Requiem for the Chyldren: the bioarchaeology of non-adult life course morbidity and maturation in Late Medieval and Tudor England, c. 1450-1600.

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REQUIEM
FOR THE CHYLDREN

the bioarchaeology of non-adult life course morbidity and maturation in Late Medieval and Tudor England (c. 1450-1600)

BENNJAMIN J. PENNY-MASON

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Requiem for the Chyldren

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Abstract

This study employs life course theory to palaeopathological evidence of morbidity from skeletons, and in doing so, endeavours to uncover new insights about the lives of medieval children in England. This research explores life course theory, through a biohistorical approach, to non-adult bioarchaeological evidence. Through the implementation of a holistic research approach, this study aims to address an important gap in our knowledge of childhood in the past, as well as demonstrate the value of engaging with – and integrating approaches from – multiple disciplines. This research examines the prevalence of skeletal disease in non-adults (in this study ≤25-years-old) in England between AD 1200 and 1700. Data for 3,466 non-adults from 146 later medieval sites and an additional 753 non-adults from 41 Tudor sites were collated from published and unpublished skeletal reports and analysed for evidence of skeletal changes reflective of disease. It was observed that, adopting a life course perspective was vital for understanding the *lived experience* of childhood in the past. It was noted that evidence of morbidity during childhood (≤11-years-old) was low, potentially indicating a period of effective child care. At around12-16-years of age the transition into youthhood occurred and this was accompanied by a change in morbidity patterns. It was also noted that patterns of morbidity in the life course changed according to different scales of analysis – such as regional, temporal, social status, urbanism. There was also potentially a difference in morbidity and burial evidence between later medieval and Tudor childhood. Evidence of violent trauma suggests that youths might have participated in warfare activities from the age of 14-17-years-old. Finally, the approach of *composite life course analysis* revealed that progressive tuberculosis was likely to have been a significant childhood experience, during which children were cared for by their familial units.

Keywords – *child, early modern, palaeopathology, disease, medicine, transdisciplinary*

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Disclaimer & Declaration

I certify that this work is of my own authorship and that the use of material from other sources has been properly and fully acknowledged in the text. To the best of my knowledge and belief, this work contains no material previously published or written by another person, except where due reference is made. Material from published and unpublished work of others which is referred to in the dissertation is credited to the author(s) in question in the text. None of the material included in this work has been previously submitted for a degree in this or any other university. Any assistance provided during the research has been given the appropriate acknowledgements. This document is the result of my own work.

This dissertation is 97,843 words in length.

Signature: 

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pto….

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Sorry to anyone I have in this moment forgotten – I really do thank you all too!

B.J.P-M
Monday 9th September 2019
Rushmoor, Surrey

for my mother,
obviously

contents

1

CHAPTER 1 | introduction

01.01 | title

Requiem for the Chyldren: the bioarchaeology of non-adult life course morbidity and maturation in Late Medieval and Tudor England, c. 1450-1600.

01.02 | abstract

This study employs life course theory to palaeopathological evidence of morbidity from skeletons, and in doing so, endeavours to uncover new insights about the lives of medieval children in England. This research explores life course theory, through a biohistorical approach, to non-adult bioarchaeological evidence. Through the implementation of a holistic research approach, this study aims to address an important gap in our knowledge of childhood in the past, as well as demonstrate the value of engaging with – and integrating approaches from – multiple disciplines. This research examines the prevalence of skeletal disease in non-adults (in this study ≤25-years-old) in England between AD 1200 and 1700. Data for 3,466 non-adults from 146 later medieval sites and an additional 753 non-adults from 41 Tudor sites were collated from published and unpublished skeletal reports and analysed for evidence of skeletal changes reflective of disease. It was observed that, adopting a life course perspective was vital for understanding the *lived experience* of childhood in the past. It was noted that evidence of morbidity during childhood (≤11-years-old) was low, potentially indicating a period of effective child care. At around12-16-years of age the transition into youthhood occurred and this was accompanied by a change in morbidity patterns. It was also noted that patterns of morbidity in the life course changed according to different scales of analysis – such as regional, temporal, social status, urbanism. There was also potentially a difference in morbidity and burial evidence between later medieval and Tudor childhood. Evidence of violent trauma suggests that youths might have participated in warfare activities from the age of 14-17-years-old. Finally, the approach of *composite life course analysis* revealed that progressive tuberculosis was likely to have been a significant childhood experience, during which children were cared for by their familial units.

01.03 | introduction

The purpose of this thesis is to explore the embodied life course experience of later medieval and Tudor children. This is to be achieved through a holistic research approach and the adoption of a biohistorical model – which values bioarchaeological and historical evidence in equal parts. In particular, this thesis aims to explore the relationship between the life course and patterns of non-adult morbidity, to explore just how far

bioarchaeological evidence can assist in interpreting childhood in the past. This is not a traditional bioarchaeological thesis, as while it is based upon new bioarchaeological and funerary evidence, it also draws heavily from evidence derived from other disciplines. This study was designed to approach historically based questions with bioarchaeological evidence. Therefore, this work can be defined as a transdisciplinary biocultural approach to medieval childhood.

Figure 01.01 – 1600 - The Bartholemew Children - Painting - Unknown Artist - Burford, Oxfordshire - Private Collection - Philip Mould ©

This study includes data from 3,466 non-adult skeletons from 146 later medieval sites from across England. In addition, it also includes data from 753 non-adult skeletons from 41 Tudor sites, which represents the largest assemblage of 'Tudor' skeletal data. This thesis aims to add new data to the evidence of children and childhood in the past through the gathering of non-adult skeletal data and funerary evidence. It is hoped that new data will add to strengthening the evidence for representing children in the past, which still remains to have an impact in mainstream archaeological academia. In addition, it is hoped the application of a life course perspective to the study of childhood will add new perspectives of the medieval and Tudor child. Finding skeletal assemblages that broadly date to the Tudor period is challenging (see chapter 2) and this research aims to 'find' evidence of Tudor non-adult skeletons.

The perception of children as miniature adults who did not experience a period of 'childhood' is still a common popularly perceived picture of the lives of medieval children. This thesis hopes to add to the body of work aiming to reconstitute a more nuanced and contextualised view of medieval childhood, one which was undoubtedly tough in a number of ways (with high mortality, disease, famine, orphanhood, etc.) but which could also be a time of protected freedom, play, exploration, gendered apprenticeship, familial care, the discovery of agency, etc. This work is intended to add to the body of scholarship which evidences the *eclectic* nature of medieval childhood. Secondly, the skeletal assemblages of a Tudor date are likely to be of popular interest. The Tudors are a unrelentingly popular past generation, which can be evidence by the wide variety of 'popular' historical books regarding this period. However, skeletal evidence is rarely included in these works, because the skeletal

assemblages are so difficult to source. Given the contemporary importance and values in regards to childhood, it is likely that new information gained from Tudor children would be of interest to a broader audience already invested in this sociocultural historical context.

Figure 01.02 – 1598 - The Family of Sir Edward & Bridget Coke - Effigy - Alabaster - St Mary's Church, Tittleshall, Norfolk - Authors Own

Non-adult bioarchaeology is particularly well positioned to help assist in understanding childhood in the past. The history of childhood has lacked a vital piece of evidence that bioarchaeologist's can provide – direct evidence of the lives of children in the past (Turner and Andrushko 2011: 44). Therefore, the skeletal remains of non-adults might be the most appropriate evidence by which to investigate children in the past (Lillehammer 1989: 96). Non-adult skeletal remains are found with relevant frequency from the archaeological record (Baxter 2005: 99). In addition, skeletal evidence is also one way to overcome the adult mediated historical bias, to materially access direct evidence of children (Youngs 2006: 40). Often, the more commonly historically recorded members of society represent those individuals who cause the greatest deviation from the status quo of the practices of the majority of the population. Focusing on the actions of this small fraction of society may have little bearing on the actual experience of most people's past lives. Therefore, finding the material body in the archaeological record is paramount to interpreting our views of the past, which are often historically biased by the few, when bioarchaeology can look at the many. However, it should be noted that the archaeological record is not entirely without its own bias, which will be explored in the next chapter (Kendall 2017: 39; Waldron 2009: 1). That being said, bioarchaeological evidence can help bypass some of the historical bias which often over-represents adult, male, wealthy, educated and urban individuals (Grauer and Miller 2017: 41). While the materiality of children cannot automatically unlock the door to our comprehension of childhood, a holistic approach to

bioarchaeological evidence is an excellent vantage point from which to explore the life courses of children in the past.

Figure 01.03 – Summary of the transdisciplinary approach adopted in this study of later medieval and Tudor childhood - Authors Own

This thesis includes evidence from bioarchaeology, palaeopathology, medieval history, archaeology, history of medicine, clinical medicine, sociology, funerary archaeology, anthropology, philosophy, ethnography, historical archaeology, history of art – as well as a variety of other subjects to a lesser extent (see figure 01.03). Bioarchaeological studies are defined by their interdisciplinary approach to the contextualisation of biological remains. This is because in order to strengthen the value of data from the human skeleton, adopting a biocultural approach is paramount and greatly increases the value of bioarchaeology in interpreting the past (Parkinson and Talbot 2017: 1). However, the extent to which bioarchaeological studies incorporate evidence from other disciplines varies. Childhood studies within bioarchaeology, medieval history, history of medicine and anthropology regularly adopt interdisciplinary approaches (Decaro 2017: 745; Hanawalt 2002: 440; Lewis 2014: 167; Rütten 2011: 70). The complexities of exploring childhood in the past has meant that childhood studies have always been reliant upon evidence from multiple disciplines (Lillehammer 1989: 96; 2010: 16; 2015: 19). The

value of a transdisciplinary approach is that the variety of evidence and outlooks of different disciplines can help overcome inherent and evidential shortcomings in other fields. Bioarchaeological studies are in a unique position to enable a transdisciplinary research approach (Knudson and Stojanowski 2008: 398; Lillehammer 2010: 16). In addition, interdisciplinarity also allows for a *post-processual* approach, integrating empirical data with theory and within a historical sociocultural context (Gilchrist 2009b: 388-400). However, approaches adopting multiple disciplines also have their own inherent challenges (Craig-Atkins 2017: 110). They are less efficient and it can be difficult to encompass work from multiple fields into cohesive and comparative evidence. Such studies will invariably have to rely on secondary sources, which means a good understanding of the authors of these sources and their wider writing is required, which takes up a considerable amount of research time. This research is indebted to the collective interdisciplinary archaeological work, particularly in reference to life course theory, by Roberta Gilchrist (2000, 2012, Gilchrist and Sloane 2005).

This chapter aims to act as an introduction to the various component parts utilised throughout this thesis. This chapter first explores the key research questions and objectives. It explores the concepts of children, childhood and life course theory. In addition, it summarises the research of children in bioarchaeology, palaeopathology, history of medicine and art history. Finally, this chapter explores concepts of health, stress and morbidity patterning.

01.04 | questions

- What can the collective patterns of morbidity data gathered from non-adult skeletons inform use about the experience of the life course of later medieval and Tudor children?
- Does the morbidity evidence support or refute the historically inherited view the life course (i.e. the view of the seventh year of life as being particularly significant)?
- Are there substantive differences in the morbidity and funerary evidence between the later medieval and Tudor child?
- What effect do different scales of analysis have on the patterns of morbidity evidence over the life course?
- What does the bioarchaeological and historical evidence suggest about the earliest age of participation in warfare activities?
- What can non-adult skeletal care analysis, on a population scale level, inform us about the relationship between the life course, children and disease in the past?

Figure 01.04 – Word Prominence – 25 most commonly occurring words in this thesis - Authors Own

01.05 | objectives

- To undertake a nation-wide study of non-adult (in this study, ≤25-years-old) skeletons from England, from published and unpublished sources, representing a total number of 3,000 non-adult skeletons dating to between AD 1000 – 1800 (to represent 'later medieval' children); as well as an additional 1,000 non-adult skeletons, dating to between AD 1400 – 1700 (to represent 'Tudor' children).
- To directly contextualise the bioarchaeological morbidity evidence into a holistic and biohistorical analysis.
- To consider the patterning of morbidity over the life course – from infanthood, to childhood, to youthhood, to adulthood.
- To examine differences and similarities in morbidity over the life course between the later medieval and Tudor periods.
- To explore scale in terms of life course morbidity – such as temporality, regionalism, social status and urbanism.
- To consider the evidence of violent trauma within the life course and to examine possible interpretations of involvement of children in warfare.
- To consider the value of non-adult care within the wider population and to apply a new theoretical model – *composite life course analysis* – to this approach.
- To develop a database of non-adult bioarchaeological data for later medieval and Tudor England – the *Bioarchaeological Database for Medieval England* (*BDfME*).

01.06 | child–ren

Hamlet posed the question – "*What, are they children?*" (Chedgzoy 2007a: 28). This question is as difficult to answer today as it was for Shakespeare. This is because children are essentially immeasurable (Lott 2017b; Schües and Rehmann-Sutter 2013: 201). Children are conceptualised as diffuse, fluid and complex to study (Fahlander 2011: 14). The determination of what a 'child' is depends on the individual experience of *being* a child

and this varies considerably (Lillehammer 2000: 20). The definitions of a 'child' are also socioculturally context dependant (Baxter 2005: 1). Childhood is also not a static phenomenon, it is a state of being that is transitional and fleeting (Corsaro 2015: 3; Woodhead 2015: 31).

"Sith all children . . . thinke onely on things that be, and regard not of things that shall be, they love playes, game and vanite, and forsake wining and profite: and things most worthye they repute least worthy, and least worthy most worthye. They desire things that be to them contrary and grievous, and set more of the image of a childe, than of the image of a man, and make more sorrow and woe, and weepe more for the losse of an apple, than for the losse of their heritage . . . They love talking . . . keep no counsayle, but they tell all that they heare or see."

Stephen Batman, 1558, *Anglicus's encyclopedia*
(Witmore 2007: 35)

"Children are playing with history, no less, exploring the temporality of things by remaking them, but not in a regular way. They do not make commodities. Nor do they construct monuments, antiques or archives."
(Mitchell 2014: 88)

Children do not write history (Levi and Schmitt 1997: 3; Lillehammer 2010: 22). While it is true that *some* children did write letters, diaries and textbooks; these examples are rare and often formulaic in nature (Herlihy 1978: 109; Mitchell 2014: 88; Newton 2014: 24; Orme 2008: 108). Inevitably, the few examples of the writings of children almost exclusive represent higher status children (Cunningham 2005: 2; Newton 2011: 161; 2014: 26). Even the contents of these texts are likely to have been mediated in some way by adults (Cunningham 2005: 2; Kemp 2001: 24; Munro 2017: 81; Newton 2011: 157). Therefore, despite these rare and important examples of child's writing, the unfiltered child perspective effectively remains elusive (Newton 2011: 153).

We study the world and agency of children from an adult perspective (Crawford and Shepherd 2007: 2; Youngs 2006: 40). The study of children in the past is inherently paradoxical, as it derives from this *adult* perspective (Lillehammer 2018: 39). The history of children can therefore easily veer into a history of parenthood (Morpurgo 2006: 16). Because we all have been a child, our adult memories of what it was to *be* a child bias our view of the 'reality' of our childhoods – our memories are elusive and spectral (Gittins 2015: 34; Lillehammer 2018: 39). As Jenny Diski put it "*there is nothing so unreliable or delicious as one's rackety memories of oneself*" (2016). The study of children in the past is undertaken within a hall of mirrors. Our views of the children in the past are refractions and tessellations – therefore, often our only recourse is to interpret them in abstraction.

01.07 | child–hood

The study of 'children' is not the same as the study of 'childhood' – although the two are often intimately intertwined (Bailey 2012: 10; Sofaer 2000: 12). There are no specific definitions of exactly what defines a 'child' and 'childhood'; both terms are used inconsistently and this in part is likely reflective of their somewhat overlapping definitions (Crawford and Lewis 2008: 7-8; Lillehammer 2010: 22). For the purposes of this thesis,

the study of 'children' is the direct investigation of (or evidence for) a child, while 'childhood' refers to the (often collective) experience (and culture) of being a child (Gittins 2015: 36; Lillehammer 2010: 23; Ryan 2013: 4). There is far more evidence about the nature of *childhood* than of *children* (Cunningham 2005: 2).

As with the concept of a 'child', 'childhood' is also an equally fluid notion (Crawford 2018: 774). Childhood is a modern unit of measurement (Corsaro 2015: 3; Gittins 2015: 36). Childhood is also a period of learning, training and enculturation (Bailey 2012: 1; Kamp 2001: 2). Our modern values pertaining to the nature of childhood can potentially distort the views of childhood(s) in the past that potentially do not accord with our own constructs of what we believe childhood is or has been (Cunningham 2005: 1; Orme 1973: 1). Perhaps our greatest departure in our conceptualisation of childhood in the past is our contemporary sentimentalised outlook of the natural innocence of the period of childhood (Hanawalt 1986: 11; Shahar 1990: 2; Sofaer Deverenski 2000: 4). The existence of children in the past does not *automatically* imply that a state of natural childhood existed (Kamp 2015: 40). Although all young children in the past experienced a period of material fragility, the nature of childhood is determined by more than biological immaturity alone (Gittins 2015: 36). Despite this, children do still *embody* aspects of their childhoods. Childhood is also not a universal phenomenon – the experience of childhood is contextual, diverse and eclectic – and dependent on any number of factors such as age, sex, ethnicity, social status, etc. (García-Sánchez 2018: 170; Gittins 2015: 35; Kane 2013: 6; Kamp 2001: 3; Kaufmann 2017: 139; Lillehammer 2010: 27; 2015: 11; Schües and Rehmann-Sutter 2013: 197; Woodhead 2015: 22). However, historians, bioarchaeologists and psychologists have almost unanimously concluded that 'childhood' was a clearly definable, separate and special stage of life in later medieval and Tudor England (Bailey 2012: 194; Barron 2007: 40; Cunningham 2005: 35; Gilchrist 1999: 90; 2012: 42, Hanawalt 1993: 5, Kroll 1977: 384; Orme 2001: 7 Pollock 1983: 97; 2017: 71; Shahar 1992: 3).

The view of children in the past as contributors to the creation of the archaeological record *should* be implicit in any/all archaeological studies (Baxter 2005: 2, 79; Lillehammer 1989: 89; 2010: 16; Orme 2008: 106, Lewis 2009: 104, 145). Our outlooks of the past should seek to be naturally inclusive, rather than to overly seek to 'find' children when their presence is embedded in all archaeological sites. We therefore need to consider children as independent and active agents (Crawford et al. 2018: 9; Inglis and Halcrow 2018: 51-53; Kane 2013: 125; Kamp 2015: 44; Lillehammer 2010: 26; 2015: 11; Oswell 2013: 269; Rosenthal 2007: 4; Sofaer 2000: 12).

01.08 | the ghost of ariès

Childhood studies have been trapped in the extended (and sometimes cyclical) debates of Philippe Ariès's *L'Enfant et la vie familiale sous l'Ancien Règime* (1960), which was published in English as *Centuries of Childhood: a Social History of Family Life* (1962) (Classen 2005: 3; Cunningham 2005: 4; Ryan 2013: 4).

Amongst Ariès various arguments, he suggested that childhood, based predominately upon the evidence of children in portraitures and literature, was not a distinct life course period before the sixteenth century (Ariès

1962: 119; 1986: 31; Coster 2001: 13; Cunningham 2005: 27; Houlbrooke 1992: 6; Langmuir 2006: 10; Oosterwijk 2018: 590; Shahar 1990: 95). Ariès also argued that the high rate of infant mortality meant that parental emotions and expressions of grief were different than today (Ariès 1962: 39, 130). His failure to contextualise his evidence led to a wide range of generalised views of medieval childhood (Houlbrooke 1992: 6).

This thesis is not concerned with an in-depth analysis of the views of Phillipe Ariès – this has been extensively covered. His generalised theories about the state of medieval childhood have been carefully critiqued and dismantled by academics over the past few decades. The majority of Ariès views have been refuted by historians, bioarchaeologists, art historians, sociologists, psychologists, etc. (Bowers 1999: 18; Chedgzoy 2007a: 18; Goldberg et al. 2004: 1; Hanawalt 1986: 9; 1993: 7; 2002: 441; Houlbrooke 1992: 6; Kline 2012: 22; Kroll 1977: 384; Langmuir 2005: 14; Lewis 2017: 33; Newton 2010: 456; Orme 2001: 5; Oswell 2013: 10; Pollock 1983: 96; Ryan 2013: 8; Shahar 1990: 3; Witmore 2007: 25). The only view of Ariès which remains pertinent to this research is in his consideration of childhood as a concept (Ariès 1962; 39, 128; Corsaro 2015: 65; Crawford and Shepherd 2007: 2; Cunningham 2005: 6; Haas and Rosenthal 2007: 15; King 2007: 372) – as well as the lingering popularised view of the unimportance of children in the past.

Ariès work was incorporated and developed upon by further influential studies. These included Lloyd deMause's edited volume in *The History of Childhood* (1974), whose chapter entitled '*The Evolution of Childhood*' was an 'psychogenic' interpretation of childhood (Cunningham 2005: 7; deMause 1974: 1; Haas and Rosenthal 2007: 17). deMause proposed that children experienced an increase in standards of living throughout time (deMause 1974: 61; Haas and Rosenthal 2007: 17). The further back in time, the worse the experience of childhood and therefore his view of the medieval child reflected one of abuse and abandonment (deMause 1974: 1-9; Haas and Rosenthal 2007: 17). Edward Shorter, in *The Making of the Modern Family* (1975), investigated the rise of the modern family (Cunningham 2005: 8). Shorter considered that medieval mothers failed what he called the '*sacrifice test*', suggesting that mothers did not put the well-being of their children before their own (Heywood 2001: 62; Shorter 1975: 265). Shorter, too, suggested that the medieval period was characterised by abuse and neglect (Haas and Rosenthal 2007: 16; Shorter 1975: 171-180). Finally, he proposed that the significant change in the family experience did not occur until the nineteenth century (Haas and Rosenthal 2007: 16; Shorter 1975: 89). Laurence Stone, in *The Family, Sex, and Marriage in England, 1500-1800* (1977) also investigated conceptual changes within the family (Cunningham 2005: 9). He considered that there was an ambivalence around child-parental relationships which were '*usually fairly remote*' (Cunningham 2005: 9; Shorter 1977: 105). He also considered that during the sixteenth century infant deaths were so high that they must have been regarded by the family as expendable (Heywood 2001: 59; Stone 1977: 81). Stone also characterised the conditions of the medieval child as poor due to parental neglect and ignorance (Haas and Rosenthal 2007: 15; Stone 1977: 81). Finally, he proposed that the significant change in the family experience was not discovered until the eighteenth century (Haas and Rosenthal 2007: 15; Stone 1977: 246). The views of Ariès, deMause, Shorter and Stone were not unanimous in their central thesis and conclusions, but their collective work left a legacy of inherent and

widespread negativity regarding the view of medieval children (and parenthood). They also all agreed that there were major changes in the nature of childhood and family relations, although they all suggested different centuries for when this occurred (Cunningham 2005: 11). Although their work has been widely challenged by numerous disciplines within academia, the legacy of their works has been the popularisation of the view *beyond* academic circles, which still embodies an inherently negative view of medieval childhood as something that was brief and brutal (Hanawalt 2002: 457; Kaufman 2016: 56; Orme 2001: 3-4; Youngs 2006: 11). There has been a great deal of scholarship since regarding children and childhood that provides a far more nuanced and contextualised view of the experience of childhood in the past. There is not enough space in this chapter to acknowledge all the historical work on medieval childhood; however, this thesis owes particular debts to the collective works of Nicholas Orme (1973, 1994, 1995, 1996, 2006, 2008, 2011) and Barbara Hanawalt (1977, 1986, 1993, 1998, 2002, 2007). In addition, it also owes a debt to the more recent theoretical approaches to medieval childhood of Patrick Ryan (2013) and J. Allan Mitchell (2014).

01.09 | bioarchaeology

Bioarchaeology as a discipline developed out of the specialisms of osteoarchaeology and palaeopathology after these fields proved too interpretively constrictive. Skeletal material is at its most valuable when it is placed within social, cultural, environmental (and when possible, historical) context (Gilchrist 2012: 66, Mays 2009: 179). The skeleton acts as a *'site of articulation between biology and culture'* (Derevenski 2000: 9). This core duality therefore requires a biocultural approach in order to fully understand the synergistic relationship between that which is biological and that which is (socio)cultural (Agarwal and Glencross 2011: 1). The skeleton is '*an (incomplete) archive of social as well as biological life experience*s' (Gowland and Penny-Mason 2018: 761). Skeletal assemblages therefore represent '*biocultural archives'* (Schutkowski 2001: 220). 'Social bioarchaeology' developed as a sub-discipline of bioarchaeology in order to emphasise the importance of integrating social theory in relation to skeletal evidence (Gowland and Knüsel 2006; Sofaer 2006). A review on the roles of bioarchaeological research themes can be found in Knudson and Stojanowski (2008); a review of biocultural themes within bioarchaeology can be found in Zuckerman and Armelagos (2011) and a review of the bioarchaeological approach to palaeopathology can be found in Buzon (2012).

'Non-adult' (or 'sub-adult') bioarchaeology is the study of human skeletal remains of those under 17-years-old (Lewis 2007: 1). Although there were some earlier pioneers in the study of non-adult bioarchaeology, it was not until the last three decades that children became the regular and central focus of research (Crawford et al. 2018: 4; Halcrow and Tayles 2008: 209; Lillehammer 1989: 89; Mays et al. 2017: 38). Studies have increased during the last decade in particular; however, the consideration of children in the past still often remains overlooked within the wider archaeological discourse (and as well as within other disciplines) (Lillehammer 2010: 16). Children still remain something of an *'optional supplement'* within archaeological studies (Lillehammer 2000: 18). Childhood studies in bioarchaeology began as an extension of feminist archaeological critiques and gender archaeology (Halcrow and Tayles 2011: 333; Lillehammer 2000: 18; Wilkie 2000: 107). Childhood studies might

have been neglected in the past potentially due to their perceived unimportance and low interpretive value within archaeological research; however, it could also be that the material and theoretical complexity that children and non-adult remains represented were also factors in the general lack of their study (Kamp 2001: 2). Whatever the reason, ignoring children in our views of the past is inherently biased, as children usually consist of between 40-65% of any living population; a society cannot be understood without viewing half of its members (Baxter 2005: 10; Lillehammer 2018: 38; Wileman 2005: 8). Additionally, non-adult bioarchaeology is potentially a powerful conduit for interpreting the past. The experiences of childhood leaves traces in both the archaeological record and within the skeleton (Crawford 2018: 780). But non-adult skeletons can also inform us about the wider social, cultural and biological environments in which children lived and this can also inform us about many broader aspects about the past (Halcrow and Tayles 2011: 351; Lewis 2017a: 1). In particular, factors such as childhood morbidity and inferences of 'health' can tell us a great deal about the experiences of disease in the past (Crawford et al. 2018: 5). The single greatest challenge in non-adult bioarchaeology has been the inability to assign a biological sex to skeletal remains (Scheuer and Black 2004: 338). However, there is now the increasing potential through the use of aDNA or lipid analysis to determine non-adult sex and these methods provide an exciting prospect for future areas of bioarchaeological research (Buckberry 2018: 66; Roberts and Manchester 2010: 32; Stewart et al. 2017: 13649). A review of the history of childhood archaeology can be found in Baxter (2008) and (2015); a recent review of child bioarchaeology can be found in Mays and colleagues (2017); a review of interdisciplinary studies in childhood archaeology can be found in Baxter and colleagues (2017); a review of theory in non-adult bioarchaeology can be found in Inglis and Halcrow (2018); finally, a history of non-adult palaeopathology can be found in Lewis (2017a).

01.10 | life course theory

There was no consistent recognition or experience of the medieval life course (Cunningham 2006: 32). Medieval temporality was not understood as a mechanism, nor as a progression. Instead, the medieval experience of time was one of rhythm, repetition, equivalence and reversal – time was experienced through habitus (Bourdieu 1977, Gilchrist 2012: 14). And yet, at the same time, the experience of life – like the changing of seasons, the cadence of nature, the motions of the stars, the proximity of rituals – was understood to move through a known pattern. Cycles underpinned the comprehension of life. The religious calendar rooted the temporal experience to a predictable pattern, one that was inextricably linked to the seasons (Gilchrist 2012: 14, Ryrie 2017d: 5, 57). Roberta Gilchrist has argued that this experience would provide a "*strong sense of linear temporality*" (Gilchrist 2012: 16). As with the changing of the seasons, the body was understood to move through different states of being, from young to old, from hot to cold. And with this, the materiality of the ageing body was central to the experience of life – of temporal biologies (Gilchirst 2012: 2-3). There was a cycle to life (Youngs 2006: 1). And yet, not quite. The extended medieval life course was believed to start before birth and carried on after death (Gilchrist 2012: 2000: 325; 2012: 22).

Life-cycle theory has been critiqued for its prescriptiveness and unsuitability to the medieval experience (see figure 01.05). Instead, it is useful to conceptualize the ageing continuum as a life course and age as a number of 'life pathways' (Hockey and Draper 2005: 43; Gowland 2006; Gilchrist 2012: 5). Life course theory is a more fluid approach which can encompass many variables of age identity and intersectionality, such as gender, ethnicity, status, etc. (Gowland and Penny-Mason 2018: 760). Despite this not being how medieval people perceived age, they did have an appreciation of there being specific periods to life in which there was a commonality of experience.

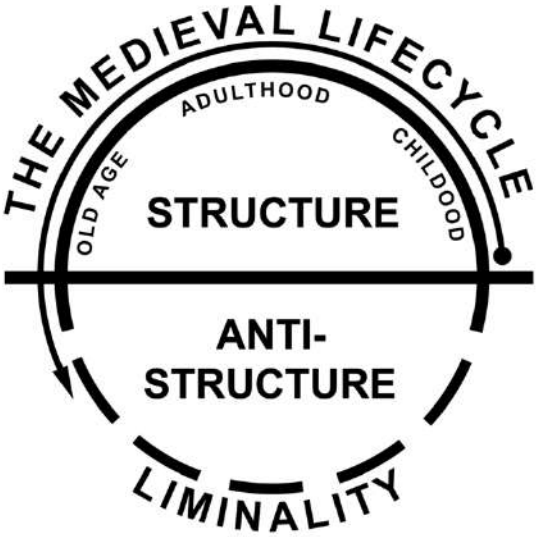


Figure 01.05 – Life cycle approach utilised by past studies

It is hard to reconcile the views of Ryan that there was no "age-consciousness" during this period, with the plethora of 'ages of man' art to which many medieval people would have been exposed (Bailey 2013: 5; Ben-Amos 1994: 11; Cressy 1992: 5; Cunningham 2005: 28-29; Demaitre 1977 465; Gilchrist 2012: 24, 32-37; Hanawalt 1993: 13, 41, 109, 204; Heywood 2001: 14-15; Langmuir 2006: 113-149; Orme 2001: 7, 2008: 111; Phillips 2003: 43; Rosewell 2008: 93, Shahar 1990: 22, Stortz 2001: 83-85, Witmore 2007: 27-28; Youngs 2006: 21-23). Patrick Ryan has been critical of those historians who he believes to have been blinded by the modern perception of age as a category of analysis within a population when it was not a medievally conceived notion (Ryan 2013: 7).

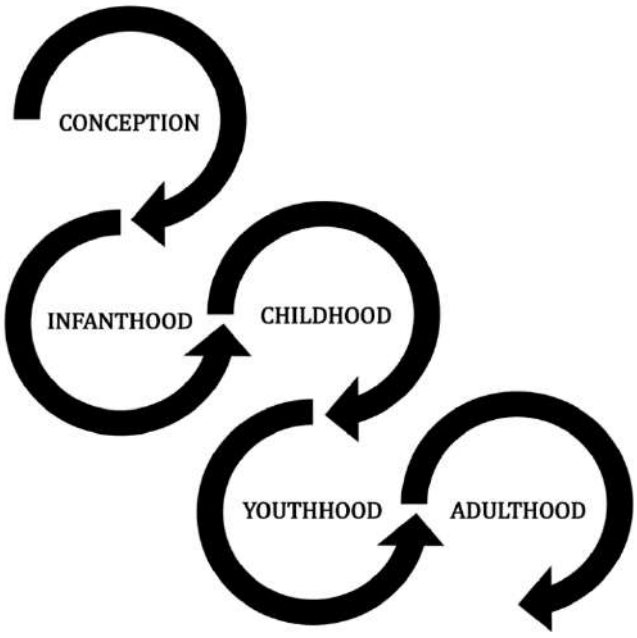


Figure 01.06 – Life cycle approach utilised by past studies

He suggests that our views of medieval development, age 'stages' and rites of passage are contextually inappropriate (Ryan 2013: 8-10). Ryan is correct to challenge our perceptions of the past and to consider the very way in which we perceive age. Our conception is undoubtedly mediated through modern constructions of age as a measure of development. As Ryan critiques, the notion of our own lives as a series of sequential stages was only developed through the nineteenth and twentieth centuries and left us with a biologically determinist concept of the mechanisms of ageing (2013: 7; Gilchrist 2012: 2).

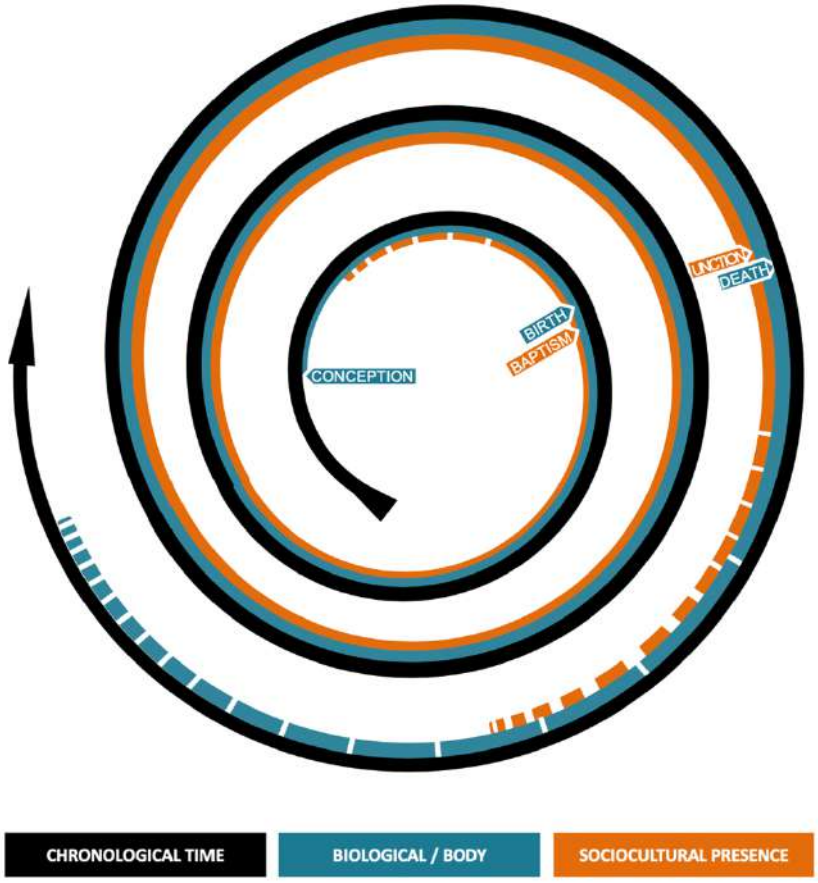


Figure 01.07 – The Life Course approach utilised in this study - Authors Own

Medieval literature, too, contains a wealth of age-related material (Gilchrist 2012: 24). Additionally, one central view of life progressing through ages that every medieval person would have known is the story of Jesus in the Gospels. Here, the life of Jesus is experienced from birth, to infancy, to adolescence and to adulthood (Berquist 2009: 526-527). The implementation of life course and social theories in bioarchaeology occurred relatively recently (Inglis and Halcrow 2018: 44; Sofaer 2011: 286). These studies have conceptualised the materiality of the body and associated chronological ageing as not simply mediated temporally; instead, ageing is biological, social, historical, local, etc. (Gilchirst 2012: 38; Gowland 2001; 2006; 2018: 106; Sofaer 2006a; Sofaer 2011: 303). The material reality of skeletal remains is that they are *static* – it is the task of social bioarchaeologist to comprehend that the body which it represents was not (Sofaer 2006a: 127). Life course analysis attempts to adopt a longitudinal view of the past and consider the skeletal evidence as a living agent (Inglis and Halcrow 2018: 46). Recent bioarchaeological studies which investigate the life course in medieval England have explored skeletal evidence in regards to age, status, gender, etc. (Lewis 2016; Shapland et al. 2015; Penny-Mason and Gowland 2014). In addition, other recent scholarship has recognised the ramifications of well-being during the earlier years of life and the impact of these factors later on within the life course (Gowland 2015: 530; Inglis and Halcrow 2018: 49; Mortimer and Duke 2017: 812). In sum, life course theory bridges the gap between skeletal material and socially based questions (Gilchrist 2012: 43). The physiology of non-adults means that they are prime candidates to be viewed within the life course, with palaeopathological material having the potential to view the life course, possibly even on a year-by-year basis (see figure 01.07).

The ages of man literature was also not necessarily directly related to *specific* categories of 'chronological age', instead they represented broad categorisations of 'social age' for the uses of moralist commentators (Gilchrist

2012: 36) (see the medieval ages of man scheme depicted in figures 01.08, 01.09 & 01.10). Within academia 'age' has been conceptualised in terms of a variety categories (Ginn and Arber 1995: 2).

Figure 01.08 – 1482 - The Ages of Man - Bartholomeus Anglicus - Drawing - Lyon - Proprietaire des Choses

Figure 01.09 – 1495 - The Ages of Man - Drawing - London - Bartholomeaeus Anglicus - De Proprietatibus Rerum

'Chronological age' can be described as our temporal measurement of time – so in relation to skeletal remains, that is the time elapsed since birth and measured in years. 'Biological age' is the measurement of maturation and measurement of the material body – which in relation to skeletal remains is most commonly measured by assessing dental development and eruption, height estimation and epiphyseal fusion. 'Sociological age' is a culturally constructed narrative, often based on chronological age, but determined by the wider sociocultural and historical context, which will often impose culture-specific norms on the wider society at different ages, which can potentially be embodied in the remains (Baxter 2008: 163; Gilchrist 2012: 2; Gowland 2006: 143-146; Gowland and Penny-Mason 2018: 760; Fahlander 2011: 14; Halcrow and Tayles 2008: 202; 2011: 348; Kamp 2001: 3; 2015: 38; Sofaer 2000: 8; 2006a: 120; 2011: 286-287). 'Functional age' is essentially the measuring of the capacity for independent activity (Sofaer 2011: 297). 'Psychological age' or mental age is largely an assessment of an individual's cognitive functioning, which in relation to skeletal material is currently not perceptible (Gowland 2006: 143, 153, 2018: 105; Inglis and Halcrow 2018: 41; Sofaer 2006: 77). Each of these categories interrelate, but the degree to which they do can differ culture-to-culture and even person-to-person. In turn, this causes us bioarcheological age-related blind-spots. For instance, two individuals with the same chronological age might have skeletal remains that appear to be of different biological and functional ages, which in turn could place them in different sociological age categories within a particular sociocultural context (Gowland 2006: 153). The point is, age is a multifaceted phenomenon and the relationships between these types of age categorisations are complex and importantly, context specific. Although generally speaking there is usually a "*loose synchronicity between these categories*" (Gowland and Redfern 2010:17) it is important to not jump to assumptions and make any age-related interpretive outcomes without a wider understanding of the sociocultural and historical context.

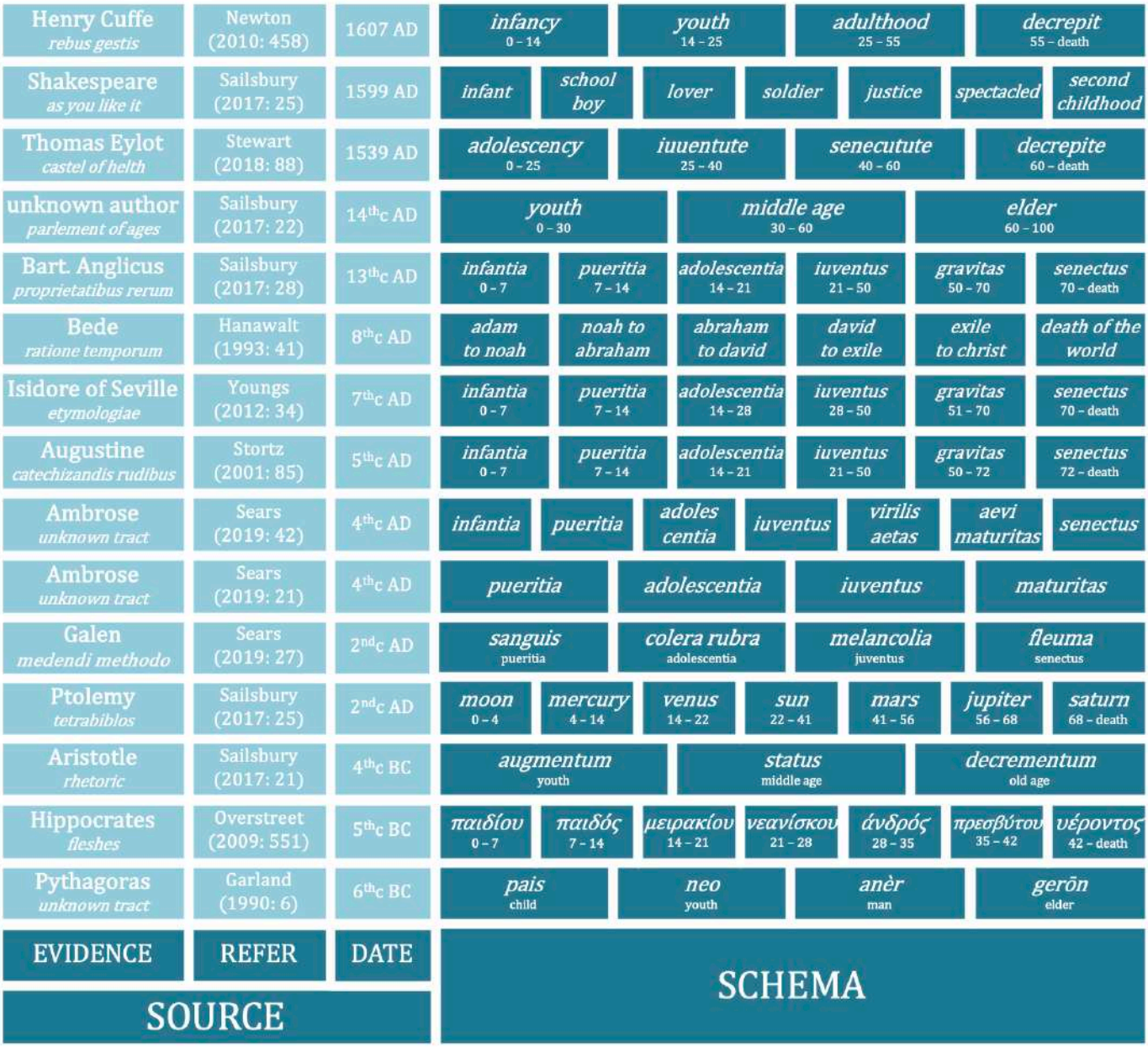


Figure 01.10 – Various *Aetates Hominum* (Ages of Man) schema - Authors Own

This should not deter researchers from looking to apply palaeopathological evidence from non-adult skeletons to life course theory. Instead, the complexities, inaccuracy and interpretation of 'age' discussions need to be fully acknowledged in any maturation-based research. Because of the complexities with defining age, categorising age is problematic, especially in bioarchaeological research biological age is often assumed to match chronological age (Crawford et al. 2018: 4; Halcrow and Tayles 2008: 192; 2011: 334; Inglis and Halcrow 2018: 41).

Later medieval and Tudor language for describing age, children and childhood is evidence of the fluidity and often non-specificity of defining 'children'. "*Child*" derives from the Middle English "*chīld*" – which derives from the Old English "*ċild"* – meaning: child, baby, infant, fetus – from English texts dating between the ninth and sixteenth centuries variations of 'child' include – *"cyld", "chyld", "chilld", "chylde", "childe", "schyld", "chield"*. The

Latin translation of "*child*" is "*puer*" – literally meaning boy or lad and although it could refer to both girls and boys, it usually refers to boys. "*Puer"* would later develop into our word *puer*ile as a notion of immaturity.

The Middle English "*chīld*' with additional plural suffixes "*r*" and "*en*" gives us the term "*children*". The Old English 'cild' with the addition of "*hād*" ("*hood*" meaning a person, condition or quality) became "*cildhād*" which gives us the term "*childhood*". 'Childhood' in Latin translated as 'puericia'. "*Bairn*" – which was more broadly used in England before being more restricted to use in the north and Scotland from 1700 – derives from the Middle English "*bern*"/"*barn*" – derived from the Old English "*bearn*" – to denote a child of either gender or age – variations of which include – "*bærn*", "*barne*", "*berne*", "*baren*" (Bailey 2012: 48; Orme 2001: 6; Pearn 2011: 762; Pelling 1988: 138; Ryan 2013: 64; Shahar 1990: 17; Youngs 2006: 39).

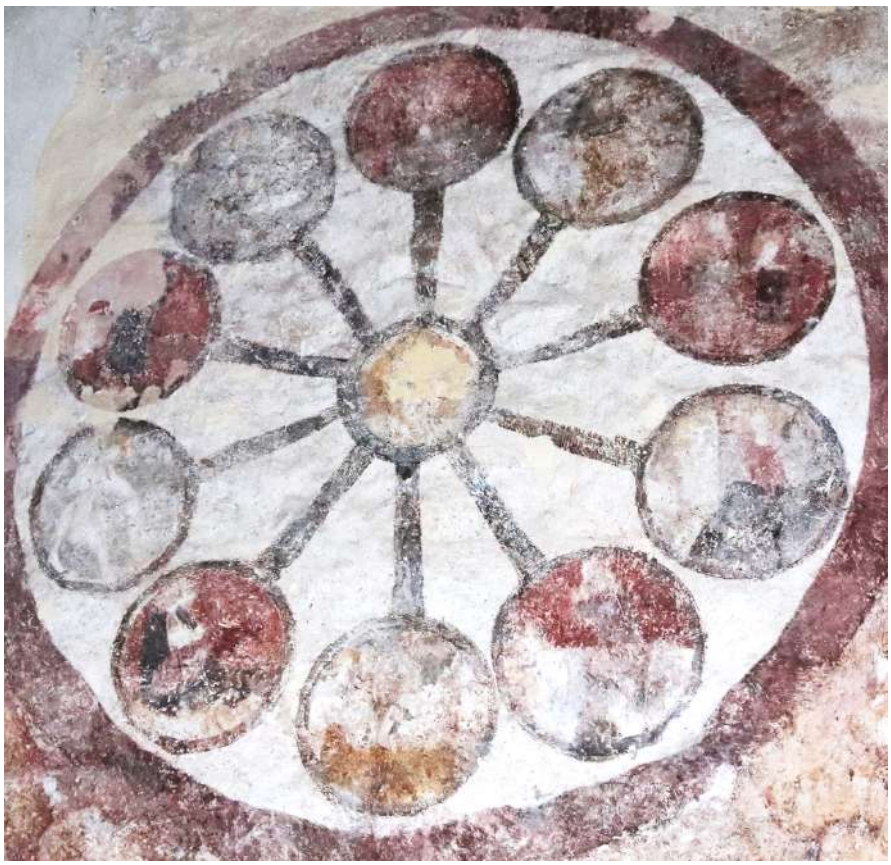


Figure 01.11 – 15thc - Wheel of Life - Wall Painting - St Mary's Church, Dymock, Wales - Ten Ages of Man - Authors Own

"*Baby*" – derives from the Middle English "*babe*" – which probably derives from the Old English "*baba*" – meaning: boy or child. The Latin synonym *"infans"* – gave use the English "*infant*"/"*infaunt*" – meaning speechless – by the fifteenth century it was used more specifically to denote a baby or young child, but could be used more broadly (Newton 2010: 458; Orme 2001: 6-7; Pelling 1988: 138; Youngs 2006: 39).

"*Girl*" – derives from the Middle English "*gerle*" – which probably derives from the Old English "*gyrle*"/"gyrele" – meaning young person of either sex. The Latin translation is "*puella*". "*Lass*" – derives from the Middle English "*lasse*" – which might derive from the Old Norse "*laskura*" – meaning: female servant, unmarried. "*Maid*" – derives from the Middle English "*mayde*"/"*maide*" which is an abbreviation of "*maiden*" – which derives from the Old English "*mæġden*" – meaning: girl, virgin, unmarried, servant (Orme 2001: 6; Pelling 1988: 138). "*Wench*" – derives from the Middle English "*wenche*" which is an abbreviation of "*wenchel*" – which derives from the Old English "*wenċel*"/"*winċel*" – meaning: girl, maid, child, servant, slave (Orme 2001: 6; Pelling 1988: 138; Shahar 1990: 17).

"*Boy*" – derives from the Middle English "*boye*"/"*boi*" – which derives from the Old English "*bōia*" – meaning: male child, prepubescent, servant. In Latin this translates as "*puer*". "*Lad*" – from the Middle English "*ladde*" – which might derive from the Old Norse "*ladd*" – meaning: young man, male servant, foot soldier, male commoner, boy. In Latin this too translates as "*puer*". "*Groom"* – derives from Middle English "*grome*" – which perhaps derives from the Old English "*grom*"/"*groma*" – or perhaps from the Old French "*grommet*" – meaning: male child, boy, youth, male servant. "*Knave*" – derives from the Middle English "*knave*"/"*knafe*" – derives from the Old English "*cnafa*"/"*cnapa*" – meaning: boy, male child, servant, youth (Bailey 2012: 35; Chedgzoy 2007b: 185; Pelling 1988: 138; Shahar 1990: 17; Orme 2001: 6).

In sum, the collective evidence of language suggests there was not much age-related specificity; instead, language was utilised in a fluid, adaptable and contextual manner. Often this flexibility extended to the application of language which could range between genders (Orme 2001: 6).

01.11 | palaeopathology

Palaeopathology is the study (*'logos'*) of ancient (*'palaeo'*) suffering (*'pathos'*) – the scientific study of abnormalities caused by disease from the archaeological record (Duffin 2010: 65; Roberts and Manchester 2010: 1). The discipline is predominately restricted to skeletal pathologies and therefore is only partially representative of disease in the past. The study of palaeopathology originally developed out of physical anthropology and medical history (Mays 2012: 302). Although there were earlier studies, palaeopathology was first formally defined by Sir Marc Armand in 1910 as the scientific study of disease in ancient human and animal remains (Roberts and Manchester 2010: 1). A review of the history of palaeopathology can be found in Buikstra and Roberts (2012) and Buikstra (2019), a review of the scope of palaeopathology can be found in Grauer (2012) and a review of the bioarchaeological approach to palaeopathology can be found in Buzon (2012).

Skeletal pathologies can be split into two categories: specific (diagnosable) and non-specific (non-diagnosable). Specific diseases can potentially be diagnosed from the pattern of lesions found distributed around the skeleton (Lewis 2017a: 11; Ortner 2011: 5; 2012: 263). However, it is difficult to classify normal vs pathological bone formation (Ortner 2003: 48). The skeleton is restricted in its ability to respond to disease, in broad terms, it can only cause an osteobastic (bone forming) or an osteoclastic (bone destroying) reaction – or a combination of the two (Brickley and Ives 2008: 24; Lewis 2007: 12; Lynnerup and Klaus 2019a: 39; Mays 1998: 6-8; Ortner 2008: 193; Waldron 2009: 19). This means that a variety of different types of pathological conditions are constrained in the skeletal response, potentially expressing similar patterns of response (Lynnerup and Klaus 2019b: 59; Roberts et al. 2018: 826). Therefore, this restricted ability to respond to different pathologies in the skeleton means that making a diagnosis is often difficult or impossible. Diagnosing pathological conditions from patterns of lesions in non-adult skeletons is also particularly difficult (Lewis 2000: 42). In addition, it is currently not considered possible to identify the difference between normative new bone formation during growth and pathological new bone formation in non-adults under the age of four-years-old (Lewis 2007: 163; Lewis 2017a:

3-4). The rapidity with which non-adults remodel also makes it less likely to identify lesion in their skeletons (Lewis 2007: 163). A lack of routine radiography means that pathological diagnosis is inherently under-represented (Lockau 2016: 118; Mays 2012: 287; Villa et al. 2019: 179; Waldron 1994: 36). There will invariably be errors with diagnosis from skeletal material alone (Ortner 2003: 112). Therefore, it is good practice to consider a differential diagnosis (Lockau 2016: 117; Lynnerup and Klaus 2019b: 81; Mitchell 2014: 89; Ortner 2003: 37; 2011: 5; 2012: 252; Waldron 1994: 34). It is also necessary to consider the co-occurrence of multiple pathologies and the effect this might have on an expression of disease in the skeleton (Lewis 2017a: 11). Finally, it is important to consider the possibility of preservation and pseudo-pathological lesions that might mislead a specific diagnosis (Waldron 2009: 21-23). In order to avoid potentially over diagnosing skeletal lesions as a specific disease, it is often more appropriate to broadly categorise the evidence into types of disease, such as infectious, metabolic, traumatic, congenital etc. (Ortner 2003: 112; 2012: 250-265; Waldron 1994: 38). Some of the more easily identifiable pathological lesions that can be identified in the skeleton include fractures, non-specific infection and arthritis (Ortner 2012: 263). This thesis aims to study non-specific infection and trauma in skeletal material, as these are two of the more commonly and consistently reported forms of evidence available. In addition, specific diagnosed infectious diseases of tuberculosis, trepanematoses and leprosy will be explored in terms of care and the life course (in chapter 9). But what can these pathological conditions tell you about the lives of people in the past, in terms of factors such as health, stress and morbidity?

01.12 | health + stress

'Health' and 'stress' are both concepts, which despite their contemporary ubiquity, neither of which are easily defined. The often-quoted World Health Organization definition of 1946 evidences the difficulties with specifically defining health. They stated that health was the *'complete physical, mental, and social well-being and not merely the absence of disease and infirmity'* (Lindemann 2010: 11; Waldron 2009: 10).

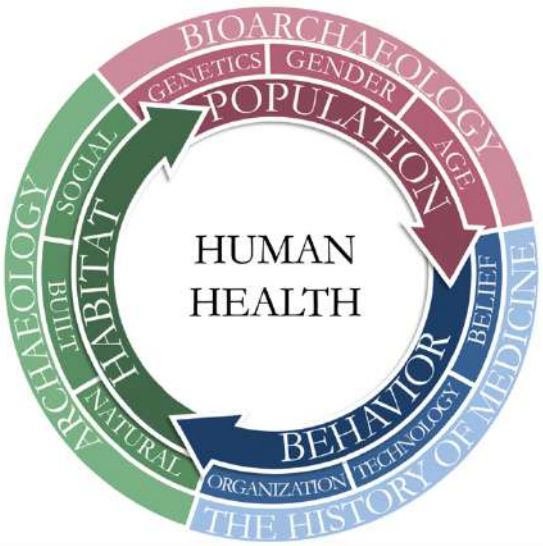


Figure 01.12 – Concept of Human Health - Adapted from Penny-Mason & Gowland 2014: 173

This definition has been widely criticised as an unattainable state of existence for the majority of the population of the world and unlikely reflective of how different individuals perceive their own health. Certainly, later medieval and Tudor people are unlikely to have recognised this definition in terms of their own view of their health (Lindemann 2010: 11). The health concept is of far more utility as a generalised prospect that can encompass diverse outlooks. This is because there is no universally perceived ideal of what health is (Meade and Earickson 2005: 2). Instead, it is context specific, due to both local environment and sociocultural outlook (Howe and Phillips 1983: 34) (see figure 01.12).

"Our only health is the disease"

T. S. Eliot, 1940, East Coker, *The Four Quartets*, 2.4:5, (2001: 18)

In particular, the concept of what health *is* can differ according to geography and period of history. Health, at a broader view, is far more to do with a general positive state of well-being, which does not necessarily have to include the total absence of disease and is flexible depending on the context (social, cultural, environmental, medical, etc.) (Meade and Earickson 2000). Health also has to be flexible enough to encompass individualism (Hillson 2014: 198; Howe and Phillips 1983: 34). Health also exists as a continuum and therefore its exact definition is inherently vague (Reitsema and McIlvaine 2014: 181).

If defining exactly what health *is* was complex enough, defining the relationship between palaeopathological evidence and health is even more difficult. For instance, one of the central concepts of palaeopathological conditions found in skeletal remains is based on a doubled-edged concept. The concept of the so-called 'osteological paradox' considers that if a skeleton is found to have evidence for a progressive disease does this mean they were 'unhealthy' or does it imply that they were 'healthy' enough to develop and sustain the disease into its more progressive state (Wood et al. 1992: 343)? There are no straightforward answers to these questions, but it in particular, these complexities mean it is not possible to draw a straight line from palaeopathological evidence from a skeleton to the health of that individual during their life. In addition, even the total absence of disease from a skeleton does not imply an absence of disease (or of 'health') in the living person. In sum, there is something of an ambivalent relationship between palaeopathological explorations of health and it cannot be inferred from skeletal material alone.

Bioarchaeologists and palaeopathologists tend to be cautious in their interpretations of the health concept. However, one of the more pervasive theories that is often adopted without much interrogation is that of 'stress' and its suitability as a non-specific unit of measurement. It is a widely-adopted notion that underpins much of bioarchaeological research: that the definition of stress is a catch-all term for a non-specific reaction. It is also generally perceived that bioarchaeological evidence of increased 'stress' represents the negative impact on the health in the past. The vague concept of stress is also so popularly entrenched, that we often do not regularly address it, nor is it routinely challenged in bioarchaeological research. This is a mistake, as it limits the interpretive scope of viewing concepts of 'stress', 'morbidity' and 'health' – but perhaps more importantly, most bioarchaeological studies in some way rely on stress as a core concept. Stress is so much a part of the popular and academic status quo, that unravelling its logic is difficult, made even more so by a general lack of direct debate around the topic. This is not entirely a bioarchaeological issue, as a discipline we have inherited the acceptance of the stress concept from clinical studies, where there too is a limited debate on the value of the stress concept; this means that bioarchaeologists have seemingly felt comfortable for the most part in not questioning the merit and suitability of utilising stress, given its significant presence in clinical literature. However, the stress orthodoxy has been quietly challenged for decades (Lazarus and Eriksen 1952, Hinkle 1961,

Mason 1975a, 1975b, Weston 2012, Hillson 2014). But, given just how widely the concept of stress is currently adopted within bioarchaeological research, often without explicitly defining the term, it is somewhat surprising there has not been more direct debate.

Defining stress is one of its first main conceptual difficulties – there is no universal definition. This is somewhat surprising given its widespread use and largely straightforward historical development. The idea of a stress-like concept was broadly understood as far back as Aristotle and Hippocrates, who had a general perception of a sort of general bodily strain causing adverse effects to health (Fink 2017: 1). The word stress itself is derived from the Latin verb *strictus* (tighten, compress), which was incorporated into Old French as *estresse* (constrict, narrow) and Middle English *distress* (force, hardship). By the sixteenth century, distress implied a form of physical injury to a person (Robinson 2018: 2). However, stress as a direct term was confined to engineering circles to describe the forces exerted on a structure and the resulting strain (a concept evidently well established by the Romans in their architectural achievements) and not used much beyond this until the early twentieth century (Robinson 2018: 2).

During the late nineteenth century, the physiologist Claude Bernard began exploring the concept of the mechanisms required to remain constant in a changing environment. Bernard's concepts were furthered by Walter Cannon, who popularised the idea of '*homeostasis*' and later also the '*fight or flight*' mechanism (Schneiderman et al. 2005: 607, Fink 2017: 1, Robinson 2018: 2). Then in 1936 in a note in *Nature*, Hans Selye first described observing a nonspecific physiological response during an experiment observing stimulated responses in rats (Selye 1936: 32, Robinson 2018: 5). Selye would later develop on these experiments, measuring the consistent physiological responses to stimuli in a three-stage criteria. Initially, he termed this the '*general adaptation syndrome*' (GAS), and later, borrowed another term instead – calling it the '*stress response*' (Seyle 1950: 1383, Robinson 2018: 4). Selye continued to develop and alter the specifics of his concept, later describing stress as '*the non-specific response of the body to any demand. A stressor is an agent that produces stress at any time*' (Seyle 1976:53). The responses were 'non-specific' because a number of the same stimuli were found to produce the same 'stress' response (Hillson 2014: 201). Selye's central thesis was also that his concept of stress negatively impacted upon health (Fink 2017: 1, Robinson 2018: 5). Not only were Selye's views eagerly adopted within academic circles, his concepts also had a significant impact on our wider culture and views of the stress concept.

One of the key conceptual difficulties with utilising the stress concept within bioarchaeology (and in academia more broadly) is the of lack of universal definition. While the actual mechanism behind GAS has been found incorrect (Fink 2017: 5), the difficulties with Seyle's concept(s) is not his central argument of the existence of a stress reaction, rather it is the implicated view that 'non-specificity' is a valid scientific concept. The legacy of his stress concept is upheld by the rationale that non-specificity as a category actually has a measurable value (Mason 1975b: 28). Additionally, when utilised in research, 'stress' is often conceptualised as the catalytic action,

not the resulting reaction. This is the opposite of what Selye defined stress as: that stress occurs as an outcome *from an* action (Bush 1991: 13; Hillson 2014: 201). Therefore, the mechanism of stress can be so broadly adapted to act as either agent *or* outcome, depending on its application. This is its central difficulty; it has been so broadly and differentially defined that it now defies all specific definition. Defining it has aptly been described as '*an exercise in futility'* (Weston 2012: 504). Even those who promote the use of the stress concept in bioarchaeology concede to it containing multiple meanings (Goodman et al. 1988: 171) and rarely are two definitions exactly alike (Hinkle 1961: 291). Stress means different things, to different people, in different circumstances (Fink 2010: 5). Given these issues, it is remarkable that 'stress' has continued to be so heavily utilised in clinical and anthropological research, despite a continued bewilderment over its actual meaning(s) (Mason 1975a: 6, Hillson 2014: 202).

Although it is not a problem unique to bioarchaeology, the discipline has still been particularly culpable of a heavy reliance on the stress concept. A survey of anthropological literature found that the term 'stress' had a wide array of definitions, sometimes even being entirely undefined (Bush 1991: 12). This is another common problem in research; the implication that stress does not need to be precisely defined, because there is a general conception of what stress means. There is no bioarchaeological standard for what constitutes 'stress' and the parameters of its definition have been broadly drawn (Larsen 1997). It is often described as growth disruption or trauma or dietary deficiency or infection or environmental – but these categories are not all aetiologically similar. For instance, the grouping together of multiple non-specific responses found in the body (often cribra orbitalia, enamel hypoplasia, periosteal new bone formation), Harris Lines, height estimation, etc.) give the impression that these conditions are caused *somewhat broadly* from the same non-specific aetiological cause, when we know this is not to be true, or we still do not know the aetiological cause (in which case, the grouping of poorly understood aetiologies' should be avoided in order to circumvent giving the impression of a scientific understanding of a similarity that has yet to be firmly established). Different types of 'stressors' have been generalised into the same category of stress only due to the seemingly acceptable utility of the catch-all definition of stress. As we have seen, stress does not have a singular indicator, so comparative frequency rates of stressors are obviously going to vary study-to-study; stress studies are often rather varied, making them interpretively difficult to untangle (Mays 2012: 295). This causes additional problems for those approaching bioarchaeological research from outside of the discipline, whereby a number of 'stressors' described will be considered of equal importance, despite this rarely being the case. This is also potentially limiting other conceptual views of bioarchaeological evidence – for instance, rather than exploring generalities of stress in childhood, explorations of clinical concepts of '*vulnerability'* and '*resilience'* theories might be more complex and interesting theories to explore, as well as being more aetiologically appropriate (Broekman 2017: 597).

If the stress concept is so poorly defined and can mean any number of things, why is it so widely adopted within bioarchaeological research? The problem with stress is not only is it poorly defined, but it invites non-specificity. Generalising is not inherently a negative practice (Robb 2013) nor is it by default bad science. When it is utilised

appropriately it has very important uses, but it always needs to be made clear that it is a generalization. The problem is that the stress concept permits and even encourages vagueness. Utilising the stress tool permits the user to be non-specific in detail in their argument. The problem is that Selyian concept is not normally seen as just that – a concept – rather, it is adopted as a science, making stress a science, and in the process legitimizing non-specificity as scientifically acceptable. However, many bioarchaeological studies looking to claim accuracy of diagnosis and interpretation of disease and health in the past often utilise a concept of stress that is so generally defined it can often border on contradicting their central argument presented.

For instance, because it is true to say that concepts of 'health' are intertwined with factors concerning the whole body as an interconnected system (and that morbidity and disease is best viewed in its entire context) this has seemingly permitted bioarchaeologists to view health as a generalised unit, into which stress is a useful tool of measurement. While this view might be partially valid, it should not permit the free use of the evidence of stress in order to avoid specifying about particular disease processes. As Weston (2008, 2012) has previously noted, the use of the stress terminology often overlooks a lack of pathological understanding on the parts of the author(s) who does not need to present up-to-date background on the disease they are exploring because it can be generalised under the umbrella of non-specific stress. As Goodman states, '*the skeletal study of stress differs markedly from Selyean stress in that there is little room for consideration of perceived stress processes*.' (Goodman et al. 1988: 195).

There is not enough scope within this thesis to undertake a full critique of the value of the stress concept within bioarchaeological research. For now, stress remains such a prevalent topic in bioarchaeology that it is almost implausible to suggest avoiding it altogether. However, there is certainly a very pertinent need for fresh and direct debate about this topic within bioarchaeology. Direct debate on the topic of stress is currently very limited – both in bioarchaeology and in wider clinical literature – which is why it has been allowed so much freedom to establish itself as a default scientific unit of measurement. Perhaps there is a place for the use of stress in bioarchaeology, both in the Selyian sense and the wider sense, but this is a topic that very much warrants more direct, critical and theoretical exploration.

Until then, avoiding utilising stress where at all possible is probably easiest (Mason 1975b: 34). These conceptual flaws impacted the structure and interpretations of the approach of this thesis to the bioarchaeological data collected. Given the prevalence of the 'stress' concept in bioarchaeological research, it is remarkably easy to avoid using the term. This might, perhaps, hint at its unnecessity; avoiding its use during this thesis research has been particularly surprising. Avoiding the use of stress forces the explanation of the meaning of individual morbidities as interpreted by the author. Over the following decades, science and interpretation will move on and change aspects of the data in this study; however, the study leaves the reader scope to re-interpret the evidence based on new data available, rather than having hidden the results, blanketed in a generality of the stress concept.

01.13 | morbidity

If the concepts of 'health' and 'stress' in relation to palaeopathological evidence are difficult to establish, it is perhaps more pertinent to utilise other definitions and measurements of disease. 'Morbidity' can be defined as illness and disease when referring to an individual and a measurement of disease within a group when referring to a group or population. It should be emphasised that morbidity (illness) is not the same as mortality (death) (Lindemann 2010: 31; Ortner 2001: 226). The similarity of these words mean that they are often conflated, which is perhaps unsurprising as the root of the word for disease (*morbus*) and death (*mors*) are the same – and *morbus* implies that it can potentially lead to *mors* (Wallis 2010: 6). Morbidity, however, is not an automatic expression or measurement of 'health'. To measure morbidity is to quantify a level of a person or a group's adaptive reactions to a change in environment – such as biological, social, cultural, etc. (Agarwal and Glencross 2011: 1; Halcrow and Tayles 2011: 338).

Non-adult morbidity is a particularly important form of measurement within a group or population, because it is indicative of the overall fitness of the population more broadly. Non-adults represent the most sensitive and fragile members of past societies (Goodman and Armelagos 1989: 225, Humphrey 2000:193). The immaturity of non-adult immune systems would also make them more likely to contract disease than their adult counterparts, rendering them more sensitive to changes in conditions in the past (Baxter 2005: 99, Halcrow and Tayles 2011: 337, Lewis 2000: 48, Ortner 2003: 112). Their biological vulnerability renders them susceptible to the collective conditions of their environments and non-adults under the age of three-years-old are particularly fragile. Therefore, their levels of morbidity can be conceptualised as *passive barometers* of their environments and care in the past and this is vital evidence for interpreting past lives (Lewis 2007: 4, 17; Pinhasi 2008: 363). Past studies of morbidity in medieval non-adults in England have identified various evidence for age, temporal and sociocultural changes (Lewis 2016; Shapland et al. 2015; Penny-Mason and Gowland 2014).

01.14 | the history of medicine

The history of childhood sickness, disease and 'paediatric' medicine in the past are topics which have been largely overlooked (Newton 2014: 11). The word 'paediatric' essentially means child (*pais*) healer (*iatros*) (Pearn 2011: 759). Paediatric medicine was not defined as a separate discipline until the nineteenth century (Colón and Colón 1999: 14; Duffin 2010: 341; Mahnke 2000: 706; Newton 2014: 2; Pearn 2011: 759; Shahar 1990: 77; Williams and Sharma 2014: 425). However, specialised medical care for children has a much older history (Kroll 1977: 386; Mahnke 2000: 705; Williams and Sharma 2014: 425). The history of childhood illness and medicine had some early pioneers, in particular, John Ruhräh's *Pediatrics of the Past* (1925), George Still's *The of History Paediatrics* (1931), Fielding Garrison's *History of Pediatrics* (1965) and Angel Colón and Patricia Colóns' *Nurturing Children: A History of Pediatrics* (1999). More recently, the work of Hannah Newton has explored

childhood illness, disease and dying in early modern England (2010, 2011, 2014, 2015a, 2015b, 2017). Medical treatment has been considered to have been broadly similar between adults and children during the later medieval and early modern periods; however, the difference in humoral makeup and material vulnerability of children at different ages throughout the life course meant that they *did* have distinct approaches to medical treatment (Colón and Colón 1999: 7; Newton 2014: 61). It was an early intention of this thesis to more centrally explore medicine within the life course in reference to bioarchaeological evidence. Unfortunately, the current limited scholarship on medicine of children and medicine in the past, in tandem with the limited bioarchaeological evidence for medical treatment meant that there was currently not enough evidence to develop a theory of the relationship between the life course and medical treatment. One aspect of medical treatment that can be explored through bioarchaeological evidence is that of care, which is theme that is explored in chapter 9.

01.15 | visual representation

It is the final intention of this thesis to explore the material and visual culture for children and childhood during the later medieval and Tudor periods in England. Visual sources are pertinent to this thesis research in order to emphasise the collective material evidence that exists for children in the past. By default, the past is adult-centric and consequently so is the material evidence used to represent past societies. While visual sources are utilised throughout this thesis, this study is less dependent on the history of art as a discipline – although these sources are present in terms of critiques of Ariès, as well as background contextual research. This study predominately limits evidence of material objects and art (in portraiture and effigies) to fifteenth and sixteenth century English sources. While it is considered that later medieval material culture was similar throughout Europe, attempting to isolate the English child within the palimpsest context of European art and culture might seem pointless. What is one actually seeing of an "English child" when painted through the artistic medium of a Flemish painter? Just how different is an artistic representation of one child in England going to differ to one from the continent? While it is true that English subjects were invariably painted by European artists in a European style, continental sources are often favoured over English ones because there are more of them to choose from, they display a greater variety of composition and they are largely undertaken by more renowned artists. Utilising European sources is sensible, but it also overlooks the plethora of visual and material culture of the English sources. There is still something of an Ariès (and co) hangover, that there is still very little to be found of the medieval child. By isolating English subjects, the aim in this thesis is to emphasise the artistic and artefactual evidence of medieval childhood in England alone.

That is not to say that imaging the later medieval and Tudor child is not difficult, it still is. The Christ child is one of the most omnipresent forms of artwork for the later medieval period, but it is considered to not reflect much directly about children and childhood of the period – the core purpose of these images was devotional (Oosterwijk 2007: 124). Beyond these paintings, however, it appears that children were less likely to have been depicted within visual sources than adults. From the fourteenth to sixteenth centuries naturalistic images of

portraiture were becoming the norm and children were more frequently adopted into these forms of art. This shift in the style of painting and the inclusion of children in greater numbers is not considered to have been an expression of 'developing' perceptions of the importance of children, rather it is thought more to do with changes within art culture than of concepts of childhood (Coster 2001: 13; Orme 2001: 82; Pollock 1983: 24).

Figure 01.13 – 1580 - Family of Thomas Wylmer - Memorial - Brass - St Mary the Virgin, Staverton, England - Authors Own

The development of a more 'naturalist' style does not necessarily help inform us about the reality of children and childhood. Visual sources (portraiture, wall-paintings, effigies, etc.) regardless of the form or style are never realistic, they are always ideological and visual sources are not automatically evidence of social norms (Baxter 2005: 81; Coster 2001: 13; Pastoureau 1997: 228; Romano 1997: 1). In particular, during the later medieval and Tudor periods illustrators, painters and carvers all routinely copied their compositions and styles from earlier works (Gilchrist 2012: 23). Ariès considered that children were dressed as 'miniature adults' in these portraits (Ariès 1962: 57). However, evidence suggests that was not necessarily the case; a survey of clothing in paintings concluded that only 9% of paintings showed evidence of adult clothing (Huggett and Mikhaila 2013: 55). However, it *is* true to say that children were dressed in their best clothes for their portraiture, which is a departure from reality and that these clothes do not represent what the vast majority of the child population wore on a daily basis during this period (Huggett and Mikhaila 2013: 11; Wilson 1990a: 375). As with examples of children's writing, evidence of children in art almost exclusively represents elite children (Langmuir 2003: 193; Orme 2001: 82; Tittler 2004: 448). Very few images of the everyday child exist (Classen 2005: 37). However, they do appear with some regularity in wall paintings, ages of man art, stained-glass windows, in manuscript and printed illuminations (Langmuir 2006: 113; Rosewell 2008: 3). Finally, facial reconstructions from skeletal

remains is another way in which to visualise children in the past. However, to date, only one reconstruction of a child from England during the fifteenth and sixteen centuries exists, that of Anne Mowbray (Watson and White 2016: 227).

Figure 01.14 – 1525 - Unknown Family - Brass Rubbing - Aldenham, Hertfordshire - University of Cambridge Museum of Archaeology & Anthropology ©

Children also appear on funerary monuments (bronze and stone effigies) with some regularity; but this source of evidence also poses its own challenges. As with portraiture, children are represented to a lesser extent than adults (Gilchrist 2012: 197; Oosterwijk 2018: 601). When children do appear, they predominately do so as 'weepers', which were essentially decorative figures symbolising family members (Gilchrist 2012: 196; Norton 2014: 35). Effigies were meant to memorialise the dead, but they perhaps were of more relevance to the living; a complex and mixed expression of grief, familial heritage and social status (Crawford 2018: 776; Fahlander and Oestigaard 2008: 9). Also, as with portraiture, the depictions of children are not literal or necessarily 'realistic' (Houlbrooke 1992: 138; 1998: 349; Oosterwijk 2000: 59). For instance, the size of the children on these monuments is not a reliable indication of age (Oosterwijk 2018: 591; Orme 2001: 53; 2008: 106). The children who were included on effigies represented living and dead family members of the deceased adult (Orme 2001: 81). Brass effigies were often based on mass manufactured patterns, so there could be high degrees of uniformity to their design, and therefore, also in the way in which children were depicted on them (Hadley 2001: 148; Houlbrooke 1998: 344; Norris 1992: 188). There is, however, some variation in design, which is more pronounced in stone effigies; some children are relatively identical in their portrayal, others demonstrate greater degrees of individuality and others show higher degrees of a 'naturalist' influence (Orme 2001: 82; Williams 2011: 578). As with portraiture, funerary monuments underwent stylistic changes, although this again has more to do with changes within artistic and memorialisation than with changing concepts of childhood (Coster 2001: 91; Houlbrooke 1992: 205, 222). However, unlike portraiture, child clothing on effigies *does* appear similar to adult dress, which could be an indication that these clothes were appropriate mourning attire (Gilchrist 2012: 69; Huggett and Mikhaila 2013: 11). As with portraiture, people of a lower social status had no such memorials (Orme 2001: 121; Thomas 1971: 721). However, despite these potentially interpretive complexities, sources of

art are still a valuable source for exploring childhood in the past. In tandem with art history contextualisation, it is possible to interpret the sociocultural message of visual representation of children in art and effigies (Lewis 2014: 152).

01.16 | historical-social-context

Population

It is difficult to accurately measure the population of later medieval and Tudor England as we only have partial evidence to work with; so estimations can only be approximately proffered (Coster 2001: 26; Goldberg 2004a: 71). The evidence demonstrates that during the fifteenth and sixteenth centuries in England, the population was expanding. In England (not including Wales, Scotland or Ireland), at around 1450 the population was perhaps around 2 million, rising to 3 million by 1550 and 4 million by 1600 (Boulton 2017: 314; Guy 1988: 32; Goldberg 2004a: 75; Houlbrooke 1992: 27; Hoyle 2011: 439; Wrigley and Schofield 1981: 531-2). Approximately half of the population consisted of 'young people'; approximately defined as those under the age of twenty (Brigden: 1982: 37; Ives 2012: 14). There was a pronounced sociocultural localism and regional variation throughout England (Cressy 1999: 482; Wrightson 2003: 48, 72).

Establishing life expectancy for this period is also difficult, the evidence available is again only partial. It is further complicated by the fact that life expectancy was determined by a mix of factors including genetics, sex, social status, localism, employment, pregnancy, etc. It is also difficult to determine life expectancy during a period where a mortality crisis occurred approximately twice a decade (Rawcliffe 2013: 69). During the fifteenth and sixteenth centuries, most people were fortunate if they reached 30 years of age (Rawcliffe 2013: 69; Ryrie 2017d: 2). However, this is a misleading number as it is an average age which is heavily biased by deaths during childhood; few people were actually dying aged 30-years-old (Ryrie 2017d: 2). As we shall explore in the following chapters, childhood mortality was very high. However, those who managed to survive their childhood and youthhoods might well expect to live into their fifties (Augenti and Gilchrist 2011: 494; Ryrie 2017d: 2). In fact, it was not rare for later medieval and Tudor people to live into their sixties, seventies and even eighties (Augenti and Gilchrist 2011: 494; Ryrie 2017d: 3; Youngs 2006: 26). Women's life expectancy appears to have been than greater men's (Augenti and Gilchrist 2011: 494; Ryrie 2017d: 5; Youngs 2006: 28).

Environment

The environment helps to determine the health status of an individual or a population – health and disease are mediated throughout the life course based upon biological temporality (Gilchrist 2012: 32, 38; Howe and Phillips 1983: 33). Factors such as temperature, humidity, air movement, biometeorology and climate change can have a direct effect upon disease and health (Meade and Earickson 2005: 159). There was a perception during the later medieval and Tudor periods that factors of environment, climate and region were expressed through individuals' health status – humours could be altered by the environment, which if unbalanced caused morbidities and ill-

health – through such factors as corrupt water, poor air quality, urbanism, etc. (Nutton 2011: 26; Rawcliffe 2013: 188; Shepard 2017: 341; Siraisi 1990: 123; Wear 2000: 184). These views had first been developed by Hippocrates in his treatise *Aphorisms and Airs, Waters, Places*, which first presented the view that geography, environment and climate could all affect the humours (Rawcliffe 2013: 189; Wear 2000: 185). The humours could also be unbalanced by the changing of the four seasons (which were hot, dry, cold, wet) which meant that diseases were often perceived as seasonal and therefore treatments were seasonal too (Hartnell 2018: 15; Lindemann 2010: 26; Wallis 2010: 19; Wear 2000: 193).

During the fifteenth and sixteenth centuries, the Northern Hemisphere was experiencing a period of modest climatic cooling scientifically labelled as the *Little Ice Age* (*LIA*) (Fagan 2001: 47; Goosse et al. 2012: 35; Mann 2002: 504). This cooling was modest, with average temperatures approximately changing less than a degree centigrade in total (Fagan 2001: 48; Mann 2002: 504). However, the *LIA* meant that England experienced more changeable seasons, with far colder winters, as well as hotter summers, which could cause periods of agricultural unpredictability (Fagan 2001: 48). The *LIA* also provoked a greater amount of storminess in England, with more frequent shifts in episodes of extreme weather (Fagan 2001: 49; Mann 2002: 504). During the fifteenth century, the country experienced relative climatic stability. From around 1560, the proceeding decades of the century experienced an environment that became particularly cold, with stormier conditions and cooler winters, which led to late harvests and caused fluctuating food prices (Fagan 2001: 50-52, 90). The 1590s, in particular, were believed to be the coldest years of the Tudor period, causing poor harvests every year from 1591 to 1597, which led to grain shortages, which led to famines (Fagan 2001: 94).

The lived environment was also changing during this period. Urbanism is often linked to an overall negative effect of health (Meade and Earickson 2005: 139). The urban environment is likely to have negatively affected health, through factors such as overcrowding, contaminated water supplies, sewage, waste disposal insufficiencies, higher pathogen loads, increased violence, etc. (Hanawalt 1998: 166; 1993: 28; Kowaleski 2014: 591; Rawcliffe 2013: 62, 128, 143; Manchester 1992: 10; Meade and Earickson 2005: 139; Roberts 2009: 315; Roberts et al. 2018: 821). Increasing urbanism is therefore often matched by an increasing morbidity. Later medieval writers provide us with evidence that the general population during this period perceived urbanism to negatively affect their health (Wear 2000: 161). During the fifteenth and sixteenth centuries most people lived in rural areas, but the proportion of those living in urban areas rose from approximately 5% to 8% of the population (Boulton 2017: 313; Dyer 2004: 331; Guy 1988: 35; Houlbrooke 1992: 23; Ives 2012: 3; Roberts and Cox 2003: 293; Whittle 2017: 177). In particular, London was heavily urbanised, with the population rising from the start of the fifteenth century from 50,000 people to 200,000 by the end of the sixteenth century (Coster 2001: 103; Guy 1988: 34-35; Ryrie 2017d: 4; Schofield 2000: 261; Sloane et al. 2000: 212; Ward 2004: 347). Migration also increased throughout this period. However, it is difficult to determine precisely how often, by how many people and by what distance migration was undertaken (Goldberg 2004b: 86). The majority of the population remained static, with those who did migrate generally relocated to nearby places (Ives 2012: 14). Those who did

migrate longer distances did so for matters such as life cycle service, marriage, work and apprenticeship (Rawcliffe 2013: 64; Thomas 1971: 778; Wrightson 2003: 49). The majority of migration was undertaken by younger people who were willing to travel distances and relocate temporarily or permanently for various employment opportunities (Beier 1983: 8; Boulton 2017: 316; Goldberg 2004b: 98; Kowaleski 2014: 59; McIntosh 2012: 18; Orme 2001: 311; Whittle 2017: 182).

Economy

Historians have a comprehensive understanding of the economy during this period thanks to a good deal of evidence regarding wages and goods prices (Clark 2007: 97). During the fifteenth and sixteenth centuries, the number of adolescents (children over 12) increased to a point where they contributed to a third of the workforce, affecting a substantial portion of the economy (Cunningham 2005: 84; McKintosh 1988: 219). The reign of Henry VII (1485-1509) whose focus on securing economic stability at the end of a wholly unstable period, led to a governmental budgetary surplus and a level of economic prosperity (Bolton 1980: 345; Goldberg 2004a: 205, 212; McIntosh 2012: 17; Rex 2006: 26). At the beginning of the sixteenth century, the population experienced a period of relative economic stability, due to high wages, good harvests, easy tenures and low rents which made for broadly affluent conditions (Bailey 1996: 2; Goldberg 2004a: 212). However, by 1530 market growth slowed, due to poor harvests and plague outbreaks (Hoskins 1964: 32). By 1550 governmental policy had seen the effects of a decade of debasement of the coinage, which had largely been undertaken to fund foreign warfare, causing an inflationary effect upon the economy (Goldberg 2004a: 213; Rex 2006: 207). Enclosure of the common land, whereby landlords denied tenants use of land previously commonly utilised, also increased significantly through this period (McIntosh 2012: 18; Ryrie 2017d: 4). The next few decades saw fluctuations in economic prosperity – the economy grew, but slower than the rising population and slower than wage-increases – this saw inflation escalate, which continued to increase the overall cost of living (Goldberg 2004a: 213; Ryrie 2017d: 4; Whittle 2017: 168). By the last two decades of the sixteen century, the country experienced a cluster of short-term crises – poor harvests, climbing food prices, epidemics, inflation, manufacturing slow-down – collectively, this led to a period of economic crisis (Boulton 2017: 316; McKintosh 1988:230; Rex 2006: 264-265; Ryrie 2017d: 168; Wrightson 2003: 150-151, 157).

Religion

During the sixteenth century, England experienced a period of significant religious turmoil. In the fifteenth century, religious life was remarkably stable, consistent and (compared to European standards) well-managed (Ryrie 2017c: 107). The head of the Catholic Church in England was the Pope, who was represented in England by the Archbishops of Canterbury and York. The Church was strong and religion in local parishes largely healthy (Haigh 1993: 3; Ives 2012: 45; MacCulloch 2003: 110). When John Wyclif argued in 1378, in his treatise *On Truth and the Holy Writ*, that an English translation of the Bible was necessary to understand the word of God without the intercession of priests, aside from a few Lollard followers, he attracted very limited attention (Hattersley 2018: 8-9). Although Wyclif's views were perceived as heretical by both Church and State, at the time they posed

little threat to the powerful position of the Church. However, when in 1525 William Tyndale started work on his own English translation of the Bible the religious landscape had already changed; new Protestant ideas were being established and the influence of Martin Luther was deemed a significant menace, therefore, subsequently Tyndale's work was regarded as a far more serious threat (Hattersley 2018: 9).

Figure 01.15 – 1530 - Family of Richard Norton - Memorial - Stone - St James, East Tisted, Hampshire - Authors Own

The initiation of Tyndale's work on his Bible is a useful approximate start of the English Reformation. The exact start date of the English Reformation is hard to pinpoint; in part, this is because it was not an incident, but rather a process, the uncoiling of an idea which occurred over decades (Goldberg 2004a: 241; Hattersley 2018: 5). The nature of Protestant reform in England was largely different to European Protestants – the English reforms were more *Evangelical* than *Protestant* (MacCulloch 2016: 104). The European Protestants motivation came predominately from a theological perspective; in England, the Reformation was inextricably intertwined with politics (Ryrie 2017d: 125). These religiopolitical changes were initially mediated by Thomas Wolsey, Thomas Cromwell, Thomas Cranmer, Anne Boleyn and King Henry VIII (Ryrie 2017d: 103, 116). Between 1524 and 1529 Wolsey suppressed 29 minor monasteries and priories (Bond 2018: 577; Hutchinson 2007: 272). Wolsey had not intended for a large-scale suppression of monastic property, but he did provide a mechanism which could be expanded upon to do so. In 1534, the *Act of Supremacy* was passed, which made Henry *Supreme Head of the Church of England*, renouncing papal authority in the country and effectively making him pope of England (Goldberg 2004a: 241; MacCulloch 2003: 199). In 1536 the *Act for Dissolution of Minor Monastic Houses* was passed, allowing Cromwell the authority to close all smaller monastic houses (Bond 2018: 577; Goldberg 2004a: 239; Hutchinson 2007: 274). Although serious rebellions broke out in 1536 and 1537, they were quickly suppressed (Hutchinson 2007: 275; MacCulloch 2003: 200; Rex 2006: 121). Between 1537 to 1540, all remaining monastic properties were dissolved (Bond 2018: 577; Goldberg 2004a: 239; Hutchinson 2007: 276). Within half a decade, the religious landscape of the country had been dramatically altered (Hutchinson 2007: 165; Rex 2006: 118). An injunction in 1538 set in motion the production of the first official State-sponsored English Bible, which

was essentially based upon Tyndale's translation, which ended with the production of the *Great Bible* of 1539 (Ferrell 2013: 263; MacCulloch 2003: 203; Rex 2006: 128; String 1996: 315). The fall of Cromwell in 1540 temporarily stalled the religious reforms. In 1543, at Henry's instruction, Parliament restricted the reading of his new Bible to those licenced to do so (Ferrell 2013: 263). But Henry was reluctant to retreat on reform entirely, so until the end of his reign reform was now mediated by his mood, he would permit neither Catholic or Protestant extremes; instead, the new orthodoxy was determined by the Kings consistently changeable position (Hattersley 2018: 68; Rex 2006: 136; Ryrie 2017a: 45-46; 2017d: 131). When Henry died in 1547, he left a Church led by *Royal Supremacy*, with Catholic views of the *Sacrament* and *Justification by Works as Well as Faith* – which is why his Church has been described by some historians as *'Catholicism without the Pope*' (MacCulloch 2016: 200; Ryrie 2017d: 121). An argument could be proffered, that for most of the population the Reformation had a limited impact on most people; matters of the Church beyond the parish did not affect the lives of most ordinary people; the majority could not read the Latin Bible before, they still could not read the English Bible now; the central tenets of Christian belief remained intact, specific dogmatic changes were of little concern – and we have limited direct evidence regarding the effect to the lives of everyday people to truly measure the level of impact. However, the effect the religious changes had on education, social conditions, poor relief, hospital provision, charitable infrastructure, social welfare and community spirit is unlikely to have left any person unaffected (Grell and Cunningham 1993: 4). The changes to the Church were likely to have been inescapable for anyone in some form or another and the rapidity of the changes must have been genuinely shocking (Gilchrist 2012: 169; Ryrie 2017d: 11).

The ascension of Edward VI to the throne in 1547, mediated by the Dukes of Somerset and Northumberland, saw the rule of the first truly Protestant King of England. In this new climate, Archbishop Cranmer pushed his advantage to now promote a truly Protestant reform agenda and to implement profound religious changes (Hattersley 2018: 79; Rex 2006: 143; Ryrie 2017d: 135-140). Injunctions were quickly ordered banning the *Mass* and eradicating *prayers of intercession for the dead* (including views on *Purgatory* and the *Last Judgement*); gone too were all wall-paintings, devotional statues, rosaries, holy water, relics, bells, candles and anything else deemed superfluous to prayer (Gilchrist 2003: 399; Hattersley 2018: 83; Rex 2006: 153, 158). *Justification by Faith Alone* was now the official position of the Church of England. In 1549, Cranmer produced his first *Book of Common Prayer*; this included the *Catechism*, which was designed to teach children the form and meaning of the *Creed, the Lord's Prayer*, and the *Ten Commandments* in place of the *Ave Maria* – Cranmer was aiming to promote reform through the education of future generations (Cunningham 2006: 62; Hattersley 2018: 86; Orme 2001: 201; Rex 2006: 143). Production of the Bible in English increased significantly (Ferrell 2013: 263). In 1552, the second *Book of Common Prayer* was published, which contained more Protestant liturgy than the first version and outlined a coherent position of Cranmer's Protestant theology, which included updated versions of baptism, confirmation and burial rites (Hattersley 2018: 92). Also in 1552, the *Second Act of Uniformity* required Church attendance of every person on every Sunday (Hattersley 2018: 92). These Edwardian religious changes were as political as they had been during the Henrician Reformation, the changes were not enthusiastically promoted by

the population, they were *top-down* changes implemented by the State (Ryrie 2017d: 157). However, the premature death of Edward abruptly ended the Protestant agenda marshalled by Cranmer (Ferrell 2013: 263).

In 1553, the thirteen-day 'reign' of Jane I (the only successful Tudor rebellion since the *Battle of Bosworth*) would likely have seen the continuation of the Edwardian Protestant faith in England, but it was not to be (Ryrie 2017d: 160). Mary I, with a supporting force, in a largely peaceful coup, claimed the throne.

From the start, as fervently as Edward and Cranmer had pushed for Protestant reform, Mary I pushed her policy of Catholic Restoration (Rex 2006: 179, 195). Mary immediately set out an ambitious programme to restore all aspect of monasticism throughout her realm and return England to Papal rule (Ives 2012: 200; Rex 2006: 195; Ryrie 2017d: 164). The Marian Restoration changes were as rapid as those implemented during the Henrician and Edwardian Reformations (Ives 2012: 217). Mary rejected the title of *Supreme Head of the English Church*, dismissed Protestant Bishops and reinstated the *Mass*. Mary set about unpicking the legacy of Protestant legislative changes; in 1553 the first *Act of Repeal* was passed into law, which essentially voided the Edwardian Reformation. Then in 1554 the second *Act of Repeal* was also passed, effectively voiding the legacy of the Henrician Reformation. In 1557 Mary was starting work re-establishing religious monastic houses. However, Mary's death brought about another abrupt change in policy. Although the Marian Restoration did not get the chance to fulfil its remit to restore Catholicism in England, it did manage to undo, or partially undo, much of the Edwardian and Henrician reforms, causing a lot of religious and political confusion (Ryrie 2017c: 114).

This religious uncertainty was inherited by Elizabeth I upon her accession to the throne in 1558. Elizabeth held something of a middle-ground in terms of her religious outlook when compared to the views of either extremes of those of her siblings. But Elizabeth was a Protestant by default; her very legitimacy to rule was predicated upon the legitimacy of her mother's marriage (Rex 2006: 217-218). Elizabeth's Church was therefore Protestant by nature, but it was also tolerant of a range of views, including minor manifestations of Catholicism (crosses and religious images were permitted) and was also defined by her religious prejudices (Hattersley 2018: 126-127; Ryrie 2017a: 46). Elizabeth predominately appointed Protestant councillors and allowed only Protestant preachers to speak at her court (Hattersley 2018: 122). In the first year of her reign in 1558, the *Act of Supremacy* was passed, breaking with Rome once again and making Elizabeth *Supreme Governor of the Church of England*. Two months after her accession she issued a proclamation requiring English prayers to be used in all Church services (Hattersley 2018: 122). In 1559 the *Act of Uniformity* introduced a newly modified version of Cranmer's *Book of Common Prayer*, which contained modifications for both Catholics and more Lutheran Protestants. The so-called *Elizabethan Settlement* aimed to bring an end to the religious turmoil of the previous decades (Rex 2006: 224). In 1569, the *Revolt of the Northern Earls*, which attempted to overthrow Protestant rule, was put down. In 1571, the *Thirty-Nine Articles* were adopted by the Church. However, toleration of Catholics steadily decreased throughout Elizabeth's reign and then in 1593 Elizabeth signed a statute into law restricting the freedoms of Catholics; who would now be required to obtain permission to travel more than five miles from their

home, restricting their travel to three months and permitting authorities to imprison any Catholics who broke these new rules (Hattersley 2018: 152).

Figure 01.16 – 1550 - The Family of John & Mary Shelley - Effigy - Brass - St Mary the Virgin Church, Clapham, Sussex - Authors Own

Society

Later medieval and Tudor society took the form of a highly structured feudal hierarchy, in which every person was prescribed a position within a divinely ordained chain of command: god/nature – king/pope – peers/clergy – followed by everyone else (Gilchrist 1999: 113; Goldberg 2004a: 3; Wrightson 2003: 26). Position in society was performative; for instance, since the fourteenth century, sumptuary laws had prescribed that dress was restricted according to social class (Gilchrist 1999: 114; Wrightson 2003: 25). The base of the social pyramid consisted of the peasantry, who made up approximately 80% of the population (Dyer 2018a: 193; Guy 1988: 41; Hanawalt 1986: 7; Houlbrooke 1992: 23). However, the peasantry class did not consist of one single homogenous social group; instead, it has been defined by historians as broadly consisting of four peasantry sub-groups (Hanawalt 1986: 6). At the very bottom of the peasantry were the residual serfs; since the Black Death in 1348, serfdom had been steadily decreasing and effectively ended during the course of the fifteenth century (Beier 1983: 3; Hanawalt 1986: Ryrie 2017d: 3). Many serfs would now make up the second group of the peasantry, the labourers or cottagers; these people worked the land but owned none of it, were dependent on wages to survive and would be the group to suffer the most in times of economic turmoil (Hanawalt 1986: 6; Houlbrooke 1992: 23). This group made-up the majority of the peasantry. The next peasantry social sub-group were the husbandmen; they were labourers who might have some material wealth, perhaps even owning some land and cattle may have had enough resources to help them through economic hardship (Hanawalt 1986: 6; Houlbrooke 1992: 23). The final peasantry social sub-group were the yeomen; these were the wealthiest peasants, landowners, with cattle and perhaps even included members of local parish government (Hanawalt 1986: 6;

Houlbrooke 1992: 23). During the fifteenth and sixteenth centuries, the boundaries between social classes were in flux and this created a new category of social class: the middle-class. This new group, which made up approximately 10 to 20% of the population, consisted of a diverse range of merchant, tradesmen, craftsmen, affluent yeoman and artisans (Hamling and Richardson 2017: 9; Houlbrooke 1992: 24). With merchants and yeomanry becoming increasingly wealthy, this new burgeoning middle-class increased in size. In reaction, the gentry tried to reinstate their position by delineating themselves from this expanding middle-class (Bailey 2012: 12; Hamling and Richardson 2017: 9). The peerage and the gentry made up approximately 2% of the population and effectively acted as landlords (Gilchrist 1999: 114; Houlbrooke 1992: 23). Finally, there were the clergy and monastic communities, which consisted of a separate estate within the population (Gilchrist 1999: 114). Throughout this period, there was a shift in wealth distribution amongst the population. While there was more opportunity than ever for those in the middle-classes to gain wealth and transition between social groups, during this same period, the rich became richer (many due to the reallocation of monastic wealth to the peerage and gentry) while the poor became poorer, which caused a more marked divergence in the standards of living between the social classes (Bailey 2012: 12; Guy 1988: 41; Hutchinson 2007: 3; Wrightson 2003: 148).

During the course of the fifteenth and sixteenth centuries, the mechanism of poor relief went from a diverse range of support (which was heavily dependent on locality) to a more centrally managed network of support (McIntosh 2012: 1). While there was (minor) state support in England prior to the Reformation, the vast majority of social support at that time was sourced from monastic communities (Hanawalt 1993: 33, McKintosh 1988: 214). After the Reformation, with this support gone, the State was forced to fill the gap left by the monasteries (Dyer 2012: 74; Hanawalt 1986: 111; McIntosh 2012: 20). It is very difficult to discuss charitable provision on a national level for this period. Much of the provision available would have varied significantly depending on the local area, both in the monastic, alms house and local authority provisions (Rawcliffe 2013: 349). Therefore, throughout this entire period, social support was very dependent on time and place; the support available would vary considerably based on both of these factors. During the fifteenth century, the Church was broadly providing sufficient alms to cope with levels of poverty; we know this because of the 1535 *Valor Ecclesiasticus* is evidence of the status of the monasteries (McKintosh 1988: 220; 2012: 294; Rushton 2001: 9). Between 7 to 9% of the monasteries' income was being given out in alms to the poor (Dyer 2012: 46). At around 1500, poverty began to worsen, with perhaps 5% of the country being so materially restricted to be dependent on alms (Dyer 2012: 42, 77). By around 1530, the situation became so difficult that perhaps a third of the population were in, or near, poverty (Beier 1983: 5; McIntosh 2012: 294). The *Dissolution of the Monasteries* (1536-1541) saw the abrupt cessation of the provision of alms giving and other forms of welfare support (Goldberg 2004a: 245; McIntosh 2012: 19). This loss had not been the motivation of the reforms but was instead an unfortunate by-product. Perhaps even more damaging was the suspension of welfare support; from the point of the *Dissolution*, it took between 30 to 50 years for local authorities to introduce effective provisions for the poor (Rushton 2001: 34). As the post-Reformation economy became unstable, population pressures increased, causing widespread social strain and urban poverty (McKintosh 1988: 230). By 1563 a further series of plagues, poor harvests and

escalating poor led many to once again drop below the poverty line, but this time without welfare provisions for assistance (McKintosh 1988: 230; 2012: 294). This would have exposed the most vulnerable individuals in society to a significant increase in poverty. Palaeopathological evidence from England may demonstrate that during the Reformation, morbidity in children increased, perhaps suggesting that they experienced a period of social strain (Penny-Mason and Gowland 2014: 183). Statutes regarding the poor were passed in 1536, 1547, 1552, 1555, 1563, 1572, 1576, 1598 & 1601; they all had varying consequences, but collectively they had minimal effect until the 1598 statute (Boulton 2017: 322; Dyer 2012: 41; McIntosh, 2012: 1; Orme 2001: 91). This statute was introduced in response to the worsening levels of poverty throughout the country between 1580 to 1600 due to a combination of inflation, epidemics, population pressure and impoverishment (Hindle 2011: 301; McIntosh 2012: 1, 20; Ryrie 2017d: 4). Poverty was also very much a concern of childhood and youthhood during this period and it has been historically estimated that during the sixteenth and seventeenth centuries in England somewhere between 38 to 53% of those in poverty were children, with 25% of that total being aged under 10-years-old (Ben-Amos 1994: 45; Cunningham 2005: 114, Griffiths 2011: 321; McIntosh 2012: 245; Pelling 1988: 147).

Warfare

Warfare was a prominent element of later medieval and Tudor life (Gunn 2018: 154; Nicholson 2004: 1). Types of warfare could be split broadly into three different categories: foreign campaigns, civil warfare and revolts/rebellions. During the fifteenth century, warfare in England was dominated by the second half of the *Hundred Years War* and the *Wars of Roses* (Hale 1998: 63; Knüsel 2014: 264). The start of the Tudor period in 1485 saw an end to these significant episodes of civil unrest. However, during the sixteenth century, foreign warfare increased, both in terms of duration and scale (Gunn 2018: 17; Hale 1998: 63; Houlbrooke 1998: 24; Siraisi 1990: 182). Between the fifteenth and sixteenth centuries, warfare *broadly* shifted from a focus on civil to foreign warfare. Additionally, the concept of implementing diplomacy instead of warfare when confronting foreign conflicts increased throughout this period (Houlbrooke 1992: 29). Riots and rebellions, both domestic and foreign (from Scottish and Irish forces), occurred throughout this period (Hale 1998: 20). Though they varied in scale and threat, they were largely unsuccessful and often suppressed by the State with relative ease (Rex 2006: 273). England did not have a standing army and instead was reliant upon its general (male) population to act as the primary military force (Gunn 2010b: 53; 2018: 104, 134; Hale 1998: 75). The population was encouraged to prepare at all times for warfare and from the fourteenth century, there had been a legal requirement for boys to practice weekly with a bow from the age of seven years (Gilchrist 2012: 56; 147; Gunn 2010a: 53; Orme 1995: 63; 2001: 183; 2006: 288; Simons 1966: 68; Youngs 2006: 84). Estimations of participation fluctuated from approximately 0.75% during conflicts to 5% of the population at the height of demand during warfare (Hale 1998: 75). Almost all able-bodied males in England between the ages of 16 to 60 were eligible (Hale 1998: 75; Hanawalt 1993: 202). During the Tudor period, conflicts of some form occurred approximately during 70% of the years of each decade (Gunn 2018: 11; Hale 1998: 19; Houlbrooke 1998: 24). Not all of these instances reflect continual war; much warfare was short-term and episodic (Nicholson 2004: 3).

Culture

Between the fourteenth and sixteenth centuries, Western Europe was experiencing the cultural innovations of the Renaissance; which can be *broadly* defined as the discovery of new ideas and the rediscovery of past wisdoms (MacCulloch 2003: 76-77). Perhaps the most significant shift of the Renaissance was the newly placed emphasis on the importance of non-theological subjects (MacCulloch 2003: 77). However, defining the Renaissance is difficult. The word *Renaissance* itself, from the word *renascita* meaning rebirth, was a term which was invented by nineteenth century historians to apply to these sixteenth century cultural changes (MacCulloch 2003: 76-77; Ryrie 2017d: 58). *Humanism*; from *humanae litterae,* approximately meaning the literature of Greece and Rome, was another nineteenth century invention by historians (MacCulloch 2003: 76; 2016: 4). Although England was unarguably affected and influenced by the Renaissance and its spreading ideas, it is more difficult to ascertain the extent to which these new influences were felt by the wider population (Houlbrooke 1992: 35-36). England was not a primary practitioner of the Renaissance; instead, the Renaissance in England was largely imported, mediated through France and the Low Countries (Ives 2005: 22). The Renaissance in England was largely manifested, through patronage (by Wolsey and Henry VIII) in art, architecture, print culture and music (Guy 1988: 15; Ryrie 2017d: 62; Sharpe 1997: 296).

Also during the fifteenth century, book printing was introduced to England, which saw book production increase rapidly (Hanawalt 1998: 173). The first printing press established in England was by William Caxton in London in 1475 and London would remain the centre of publishing throughout the Tudor period (Ryrie 2017d: 72-73). Before the introduction of the press, books were laboriously hand-copied, which made them time-consuming to produce, expensive and only available to those who could read numerous languages (Ryrie 2017d: 71). The new printing press of moveable type was developed by Johannes Gutuenberg in 1454 in Germany, although the process of ink-stamping paper had been a long-held Chinese invention (Ryrie 2017d: 71). The introduction of Caxton's moveable type press allowed the transmission of new ideas, more rapidly, in the English language; this allowed new ideas on religion and humanism to flourish (Houlbrooke 1992: 27). Print could now mediate ideas anywhere; this was a powerful reforming tool for people seeking to change minds with new ideas (MacCulloch 2003: 152). A wide range of topics were now accessible in English for the first time, including Classical literature and moral advice literature (Bailey 2012: 79; Cox Jensen 2011: 520). The sixteenth century saw a massive increase in printed books, largely due to decreasing prices and raising levels of literacy (Bailey 2012: 127-129; Ryrie 2017d: 73). However, despite these significant increases in print, books were still predominately restricted to the gentry and middling-classes (Bailey 2012: 129). Determining just how influential the printing press was to the majority depends on being able to estimate levels of literacy, which is a tricky task (Orme 2001: 238). Throughout the fifteenth and sixteenth centuries in England it is believed that literacy was increasing throughout the country at all levels of society; both because of, as well as due to, the increase in printing press production (Fox 2017: 138; Hanawalt 1998: 13; Wrightson 2003: 202). Defining exactly what we mean by literacy is the first difficulty; literacy can include reading, writing, name signing, phonetic, comprehension, etc. (Phillips 2003: 63). However, it is considered that by the end of the Tudor period perhaps 15% were *broadly* literate (Cunningham

2006: 50). Although the evidence remains partial, there seems to have been a female literacy bias, with fewer women being able to read and write than men (Byrne and Boland 1983: 87; Cunningham 2006: 50; Fox 2017: 137; Heywood 2001: 161; Orme 1973: 55; Phillips 2003: 63-70). However, literacy could also be situational; for instance, it is considered that perhaps as much as half of all adult males in London were literate (Cunningham 2006: 50; Hanawalt 1993, 82; McLean 1972: 82). What we can be more certain about is that, despite the rapid increase in printing press book sales, the majority of people in England during this period remained illiterate (Cox Jensen 2011: 514; Ives 2012: 42; Wrightson 2003: 228).

The nature of art was also shifting from purely iconographical images from the eleventh century, to new more 'naturalistic' forms of art from the fourteenth through to the sixteenth centuries (Classen 2005:37; Cunningham 2005: 28; Huggett and Mikhaila 2013: 11, 55; Oosterwijk 2018: 59; Orme 2001:82; Pollock 1983: 23; Shahar 1990: 32, 95; Tittler 2004: 458-459). The rise of *naturalism* does not imply an increase of realism; art is always symbolic and ideological and the theology of art was in flux during this period (Baxter 2005: 81; Pastoureau 1997: 228). The biggest change to art for most people would have been the loss of colourful wall paintings within Church spaces during the Reformation, which saw the destruction of these familiar paintings during the Edwardian Reformation (Rosewell 2008: 3-4). Acts of memorialisation were also affected by new ideas of humanism – this was a mix of new Classical influences, concepts of individualism, artistic realism, changes in commemoration, mixing of new religious beliefs – collectively, these new concepts lead to new customs about appropriate mourning style (Coster 2001: 91; Houlbrooke 1992: 105, 205; 1998: 344). This was expressed in both brass and stone effigies. The use of memorial brass effigies increased throughout the fifteenth and sixteenth centuries as they became cheaper and mass-manufactured through workshop patterns (Norris 1992: 188-194).

Temporal Summary

To *broadly* summarise this period from the beginning of the fifteenth century to the end of the sixteenth century; population demographics went from stable to rapidly expanding; the economy went from relative prosperity to hardship; religion went from Church unity to discord; the nature of warfare shifted from civil warfare to international foreign campaigns; the environment went from stable to some limited climate change; poverty went from manageable levels to high levels of poverty; social mobility increased, but so did the wealth divide between the poorest and the wealthiest; the nature of theology and art was transformed by new ideas of humanism and spread through an expansion of print culture. In sum, these collective and often interconnected issues saw relative stability at the start of the fifteenth century, transforming into a period of unrest by the end of the sixteenth century.

01.17 | thesis structure

The study of medieval childhood from a life course perspective is reflected in the thesis structure, viewing the evidence for children on a year-by-year basis:

- Chapter 2 explores the materials and methods utilised in the collection and analysis of the data gathered during this research. In addition, the chapter considers osteoarchaeological recording standards, palaeopathological morbidities definitions and data analysis.
- Chapters 3 to 6 explore the medieval and Tudor life course, through the periods of infanthood, childhood, youthhood and adulthood. These chapters utilise the morbidity and funerary evidence within a historical context to examine the life course.
- Chapter 7 also explores the life course, through an introductory view of the bioarchaeological evidence in relation to varying forms of scale, including regional, temporal, social and urbanism.
- Chapter 8 explores the bioarchaeological evidence and historical documentation for evidence of the participation of children in warfare activities.
- Chapter 9 explores the theme of care within a population-level study and adopts a new theoretical model to the theme of non-adult care in the past.
- Chapter 10 concludes the thesis with a brief overview, as well as posing suggestions for future avenues of research.

2

CHAPTER 2 | materials + methods

02.01 | introduction

This chapter outlines the materials used and methods implemented in this research project. It also details some of the operational definitions, practicalities of the research, including database creation, data collection, data entry, search terms use, pathological conditions, standards, representation, temporality, archaeology record bias, phasing and matrices, data analysis and case study analysis.

02.02 | operational definitions

term	brief description
late medieval	AD 1050 – 1540 in England (archaeological definition)
early modern	AD 1500 – 1800 in England
tudor	AD 1485 – 1601 in England
child(ren)	a young person, often unspecific in use in regards to age
non-adults	a person who is not adult, often used in bioarchaeology to denote skeletons below the age of 17-years-old (alternatively used as subadult)
adult	a fully matured person
infanthood	the experience of being an infant, in this study below the age of 2-years-old
childhood	the experience of being a child, in this study broadly applied to those between the ages of 3-11-years-old
youthhood	the experience of being a youth, in this study broadly applied to those between the ages of 12-25-years-old
adulthood	the experience of being an adult, in this study broadly applied to those between the ages of 25+years-old

Table 02.01 – Age related operational definitions used in this thesis

02.03 | regional scale

All available data from published and unpublished site reports from across England and Wales were included in the report gathering stage (this did not include Scotland, Ireland or coastal islands). After data entry, it was

decided to focus exclusively upon English sites, so the Welsh sites were not included in the final analysis (refer to figure 02.01).

Figure 02.01 – The later medieval sites across England used in this thesis

02.04 | temporal scale

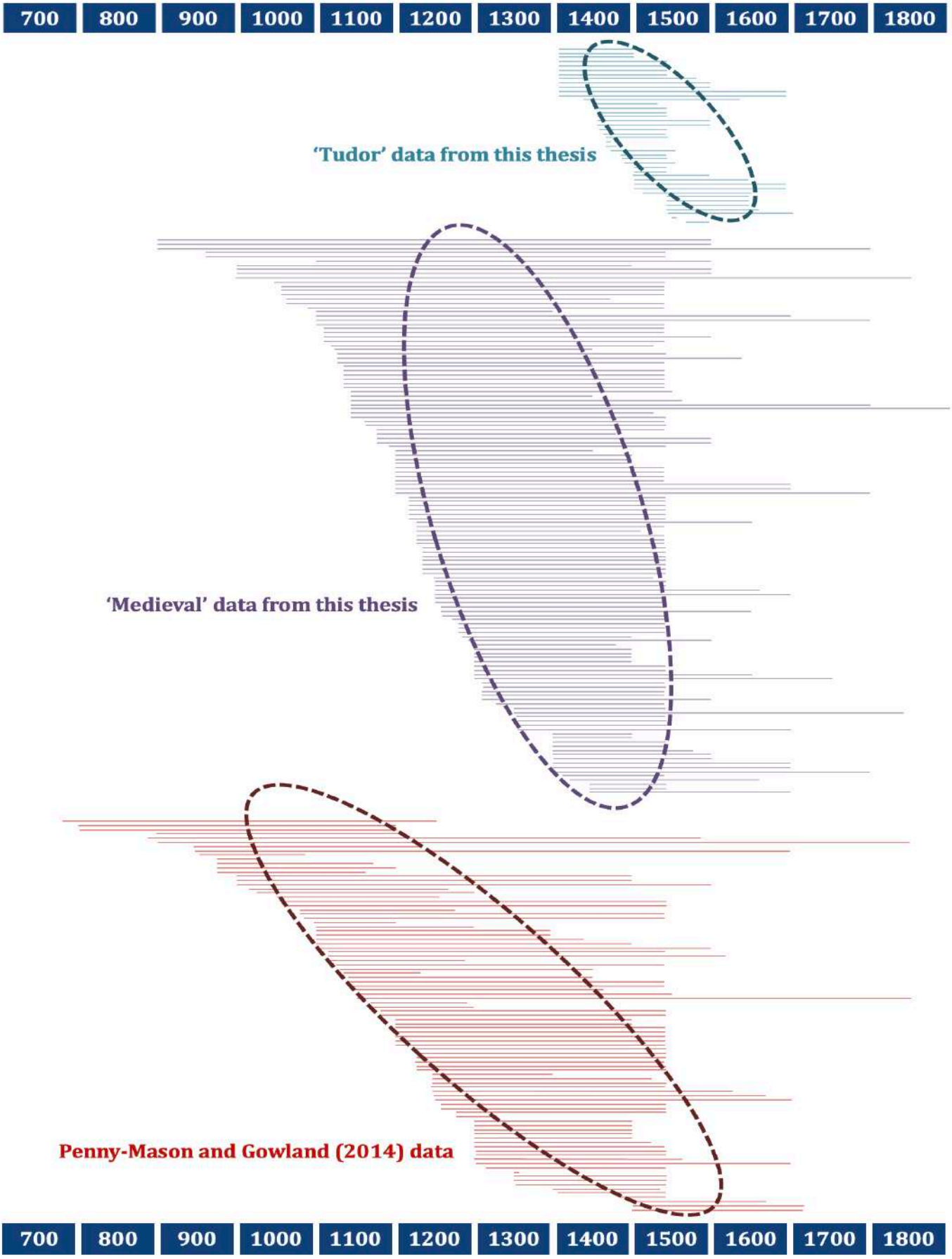
This study aimed to cover a temporal range between the end of the later medieval and early modern periods. This study seeks to focus on the period of AD 1450-1600; which essentially represents the Tudor period (1485-1601). A number of previous studies of childhood have focused on either the later medieval or the early modern period. The later medieval period in England can be defined as between the eleventh and sixteenth centuries (Gilchrist 2012: 25) and the early modern period can be defined between the sixteenth to eighteenth centuries (Wrightson 2017: 2). The period from 1450-1600 suffers from something of an bioarchaeological and historical limbo (Gilchrist 2003: 403; Goldberg 2004a: 200; Penny-Mason 2017: 75). One of the only bioarchaeological studies of Tudor skeletons was undertaken by Fay whose biohistorical study explored the health and disease of skeletons from Tudor Norfolk (2006: 205).

One of the most significant obstacles in terms of data collection for the period in question relates to the history of cemetery use in England. Up until the English Reformation and the Dissolution of the Monasteries (1536-1541)

medieval cemeteries can be relatively accurately dated. The Reformation halted burial in monastic consecrated grounds, many of which were subsequently deconsecrated, and new cemeteries created. Many of these later cemeteries were then in use for many centuries, often into the eighteenth and nineteenth centuries, with some even still in use today. Within archaeology, the term 'post-medieval cemetery' tends to encompass a, time span from 1540 to 1900, whereupon all skeletons within this group are treated as a temporally homogenous sample, with little attempt at phasing. It is often very poorly understood just how long some of the oldest post-medieval cemeteries have actually been in use and to what extent sixteenth, seventeenth- or eighteenth-century individuals, are being associated with post-medieval cemeteries. Post-medieval cemeteries, more often represented by larger skeletal assemblages, often require greater financial commitments which might end up receiving equal funding as cemeteries sites of an earlier date (Mays et al. 2015: 2). As a consequence, identifying skeletons specifically to the century after the Reformation is very difficult and there are few sites which can be accurately dated to this period.

To address these issues, this study aimed to focus on the more accurately dated sites in the published and unpublished literature. Additionally, it was the initial intention from the outset to apply 'retrospective Harris Matrix reconstruction' analysis on sites with good bioarchaeological evidence (Penny-Mason 2017). Unfortunately, however, this method quickly proved beyond the scope of the timescale available for this research project, which also could not guarantee from the outset that such analysis would be possible on all forms of archive material (Penny-Mason 2017: 83).

In order to improve dating accuracy and resolution, wherever possible, this study removed sites or phases within sites dated to periods either earlier or later than the period of interest (1450-1600). However, a large amount of data from long-used cemeteries were included in this analysis, some of which will inevitably fall outside of the period of the study. In sum, these sites date to the eleventh to eighteenth centuries. Given this, why even term it 'medieval' at all? This has been denoted because the majority of the evidence is reflective of monastic cemeteries sites and parish cemetery sites, both of which date predominately to 1200-1600 (see Graph 02.01). Therefore, although there a are number of sites with dating evidence of use to during earlier and later periods, the dataset gathered for this study can still be viewed as 'medieval' due to the predominance of this centrally dating material. Removing the sites of a wider date span would require the removal of substantial amounts of lay cemetery data, in particular parish churches, which are required to represent different forms of burial sites, but which are often widely dated. Although parish churches often have significant intercutting and evidence useful for phasing, they are rarely investigated through excavation in their entirety, instead often being explored through alterations and repairs which require small archaeological watching brief or evaluation explorations. These works, unfortunately, do not often reveal stratigraphic evidence and this burial evidence can only often be dated to the life of the church. This is very problematic, as it is quite regular for most parish churches to span centuries, nearly millennia, of burial use. Despite the quantity of excavation activity in London of a large quantity of excavations of monastic cemeteries and plague pits, there has only been a single large-scale excavation of a medieval parish church cemetery at the site of St Benet Sherehog (Sloane et al. 2000: 216).



Graph 02.01 – The temporal distribution of later medieval and Tudor sites used in this study, in comparison to an earlier study

Figure 02.02 – The Tudor sites across England used in this thesis

In addition, a number of more precisely dated 'Tudor' sites or phases have been separately analysed (see figure 02.02). Unfortunately, such data was not sufficiently plentiful to constitute the primary focus of this analysis, which aims to provide a national view of childhood during this period. It is often an assumption in respect to broadly dated cemetery sites that the skeletons date mainly to the middle of the time-period, or even towards the earlier end. There is less agreement over the representation of the later period, because, it is often viewed that there is some slowing down of burial before an inevitable end of use. This view is a mistake because the Reformation monasteries were not slowing down in their use of their cemeteries. Additionally, cemetery sites were prone to regular reuse, either through direct removal of older skeletons to create space for new burials, or through significant intercutting of earlier cemetery assemblages. Therefore, it can be conceptualised that cemeteries with a long history of use will be more represented by later burials than the earlier ones (which are more likely to have been removed or intercut). It is likely that most cemeteries sites were in continuous use actually reflect the interments of the most recent burials, as these would be the most recent and arguably most intact. So, in sum, to ignore the 'medieval' data would be to ignore valuable evidence of potential 'Tudor' occupation. In addition, radiocarbon dating of the later-medieval and post-medial skeletons is imprecise (Bayliss 2009). These collective issues mean that defining Tudor skeletons is dependent on thorough stratigraphic recording on the entire burial ground; however, this is not always undertaken (Penny-Mason 2017). Finally, by excluding the known earlier medieval phases from this analysis, it is hoped that more of the skeletons between 1450-1600 will be represented in the dataset than the earlier ones.

This study did encounter some inherent biases within the Tudor data gathered. It discovered that it the evidence from older site reports was more likely to contain stratigraphic recording and was more likely to do so for individual skeletons. However, the older reports also represented the reports which relied upon older osteological standards of recording. Therefore, the 'Tudor' data utilised in this study representing something of a paradox; often the better representation of dating and stratigraphic evidence, the worse the osteological recording. In addition, the more recent osteoarchaeological evidence from London is particularly well represented (Bekvalac 2016). In addition, the minimum archival standard for submission with the Museum of London means that stratigraphic evidence is a prerequisite (Maloney 2009). Therefore, the 'Tudor' data utilised in this study is also overrepresented by predominately London-based data.

02.05 | data collection

Data collection began with a desktop-based investigation. Bioarchaeological data was sought after from published (book, reports, journals, etc.) and unpublished reports ('grey literature', manuscripts, laboratory notes, archive reports, etc.). There was significant variation between the types of report and resulting data (Penny-Mason 2017: 73; Roberts and Cox 2003: 28). In particular, commercial archaeology is limited by funding and time, which potentially limits the ability to record data equally (Penny-Mason 2017: 74; Průchová et al. 2017: 527) and older journal articles are usually more limited in their bioarchaeological data. There is no central database of reported skeletal material (Roberts and Cox 2003: 27). Bibliographic sources were initially derived from Penny-Mason and Gowland (2014), a study which drew heavily on the extensive work undertaken by Gilchrist and Sloane (2005) and Roberts and Cox (2003).

Data collection was started with the Requiem database (Gilchrist and Sloane 2005) and the Wellcome Osteological Research Database (WORD). Grey literature from the Archaeology Data Service (ADS) was also obtained. Grey literature from commercial archaeological units was sought and gathered from online resources from Oxford Archaeology (and the Past People of Oxfordshire), Museum of London Archaeological Service, York Osteoarchaeology, Wessex Archaeology, Archaeology South-East, Cotswold Archaeology, Canterbury Archaeological Trust, Thames Valley Archaeological Services, John Moore Heritage Services, Archaeology Reports Online and English Heritage. In particular, the Heritage Gateway was a vital tool for finding listings of archaeological work and relevant report references. Search terms used included: 'Medieval', 'Post', 'Middle', 'Ages', 'Early', 'Modern', 'Tudor', '17', '16', '15', 'Burial', 'Skelet*', 'Cemetery', 'Abbey', 'Priory', 'Friary', 'Hospital', 'Monast*', 'Excavation', 'Report', 'Parish', 'Church', 'Osteol*', 'Castle', 'Ground', 'Human', 'Bone', 'Child', 'Infant', 'Baby', 'Youth', 'Girl', 'Boy', 'Non-adult', 'Subadult', 'Pathology'.

After online searches and an exhaustive use of ADS, individual commercial archaeological units were contacted directly and data not already included on ADS was requested, including from Allen Archaeology, Archaeological Services WYAS, Archaeology South-East, Avon Archaeology, Cambridge Archaeological Unit, Canterbury Archaeological Unit, Clwyd-Powys Archaeological Trust, Colchester Archaeological Trust, Cotswold Archaeology,

Glamorgan-Gwent Archaeological Trust, Gwynedd Archaeological Trust, John Moore Heritage Services, Museum of London Archaeology, Oxford Archaeology, Pre-Construct Archaeology, Surrey County Archaeological Unit, Thames Valley Archaeological Services, Wessex Archaeology and York Archaeological Trust. The resulting reports and miscellaneous data gathered is an extensive but not exhaustive collection of bioarchaeological data between 1000-1800 and it is likely there are still reports and archive material that was not forthcoming.

Published material was sought from Durham University libraries (Bill Bryson, Leazes Road, Ushaw, Palace Green, Cathedral, etc.), the British Library and the Bodleian – as well as much inter-library-loaned material. Primary data collection was undertaken at the Centre for Human Bioarchaeology at the Museum of London. Key online sources included Google Scholar, Academia, ResearchGate, The British Library, The Wellcome Trust, The Hunterian Museum, The Science Museum, Art UK, The Wallace Collection, The Museum of London, The Mary Evans Picture Library, The Philip Mould and Company, Tate Britain, The Bridgeman Art Library, The Yale Centre for British Art, The Huntingdon Library, The Berger Collection, The National Portrait Gallery, The Victoria and Albert Museum, The Royal Collection Trust, (Hide and Seek Exhibition) at The Cambridge Museum of Archaeology and Anthropology, The Fitzwilliam Museum, The Science and Society Picture Library, The McMaster Library Collections, The Tudor Effigies Costume Research Image Library, The Church Monuments Society, The Portable Antiquities Scheme, The UK Detector Finds Database, The Weiss Gallery, Geograph, The Web Gallery of Art and Google Art Project.

One of the greatest challenges facing medieval archaeology is the management of 'Big Data' (Gerrard 2018: 984). This is a particular issue within bioarchaeological studies, more specifically how to organise and store data, in order to optimise usability and to secure perpetuity. There are currently no guidelines for creating a database for bioarchaeological data (White 2008: 183). However, this might in part be due to the fact that there is no single form of database applicable to all kinds of bioarchaeological requirements (Stodder 2012: 340). The data gathered from the human skeleton does not easily lend itself to fit into a digital database and this was one of the biggest challenges of this research – to create a useable database (Stodder 2012: 348).

When data collection for the study initially began, the database was going to be based on the one created for the preceding project, now published in Medieval Archaeology (Penny-Mason and Gowland 2014). An initial database was created in this manner, altering and improving elements, but taking much of the same structure. This first database was called the Bioarchaeological Database for Medieval England or BDfME v1.1. However, the data retrieved from the various type of literature was more diverse and significant modifications were required to encompass this variation in reporting. When adapting the database, there were two main principles: firstly, to try to include as much variety of data as possible and secondly to record and store this data in the most simplistic format possible. The database, BDfME v2.1, was created using Excel, to allow for easy compatibility and sharing.

In order to speed up data entry a number of pre-existing data collection programmes were trialled. A trial of data entry using Skelly-Pad was undertaken. The app is comprehensive and intuitive and data entry is made easy. However, the data out-put was too dissimilar to BDfME v2.1 that manual data entry was found to be faster. After the initial six months of database creation and data entry, further adjustments were made to allow greater flexibility. However, this version still had the problem that data entry took extensive periods of time.

The Arts and Humanities Research Council (AHRC) consortium the Northern Bridge Doctoral Training Partnership (NBDTP), who funded this research, carried out a workshop on Relational Databases for Researchers where upon they helped with the construction of a tailor-made database using FileMaker, which resulted in BDfME v3.1. FileMaker is a relational database which can essentially create a '3D' form of inter-related recording, as opposed to a single '2D' excel spreadsheet. This is an excellent cross-platform software that was able to be used on any computer and most mobile devices, which made it perfect for data input and significantly decreased data input time. FileMaker also provided greater flexibility in customisation and allowing the inclusion of more varied types of data. The software can cope with a large volume of data without the small but regular technical difficulties experienced with large-datasets in Excel. FileMaker also has the potentiality to perform various functions of statistical analysis, so it was adopted for this project with the aim of utilising this function in the future.

During the data entry portion of this study, the database went through several different customizations using FileMaker from BDfME v3.1 to v3.6. Unfortunately, there were some consistent difficulties using FileMaker that were encountered, from small issues to more fundamental problems. While the majority of these were solvable, the specialist skillset required to understand the FileMaker software meant that there was little technical support available. The more data and level of detail included in the recording, the more difficult the FileMaker problems became. The '3D' aspect of the database meant that it was not possible to export the data to a single '2D' spreadsheet. After several years of data entry and continual difficulty in being able to independently problem-solve issues meant that the software became more of a liability than an asset and this eventually proved insurmountable. Therefore, due to time issues, it was decided to export everything into a new Excel database BDfME v4.1. This took a significant amount of effort and time as there was no automatic way in which to in order to 'fit' the data back together, so exported data from FileMaker had to be manually re-entered and this was a very time consuming process for data of over 10,000 skeletons that were entered into v.3.1. This process has been detailed in the methods in some detail for any researchers in bioarchaeology who are looking to gather a large quantity of data and might want to avoid some of the pitfalls encountered during this research.

FileMaker is useful software that is excellent for making tailor made relational databases (it is particularly good for customising and being fluid during data entry). It is more reliable than Excel with large-scale datasets, it can be used on almost any digital device and can potentially do advanced statistical analysis. However, using this programme to create very complex databases will require significant amounts of technical support. If this is not

forthcoming significant problems can be encountered that may not be independently solvable. Additionally, there are likely to be very few people who are specialised enough to fix complex issues. In sum, it might be better with the FileMaker software to work jointly with an expert on projects or to only use it in relation to more simplistic datasets. Alternatively, restrict use of programmes during database creation to those that can be independently used (such as Excel), or utilise software that is more commonly understood. The new Excel database went through various adjustments and iterations during the correcting of the FileMaker data from v4.1 to v4.4. Finally, BDfME v4.5 was finished and this dataset represents the data presented in this thesis.

The few occurrences of cremated material encountered during data collection were not included in the data entry process. Disarticulated remains were also not included. Articulated skeletons were defined by reports differently, usually requiring a number of skeletal elements and perhaps a visible articulation. Each site report was initially skim read to assess if bioarchaeological data was present and with archaeological phases relevant to the period of 1450-1600. If relevant material was present, the first step was to establish general background information about the site, e.g. site name, site code, excavation type (excavation, evaluation, watching brief, etc.) region, county, location, grid reference, year of excavation, number of stratigraphic phases, archaeological excavators, osteoarchaeological recorders, site type (monastic, lay, hospital, catastrophic, etc.), date range (terminus post quem and terminus ante quem), urbanism (rural, suburban, urban, London etc.), number of adult skeletons, number of non-adult skeletons, full report reference, dating quality (good, moderate, poor, etc.) and bioarchaeological evidence quality (good, moderate, poor, etc.). In cases where burials had significant enough stratigraphic or dating evidence to be broken up into different phases, efforts were made to separate from other data. Next, the skeletal catalogue was identified and if one was not present, a list was made of all the skeletons in the report. Once a list was established, the report would then be read in detail in order to identify and record as much supplementary data as possible, including evidence from appendices, plans, photographs and microfiche. Each skeleton had attributed background information gathered from the report and online database, to this was added skeleton context no., age category a, age category b, mean age, reported age, sex estimation, height measurement, bone condition, finds, coffin, internal/external, orientation, back positioning, arms, legs and additional contextual information. Often finds data were not attributed to individual skeletons, so reading reports in detail was necessary to make attributions based on the written text, photographs and plans. The determination of a coffined burial had to be independently assessed as there was too much variation in the reports over what amount of evidence suggested coffin use. For the purposes of this study, coffins were determined by the existence of two or more nails from within the burial context, or by a coffin stain, or coffin 'furniture', or preserved wood, etc. Combing the reports in detail often helped resolve inconsistencies in reporting in the tables and appendices alone. Where there were errors or conflicting data, determinations had to be made based on the rest of the contextual information to inform how to record the data. Any instance where conflicting evidence meant having to form arbitrary guesses were not included in the database.

Age and sex estimation relied upon the reporting authors. These include standards for non-adult age based on dental development, dental eruption, fusion, long bone length, etc. (AlQahtani et al. 2010; Buckberry 2018; Crawford et al. 2018; Fazekas and Kosa 1978; Liversidge 1994; Liversidge and Molleson 1999; Moorrees et al. 1963a; 1963b; Saunders 1992; Scheuer and Black 2000; Ubelaker 1987; 1989; 1999). Skeletons under the age of seventeen cannot be biologically sexed from macroscopic analysis (Lewis, 2007, 2017; Scheuer and Black). Standards for adult age (Brooks and Suchey 1990; Brothwell 1981; Işcan et al. 1985; Lovejoy et al. 1985; Milner and Bolsden 2012; Scott 1979; Todd 1920; 1921) and adult sex (Buikstra and Ubelaker 1994) were also used. The use of standards increases accuracy and comparability, but it should be remembered that macroscopic age and sex analysis is an estimation, not a determination.

Non-adult remains were mostly given a biological age based on a range (e.g "3-4 years old"). The data were split into nine age groups (see table #). When defining these categories, was originally decided to divide them according to age groups reflective of medieval perceptions of childhood. Instead, practicalities of data manipulation in regards to the most predominately reported ages within the bioarchaeological literature took precedence.

term	description
premature infant	*26-37-weeks-old*
newborn infant	*38-44-weeks-old*
infant	*1-month-2-years-old*
younger child	*3-7-years-old*
older child	*8-11-years-old*
younger youth	*12-16-years-old*
older youth	*17-25-years-old*
adult	*26-45-years-old*
older adult	*46+years-old*

Table 02.02 – Operational definitions of ages used in this thesis

Defining the category of 'infant' is problematic. In bioarchaeological research there is no agreement about the use of this term: for some, it is the first year, others 18 months, two years, or even three years, some include the prenatal foetus in this catchment, others do not, etc. Additionally, historians use it indiscriminately. Finally, medieval terminology too could be highly flexible in its use. For this thesis, 'infancy' is divided into three categories. First, the gestational age of 26-37 weeks is designated as 'premature-infants' in order to explore this earlier phase of infancy. Then those with a gestational age of 38-44 weeks were designated 'newborn-infants'. Finally, those between 1-to-24-months-old were called 'infants' (see table 02.02).

In instances where ranges described non-adults as "3-6 years" or "11-13 years" the midpoint age was assumed. Additionally, chronological age was adopted as a scale to measure year-by-year maturation; in this instance, from 0 to 25-years of age (see figure 02.03). Skeletons of younger non-adults can potentially be aged more precisely based on a combination of fusion points, dental development, dental eruption and long-bone length (Buckberry 2018: 56; Cunningham et al. 2016; Lewis 2007; 2017; Scheuer and Black 2004).

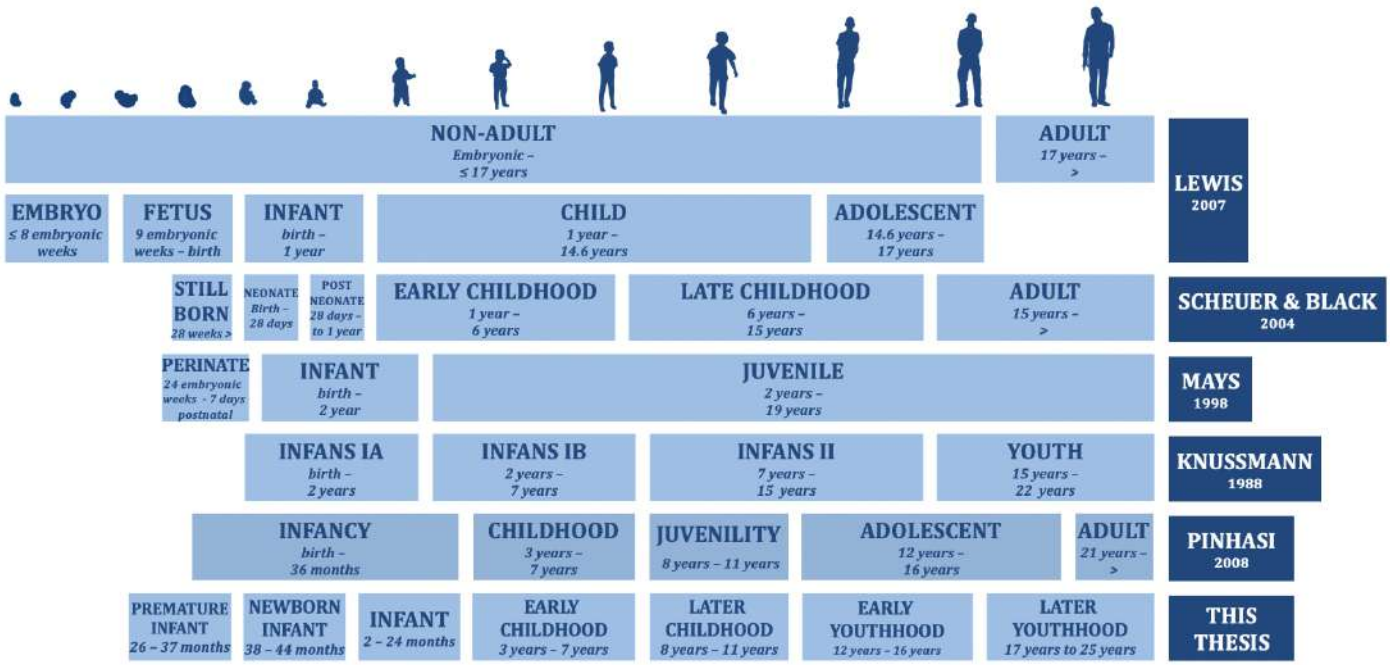


Figure 02.03 – Comparative Age Categories – Authors Own

Reports in which skeletons and graves were described but no osteoarchaeological analysis was included were not recorded. Unfortunately, some skeletal reports were presented in such a way that it was impossible to assign diseases to the individual skeletons accurately and these also had to be excluded. The majority of data and pathologies were taken from bioarchaeological reports and therefore diagnosis was predominately reliant on the interpretations as described by the reporting author(s). Therefore, this analysis will be heavily reliant upon the standard of the original skeletal reports, which can be problematic (see Robert and Cox 2003). It will also almost certainly result in the underestimation of the prevalence of each disease. Therefore, this dataset will not be able to assess the exact proportions of disease prevalence.

02.06 | palaeopathological conditions

The flexibility of the database utilised in this research meant that potentially any number of pathologies and traumas could be recorded. This project aimed to assess the pathological conditions in non-adult remains that best reflect living conditions. In particular, nonspecific infection (PNBF, osteitis, osteomyelitis), diagnosable infectious conditions (tuberculosis, treponematoses, leprosy, etc.) and traumas (fractures) were focused upon (see table 02.03). Pathological conditions that currently have unknown or ambiguous aetiologies, such as entheseal changes or Harris Lines, were not included in this investigation (Ortner 2003).

Figure 02.04 – 1578 - Death - Drawing - London - John Banister - The Historie of Man - The Huntington Library © - Cl. recto RB 95581

In order to allow for a comparison between adult and non-adult pathological patterns the pathologies under investigation were also analysed in the adult data. Where pathological lesions were described, especially from older reports, attempts were made to diagnose the condition. Current working definitions for descriptions of the bony manifestations of each pathology can be seen in table 02.03. As discussed, the database was created to encompass the recording of many variations of pathologies. The table identifies the most commonly recorded morbidities and those which will be of focus in this specific research, but the database included a wider range of pathologies than this. For the sake of time management, dental disease and adult joint disease were not recorded. Dental disease recording requires very complex standards and recording thousands of skeletons would take more time than this research allows. Additionally, a recent study on non-adult dental disease can be found in Penny-Mason and Rose (2018). Similarly, joint disease can be highly complex to record in terms of prevalence rates. However, the few instances of juvenile arthritis encountered in skeletons under the age of 20 were recorded.

DESCRIPTION	DEFINITION
Periosteal New Bone Formation [PNBF] One of the most frequently found lesions in skeletal material, PNBF is defined as new bone formation. PNBF is not entirely aetiologically understood because, clinically, it has little research value and there have been few direct bioarchaeological studies about it. While PNBF is often interpreted as reflective of rates of infection, this default association is misguided as it can be caused by both inflammation and trauma, neither of which are infectious by nature. While it is likely that much of PNBF is reflective of an infectious response, it is not possible to define a single lesion as such. PNBF rates are often associated with a 'stress' response, despite the fact that there is no etiological evidence to support this. However, it is not believed that PNBF is randomly produced, instead it is thought to be caused by a potential mix of infection, inflammation, trauma, underlying disease, in sum: a mixture of the collective patterns of living. However, it should be remembered that PNBF patterns are reflective of those who acquired it when they were closer to death and therefore their	– Osteoblastic new bone formation

patterns are not directly comparable to patterns of the living. Additionally, the majority of reports did not differentiate between active and healed lesions, so this imposes some interpretive limitations. PNBF and fractures are two types of lesions that reports of any age were able to identify consistently, so these were some of the main morbidities to investigate. *Periosteal New Bone Formation* will be referred to as *PNBF* throughout this thesis. *(DeWitte 2014b: 42, 262; Klaus 2014: 295; Larsen 2015; Mays 2012: 296; Ortner 2003: 204-209; Roberts 2019: 291; Roberts and Cox 2003: 235; Weston 2008: 48-57; 2012: 492-503)*	
Osteitis Not all bioarchaeologists use this term, especially in older publications, despite the fact that they regularly describe it in the literature. Osteitis is the appearance of new bone formation in the cortex. It can be an earlier stage of the more serious osteomyelitis, or it can heal. This condition is underrepresented in the literature which is unfortunate as it is a useful and more definitive sign of bone infection, when compared to PNBF. Careful attention should be paid to earlier osteoarchaeological reports which use PNBF and osteitis interchangeably, often mistakenly referring to examples of lamellar bone as osteitis. Medieval skeletal evidence of osteitis is relatively common. *(Lewis 2017a: 132-133; Ortner 2011: 195; Roberts 2019: 287)*	– Osteoblastic new bone formation – Cortical bone infection – Possibly reduced medullary cavity
Osteomyelitis An infection that has progressed into the marrow of the bone and endosteal surface is osteomyelitis. Diagnosing this macroscopically or radiographically requires the appearance of a cloaca, sequestrum and involucrum collectively. While osteomyelitis can develop directly from a source such as a penetrating wound (perhaps from a fracture, a bite, surgery, etc.), bacteria spread via a haematogenous dispersal. Osteomyelitis could heal, with infections sometimes reappearing after a period of latency, but it is also estimated that in around 20% of cases prior to antibiotics it ended in death. Medieval skeletal evidence of adult osteomyelitis is somewhat frequent. However, non-adult osteomyelitis is rare, especially under the age of four. *(Brothwell 1981: 128; Lewis 2017a: 134-136; Roberts 2019: 287-301; Ortner 2003: 181-187, 204; 2008: 195; Waldron 2009: 84-86)*	– Hypertrophy – New bone or involucrum – Necrosis of sequestrum – Draining cloacae

Tuberculosis Tuberculosis is an infectious disease caused by a member of the Mycobacterium complex. In humans this is commonly caused by *Mycobacterium tuberculosis*, although other members of the complex can also be responsible, including *Mycobacterium africanum, Mycobacterium canetti, Mycobacterium bovis, Mycobacterium microti, Mycobacterium pinnipedii*, and *Mycobacterium caprae*. Tuberculosis is primarily contracted by humans through droplet transmission, by passing on infected droplets into the respiratory system and into the lungs, through actions such as touching, coughing, sneezing, etc. It can also be contracted through the gastrointestinal system, by the consumption of meat foodstuffs sourced from animals infected with the bacterium. Tuberculosis can affect people of all ages, but it is a disease that is particularly intertwined with childhood. Palaeopathologically, tuberculosis is usually inferred from changes in the spine. However, children often present a wider variety of changes, often in the joints of the skeleton. Therefore, it is challenging to diagnose tuberculosis in non-adult skeletal remains and this will invariably underestimate its occurrence in bioarchaeological reports and research. It is estimated that approximately 3-5% of chronic tuberculosis sufferers went on to develop skeletal changes. Medieval skeletal evidence of tuberculosis is rare. *(Dawson and Robson Brown 2012: 34; Lewis 2011c: 12, 20; 2017a: 155-158; 2018: 473; Ortner 2003: 227; Roberts 2002: 31-32; 2012: 435; Roberts and Buikstra 2019: 321-323; Waldron 2009: 90-91)*	– Infective lesions of the pelvis, knee and ankle – Vertebral ankylosis – New bone formation on ribs and long bones – Osteomyelitis – Lesions on vertebral discs
Treponematoses Treponemal disease is caused by bacteria from the genus Treponema. There are four species which causes variants in the disease – syphilis, bejel, yaws, pinta – and apart from pinta, they can all potentially affect the skeleton. In the skeleton it is highly problematic to differentiate and diagnose between the different types. The routes of transmitting treponematosis can occur in two ways – acquired or congenital. Acquired venereal syphilis occurs when the organism is transferred from an infected and open lesion during sexual contact. It is also thought that yaws and bejel can be acquired through contact with infected skin. Congenital syphilis occurs when the organism is transferred transplacentally during pregnancy from the infected mother to her child. It is estimated that approximately 3-5% of chronic treponemal disease sufferers went on to develop skeletal changes. Medieval skeletal evidence of treponemal disease is rare.	– Frontal bossing – Saddle nose – PNBF – Osteochrondritis – Sabre tibia – Endosteal new bone – Long bone bowing

(Lewis 2017a: 172; Ortner 2003: 274-278; Roberts and Buikstra 2019: 375-376; Roberts and Cox 2003: 273; Waldron 2009: 102)	– Hutchinson's Teeth – Mulberry Molars
Leprosy Leprosy, also known as Hansen's Disease, is an infectious disease caused by *Mycobacterium leprae* or *lepromatosis*. Despite the antiquity of the disease, surprisingly little is known about the exact mechanisms of the disease process. It is believed to be transmitted by airborne droplets containing the bacteria, which are inhaled into the respiratory system. It has a low virulence and cannot be contracted by touch alone. Children, however, are particularly susceptible to contracting leprosy. In many cases, leprosy can spontaneously heal, although it can then later reappear during later childhood or even during adulthood. All these potential variations in the progression of the disease means that it will take a long period of time for alterations in the non-adult skeletons to manifest, identifying the subtle diagnostic features in non-adults is challenging, and so it will be generally rare in the archaeological record. Of those children who contracted leprosy, clinical evidence suggests that approximately a quarter developed into the full spectrum of the disease. It is estimated that approximately 3-5% of chronic leprosy suffers went on to develop skeletal changes. Medieval skeletal evidence of treponemal disease is rare. *(Lewis 2017a: 16, 164-172; Lynnerup and Boldsen 2012: 458-466; Ortner 2003: 264; Roberts 2011: 256; 2017: 105-116, 2018: 1-14; Roberts and Buikstra 2019: 363-365; Roberts and Cox 2003: 271; Waldron 2009: 98)*	– Osteomyelitis – PNBF – Nerve bone and joint lesions
Rickets Long-term Vitamin D deficiency can cause poor mineralization of the growing non-adult skeleton, potentially resulting in rickets. This is predominately caused by a lack of sun exposure and to a lesser extent due to a dietary calcium deficiency. Evidence of bowing alone can be indicative of other pathological conditions. The development of rickets requires consistent restriction from the sun, so skeletal evidence can be suggestive of sociocultural practices such as the treatment of a sick child or even child abuse. It can also be reflective of air pollution and urbanism. Medieval skeletal evidence of rickets is rare. *(Brickley and Ives 2008: 75-133; Brickley et al 2018: 43-44; Brickley and Mays 2019: 540; Lewis 2017a: 209-213; 2018: 471; Mays 2007: 176; Newton 2014: 45; Ortner and Mays 1998; Roberts and Cox 2003: 248; Still 1932: 28;*	– Bowing of the legs – Enlarged, cupped and fraying epiphysis – Thinning in the skull

Thomas 1971: 7; Thomas et al 1997: 229; Waldron 2009: 97, 127-129)	
Osteomalacia Vitamin D deficiency in adults is called osteomalacia and differs from rickets by the fact that it occurs after the end of normative skeletal growth. As with rickets, osteomalacia is predominately caused by a lack of sun exposure and to a lesser extent diet. Diagnosing osteomalacia is difficult as there is no pathognomonic indicator. It is defined by a demineralisation of bone and while this often occurs in the ribs and pelvis, it can technically affect any bone, making diagnosis difficult. Macroscopically, it will appear similar to the common condition of osteoporosis and usually requires radiographic evidence to suggest its occurrence more confidently. Therefore, medieval skeletal evidence of osteomalacia is very rare. *(Brickley and Ives 2008: 91-114; Brickley and Mays 2019: 546; Ives and Brickley 2014: 45; Ortner 2003: 398; Waldron 2009: 130)*	– Demineralised bone – Pelvis and rib deformations
Scurvy Prolonged Vitamin C deficiency can cause problems in the synthesis of collagen which can lead to the development of scurvy. Humans are unable to store vitamins, so require regular and continual sources from fresh fruits and vegetables. Osteoarchaeological evidence of scurvy is challenging to identify as the signs are relatively subtle and similar to other inflammatory pathologies. Scurvy can inform us about past sociocultural practices such as food processing, preservation and storage practices. Medieval skeletal evidence of scurvy is rare. *(Brickley and Ives 2008: 41-62; Brickley and Mays 2019: 532-537; Krenz-Niedbala 2016: 633-635; Lockau 2016: 122; Lewis 2017a: 213-218; 2018: 471; Mays 2014: 55-59; Ortner 2003: 383-384; Roberts and Cox 2003: 248; Waldon 2009: 130-132)*	– Metaphyseal flaring – Subperiosteal new bone – Bone resorption
Fractures A fracture can be defined as a partial or complete breaking of a bone. Fractures are predominately caused by four factors: accidental trauma, violent trauma, underlying pathology or repetitive strain. Adult fractures are common. Identifying if a fracture was sustained antemortem, perimortem, or post-mortem is a central issue that hinders the interpretation of these breaks. The rapid remodelling abilities of non-adult bone mean that non-adult fractures are less common, often due to their ability to heal completely without any sign of deformity. Non-adult bone can experience any of the types of trauma listed, but the higher plasticity of non-adult bone renders them	– Transverse – Oblique – Spiral – Crush – Wedge – Greenstick – Physeal – Tension

susceptible to greenstick fractures, where the bone break penetrates the cortex, but stops before the medullary cavity. Fracture patterns within a group can potentially inform us about sociocultural practices such as labour, gender differences, violence and warfare. Medieval skeletal evidence of fractures is common. *(Glencross and Stuart-Macadam 2000: 202; Lewis 2014: 40-46; 2017a: 92-100; Ortner 2003: 46, 119-120; Roberts and Manchester 2010: 89-90; Redfern and Roberts 2019: 260; Verlinden and Lewis 2015: 411; Waldron 2009: 150-151)*	– Compression / Crush – Stress – Colles – Parry – Traction / Avulsion – Closed / Simple – Open / Compound
Hip Dysplasia There are three main types of hip dysplasia that can be identified in osteoarchaeological material: congenital hip dysplasia, slipped femoral epiphysis and Perthes disease. All three diseases can essentially be mistaken for one another and all involve a subluxation or dislocation of the hip. Infants are born without signs of hip dysplasia and gradually become disabled during childhood. It occurs genetically, but can also be affected by swaddling, birth in the breech position and family history. It is more common in girls than in boys. Medieval skeletal evidence of hip dysplasia is rare, however, it is one of the more commonly identified congenital conditions. *(Clarke 2014: 5; Hall and Elliman 2008: 150; Lewis 2017a: 46-51; Mahan and Kasser 2008: 177-178; Mafart et al. 2007: 27; Mitchell and Redfern 2008: 61-70; Roberts and Cox 2003: 277; Verbruggen et al 2018: 2-9; Waldron 2009: 210-211)*	– Hip subluxation – Shallow acetabulum – Femoral head malformation – Secondary osteoarthritis

Table 02.03 – Palaeopathological conditions used in this thesis

Additionally, miscellaneous congenital conditions (malformations, disruptions, deformations, dysplasias, etc.), miscellaneous trauma (subluxations, dislocations, Schmorl's nodes, etc.) mastoiditis, cribra orbitalia, Paget's disease, Diffuse Idiopathic Skeletal Hyperostosis (DISH), poliomyelitis, bone tumours, etc. were included in the database.

02.07 | the skeletal assemblage

In total, 10,021 later medieval skeletons from 146 sites from across England were included in this study. These data were subdivided into those under the age of 25-years-old, totalling 3,446 skeletons. Additionally, 1,937 tudor skeletons from 41 sites from across England were included in this study (refer to table 02.04). These data were also subdivided into those under the age of 25-years-old, totalling 753 skeletons. Only those under the age of 25 were included in the assessment of this study, however, data from later ages was used as comparative data.

	medieval | 1200-1600	**tudor | 1400-1650**
non-adult?	99	25
pre-0-years-old	41	7
0-2-years-old	504	79
3-7-years-old	543	70
8-11-years-old	468	93
12-16-years-old	561	153
17-25-years-old	1,230	326
26-45-years-old	3,599	839
46+years-old	1,399	188
adult?	1,577	157
	10,021 total	**1,937 total**

	medieval | 1200-1600		**tudor | 1400-1650**	
	sites	**skeletons**	**sites**	**skeletons**
North	27	3,187	5	436
Midlands	50	2,207	11	173
London	14	1,598	9	1,083
South	55	3,029	16	245
total	**146**	**10,012**	**41**	**1,937**

	medieval | 1200-1600		**tudor | 1400-1650**	
	sites	**skeletons**	**sites**	**skeletons**
Monastic	**76**	**5,117**	**21**	**1,242**
Augustinian	18	1,821	8	974
Benedictine	15	956	3	54
Carmelite	3	52	n/a	n/a
Carthusian	1	42	1	25
Cistercian	8	389	1	98
Cluniac	5	324	1	2
Crutched	1	17	n/a	n/a

Dominican	11	944	4	39
Fontevraultine	1	24	n/a	n/a
Franciscan	10	461	2	44
Gilbertine	2	75	n/a	n/a
Hospitiller	1	12	1	6
Secular	**68**	**4,769**	**18**	**560**
Parish Church	37	3,481	8	415
Secular Hospital	14	791	1	5
Castle	5	57	4	17
Cathedral	4	41	2	9
Cemetery Only	7	396	3	114
Domestic House	1	3	n/a	n/a
Catastrophic	**2**	**135**	**2**	**135**
Mary Rose	1	92	1	92
Towton	1	43	1	43

Table 02.04 – Summary of skeletons and site types used in this thesis

Due to the biased nature of developer-funded archaeological activity, over 25% of sites in this study represent 'urban' areas, despite the fact that between the fifteenth and sixteenth centuries, only approximately 5-8% of the population were living in towns or cities (Boulton 2017: 313; Dyer 2004: 331; Ives 2012: 3; Roberts and Cox 2003: 293; Whittle 2017: 177).

There is also an additional 'London Bias' in the dataset. There have been considerable amounts of archaeological activity undertaken in the Greater London area (Nixon et al. 2000: 2). During the fifteenth and sixteenth centuries London was a particularly urbanised environment and the city's population grew from around 50,000 to 200,000 (Ryrie 2017d: 4; Schofield 2000: 261; Sloane et al. 2000: 212; Ward 2004: 347). Subsequently, more skeletons have been excavated in London than any other location in England (Roberts and Cox 2003: 287). London was so economically dominant by the sixteenth century to the extent that it should be considered as a distinct entity (Dyer 2004: 330-335). London was unique, nowhere in England was more connected, nowhere more urban, no other English city paralleled it. This uniqueness, however, means that there is a tendency for London data to

overshadow and warp datasets and subsequently the London effect should be noted on any national-level studies. However, the London bias goes beyond material representation itself.

The Centre for Human Bioarchaeology at the Museum of London has now recorded and made publicly accessible data from tens of thousands of skeletons. This volume of recording and publication has subsequently caused a positive bias (Bekvalac 2016: 24). Data from London is more represented in publications and it is possible that the quality of their recording makes the London skeletons appear to have higher rates of morbidity. There is also a similar pattern seen in York, which was medievally urbanised and has undergone plenty of archaeological activity, with York Osteoarchaeology causing another positive data bias. This occurrence potentially contains a difficulty when interpreting regional patterns of bioarchaeological evidence. For instance, bioarchaeologists work broadly in regional catchments and often their work is relatively confined to a geographical location. Therefore, differences in morbidity data over different regions might also be a reflection of osteoarchaeologists recording practices.

In addition, only around 10% of the population during this period would have been buried in monastic cemeteries, yet these account for over 75% of this dataset (Gilchrist and Sloane 2005) (see figure 02.05 which details the various forms of monastic cemeteries included in this analysis). Very few nunneries have been excavated in comparison with friaries and priories (Gilchrist and Sloane 2005: 68). From the twelfth century onwards, monastic burial became extended and encouraged to the laity, in return for money, land or possessions (Gilchrist and Sloane 2005: 62). Despite some misconceptions, children could be buried in monastic grounds, fee permitting (Orme 1994: 572). This means the non-adult monastic burials likely represent both young boys who were being educated to become members of the clergy and as well as the children of families of founders, patrons and beneficiaries of the monasteries, solvent enough to afford the burial cost (Gilchrist and Sloane 2005: 60). Therefore, it is possible that there is an overrepresentation of non-adults from higher levels of society in monastic burial contexts (Greene 1992: 56).

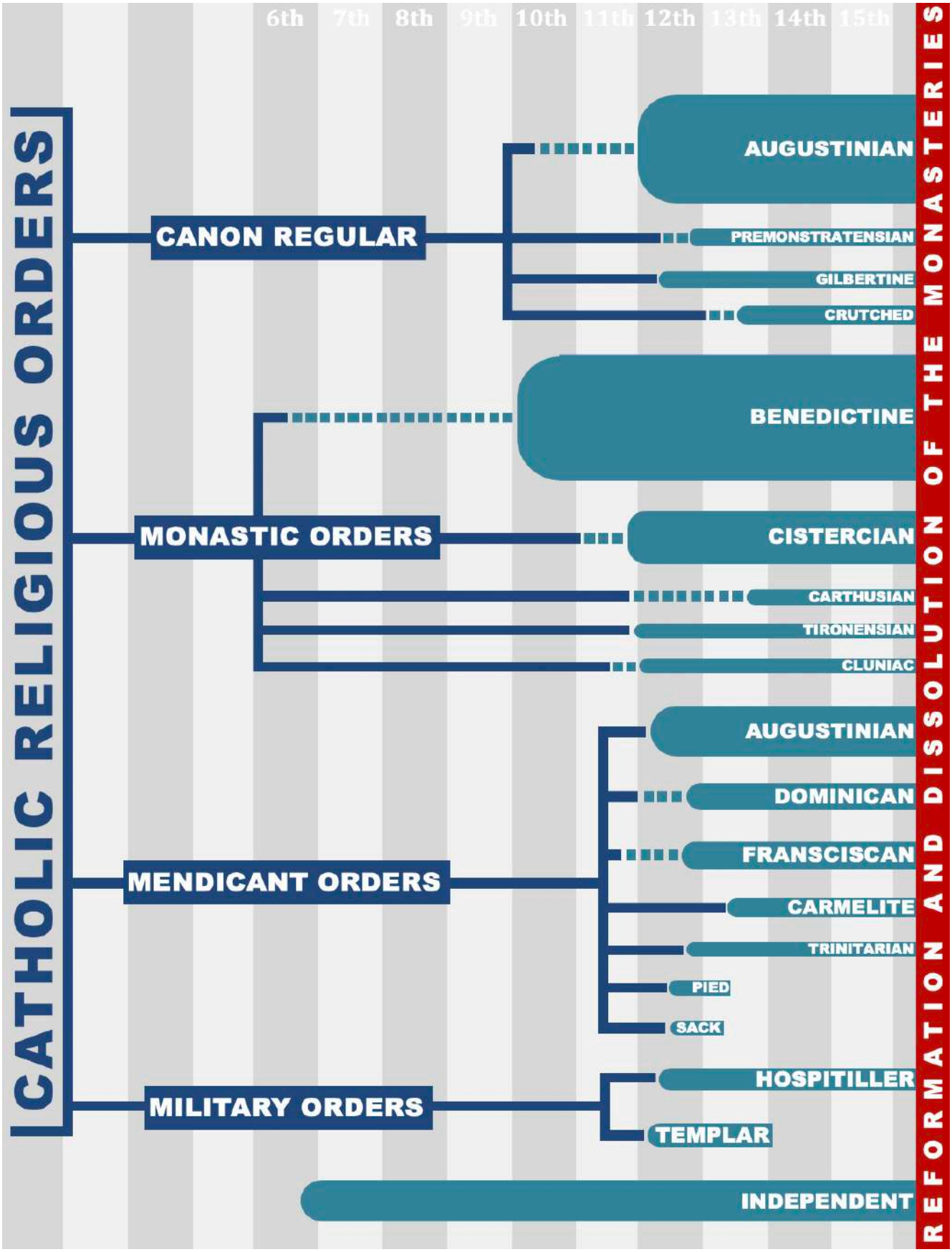


Figure 02.05 – Summary of Monastic Foundations in England - Authors Own

However, despite these difficulties and bias with the dataset, it is hoped that the size of the database will do something to tackle some of the representational issues. For instance, even if a subset of data from one site underdiagnoses a particular disease, this will be somewhat counterbalanced by data from other sites where there is some over-diagnosis of disease. It is hoped that some of the inconsistencies in the dataset will, therefore, be broadly cancelled out by the number of sites and data represented.

The bioarchaeological record is an archive of the dead population and largely incomplete. Very few of the people who entered the archaeological record have ever been retrieved, so it is important to consider just what this particular collection actually represents. It is well established that the archaeological record is hampered by a multitude of inherent taphonomic difficulties. Cemetery assemblages are almost always random subsamples, usually partially excavated, each to varying and unknowable degrees (Jackes 2011: 111; Milner et al. 2008:563; Pinhasi and Bourbou 2008: 32; Weiss-Krejci 2011:68) (see figure 02.06).

Figure 02.06 – Issues with Population Representativeness. 1) The proportion of the population that dies, likely less healthy than the living population. 2) The sample that enters the archaeological record. 3) A skeletal collection made up of a sample of the buried sample. 4) Many intrinsic/extrinsic factor affect preservation. 5) Modern construction, ploughing, scavenging, etc. could disrupt remains. 6) Random nature of excavation means most sites have yet to be discovered. 7) Only a sample gets excavated. 8) Bones need to be carefully retrieved, requiring a certain level of skill and anatomical awareness. 9) Not all the skeletons retrieved will be complete enough for osteological analysis. 10) Not all the skeletons retrieved will be preserved well enough for osteological analysis. 11) Only a small fraction will have pathological lesions. 12) Only a portion of these will be non-adults. 13) Osteological analysis and methods will vary. 13) Thorough recording and dissemination are required, but often hampered by problems. 14) How to record and report the analysis also varies. 15) Does the final data represent the living population?
based on Waldron 1994:13, 2007:28
Authors Own

Non-adult skeletons also seem to be less present in the archaeological record. Traditionally, this underrepresentation of non-adult remains has been explained as a result of the fact that intrinsically their bones are less likely to survive in the burial environment (Baxter 2005: 101; Bello et al 2006:24; Brickley and Ives 2008:13; Guy et al 1997: 225; Halcrow and Tayles 2011: 333; Saunders 2008:119; Stodder 2008:83; Manifold 2010:59; Pinhasi and Bourbou 2008:32; Wileman 2005: 83) although this has been challenged by evidence that also suggests non-adult bones can survive particularly well (Lewis 2007:20; 2011b: 4; Manifold 2010: 44). It is possible that children are buried in different areas of some cemeteries (Baxter 2005: 99; Chamberlain 2000: 210; Lewis 2007:32; Pinhasi and Bourbou 2008: 32), which may be missed during excavation. It has also been

suggested that the smaller size of non-adult graves means that they were often interred at shallower depths than adults, leaving them more susceptible to general disturbance, such as disruption by ploughing, scavenging by animals, etc. (Lewis 2007:28; Manifold 2010: 48). Excavator skill in relation to successfully recovering non-adult bones has also been found to be an ongoing issue (Lewis 2007: 28; Mays 1998:15; O'Meara 2018: 83). Because of these inherent issues, no skeletal sample is likely to be representative of the population (Southwell-Wright 2013: 74). The difficulty with this is that, even though we are aware of biases in the data, it is the unknowable and unaccountable elements of most of these which is problematic in terms of interpretation.

Additionally, there are further theoretical concepts to overcome, the most relevant being that the bioarchaeological record is an archive of the *dead* of the population. Even if it is possible to source a complete, bias-free, skeletal sample, there is also the issue of whether or not a dead population has any relevance to a living population from which the individuals derived from (Wood et al. 1992: 344). This means that making inferences about the state of the living population from material from the archaeological record, is going to be problematic (Waldron 199 1:17; 1994: 16; 200 9:10). To clarify, the dead population, on the whole, will be of poorer health in comparison to the rest of the population, due to their closer proximity to death (Milner et al. 2008: 572; Wood et al. 1992: 34,). Therefore, the skeletons recovered and analysed represent the 'non-survivors' of the living population, who have failed to survive to the next age group (Milner and Boldsen 2017: 28). This is of particular relevance to datasets consisting of non-adults who died prematurely (Halcrow and Tayles 2011: 344). Non-adult remains without lesions could, therefore, reflect individuals of weak health or a particularly virulent disease (Goodman 1993: 283). It has yet to be fully agreed to what extent the dead population differs from the living one from which they derived, but, on the whole, the dead population are likely to appear in poorer health than the living population.

The archaeological record, then, is laden with inherent representational issues. This overview is not provided to paint a negative picture of bioarcheological analysis. Instead, it is meant to be an important overview of what can and cannot be said about any particular dataset. The ability to make affirmative statements about what a subset of this dataset represents is entirely dependent on the completeness and representativeness to originally sampled population (Jackes 2011: 107). These issues themselves are mostly manageable, so long as the researcher is keenly aware of them. Despite the pitfalls, it is still generally regarded that rates of morbidity do bear some reflection of the living population (Jackes 2011:138).

02.08 | data analysis

Crude prevalence is the measurement of the total number of cases (in this study, morbidities), divided by the total number of individuals within a group or population: crude prevalence = morbidity frequency / assemblage (Chamberlain 2006: 153; Klaus 2014: 301; Milner and Boldsen 2017: 34; Pinhasi and Bourbou 2008: 36; Roberts and Cox 2003: 2; Waldron 2007b: 42-59; 2009: 250-254). Crude prevalence only records the number of individuals with the presence or absence of morbidity. For instance, if an individual has two examples of fractures

in their skeleton, they would only be recorded and represented as a positive incidence of displaying a fracture. It will always be an underestimation of morbidities, as it does not take into consideration such issues of skeletal preservation or representativeness. In contrast, true prevalence is a measurement of the total number of morbidities, divided by the total representation of skeletal elements present. For instance, the total number of tibial fractures recorded from a site are not simply divided by the total number of skeletons, but instead by the number of tibias identified. Crude prevalence will always significantly underestimate the rate of true prevalence (Roberts and Cox 2003: 29; Waldron 2007b: 83). However, the majority of osteoarchaeological reports rely predominately on crude prevalence recording, rather than true prevalence (in part, due to the fact that the latter is more time-consuming and therefore expensive). The majority of the data from reports amalgamated into this database only included evidence for determining crude prevalence (Klaus 2014: 301; Roberts and Cox 2003: 29). Therefore, in order to allow for the inclusion of as much data as possible, only crude rates were assimilated for this project. It was not the intention for this study to do advanced statistical analysis and it is potentially inappropriate to do so with crude prevalence (Waldron 2009: 254). Many of the results of non-adult morbidity and archaeological material would prove statistically insignificant. As many of the sites were potentially only used for part of their assemblage, no overall crude rates were determined from the reports.

This study purposefully utilised limited statistical analysis – as discussed above, the nature of a database consisting of a variety of disparate datasets, as well as divided sample size representation, renders it unsuitable for most statistical analysis. However, statistical tests of significance were employed to ascertain the validity of comparisons made between the results of crude prevalence incidence throughout the study. Chi-squared tests were employed utilising *PAST* software (Hammer et al. 2001) and using *Microsoft Excel*. Significance was set at $p < 0.05$ (with 99.5% confidence), *p*-values lower than 0.05 were considered to be statistically significant. A total of two variables were used for each chi-squared test. Chi-square results are presented numerically throughout.

02.09 | warfare (chapter 8) additional methodology

For the purposes of chapter 8, a brief methodology of the materials and methods will be explored. The materials for this chapter were derived from the database designated BDfME v4.5. In total, 3,446 skeletons under the age of 25 from 146 sites across England were included in this analysis. The present study focuses on the late medieval and Tudor period of 1400-1600; subsequently, sites or phases within sites, from earlier periods were not included in this analysis. However, this study still contains data from earlier periods and, therefore the results can be viewed as more widely reflective of evidence between AD 1000-1800. All varieties of fracture types were included in the database, fractures were recorded over the life course by age group, including those. Fractures indicative of violent trauma were also; recorded, therefore the correct interpretation of these lesions is reliant upon the reporting authors. Unfortunately, the Tudor data was too poorly represented to allow for the exploration of violent trauma specifically within this period.

02.10 | care (chapter 9) additional methodology

The materials for chapter 9 were derived from the database designated 'Bioarchaeological Database *for* Medieval England, version 4.1 (BD*f*ME v4.1). In total, 4,091 skeletons (under the age of 25) from 158 sites across England were included in this study (see figs. 06.02 and 06.03). A full list of skeleton utilised in the chapter 9 care analysis can be found in the appendix.

Even with such a large dataset, it was not possible to look at every progressive disease and every category of disease; instead, a few diseases have been included in the analysis, to fit the scope of this chapter. The resulting dataset was assessed for pathological conditions and all individuals with mention of morbidity were initially considered for inclusion. Descriptions were read to discern individual skeletons that might have evidence of progressive conditions and these were noted during data entry. Possible cases of 'care' evidence were narrowed down further, often by revisiting the original osteological reports. The case studies with probable evidence for care analysis were assessed against the four stages of the *Bioarchaeology of Care* method (Tilley 2015:189). The *Index of Care* was utilized as a support for recording cases (Tilley and Cameron 2014:5). Given the thoroughness of the Bioarchaeology of Care method, it was not possible to report all the full detail the method invariably requires for a population-based study and instead the results were incorporated in the summarized results.

Pathological descriptions were often not sufficiently detailed to ascertain whether or not such evidence could be utilized in care analysis. Consequently, progressive infectious diseases were chosen, including: tuberculosis, leprosy, and treponemal disease – as these diseases were more thoroughly described in the literature. All the morbidity data were collected for each disease from the dataset. The resulting data were applied to a theoretical model, composite life course analysis, in the following manner:

First, chronological age was adopted as a scale to measure year by year maturation; in this instance, from 0 to 25 years of age. The data were split into year by year age categories. In instances where the reported age range spanned these categories, the midpoint age was assumed. Second, the pathological case studies of definitive care were plotted (in dark grey) based on the estimate of the age of the individual at death – these are cases assessed and believed to meet the criteria for *Bioarchaeology of Care* (Tilley 2015) case-study. Third, the cases of each of the disease types that were progressive enough to be diagnosed, but *not* progressive enough to suggest care in terms of the Bioarchaeology of Care method, were represented in light grey. By including these cases in the analysis, it allows for the consideration of each pathology within the spectrum of the progression of disease, as well as allowing for a wider amount of data to be implemented in this study. Fourth, the plotted results had lines added to them to allow for the inclusion of age of onset estimations based on clinical evidence to help narrow down the potential age of onsets. The firm line represents the known average onset for progressive infectious disease of over a year, then dotted line, assuming several years. Although it is possible some of these diseases progressed more rapidly, the majority would often have taken even longer to progress. The point is for the reader to consider the age of onset for themselves when viewing the life course analysis.

It should be noted that the composite life course analysis approach embodies a potentially central paradox that could undermine its usefulness: utilizing this theoretical approach can only be achieved with large datasets; however, large datasets really only exist if created by compositing different datasets together, which, in turn, will cause the effects of bias already explored.

3

CHAPTER 3 | life course – infanthood

03.01 | introduction

The purpose of the following four chapters is to integrate bioarchaeological data with historical evidence to explore the life course of the medieval and Tudor child through a temporally-lived perspective. This is to be done through a transdisciplinary approach and the adoption of a biocultural model. This chapter aims to explore the collective morbidity data gathered in this study (BD*f*ME v4.5). This chapter examines the bioarchaeological evidence of 41 pre-0-year-old skeletons and 504 0-2-year-old skeletons. In particular, this chapter examines the relationship between the life course and patterns of morbidity, to explore just how far bioarchaeological evidence can help in interpreting childhood in the past. For instance, is there evidence for certain morbidity clustering around specific ages, and if so, why might this be? By viewing numerous diseases and traumas collectively, it might be possible to identify patterns of morbidity to answer this question. It is the aim of this chapter to interpret these patterns of morbidity in terms of the life course. It is also the aim of this chapter to explore the differences and similarities between medieval and Tudor childhood. This chapter is focused on the extended life course, conception, pregnancy, birth, and infanthood.

03.02 | medieval conception theories

Life does not begin with birth – nor was it thought to be so in the medieval period (Forsdike 2005: 24). The medieval beginnings of life were conceptually complex and perhaps the most significant stage of life. Medieval life started before conception, with the parents to be and fertility-based issues (Gilchrist 2012: 134). Notions of medieval conception were based on earlier Classical theories, but by the later medieval period, two schemes were most prominent (Gilchrist 2012: 21; Mitchell 2014: 9). The Aristotelian one-seed theory proposed that the father provided the spirit and the mother, through her menstrual blood, provided the matter (Gilchrist 2012: 21; Youngs 2006: 44). In this view, the male seed helped form the embryo, which was then nurtured by the mother's blood (Mitchell 2014: 8). This scheme implied that the passive female matter is secondary to the centrality and animation of the father's seed (Lindemann 2010: 19, Mitchell 2014: 9). This often led to the view that a child was created predominately by the father and inherited characteristics primarily from him too (Rider 2016: 253). The Hippocratic-Galenic two-seed theory instead proposed that two seeds were necessary, one from the mother and one from the father, which eventually developed into a foetus (Gilchrist 2012: 32). In this scheme, both sexes were theoretically considered to be equal in conception (Lindemann 2010: 20; Mitchell 2014: 9). However, in

practice, it was often assumed that the father's seed carried a higher potency and privilege (Shepard 2017: 336). Aristotle's ideas were incorporated into medieval encyclopaedic works during the thirteenth and fourteenth centuries, being adopted by Bartholomew, Albertus Magnus, Thomas Aquinas, Giles of Rome and Pseudo-Albertus (Orme 2001: 15; Mitchell 2014: 9). However, Galen's views were also well known and there was no real consensus among later medieval theorists over the exact process of conception (Mitchell 2014: 12). We also have no way of knowing what the majority of people knew of these academic debates and what lay views on conception may or may not have been (Lindemann 2010: 21). Whichever scheme was utilised, however, they did (mostly) agree that the resulting foetus then existed in a pre-human state – and crucially, without a soul.

03.03 | foetal theories

The Aristotelian view was that the conceived matter now moved through various stages of existence (Youngs 2006: 44). The embryo would develop from a vegetative state, to an animal state and then finally to a human one (Mitchell 2014: 8, Orme 2001: 14). In the Galenic-Hippocratic view, the matter began as plant, progressing to an animal state, and finally to a human one (Gilchrist 2012: 21). St Augustine later developed both these ideas into his own scheme in which the embryo moved from a milk state, to blood, to flesh, and finally to human form (Orme 2001: 14). Bartholomew the Englishman adopted Augustine's views in his *De Proprietatibus Rerum,* which not only remained in print during the sixteenth century but was also likely to be the primary 'popular' source on foetal development during this period in England (Orme 2001: 16, Mitchell 2014: 12). The majority of the literature agreed on the view that the developing female embryo was slower than that of the male, due to the female humoral lack of heat (Gilchrist 2012: 21, MacLehose 1999: 14). At this point, how does the developing foetus fit into the later medieval world? For instance, if it was considered that the developing foetus did exist in a pre-human state, then how did the law address assault against a pregnant woman? There is very little evidence in this regard and there seemingly was no consistent view from the various authorities about the status of the foetus as a person or not (Mitchell 2014: 18-19). However, it was a topic over which there was some level of anxiety, suggesting that it was a matter that did hold some importance. Canon law, of course, *implied* a right to life. However, we should not be mistaken to suggest that children held automatic or universal rights; they did not, and the reaction to foetal death was inevitably varied (Helmholz 2007: 44-45).

One aspect of foetal development considered particularly significant was that of temperament. Temperament is a pervasive concept, one that had Classical origins and is an idea that is still of relevance even today (Degnan 2017: 498; Field 2007: 41). It was medievally believed that celestial bodies affected the developing child in utero (Gilchrist 2012: 21). An individual's temperament was mostly determined astrologically, which would ultimately unbalance the individual's humoral make-up. This meant that the intrauterine period was particularly important, as once temperament was set, it was set for life and would determine an individual's characteristics; such as personality, behaviour, health, disease, etc.

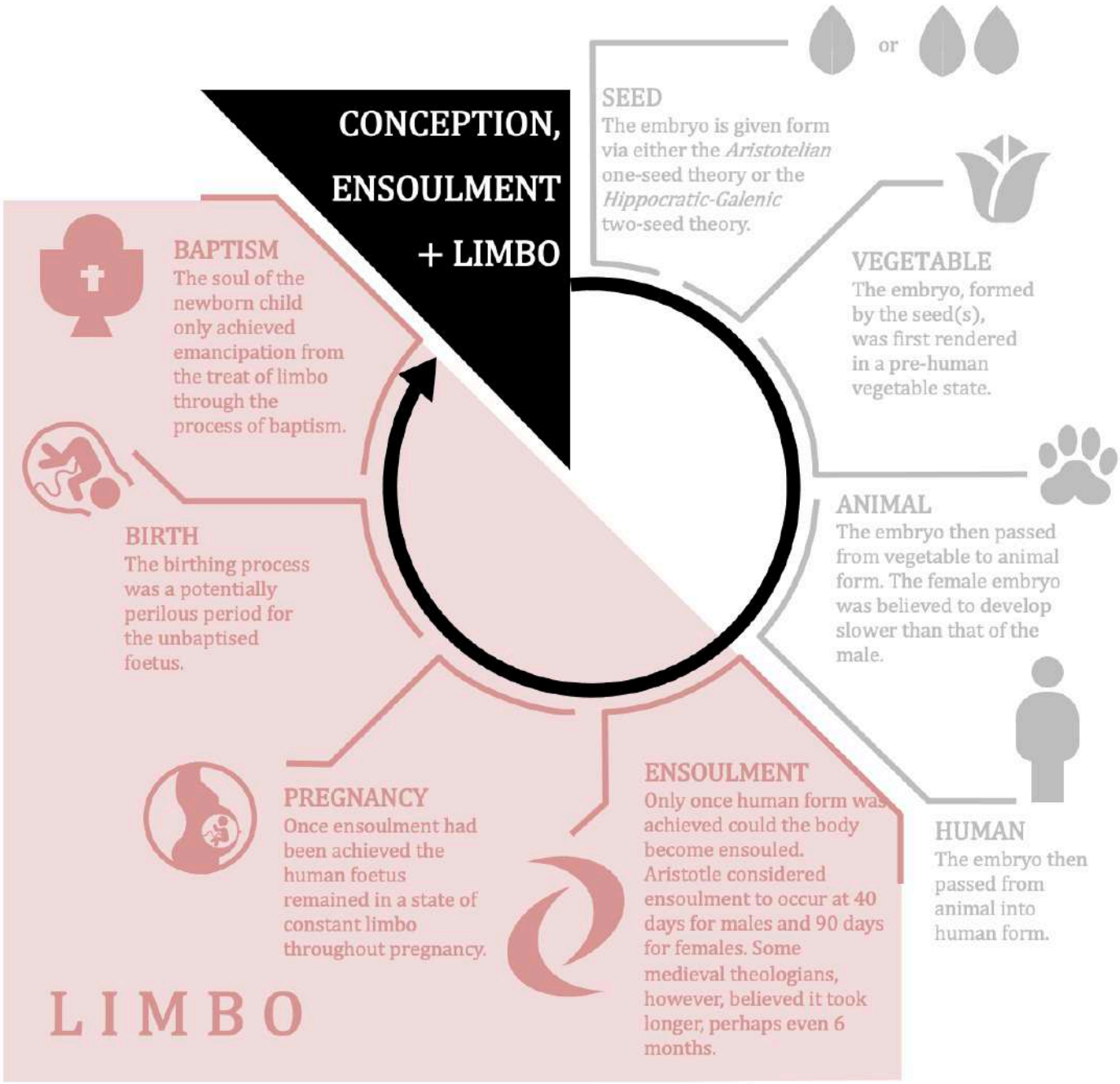


Figure 03.01 – Conception, Ensoulment + Limbo - the period of limbo from conception to baptism - Authors Own

The stage at which the developing embryo became finally 'human' and 'ensouled' was not entirely agreed upon by medieval authors (see figure 03.01). It was mostly agreed that ensoulment occurred around the end of the material forming of the foetus, because the soul would only be able to infuse the body once it was of a recognizably human shape (Youngs 2006: 44). Aristotle believed that the male embryo became human and gained a rational soul after forty days from conception. The female embryo, however, was believed to develop more slowly, achieving human form and ensoulment after ninety days (Mitchell 2014: 9; Orme 2001: 14; Rawcliffe 1997: 172; Youngs 2006: 44) – clinically, we now know that the female foetus develops faster (Lewis 2007: 43). This scheme was later altered by Augustine and Bartholomew, to forty-six days of development for the male embryo, to fit with the narrative of the period between the conception of Jesus and his nativity (Gilchrist

2012: 219; Mitchell 2014: 12; Orme 2001: 16). By the later medieval period, the debate about exactly when ensoulment occurred was continuing, with some authors considering that ensoulment might occur six months after conception (Gilchrist 2012: 21; Jones and Oslan 2015: 407). The soul was now believed to germinate with the foetus, developing and defining the character of the individual prenatally, and affecting the temperament too (Gilchrist 2012: 21). The embryo, now a human foetus with a human soul, had achieved personhood. Medieval ensoulment came at a price, however. Since the writings of St. Augustine (AD 354-430), children had been placed within the scheme of the Original Sin; therefore, the nature of children was considered inherently debased – and potentially even actively evil (Coster 2001: 90; Houlbrooke 1992: 141). A developing embryo that died before ensoulment could not be considered human and would therefore not be consigned to the punishments of limbo. However, from the moment of ensoulment until the moment of baptism, any foetus that died during this period was condemned to *Limbus Puerorum* (limbo). Although those in limbo were not consigned to the full depths and experience of Hell, they were permanently restricted from Heaven (Gilchrist 2012: 22, 185; Youngs 2006: 45). This time between ensoulment and baptism was the most precarious stage in all of medieval life – a period of dangerous liminality (Gowland and Penny-Mason 2018: 762; Mitchell 2014: 29). This view, of course, altered somewhat with the Protestant reformers who reemphasised the essentiality of the nature of children as mouldable; despite this, many of the concepts of original sin were retained (Ben-Amos 1994: 13; Houlbrooke 1992: 156).

03.04 | pregnancy

The period of pregnancy, then, must have been a particularly anxious time for medieval parents given these outlooks. While it is the purpose of this thesis to explore the experience of the life course from the perspective of the *child*, it is pertinent to briefly consider some of the aspects of pregnancy from the parental perspective, because it also speaks to the agency of the foetus. Mother and foetal health and well-being are intricately intertwined (Gowland 2015: 530). In addition, the preparations and routines of the mother during pregnancy speak to the agency and increasing social identity of the foetus (Hockey and Draper 2005: 54). Evidence from medieval diaries suggests that women knew they were pregnant from a month or two from conception, many women would have missed their menstruation and present several symptoms such as exhaustion and uncomfortableness, with stirring of the child from around four months (Cressy 1999: 43). Once the pregnancy was confirmed, the infant then gained a social presence (Cressy 1999: 41-42, Gowland 2018: 104; Youngs 2006: 44). In *De Proprietatibus Rerum*, Bartholomew suggested that if the mother's right breast was larger than the left, then the child was a boy (Orme 2001: 16). Other advice literature suggested that if the child lay mainly to the right side of the mother, it was also a boy (Youngs 2006: 44). If the mothers' urine had a reddish tint, this was also a sign of a boy, while a whitish colouring suggested a girl (Cressy 1999: 43). We know that during pregnancy maternal health has an impact on the health of the child – so too were there Classical and medieval understandings of this gestational period being delicate and that the health of the mother was vital for the well-being of the child (Barker 2007: 412; Barker et al. 2012: 30-31; Forsdike 2005: 28; Gowland 2015: 530-533; Mitchell 2014: 14, Radbill 1963: 201). Advice literature emphasised the importance of maintaining a healthy diet,

this would mean different things to different women depending on their humoral balance and temperament, but most advice primarily emphasised moderation in all things (Mitchell 2014: 15; Pollock 1990: 50). It is impossible to know if most medieval mothers were aware of such advice, let alone whether they chose to follow it or not (Pollock 1990: 50). The economic burden of a pregnant woman who did not work at all, especially those of a lower social status, suggests that women would have continued to work throughout their pregnancies (Coster 2001: 69). However, it has also been suggested that even women from lower social groups would have had a period of maternity leave from their household responsibilities (Gilchrist 2012: 140; Pollock 1990: 51). Although there is not much supporting evidence, it has been suggested that the heavy workloads and undernutrition of most of the lower classes would mean that many women miscarried (Coster 2001: 70; Houlbrooke 1992: 128; Shahar 1990: 39). Additionally, there is plenty of evidence of knowledge of abortion-inducing herbs and knowledge of such methods is thought to have been relatively widespread (Butler 2007: 59; Cressy 1999: 48-50; Lindemann 2010: 22).

The risk of maternal death during childbirth in the medieval period is difficult to measure, but early modern sources suggest that between 1-1.5% of childbirths ended with maternal death (Coster 2001: 70, Cressy 1999: 30, Shepard 2011: 364). This is quite high (the modern rate is less than 0.01%), suggesting that maternal death must have been a relatively common occurrence and a source of anxiety for any expectant mother. The burden of anxiety placed on women during this period of pregnancy must have been immense – they would have had to contend with their practical work as well – all the while time knowing that any sign of sickness or imperfection in the child would likely be blamed on them (Cressy 1999: 45; MacLehose 1999: 16). The potential threat of mortality, for both child and mother, must have meant that this period was particularly fraught (Gilchrist 2012: 138; Houlbrooke 1992: 129). The apprehension that her child could also die without the baptismal rites and spend eternity in purgatory must have played on the mind of the expectant mother. Despite the change in Protestant views about original sin and the importance of baptism, Protestants were initially ambiguous about the fate of unbaptized infants – were they in hell, an undefined limbo-like state, or even heaven (Cressy 1999: 114)? There was no definitive forthcoming answer and this must have invariably caused confusion to parents about the fate of the souls of their children and both pre-and post-Reformation mothers must have experienced similar levels of anxiety. In addition, fear of the pains of childbirth – the legacy of Eve – must have been frightening (Cressy 1999: 28; King 1991: 4). Unfortunately, maternal anxiety was viewed as another failing. It was believed that the mother's emotional and mental well-being had a direct effect on her child (Shepard 2011: 355). Because of this perilous situation, the mother was counselled to create a state of calmness, to free herself of agitations, in order to promote the wellbeing of the foetus. To combat this anxiety mothers were encouraged into spiritual preparation (Orme 2001: 16). Prayer, and lots of it, was essential (Rawcliffe 2013: 90; Shahar 1990: 35). Women were also told that in order to ensure the safe delivery of their child they should try to attend daily mass (Ives 2012: 48). Women were also encouraged to attend confession and receive the sacrament towards the end of their pregnancy (Cressy 1999: 22; Gilchrist 2012: 138). In addition, they could visit shrines and go on pilgrimages which would help protect the growing foetus (French 2016: 129; Shahar 1990: 35).

Figure 03.02 – 15thc - Doom Painting - St Marys Church, North Leigh, Oxfordshire - Wall Painting - Authors Own

It was essentially believed that a pious mother should prepare herself for death – maternal morality was vital for the wellbeing of the child (Houlbrooke 1992: 129; Salmon 2011: 167). What most women actually did is impossible to know, but clearly, increased piety was a proactive thing a mother could do to assist the wellbeing of herself and her pregnancy. It was is vital for maternal behaviour to be seen to conform to sociocultural standards (Salmon 2011: 167). Anxious and expectant mothers could also take comfort from one particularly vital source – other women. As with birth, pregnancy was considered a female environment and expectant mothers would have had a reserve of support from relations, kin and friends (Cressy 1999: 44; French 2016: 127; Gilchrist 2012: 140). In practical and emotional terms this is likely how the vast majority of women helped fortify themselves. Without this wider network, pregnant women were mainly at the mercy of their family unit for support (Orme 2001: 86).

Women could also prepare themselves through natural magic. Medieval magic was essentially a mixture of Classical beliefs, folk rituals and long-established traditions (Gilchrist 2008a: 119; Gilchrist 2012: 166). This type of magic was largely tolerated by the church – if people wished to take comfort from the natural world, as God had provided for them, then there was no harm posed to religious traditions (Gilchrist 2012: 166). Amulets were a particularly popular source of natural magic and a valuable resource available to every woman in society. Amulets could be both protective and therapeutic and were believed to help women through childbirth (Gilchrist 2008a: 124; Rawcliffe 1997: 95). In particular, aetities (eaglestone) and jet were considered helpful in assisting women through labour (Cressy 1997: 47; French 2016: 136; Gilchrist and Sloane 2005: 89; Shahar 1990: 36). Acquiring these objects during pregnancy may have provided mothers with some feeling of agency in the face of anxiety. However, the Reformation saw the suppression of these childbirth rituals (Cressy 1999: 23-24; Hayward 2009: 7; Orme 2001: 19; Rawcliffe 1997: 180, 200; Thomas 1971: 318). Relics, often girdles or belts, might also have been borrowed from churches and monasteries, and were believed to be particularly powerful for women during childbirth – although some of these were loans which incurred a fee, so this may not have been available to all (French 2016: 133; Gilchrist 2012: 138; Hayward 2009: 7; Orme 2001: 16; Shahar 1990: 36). Textual amulets, however, would have been widely circulated – these would involve writing a prayer on a piece of

parchment which was scrolled up placed against the body, likely attached to a girdle (Gilchrist 2008a: 125; 2012: 138-140; Ives 2012: 48; Orme 2001: 16; Rawcliffe 2013: 90).

What was the paternal role during pregnancy? It is difficult to know. It has been suggested that following conception men played a minor role (Hanawalt 1986: 216). However, it is thought that husbands were expected to support their wives (Cressy 1999: 44). It has also been suggested that husbands may even have deferred to the needs of their wives during pregnancy (Coster 2001: 69; Shepard 2011: 355). Male roles are likely to have varied greatly, depending on factors such as social status, but also inter-personal factors based on the nature of the marital relationship.

During pregnancy, the parents would have concerned themselves with the business of choosing suitable godparents (Coster 2001: 72; Cressy 1999: 157; Hanawalt 1993: 45; Fleming 2001: 62; Goldberg 2004a: 28; Gilchrist 2012: 185; Houlbrooke 1992: 39; Orme 2001: 25). It was an important decision to make; godparents would be important for both spiritual and practical needs. Traditionally, three godparents were chosen, two of the infants' sex and one of the opposite. They would also have the power to name the child in consultation with the parents (Cressy 1999: 162; Orme 2001: 37). Naming was often derived from the name of a godparent, or a saint, or a common family name (Cressy 1999: 162; Fleming 2001: 62; Goldberg 2004a: 28; Houlbrooke 1992: 131; Woolgar 2006: 56).

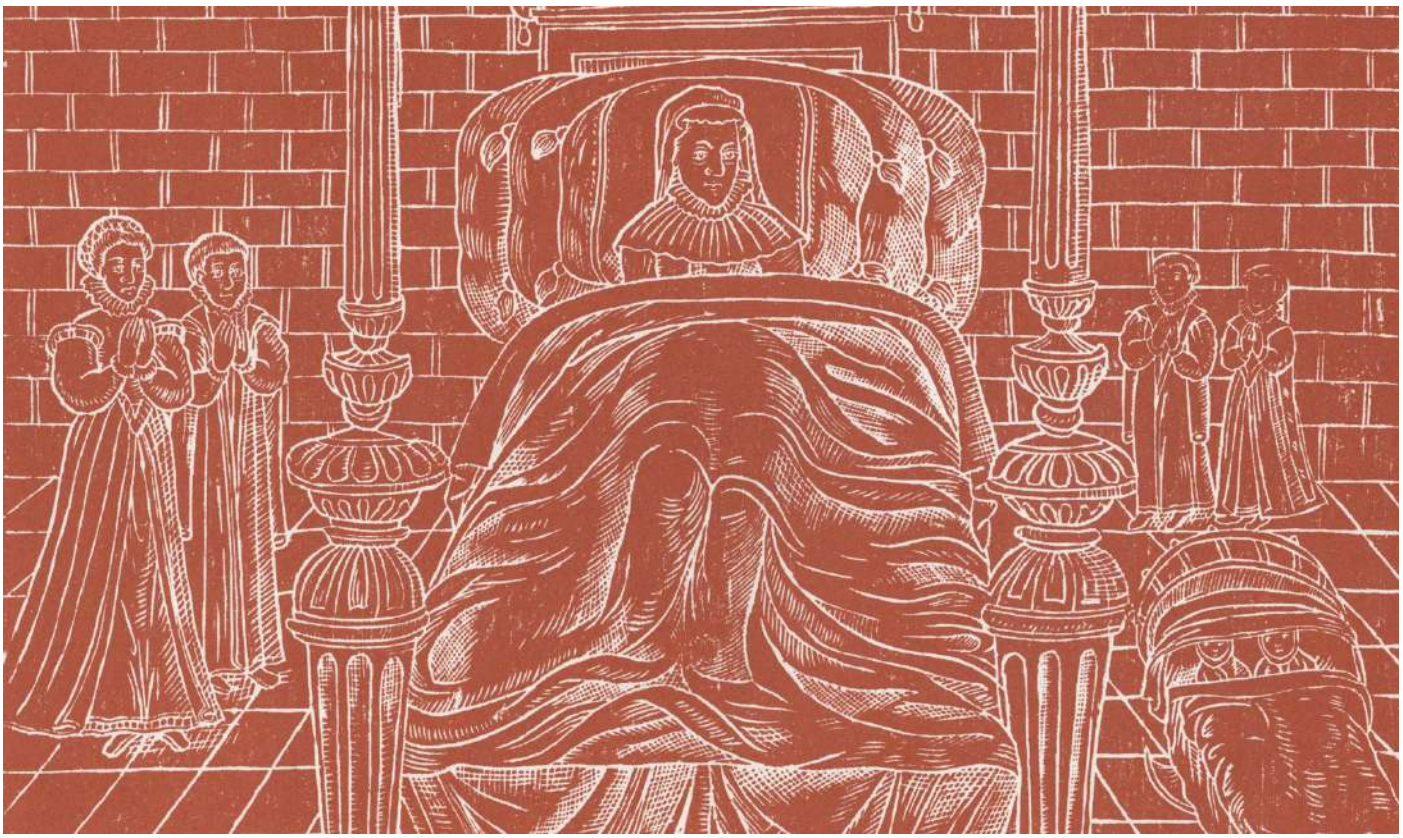


Figure 03.03 – 1587 - Mother Silvester and Family - Brass Rubbing - Halling, Kent - John Page-Phillips 1970

The mother, with help from the family, would also need to prepare the birthing space. Birth would take place at home; the few hospitals that did exist were far away from most mothers and predominantly provided to poor women without support (Gilchrist 2012: 138; Shahar 1990: 37). The mother would rely on the advice of other women and this would have differed according to social status, e.g. clothing, bedding, swaddlebands, cradle, draperies etc. (Cressy 1999: 44, 50-51; French 2016: 130-132; Orme 2001: 60). It was believed that the birthing conditions should be similar to the environment of the womb; therefore, it should be dark, quiet and warm (Cressy 1999: 53; Goldberg 2004a: 28; Gilchrist 2012: 140; Shahar 1990: 40). Some wealthier mothers may have chosen to purchase birthing furniture, e.g. birthing chairs or stools (Dunn 1998: 77; Gilchrist 2012: 140; Richardson 2003: 324; Shahar 1990: 38); though it is considered that only a few midwives actually used them (Cressy 1999: 52). Traditionally, expectant mothers would 'withdraw' for a period before their birth, the length of which probably increased with social status, but on average would have lasted several weeks (Goldberg 2004a: 28; Gilchrist 2012: 139-140; Orme 2001: 21). Mothers were expected to acclimatise to the darkness, quiet and warmth of the birthing room, where, apart from female visitors, were supposed to remain in relative seclusion until the birth.

03.06 | birth

By the late medieval and early modern periods, there was a wealth of medical manuals and domestic advice books on women's diseases, gynaecology and obstetrics which had been inherited from Classical sources and compiled into medieval literature (Shahar 1990: 33-34). While the increasing publication of such texts suggests a growing public audience, they cannot tell us much about the actual experience of birth in early modern England (Cressy 1999: 36).

Figure 03.04 – 1600 - The Cholmondeley Ladies - Painting - Unknown Artist - British - Tate Britain - T00069

The majority of these texts focused on medical complications of childbirth, with little attention paid to regular childbirth practice (Green 2008b: 495; Wallis 2010: 189). As has been noted, this literature was written predominately by literate (elite) men, for a literate (elite) male audience, the majority of women would not have been able to read them (Cressy 1999: 16; Green 2008a: 19; 2008b: 448). It is thought that the actual birthing environment was predominately a feminine domain and support came from a number of female helpers comprised of relatives, friends, neighbours and other experienced hands (Cressy 1999: 15; French 2016: 127; Gilchrist 2012: 139; Goldberg 2004a: 28; Hanawalt 1993: 42; Houlbrooke 1992: 129; King 2007: 391; Shahar 1990: 37). Men were restricted from the birthing environment and only permitted entry during a medical emergency (Cressy 1999: 15; Goldberg 2004a: 28; Hanawalt 1986: 216; King 2007: 393). Despite this, having husbands nearby is known to have been of comfort to some early modern women (Pollock 1990: 53). The most vital assistance to women during birth was the midwife (meaning '*with the wife*'), who would have taken charge of the entire birthing process (Cressy 1999: 61-62; Gilchrist 2012: 138-140; King 2007: 391; Lindemann 2010: 269; Orme 2001: 17). The knowledge of midwives was acquired through their years of practical experience of assisting other successful births and would have been indispensable to the mother (Cressy 1999: 60; Gilchrist 2012: 138-140; Goldberg 2004a: 28; Hanawalt 1993: 42; Houlbrooke 1992: 129). Midwives were also theoretically supposed to be licensed by the church; this was likely due predominately to their powers over baptism (Cressy 1999: 60-64). In the event that during childbirth the infant was *in extremis* and unlikely to survive, the result of which would end with the unbaptised infant resigned to eternal purgatory, church authorities allowed midwives who were licensed under the church to provide the last rites to save them from such a fate (Cressy 1999: 61; Gilchrist 2012: 139). This, of course, gave midwives significant powers and it seems as though church authorities were always somewhat uneasy about the prominence of midwives in this matter. Although midwives had this special status, technically, anyone was permitted to baptize a dying infant if no priest was available to do so (Gilchrist 2012: 139, 185; Orme 2001: 25). Perhaps somewhat surprisingly, this is one of the few rituals to survive the Reformation (Cressy 1999: 118-123).

"God's creature,
I hereby baptize thee
in the name of the Father,
the Son,
and the Holy Ghost"

The Gospel of Saint Matthew, *New Testament*, (Hanawalt 1986: 172; Shahar 1990: 49)

Midwives helped administer oils, herbs, amulets and other sympathetic magic. They lubricated the mother for birth, helped correct the positioning of twisted infant limbs and provided whatever the mother required for her comfort and support during birth (Cressy 1999: 62; Lindemann 2010: 269-270). Most children were likely born into a noisy and crowded environment (French 2016: 127). As soon as the infant was born, it was the duty of the midwife to help it to breathe, open its nostrils and tie and cut the umbilical cord (Cressy 1999: 80; Fleming 2001: 61; Gilchrist 2012: 141; Hanawalt 1993: 43; Lindemann 2010: 270).

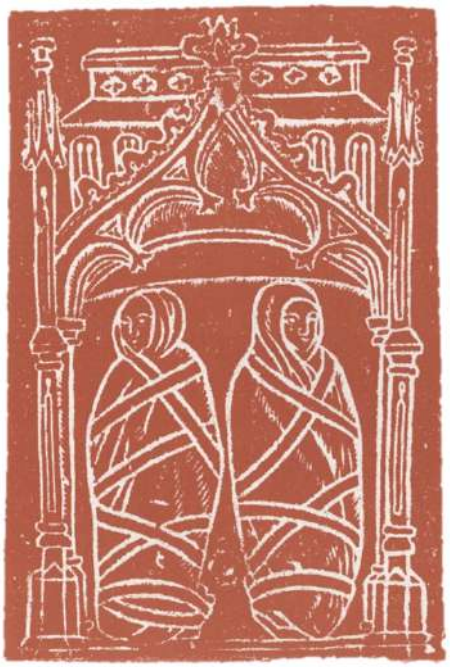


Figure 03.05 – 1505 - John and Roger Yelverton - Brass Rubbing - Rougham, Norfolk - John Page-Phillips 1970

The midwife would then wash the infant in warm water and rub it with salt and ointments for cleansing (Cressy 1999: 81; Fleming 2001: 61; Gilchrist 2012: 140-141; Hanawalt 1986: 172; Mitchell 2014: 25; Radbill 1963: 204; Ruhräh 1925: 75; Spaulding and Welch 1994: 259; Still 1932: 27-28). The infant was then swaddled immediately, in order to sustain the feeling of warmth from the womb, as well as to help protect it (Gilchrist 2012: 142; Shahar 1990: 87).

Figure 03.06 – 1592 - Family of Dorothy Parkinson - Brass Rubbing - Haughton-le-Skerne, Durham - John Page-Phillips 1970

The birthing room was kept in the same warm environment to lessen the trauma of birth and sources of potential stimuli were kept to a minimum. The room would be kept like this during the mothers lying-period, to allow the infant's sensitive eyes and ears to gradually adjust (Cressy 1999: 53; Houlbrooke 1992: 132; Mitchell 2014: 12, 25; Shahar 1990: 40; 282).

03.07 | lying in

Traditionally, women were banned from holy places for four to six weeks after giving birth (Cressy 1999: 84; 205; Hanawalt 1993: 45). The infant would stay with its mother during her period of sequestration in the lying-in environment, only leaving for baptism (Cressy 1999: 53; 82; Gilchrist 2012: 143). During this time, women were viewed as impure, due to the disruption in their menstruation, which required a period of healing until cleansing at a ‘churching' ceremony (Gilchrist 2012: 182; Orme 2001: 31). Post-Reformation, churching was viewed with superstition, some reformers unsuccessfully tried to abolish the practise altogether, although after 1552 it was officially no longer a ‘purification' but instead a thanksgiving (Cressy 1999: 198-216; Gilchrist 2012: 183).

Figure 03.07 – 1566 - The Family of Alexander and Anne Denton - Effigy - Stone - Hereford Cathedral – Authors Own

03.08 | baptism

Baptism was one of the most important moments in the life of a medieval and Tudor child (Cressy 1999: 99). From the moment of baptism, a child officially became a member of the church and its place in society was confirmed (Hanawalt 1993: 46; Mitchell 2014: 30; Orme 1994: 563; 2001: 35). Crucially, it is the moment when the associations of original sin were washed away, emancipating the child from its fragile state of liminality and the potential threat of an eternity in purgatory (Gilchrist 2012: 185; Houlbrooke 1992: 130; Orme 2001: 124; Youngs 2006: 45). There were Protestant changes to baptism, which saw a reduction in the importance in its role in Salvation, in which an infant no longer required baptism to wash away the burden of original sin. Yet, interestingly, it was one of the sacraments to survive the vigorous reformers (Cressy 1999: 98; Cunningham 2006: 66; Houlbrooke 1992: 130).

Traditionally, it is believed to have been the father's duty to arrange his child's baptism, which would make practical sense as the mother would still be confined to her period of lying-in (Cressy 1999: 149). From the eleventh century, concerns about children embodying the taint of original sin meant that baptism was done as quickly as possible to lessen the potential risk of death without purification (Houlbrooke 1986: 130, Orme 1994: 563; Shahar 1992:45). This meant catholic baptism was conducted within a day or two of birth (Coster 2001: 71; Gilchrist 2012: 6; 143; Goldberg 2004a: 28; Hanawalt 1986: 172; 1992: 130; Orme 2001: 24). The Protestant downgrading of the vital role of baptism in salvation meant that post-Reformation, the period between birth and baptism was elongated, to within several days or even weeks (Cressy 1999: 101; Houlbrooke 1992: 130; Orme 2001: 36).

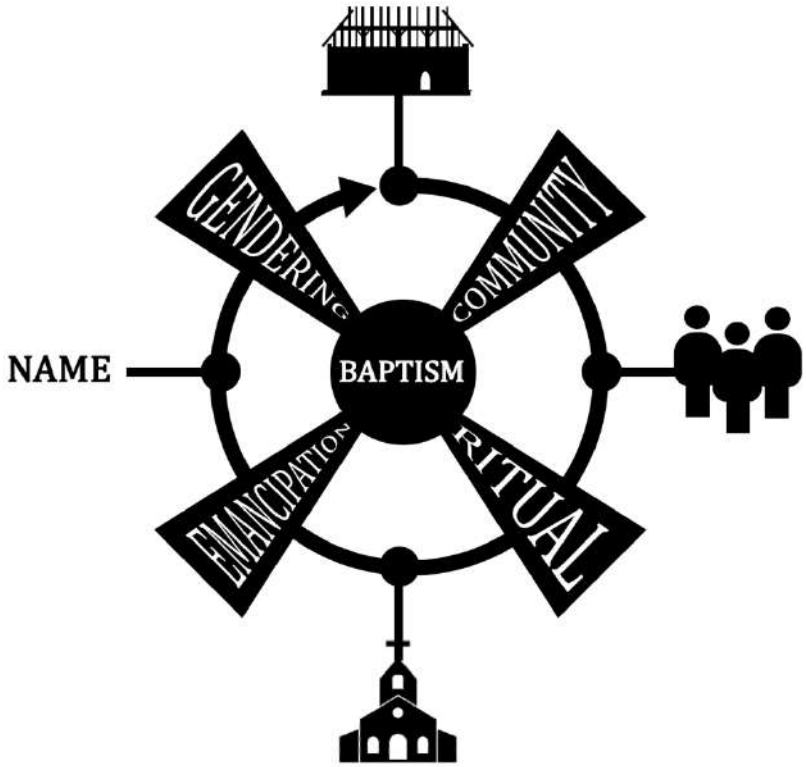


Figure 03.08 – Baptism – from home, to baptism, to naming, to celebration - Authors Own

The baptism would essentially start at home, where the child would be collected by the midwife, godparents and the baptism party (see figure 03.08). Though the father would attend the baptism, he played a minor role in the proceedings (Cressy 1999: 149). The mother, who remained lying-in, would not attend at all, so the emphasis was very much focused on the infant (French 2016: 139; Gilchrist 2012: 185). The infant would be dressed in a baptismal cloth and carried in procession from the home to church (or chapel) by the midwife or potentially by a godparent (Gilchrist 2012: 91, 185; Fleming 2001: 61; Goldberg 2004a: 53; Hanawalt 1986: 173; Orme 1994: 564).

Once they reached the church, they would stop at the door, the child could not yet enter and the initial rites began on the threshold of the church, symbolic of the liminality of the infant waiting at the gateway of christian society (Youngs 2006: 46). The priest would meet the congregation at the door and inquire about the sex of the child and ask if it had been baptised previously (Hanawalt 1986: 173). The infant would then be blessed, before the priest would place salt in its mouth, as a cleansing and a symbol of wisdom (Hanawalt 1986: 173, 1993: 45; Orme 2001: 27-28). The priest would then make the sign of the cross over the infant and trace a cross in chrism oil across its forehead (Cressy 1997: 135). The priest would read biblical passages, enquire into the spiritual preparedness of the godparents and inquire about the name of the child (Fleming 2001: 61; Hanawalt 1986: 173). Only after these proceedings in the doorway was an infant permitted to enter the sanctity of the church (Fleming 2001: 61). The party would process through the church to the baptismal font, where the midwife presented the infant (Cressy 1999: 62; Fleming 2001: 61; Gilchrist 2012: 185; Hanawalt 1986: 17; Youngs 2006: 46). The party then prayed together (Hanawalt 1986: 173). In accordance with Sarum Rite, a male infant should be positioned to the right side of the priest and females to the left – females being fashioned from a left rib of Adam – demarcating that from birth male and females were different (French 2008: 54; Orme 2001: 27). Multiple infants could be christened together, but the majority would have had their own individual ceremonies (Orme 2001: 35). If the water in the font was fresh and the priest had not had time to prepare, the water would need cleansing through further prayer and ritual (Orme 2001: 28). The priest would then make the sign of the cross on the infant's forehead, before using his thumb and saliva to moisten the ears and nose and then place salt in the infant's mouth once more (Orme 2001: 29; Youngs 2006: 46). The priest then crossed the infant with holy oil on the breast,

shoulders and right hand, before tracing another cross in chrism across the forehead (Cressy 1999: 124, 135; Hanawalt 1986: 173).

Figure 03.09 – 1578 - A Booke of Christian Prayers - Richard Day - England - Post-reformation baptism - Bodleian Library - RSTC 6429

He then stated "*so that you may sign yourself and repel yourself from the party of the Enemy. And may you remain in the Catholic faith and have eternal life and live for ever and ever. Amen.*" Then, to the infant, he stated: "*Go into the temple of God*" (Orme 2001: 29). Through prayers – aided by oil, salt, water, saliva – the priest combated with the devil to depart from the infant. The sacrament was then confirmed through the correct recitation of the verbal formula (see text box), for which the godparents were expected to answer on behalf of the infant (Gilchrist 2012: 185).

"Abrenuncias sathane?	Do you renounce Satan?
Abrenuncio.	I renounce him.
Et omnibus operibus eius?	And all his works?
Abrenuncio.	I renounce them.
Et omnibus pmpis eius?	And all his pomp?
Abrenuncio.	I renounce it.
Quid petis?	What do you seek?
Baptismum.	Baptism
Vis baptizari?	Do you wish to be baptised?
Volo."	I do.

The *Manual,* 15thc, (Orme 2001: 29)

The infant was now suitably prepared for baptism. The priest would hold the infant with its head pointing east and face to the north, and then he would recite "*et ego baptizo te in nomine patris"* (and I baptise you in the name of the Father), he would plunge the entire infant into the water, then raised it, turning its face to the south before reciting "*et filii"* (and of the Son), again plunging the infant back into the water, and then back out, then back into the water for the third and last time, before finishing by reciting "*et spiritus sancti"* (and of the Holy Spirit) – "*Amen"* (Cressy 1999: 139; Gilchrist 2012: 186; Orme 2001: 29). One of the godparents would then raise the infant from the font and hold it as the priest made a final cross upon the forehead of the infant with chrism (Orme 2001: 29). The infant was then wrapped in a white cloth – its chrisom (Fleming 2001: 61; Gilchrist 2012: 185; Hanawalt 1986: 173). As this cloth was sanctified by the contact with the remnants of the baptismal chrism, holy water and oil, it was expected to be returned to the church, traditionally when the mother reappeared in society after her period of lying-in to be purified at her 'churching' ceremony (Cressy 1999: 163; Gilchrist 2012: 91; Orme 2001: 29; Oosterwijk 2000: 52). Following the baptism, the godparents took the infant to the altar for its first service as a Christian (Hanawalt 1986: 173; 1993: 45; Youngs 2006: 47). Following the infants' first service, the party and infant held candles, church-bells ringing, as they processed out of the church and made their way back to the home (Gilchrist 2012: 186). Traditionally, the day of baptism was concluded with a feast, the details of which would have significantly varied with social status (Cressy 1999: 164; Hanawalt 1986: 173, 1993: 45; Houlbrooke 1992: 130; Orme 2001: 30; Partee 2006: 23; Youngs 2006: 46). The infant was also bestowed with gifts from the godparents (Gilchrist 2012: 144; Hanawalt 1986: 173; 1993: 45; Houlbrooke 1992: 131; Orme 2001: 30; Youngs 2006: 46).

Post-Reformation, the service was quite different. Gone was the extensive gesturing, the supplementary candles, oils, salts, etc. Water was retained, but only with the view that it held no intrinsic powers. The *Book of Common Prayer* detailed how the priest should now make a simple cross upon the forehead (though even this caused indignation amongst some reformers) while repeating "*we receive this child into the congregation of Christ's flock, and do sign him with the sign of the cross, in token that hereafter he shall not be ashamed to confess the faith of Christ crucified*" (Cressy 1999: 124, 135-137). The point of baptism also differed, by dipping part of the infant in the water, once, while reciting "*N, I baptize thee in the name of the Father, and of the Son, and of the Holy Ghost*" (Cressy 1999: 108). Perhaps surprisingly, the use of chrisom cloths endured (Cressy 1999: 163).

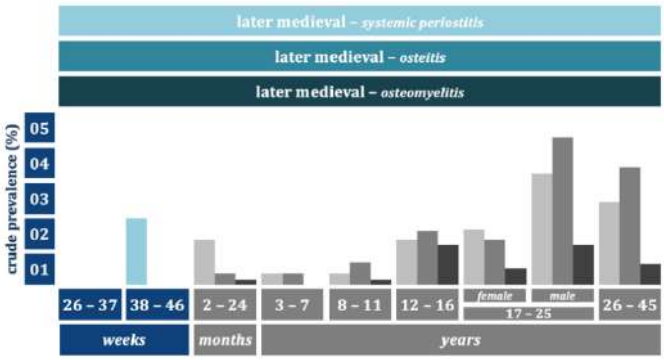
It has been suggested that too much importance has been placed on the role of baptism in the life course of a medieval child – however, on a single day the infant emerges from the darkness of lying-in, into the world, where it undergoes a "*mystical transformation*", a process of emancipation, a public initiation into society and is bestowed a name (Cressy 1999: 107, Hanawalt 1993: 48; Youngs 2006: 47).

03.09 | bioarchaeological evidence

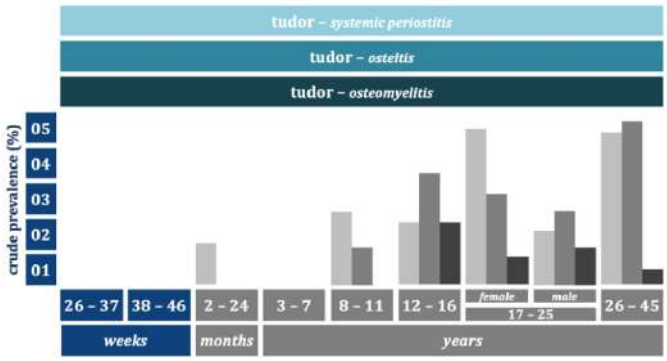
For the purposes of this thesis, 'infancy' is divided into three categories. First, the gestational age of 26-37-weeks-old is designated as 'premature infants' in order to explore this earlier phase. Then those with a gestational age

of 38-44-weeks-old will be designated 'newborn infants'. Finally, those between 1-to-24-months-old will be designated simply as 'infants' and will be explored in the next section.

Infant palaeopathology is methodologically complex and interpretatively challenging. 'Foetal' palaeopathology is a relatively new field of investigation that is hampered by a lack of understanding regarding how disease expresses itself in the foetal and infant bodies. For example, the presence of woven bone on an adult skeleton is often indicative of some form of inflammation, but on a rapidly growing infant may represent normal growth (Hodson 2017: 28-29; Lewis 2000: 42; 2017: 2-3: 2018: 125). It has been considered that new bone growth in those under the age of 4 should be considered as evidence of normal skeletal growth in children (Lewis 2017). Until the age of 4+ years then, there is less unequivocal pathological evidence with which to contend. The results from this study also reveal no pathology at all in the medieval or Tudor prenatal infants. In the data from this study, medieval newborn-infants express a 13.7% (7/51) rate of PNBF. This new bone formation was likely to have been identified correctly, however, it is not currently known if new bone formation at this age is pathological, or instead evidence of normative bone growth.



Graph 03.01 – Results of later medieval 26-37-week-olds and 38-46-week-olds infectious pathology from this study



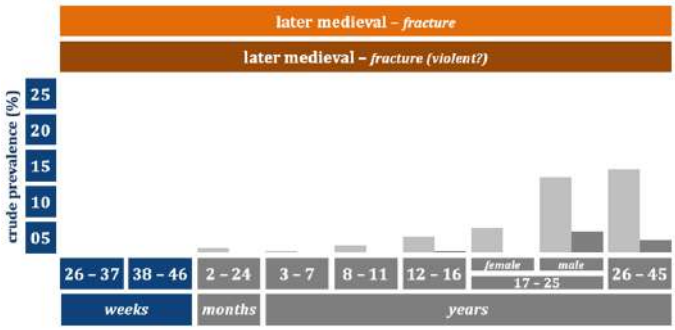
Graph 03.02 – Results of Tudor 26-37-week-olds and 38-46-week-olds infectious pathology from this study

No systemic PNBF was expressed amongst 27-week-old infants in either the later medieval or Tudor periods (refer to graph 03.01). 1.9% (1/51) 38-46-week-old infants demonstrated evidence of systemic PNBF during the later medieval period, but not the Tudor period (refer to graph 03.02). In isolation, this limited evidence provides us with few opportunities for insights regarding the lives of infants.

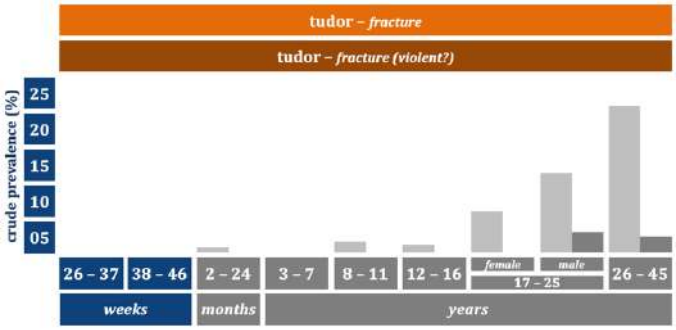
However, pioneering work into foetal and infant palaeopathology is concurrently being conducted by Claire Hodson, whose thesis research (to be published) is investigating the co-occurrence of possible pathological bone formation with indicators of growth disruption (Hodson and Gowland 2019). These results revealed that 73.3% (11/15) of a sample of medieval newborn-infants (38 to 52 weeks) had signs of new bone formation which is likely indicative of pathology (Hodson 2017: 314). This is crucial evidence for understanding infant and maternal health in the past. However, it is currently difficult to view these initial results within any wider context, because

there is currently no reliable comparative data, but this research demonstrates great potential and will soon be able to help bring fresh insights to foetal and infant lives in the past.

Even without the methodological difficulties of foetal and infant palaeopathology, it would still be expected to identify less evidence than seen in adults as non-adults had less time to develop pathologies. Congenital conditions are a group of pathologies that would be identifiable from birth. The results from this study found no examples of congenital conditions in infants and this may be a factor of the small data-set and the difficulty of recognising some of these conditions in small infants. Unfortunately, there were only 22 premature infants and 51 newborn infants. Amongst the entire population dataset, the results show that there were 36 cases of hip dysplasia and/or perthes disease 0.4% (36/10021). This probably seems like a very low rate indeed, but when you consider it in comparison to the incidence of scurvy 0.4% (36/10021), rickets 0.1% (20/10021) and possible rickets 0.8% (80/10021) it puts the evidence for congenital conditions into some context. However, as discussed in the next chapter, rickets and scurvy were relatively rare conditions during this period. This congenital data for the adults shows that there were by implication infants and children with such conditions. Interestingly, 80.6% (29/36) of them are from urban contexts 16 are female, 18 male and 2 unsexed non-adults. This suggests that congenital conditions were being lived with in equal proportions among men and women and may indicate that they might have been cared for in equal proportions of female and male infants.



Graph 03.03 – Results of later medieval 26-37-week-olds and 38-46-week-olds infectious pathology from this study



Graph 03.04 – Results of Tudor 26-37-week-olds and 38-46-week-olds infectious pathology from this study

Finally, there is no evidence from this study of fractures during 27-week-old and 38-46-week-old infants during both the later medieval and Tudor periods (refer to graphs 03.03 & 03.04).

03.10 | death

Clinically, we know that birth is something of a crisis for the newborn infant; when it is born it cannot regulate its warmth or its nutritional requirements, its immune system is still developing and it is less able to cope with external pressures (Halcrow and Tayles 2011: 339). How many infants survived childbirth and the transition into the world? Infectious pathogens are known to affect the very young and therefore infant mortality must have been very high (Goldberg 2004a: 28; Ortner 2001: 31). Estimating mortality is challenging, but Elizabethan documentary evidence suggests that somewhere between 2-2.5% died before the end of their first day (Cressy 1999: 117; Houlbrooke 1992: 129).

Figure 03.10 – 1607 - The Family of Sir William Leighton and Wife - Effigy - Stone - St James, Cardington - Authors Own

"Come away, come away death,
And in sad cypress let me be laid.
Fly away, fie away breath,
I am slain by a fair cruel maid.
My shroud of white, stuck all with yew,
O prepare it.
My part of death no one so true
Did share it.
Not a flower, not a flower sweet
On my black coffin let there be strewn.
Not a friend, not a friend greet
My poor corpse, where my bones shall be thrown.
A thousand thousand sighs to save,
Lay me, O, where
Sad true lover never find my grave,
To weep there."

William Shakespeare, 1601, *Twelfth Night*, 2.4:50-65, (2005: 728)

The theme of parental grief deviates from viewing the experience of the life course of the child, but it is worth briefly considering as medieval parental uncaringness is still a prominent topic. The majority of medieval and Tudor people would not have been literate and so their ability to record their feelings about any number of topics was not possible. Despite this, there have been assumptions that the general silence of parental love and grief automatically equates to the fact that parents did not love or grieve for their children. Though there is a paucity of evidence to consider in regards to this topic, the small amount of evidence that does exist is almost exclusively demonstrative of love and grief (Cartlidge 2006: 236; Coster 2001: 14; Cressy 1999: 393; Fletcher and Novy 2007: 60-62; Hanawalt 2002: 454; Houlbrooke 1998: 234; Maddern 2017: 53; Newton 2014: 225; Ryrie 2017d: 5). Additionally, excessive displays of parental grief during this period, at least publicly, could be considered self-indulgent (it was, of course, the child who had died), as well as being of quasi-critical of the will of God (decisions of life and death were the agency of God) (Heywood 2001: 59; Rawcliffe 1997: 8).

"Thy soule, litel child, I hym bitake,
For this nyght shaltow dyen for my sake"

Geoffrey Chaucer, 14thc, *The Clerk's Tale*, 559-560, (1992: 237)

"I am ful yong
I was born yisterday
Death is ful hasty
on me to ben werke"

John Lydgate, *Dance of Death*, 16thc, (Hanawalt 1993: 61)

There is another persistent notion that parents grieved less for an infant who died early on and with whom they did not have a chance to bond with (Heywood 2001: 59; Houlbrooke 1992: 137; Murphy 2011: 413). This argument is harder to critique, simply because there is limited evidence either way. Of course, medieval and Tudor parents lived in a period where there was a high rate of mortality, especially for infants (Hanawalt 1993: 61). However, we do not know, nor have evidence for, the effect this played on the psycho-emotional experience of parents and we really ought to avoid outright guessing, for fear of concluding by default that a lack of evidence meant that parents grieved less at the loss of their infants. Whatever the reaction and experience of parents, it is likely that they were varied in their responses (Houlbrooke 1998: 234).

03.11 | funerary evidence

What can archaeology tell us about grief? Nothing directly, but it can inform us about burial, and grief and burial are intertwined phenomena (Tarlow 1999). As we explore the life course of the medieval child on an incremental basis, it is important to consider the evidence of their deaths in context with the life course. Changing burial norms of individuals throughout their life course can inform us about the *lived* experience of medieval and Tudor death. *Children were buried* – it was something done to them, by adults, so burial rites speak more to adult sociocultural customs than of the child or childhood per se – child burials, therefore, can even be conceptualised as semi-artefactual (Gilchrist and Sloane 2005: 223; Murphy and Le Roy 2017: 2; Sánchez Romero 2017; Sofaer 2000: 10). Documentary evidence suggests that children were afforded funerals, albeit on a smaller scale than the adult versions, and these occasions would have differed based on the social status of the parents (Daniell 1997: 52; Gilchrist and Sloane 2005: 24; Orme 1994: 571-572; Youngs 2006: 198). There is less evidence to suggest a what age these funeral rites were extended to all children equally; did they, for instance, include newborn-infants? We simply do not know. What we can be more confident of, through burial archaeology, is an understanding of burial rites. The majority of children were buried in external cemeteries, with the internal space (in churches, monasteries, cathedrals, etc.) being predominately reserved for adults (Gilchrist 2012: 205; Gilchrist and Sloane 2005: 22; Orme 2001: 120). Often, but not always, there is a clustering of children of all ages in areas of cemeteries, sometimes more definitive zoning by age is also perceptible in the archaeological record, but it should be emphasised that on a national scale there is a lot of regional variation to these patterns (Craig-Atkins 2014: 106; Daniell 1997: 124; Dawes and Magilton 1980: 33-36, Gilchrist 2003: 410; Gilchrist 2012: 205; Gilchrist and Sloane 2005: 67-70; Hadley 2001: 48; Mays 1991; Orme 2001: 120; Stroud and Kemp 1993; Ward 1990: 122). It is interesting, however, to note that it was *only* children buried in clusters (Gilchrist 2012: 205).

Figure 03.11 – 1596 - St Francis and Katherine Knollys - Effigy - Stone - St Nicholas, Rotherfield Greys - Authors Own

Traditionally, from the fourteenth century, the unbaptised could not be buried in consecrated ground (Crawford 2018: 778; Gilchrist 2012: 119-220; Gilchrist and Sloane 2005: 31, 72; Mays 1998: 25; Murphy 2011: 410; Orme 2001: 124-126). Because the newly created Church of England had an ambiguous outlook over the fate of unbaptised infants, it is possible, though unproven, that there were equally ambiguous burial practices for the unbaptized (Cressy 1999: 114). The power of unbaptized infants was so efficacious as to encourage some drastic acts in order to stop their integration into consecrated earth. Women who died with an infant *in utero*, (the infant of course not having received baptismal cleansing) was contaminated and not eligible for burial in consecrated ground. In such circumstances, it was instructed that the infant should be cut out from the mother so that she might then be made clean and eligible for burial – but it not clear just how often this was practiced (Shahar 1990: 51). These views gained traction during the fifteenth century through the influential writings of the Augustinian canon John Mirk who wrote the guidelines for burial practice (Daniell 1997: 127). Despite the guidelines, there are many archaeological examples of pregnant women found buried in consecrated ground during this period (Gilchrist 2012: 210; McKenzie and Murphy 2018: 68; Shepard et al. 2015: 285).

"A woman that dies in childing shall not be buried in church, but in the churchyard, so that the child should first be taken out of her and buried outwith the churchyard."

John Mirk, 15th c, (Gilchrist and Sloane 2005: 71)

The data from this study found only 22 instances of premature infants in the later medieval results, where authors included gestational age, but they do come from a range of sites and show some interesting patterns. Premature infants present one particular challenge in the interpretations of their burials. It is impossible to tell infants that *may* have been stillborn, and were therefore unbaptized, to those who were born alive but were of small size for gestational age or premature and promptly baptised before death. While there has been much focus

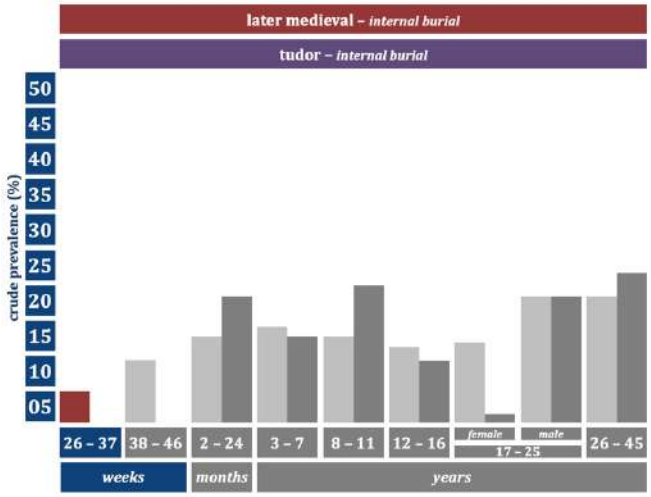
around the status of unbaptised infant burials from earlier periods, it is safe to assume, given the powers of anyone to baptise an infant *in extremis*, that the vast majority of newborn infants in later medieval and Tudor burial sites were baptised, so potential differences in burial practices should not be viewed as a perception towards the unbaptized (Gilchrist 2012: 221).

Figure 03.12 – 1588 - Elizabeth Bacon - Brass Rubbing - Aveley, Essex - Chancel Floor - John Page-Phillips 1970

The results from this study also include three premature-infant burials from a domestic dwelling, which is highly unusual in comparison to the rest of the population data. Why were these premature-infants the only ones out of thousands of burials found in a domestic setting? The evidence of burials in domestic dwellings in this data set unfortunately comes from a very broadly dated site at Raunds (5th-16thc.) and likely dated to the thirteenth and fourteenth centuries and therefore earlier than the scope of this study (Gilchrist 2012: 220; Lewis 2017: 32). Roberta Gilchrist has suggested that these infants may have been retained in the domestic dwelling as their bodies held agency (Gilchrist 2012: 222). It may also be that this practice was more common than we are currently aware of as only a handful of medieval or Tudor domestic dwellings have been fully excavated.

If the domestic burials date to the period of this study (1450-1600), then preterm infant burials are most likely to be singled out for anomalous treatment. If, however, they are of an earlier date, which is more likely to be the case, then there is not a difference between preterm infant burial and newborn infant burial locations (Craig-Atkins 2014: 106).

Figure 03.13 – 1585 - Richard Best - Brass Rubbing – Merstham, Surrey - John Page-Phillips 1970

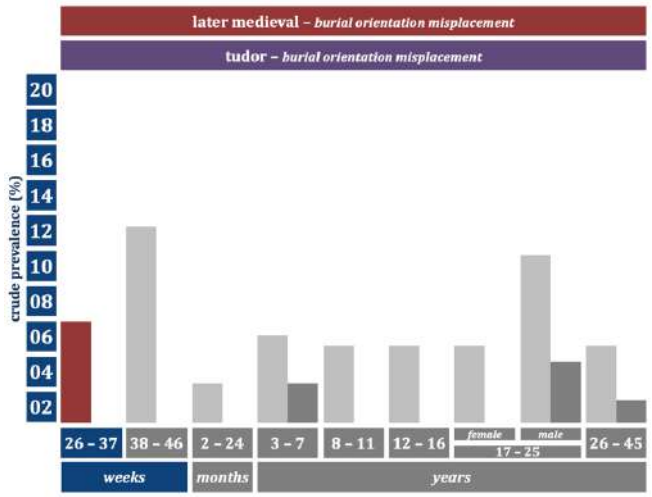


Graph 03.05 – Results of burial location from 26-37-week-olds from this study

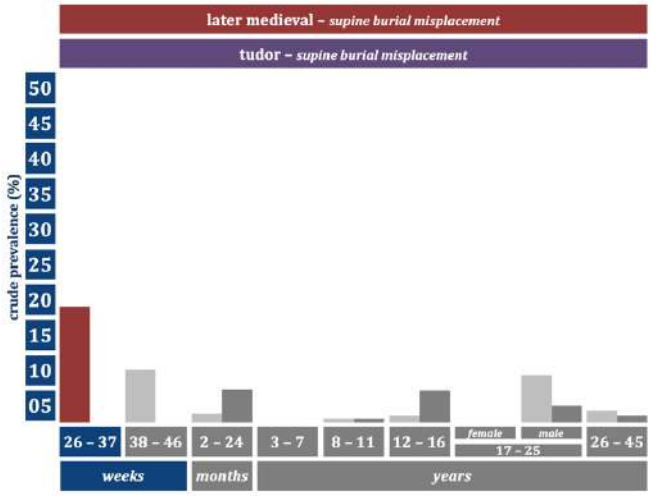
The burial archaeological evidence from this study reveals that 5.0% (1/20) of later medieval 26-37-week-olds were buried in internal spaces (refer to graph 03.05). This reflects one of the lowest incidences of internal burial from the later medieval evidence, however, when compared to the adult incidence of 26-45-year-olds of 17.9% (362/2019) it is not a statistically significant difference (p = 0.132).

There is too little Tudor burial archaeological evidence for 26-37-week-olds and therefore this will solely focus upon the later medieval evidence this age cohort.

Later medieval burial orientation misplacement of 26-37-week-olds was 5.9% (1/17) (refer to graph 03.06). Throughout infancy burial orientation misplacement remains higher then throughout childhood and youthhood; the misplacement is statistically similar level of 26-45-year-olds of 3.0% (80/2638 / p = 0.495). However, it is it difficult to draw definitive evidence of premature-infants from 17 cases alone.



Graph 03.06 – Results of burial orientation from 26-37-week-olds burial evidence from this study

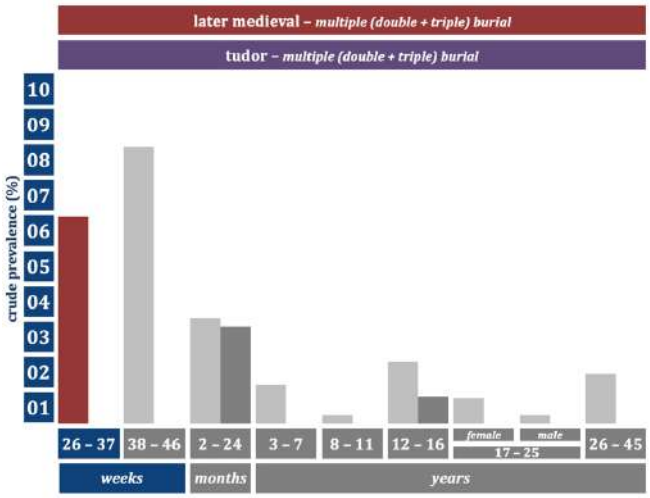


Graph 03.07 – Results of burial misplacement 26-37-week-olds multiple burials from this study

17.6% (3/17) of 26-37-week-olds were found positioned on their sides (refer to graph 03.07). This is the highest degree of displacement seen during the life course. Additionally, arm positioning varied, as is often seen in later medieval cemetery sites, with no patterning. Less attention has been paid to the placement of legs in the grave, the vast majority of medieval and Tudor dead having been buried with their legs extended. However, 26-37-week-olds show a deviation to that of 16.7% (3/18) with a

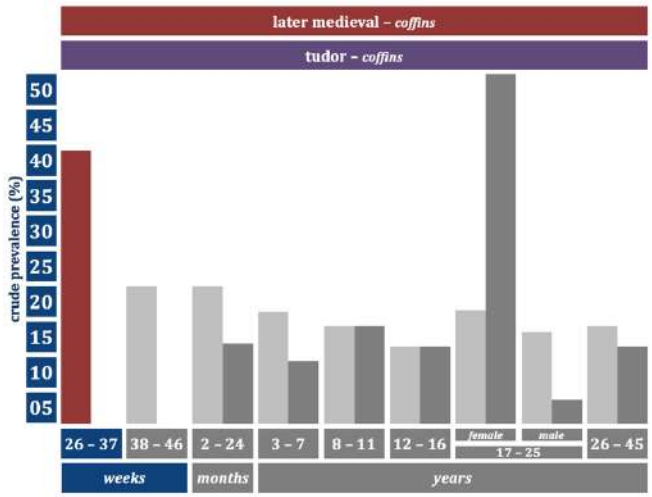
flexion legs, to compensate for their malalignment of burial on their sides. The burial of premature infants in this manner might be associated with them being placed in a sleeping position (Gilchrist and Sloane 2005: 156). Flexion also might have occurred when lowering into the grave, or perhaps a loose-fitting chrism cloth, or due to pathology (McKenzie and Murphy 2018: 61). The relatively small sample size, unfortunately, makes it impossible to conclude with certainty just how common irregular placement of premature infants was, but the results, representative of several sites, does hint at a pattern.

Burials of multiple occupancy (burials of double and triple occupancy) in the later medieval period were irregular, but not uncommon, as they had been during the Anglo-Saxon period (Crawford 2007: 84; Gilchrist and Sloane 2005: 156-158; Murphy and Donnelly 2018: 137). It is likely that many of these burials of multiple occupancy reflect familial ties, but it is also possible that they did not (McKenzie and Murphy 2018: 66; Murphy and Donnelly 2018: 126). It is considered to have been commonly believed that baptized infants under the age of two represented the Holy Innocents and therefore held potential amuletic powers for those associated with them (Gilchrist 2012: 207). It has been suggested that burials of multiple occupancy might represent coincidental deaths (Crawford 2007: 86; Murphy and Donnelly 2018: 138). It has also been considered that the practice might be a reflection of adult accompaniment of children through purgatory (Crawford 2007: 90; Gilchrist 2012: 209). It might also be possible that the bodies of children were objectified and held a value to a potential adult burial (Crawford 2007: 90). Of the burials of multiple occupancy, there is only one instance, 5.9% (1/17), for this period of women buried with preterm infants (refer to graph 03.08). This preterm infant is 37-weeks-old and is therefore likely to represent an infant who was baptised before death. Of course, pregnant women were buried with child *in utero*, but this may not have been by choice, rather than a distain for the alternative, which was to remove the foetus from the mother. Burials of multiple occupancy practices change significantly with newborn infants, where, as we shall see, the practice rises to 10% in its use in comparison with the rest of the life course (1-25-year-olds = between 1-3% / $p = 0.027$).



Graph 03.08 – Results of 26-37-week-olds burials of multiple occupancy from this study

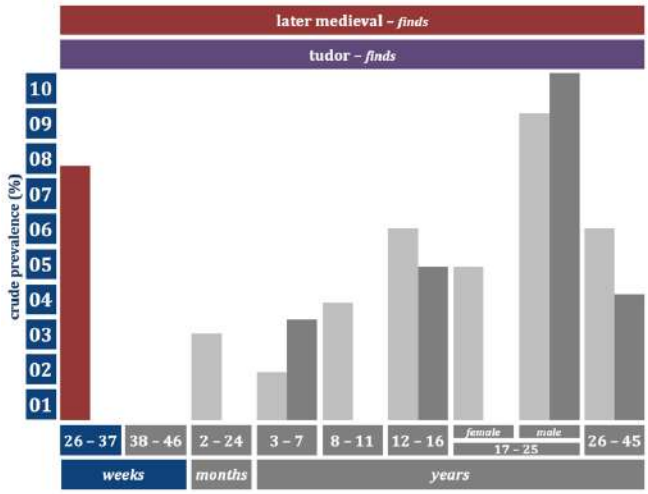
26-37-week-olds are the most likely to be buried with evidence for a coffin at 38.9% (7/18) compared to only 20.0% (8/40) of 38-46-week-olds, although this is not a statistically significant change ($p = 0.128$) (refer to graph 03.09). Although premature infant coffin use of 38.9% (7/18) is statistically higher than the 14% average for adults aged 26-45-years-old ($p = 0.002$). Why is it so much higher for this age cohort? It might have something to do with the need to protect the premature infant in burial.



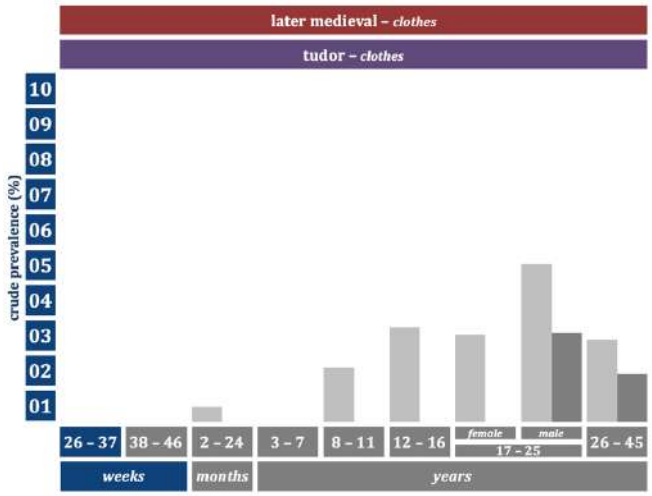
Graph 03.09 – Results of evidence of coffins from 26-37-week-olds burial evidence from this study

Gilchrist and Sloane have made a convincing case that the higher use of coffins seen in children and women is a reflection of their moister humoral matrices (2005: 222; Gilchrist 2012: 205). Additionally, we, know that it is cheaper to provide coffins for children, so perhaps, this was also a factor.

Later medieval finds evidence of 26-37-week-olds is quite high at 7.2% (1/14), but from poorly represented data (refer to graph 03.10). This is not significantly different to the 26-45-year-old adult incidence of 5.5% (119/2173 / p = 0.784). However, it is it difficult to draw definitive evidence of 26-37-week-olds from 14 cases alone.



Graph 03.10 – Results of 26-37-week-olds evidence of finds from this study



Graph 03.11– Results of 26-37-week-olds evidence of clothes from this study

There was no later medieval or Tudor evidence for clothing associated with 26-37-week-olds (2.3% of 26-45-year-olds had evidence for clothes) (refer to graph 03.11). However, this is likely a reflection of the fact that traditionally, newborn babies, before and after the Reformation, were buried wrapped in their baptismal chrism cloth, if death occurred within 40 days after baptism (Cressy 1999: 163; Daniell 1997: 43; Gilchrist and Sloane 2005: 24; Orme 2001: 119; Partee 2006: 23; Youngs 2006: 197). Furthermore, apart from the possibility of

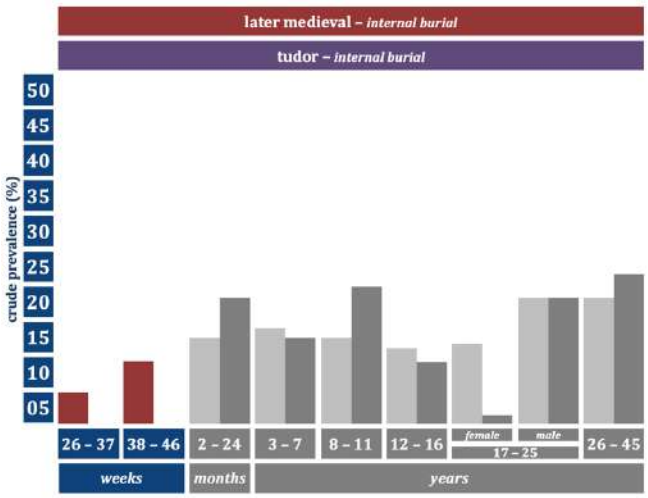
accompanying pins, which there is no evidence for, shrouding material is unlikely to survive in the archaeological record.

This may be a reflection of a small sample size of premature infants, only 22 in total, but it could also be suggestive of evidence of burial practices of pre-and-post-baptism burial rites. Unfortunately, Tudor premature infants are only represented by one individual, so there is not enough comparative evidence to assess temporal change. Premature infants were on the whole accorded normative burial rites under both catholic and protestant views. However, they do also demonstrate the most substantial degrees of dissimilarity in the dataset. They a far more likely to have a coffin, to be positioned unusually, but are far less likely to be placed in double burials.

"…and went away an it had been any christom child."

William Shakespeare, 1598, *Henry V*, 2.3:11-12, (2005: 728)

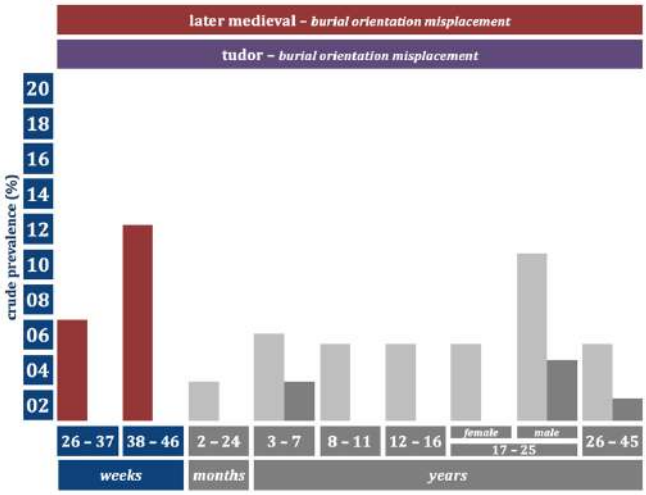
However, the statistical measurement of significance suggests that majority of the noted differences are broadly similar between premature-infants and newborn infants; however, premature-infant's burial package was largely dissimilar to that of 26-45-year-old adults. In sum, premature infant remains are treated in the same manner as newborn-infants.



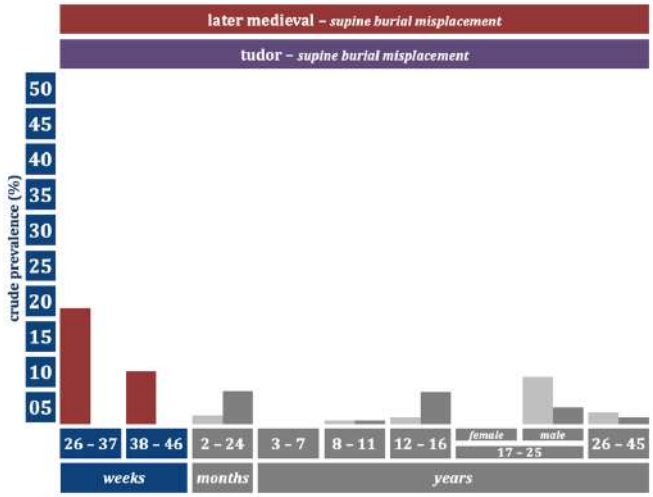
Graph 03.12 – Results of burial location from 38-46-week-olds from this study

The burial archaeological evidence from this study reveals that later medieval internal burial increases from 5.0% (1/20) of 26-37-week-olds to 9.1% (4/44) of 38-46-week-olds, which is not a statistically significant difference ($p = 0.571$) (refer to graph 03.12). This is also not significantly different to the 26-45-year-old adult incidence of 17.9% (362/2019 / $p = 0.129$). Although 38-46-week-olds were predominately to be found in buried in external cemeteries, newborn-infants were found inside too (as was one premature-infant), which is noteworthy, as it is usually assumed that children, especially younger children, were largely excluded from these internal spaces. Again, as with premature-infants, there is too little Tudor burial archaeological evidence for newborn infants and therefore this will solely focus upon the later medieval evidence this age cohort.

Later medieval burial orientation misplacement increases from 5.9% (1/17) of 26-37-week-olds to 13.2% (5/38) of 38-46-week-olds, which is not a statistically significant difference (p = 0.423) (refer to graph 03.13). However, this is significantly different to the 26-45-year-old adult incidence of 3.0% (80/2638 / p = 0.000).



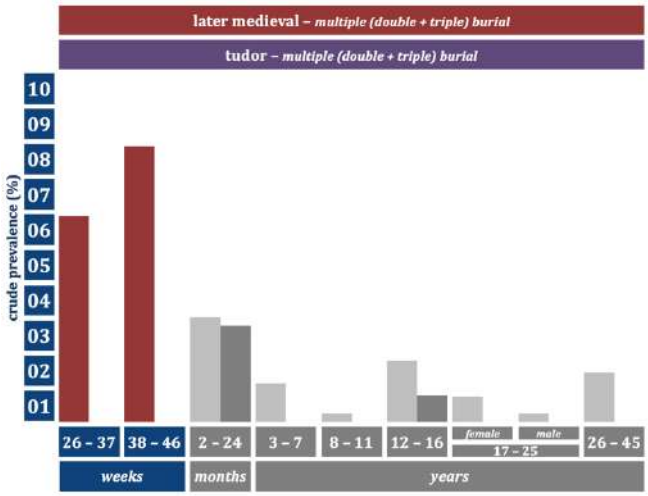
Graph 03.13 – Results of burial orientation from 38-46-week-olds burial evidence from this study



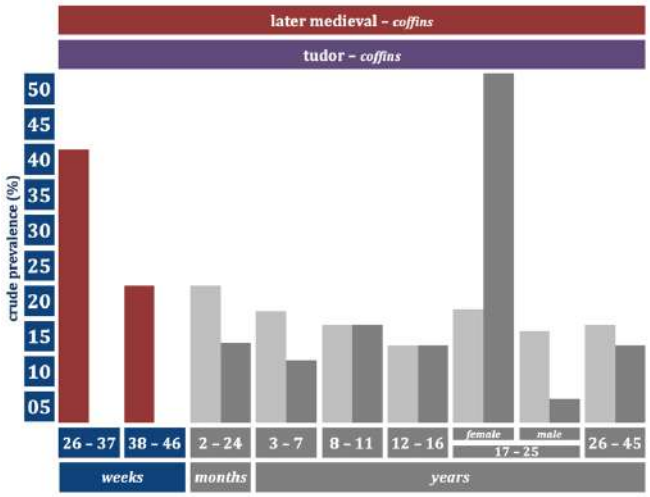
Graph 03.14 – Results of burial misplacement 38-46-week_-olds multiple burials from this study

Later medieval supine burial misplacement decreases from 17.6% (3/17) of 26-37-week-olds to 7.5% (3/40) of 38-46-week-olds, which is not a statistically significant difference (p = 0.253) (refer to graph 03.14). However, this is significantly different to the 26-45-year-old adult incidence of 1.5% (39/2652 / p = 0.002). While the majority of 38-46-week-olds were buried in a supine position, however 5.0% (2/40) were found buried on their sides. Arm placement again revealed a variety of forms with no discernible pattern. Leg positioning was again unusual, with 5.0% (2/41) displacement, a product of the placement of the body on the side.

Later medieval burials of multiple occupancy increase from 5.9% (1/17) of 26-37-week-olds to 7.9% (3/38) of 38-46-week-olds, which is not a statistically significant difference (p = 0.790) (refer to graph 03.15). However, this is significantly different to the 26-45-year-old adult incidence of 1.4% (36/2638 / p = 0.000).



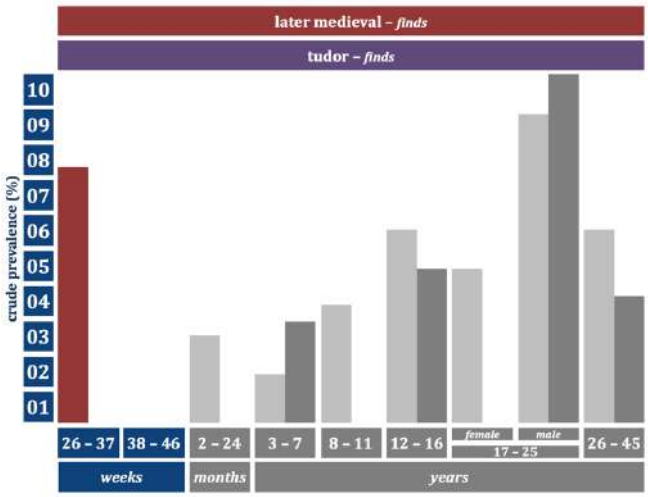
Graph 03.15 – Results of burials of multiple occupancy from 38-46-week-olds burial evidence from this study



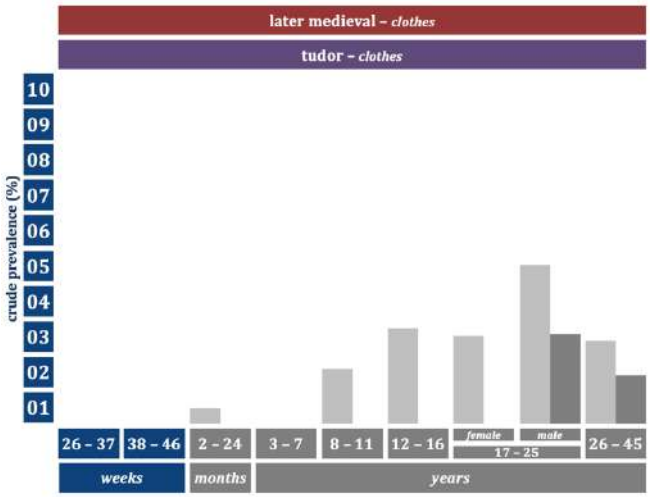
Graph 03.16 – Results of evidence of coffins from 38-46-week-olds burial evidence from this study

Later medieval coffin evidence decreases from 38.9% (7/18) of 26-37-week-olds to 20.0% (8/40) of 38-46-week-olds, which is not a statistically significant difference ($p = 0.055$) (refer to graph 03.16). This is also not significantly different to the 26-45-year-old adult incidence of 14.0% (344/2457 / $p = 0.598$). Again, this is a likely indication of children's different humoral temperaments (Gilchrist and Sloane 2005: 222; Gilchrist 2012: 205).

38-46-week-olds were found without accompanying objects, 0% (0/36) (refer to graph 03.17). This is not unusual for later medieval burials, which are often believed to be largely devoid of objects (26-45-year-old on average had about 5%). This study found no evidence of clothing for 38-46-week-olds. Gilchrist and Sloane note four lace chapes in their study; three of these are from Scotland (outside the geographical scope of this study) or outside the temporal scope (Gilchrist and Sloane 2005: 81). This suggests that, for this period of study, newborn infants may have had more simplistic burials than their adult counterparts.



Graph 03.17 – Results of 38-46-week-olds evidence of finds from this study



Graph 03.18– Results of 38-46-week-olds evidence of clothes from this study

There was no later medieval or Tudor evidence for clothing associated with 38-46-week-olds (2.3% of 26-45-year-olds had evidence for clothes) (refer to graph 03.18).

In sum, newborn infants were buried in normative Christian burial practices and demonstrated an overall degree of similarity to premature-infant burial practices. However, the statistical measurement of significance suggests that premature-infants and newborn infant's burial packages were dissimilar to that of 26-45-year-old adults. Unfortunately, Tudor newborn-infants are only represented by three individuals, so there is not enough comparative evidence to assess temporal change.

infancy

03.12 | humoral theory + the bodily equilibrium

What was a medieval and tudor child? What was a child formed of? Views about the materiality of the *medieval* body were essentially views of the *Classical* body, predominately Aristotelian-Hippocratic-Galenic works, which were 'inherited' and regurgitated by early, middle and late medieval philosophers and medics. Classically, the world was considered to be comprised of four natural elements – fire, water, earth and air (Gilchrist 1999: 114; Nutton 2011: 29; Rawcliffe 1997: 33; Wear 2000: 38). In accordance, the body, consisted of quadripartite natural elements which corresponded to the 'humors' (Duffin 2010: 42; Gilchrist 2012:32; McLean 1972: 169). These humors also consisted of four parts – blood, phlegm, yellow bile, and black bile (Demaitre 2013: 16; Lindemann 2010: 13; Nutton 2011: 29; Rawcliffe 1997: 33; 2013: 56; Siraisi 1990: 105; Spaulding and Welch 1994: 213; Wallis 2010: 7; Thomas 1971: 10; Youngs 2006: 19).

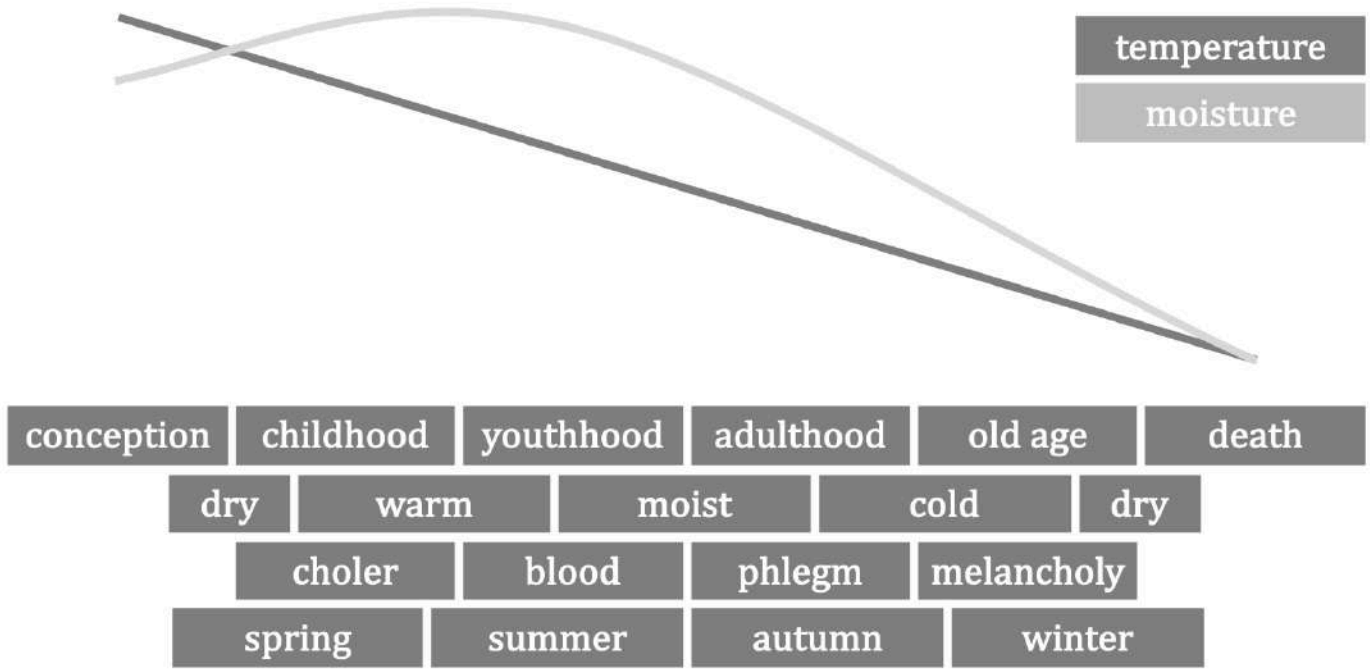


Figure 03.14 – Humoral theory - adapted from Newton 2014: 34-35 – Authors Own

Each of the humors were related and connected to different factors internal and external to the body. For instance, the constitution of blood was believed to be *hot,* phlegm was *cold,* yellow bile was *dry* and black bile was *moist* (Spaulding and Welch 1994: 213) (see figure 03.14). The humoral constitutions of women and men were different – and, crucially, they changed according to age (Gilchrist 1999: 115; 2012: 32-33; Goldberg 2004a: 8; Lindemann 2010: 17; Rawcliffe 1997: 175) (see figure 03.15). Humors could be unbalanced by any number of external influences, however the most common were known as the 'non-naturals'. These were split into six categories which included: – environment and air – exercise and rest – sleep and waking – food and drink – repletion and excretion (including sex) – passions and emotions (Lindemann 2010: 14; Rawcliffe 2013: 100; Siraisi 1990: 101; 120; Wear 2000: 156; Youngs 2006: 19).

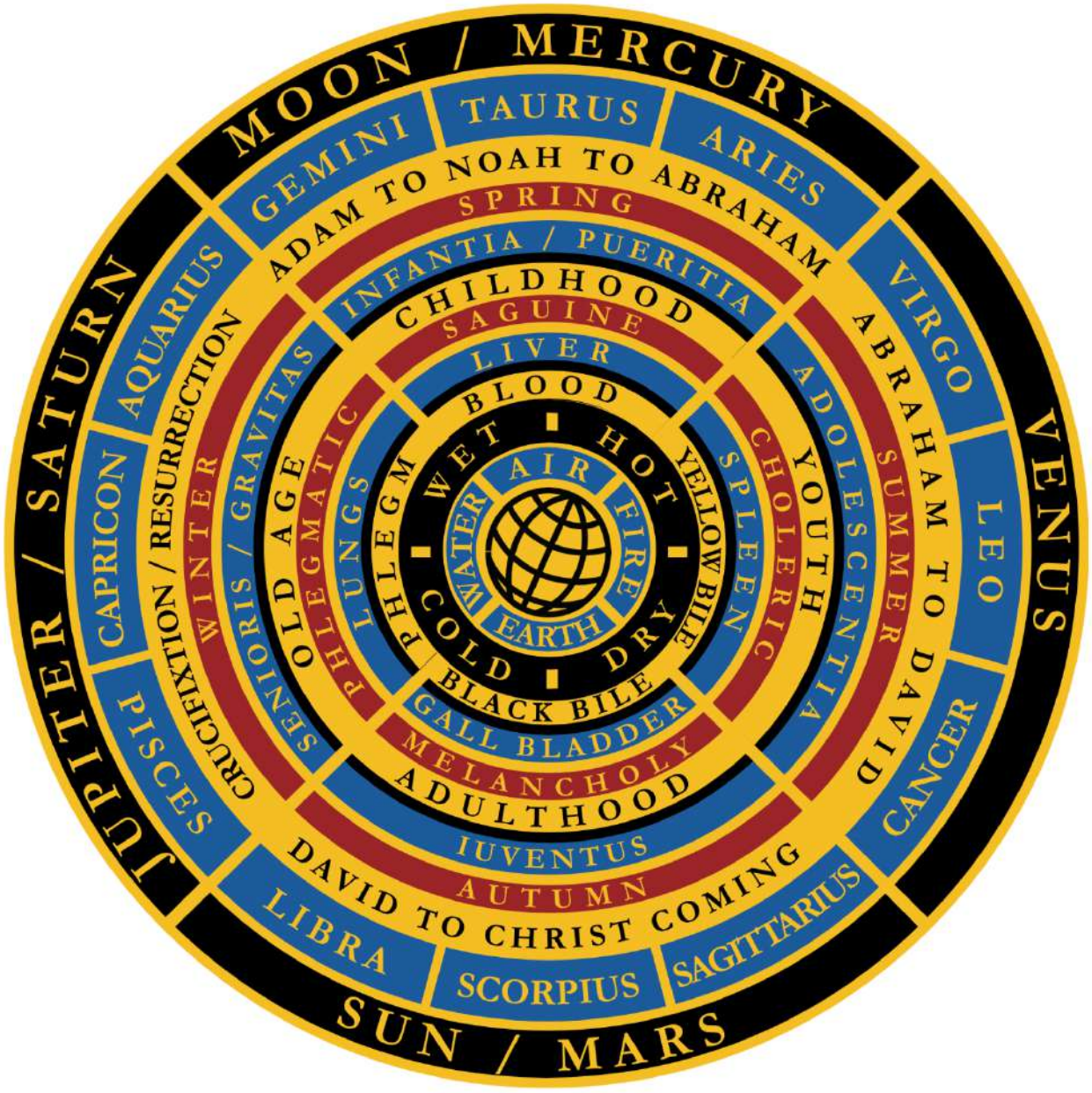


Figure 03.15 – The connection between the humors, the planets, the seasons, the organs, the ages of man and nature - Authors Own

Each of these could potentially unbalance the humors and cause ill health; although diet was often the main offender (Rawcliffe 2013: 120). As we have already touched upon, individual temperament was created during the forming of the foetus which also helped determine an individual's specific humoral balance (Degnan 2017: 498; Field 2007: 41; Gilchrist 2012: 21; Lindemann 2010: 23; Rawcliffe 1997: 33; Shepard 2017: 341; Siraisi 1990: 121). Balance, then, was the key to maintaining a healthy life (Demaitre 2013: 23; Gilchrist 2012: 32; Lindemann 2010: 13; Rawcliffe 2013: 57; Spaulding and Welch 1994: 213; Youngs 2006: 18; Wallis 2010: 7; Wear 2000: 155). Trying to maintain balance was a continuous struggle and preventative measures were almost always more accessible to those with greater financial means (Newton 2014: 34; Wear 2000: 154). Medical treatment would predominately seek to restore balance gently; *medicine*, after all, has its roots in *modus* (moderation) (Lindemann 2010: 23; Wallis 2010: 6). This meant that prevention through leading a healthy lifestyle per one's humors and temperament was the predominate medical treatment. The medieval body was, in a way, porous; open to influences from the non-naturals, cosmos, magic, etc. All these things could unbalance the much sought-after health equilibrium.

"He knew the cause of everich maladye,
Were it of hoot or coold, or moyste or drye,
And where engendered, and of what humour;
He was a verray, parfit praktisour:."

Geoffrey Chaucer, 14thc, *The General Prologue*, 419-422, (1992: 13)

03.13 | plastic children

Children were considered to be humorally unique. Childhood was hot and moist, connected with spring and air (Hanawalt 1993: 41; Newton 2010: 458; 2014: 31-35; Rawcliffe 1997: 36; Wallis 2010: 19). Infanthood–childhood – youthhood – were all imbalanced. The incoherency of infanthood was due to the extent of moistness and heat of their age – by the time they were adolescences and youths, they were more competent than infants, but still retained a level of heat and moistness that made them inherently passionate and unruly (Shepard 2011: 357). Children, then, were moist, hot, soft, fluid, pliable, like clay, with a plasticity – like unset wax. As children aged, this wax slowly cooled, setting, becoming less vulnerable, less malleable, slowly setting, until it became fixed. This theory extended into advice literature regarding the treatment of the infant; the newborn was seen as essentially mouldable and numerous advice suggested that parents *gently* manipulate the bodies of their children to ensure they grew correctly and shapely (Bailey 2012: 19, 124; Gilchrist 2012: 34; Griffiths 2011: 316; Newton 2010: 470; 2014: 61; Mitchell 2014: 22; 28; Shahar 1990: 88; Youngs 2006: 52). This underlying view of the theory, but also the materiality of children, is key to understanding how they were raised in all manner of areas. Interestingly, this view is similar to the nature of the human skeleton, which during childhood has a greater degree of plasticity, before essentially becoming denser during adulthood, and then becoming porous in old age – in a similar pattern of humoral theory from early-age moistness to drying out in old age.

"And therefore saynt Anselme in his boke of symylitudes compareth Infancye or chyldehode to waxe whiche is softe"

Jacques Legrand, *Livre de Bonnes Moeurs*, translated by William Caxton, 1487, (Bailey 2012: 124)

During the period from two months' post-birth to the second year, the infant develops at a very rapid pace. In the space of two years it learns to – hold its head up, roll over, sit up, stand, crawl, walk, climb, run – grasp, point, seek, demand, coordinate – coo, gurgle, laugh, shout, speak – play, imitate, socialise (Bendersky and Sullivan 2002: 36; Bremner 2017: 330; Field 2007: 137-145; Goldfield and Wolff 2002: 62; Robinson 2008: 63; 186-191; Thurtle 2005: 40). This development is mediated by the family unit (Thurtle 2005: 38).

"The bodies of such little Children, may be compared to a young and tender root or twigg of a Tree . . . [they] are like soft Wax, or young Trees"

Felix Wurtz, 16thc, *An Experimental Treatise of Surgerie in Four parts*, (Newton 2014: 36)

03.14 | sleeping

During the early months after birth, infants spent the majority of their time sleeping and feeding (Hanawalt 1993: 64). Most of the infant's time would have been spent in a cradle of some variety, which would, of course, have altered varying to social status (Gilchrist 2012: 142; Orme 2001: 62; Shahar 1990: 89). Children who could not sleep were considered to have been affected by vapours, arising from strong milk (Ruhräh 1925: 86). The root of poor childhood health was almost without exception believed to stem from the insufficiencies of the mother, through her influence on the foetus, her milk, her seed, etc. (MacLehose 1999).

"*Slepe is the nouryshement and foode of a suckyng chylde, and as much requisite as the very tete, wherfore wha it is deprived of the naturall reste, all the hole body falleth in distemper, cruditie and weakenes.*"

Thomas Phaer, 1544, *The Boke of Chyldren*, (Colón and Colón 1999: 111)

Crying during these early months was considered healthy, good exercise for strengthening the body of the infant, unless it became excessive, in which case it could be harmful; the most likely help in these instances was some form of sympathetic magic, such as stone amulets (Demaitre 1977: 470; Field 2007: 58; Gilchrist 2012: 79; Ruhräh 1925: 79; Spaulding and Welch 1994: 266; Young 2016: 23).

Overlaying was one topic of particular interest to medieval and Tudor authors. Even the Church issued warnings against it and it is interesting to note that it is still a topic of debate today (Duffin 2010: 346; Field 2007: 49; Houlbrooke 1992: 139; Shahar 1990: 89). Clinically, there are known to be many perceived benefits and risks of

bed-sharing habits (Ball 2002: 207; 2003: 101; 2006: 301). Documentary evidence suggests it was one of the primary causes of infant death, it likely included what today we would term Sudden Infant Death Syndrome, when death spontaneously happens, usually when an infant is sleeping (Field 2007: 63; Houlbrooke 1992: 139; McKenna 2017: 723). Medieval and tudor overlaying was associated with infanticide. The lack of direct evidence for abandonment and infanticide means that there is lots of space for assumptions regarding the practice (Kroll and Bachrach 1986: 568; Vuolanto 2011: 8). During the later medieval and Tudor periods, infanticide was very rare; infant mortality was so high that no assistance was required to kill infants. Exposure of children was considered abominable in scripture; infanticide too is always portrayed with horror (Radbill 1963: 209-210). Oblation, the permanent relinquishing of a child to a monastery was a mechanism for parental abandonment, although this too is thought to have been rare (Boswell 1984: 17; Hanawalt 2002: 452). Child murder was taken seriously in law; there is no sense of leniency towards infanticide in ecclesiastical court cases (Butler 2007: 61, 75). Overlaying has previously been assumed as the mechanism parents took to commit infanticide; even though the ecclesiastical courts themselves considered cases as accidental death through parental negligence (Butler 2007: 67). Did infanticide happen? Yes, of course. Was it socioculturally accepted? No, not at all. There is no evidence in this dataset to further add to the theme of medieval infanticide.

03.15 | swaddling

As we have seen, infant's bodies were conceptualised as malleable, and, therefore, it was the responsibility of the parents to ensure the proper development of their child by actively moulding him/her into shape. Swaddling, as well as being practical, was also done with the intention of moulding the infant by promoting the straight and shapely growth of the limbs (Buck 1996: 24; Coster 2001: 72; Demaitre 1977: 472; Dunn 1997: 76; Fleming 2001: 61; Gilchrist 2012: 34; Gowland and Penny-Mason 2018: 763; Houlbrooke 1992: 132; Kroll 1977: 386; Orme 2001: 62; Shahar 1983: 282; 1990: 87; Radbill 1963: 203; Rawcliffe 1997: 201; Ruhräh 1925: 77; Spaulding and Welch 1994: 262; Youngs 2006: 45).

Figure 03.16 – 1558 - The Family of Sir Robert and Anne/Dorothy Broke - Effigy - Stone - All Saints, Claverley - Authors Own

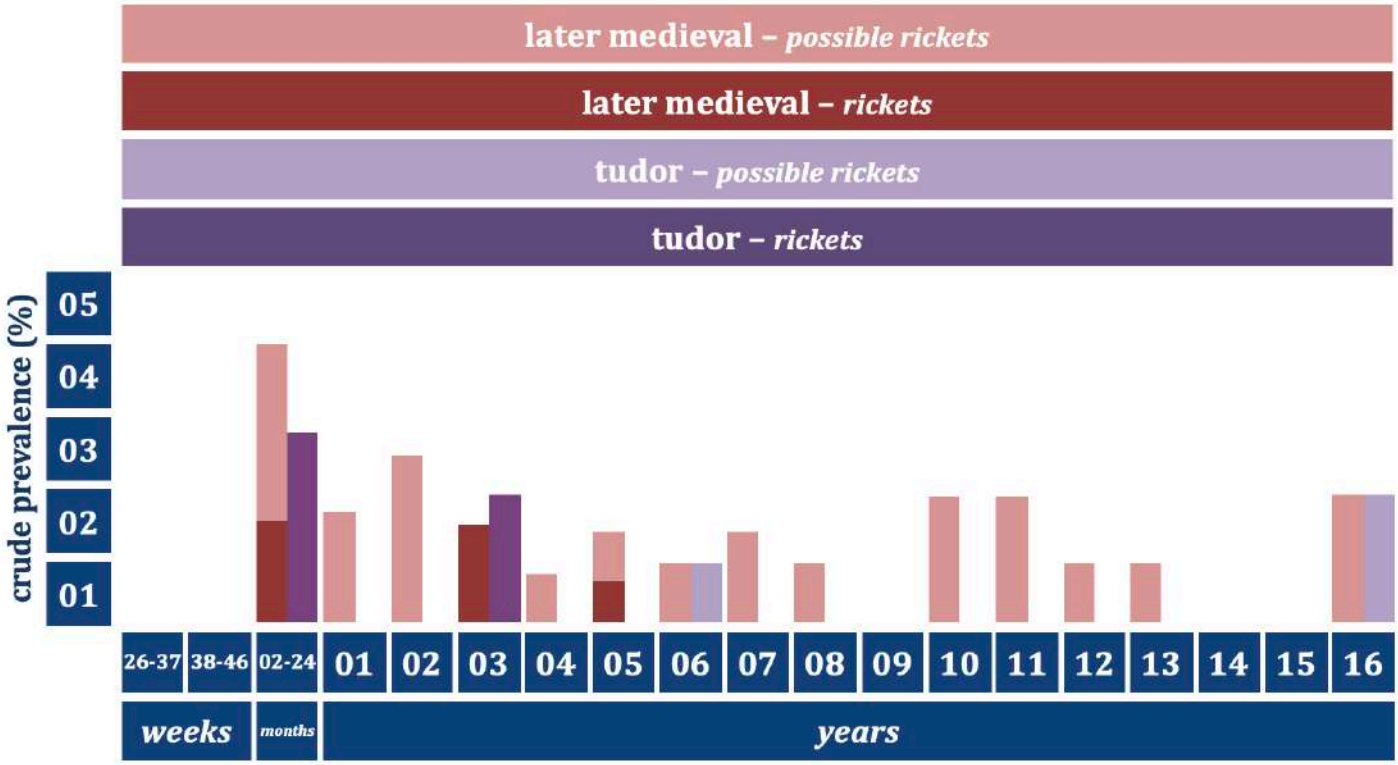
It is impossible to know how this moulding might be evidenced in skeletal material, but it is worth considering when assessing medieval and Tudor infants. It was not just the limbs that were considered pliable, but the crania too and there are a few interesting examples in this dataset that *could* suggest some moulding during infancy. At

Cumbria Blackfriars, an adult female was found with a small depression above the frontal bone "*resembling a thumbprint*" (Henderson 1990: 79). Evidence of similar frontal bone depressions were identified at St Saviour, Bermondsey and St Thomas's Hospital, Southwark (Connell and White 2011; Knight 2002; WORD database). Additionally, at Coventry Cathedral, an adult male was also found with flattening to the skull which was considered to possibly have been due to a result of cradling as an infant (Brothwell 1967: 138). Of course, it is *highly unlikely* that these descriptions are evidence of cranial alteration; they are far more likely to be well-healed depression fractures. The point is, that we should consider osteoarchaeological evidence in view of mouldability when assessing medieval and Tudor collections.

Swaddling itself was performed through various methods, but most likely, the infant was first placed on a 'bed' (a rectangle of fabric) which was first wrapped around the body (Huggett and Mikhaila 2013: 16). Then, the arms of the infant were gently extended and wrapped using 'swaddle-bands', not too tightly, across the body, in a criss-cross pattern, in strips of fabric, most likely of linen (Coster 2001: 72; Cressy 1999: 82 Dunn 1997: 76; Hanawalt 1993: 43; Huggett and Mikhaila 2013: 16; Orme 2001: 62; Spaulding and Welch 1994: 262). Swaddling was believed to help protect the infant, promote warmth and prevent crying; all of which have been found in clinical evidence (Buck 1996: 24; Demaitre 1977: 472; Field 2007: 49; Fleming 2001: 61; Hanawalt 1986: 175; Houlbrooke 1992: 132; Huggett and Mikhaila 2013: 7; Gilchrist 2012: 79; Meyer and Erler 2011: 155-159; Van Sleuwen et al. 2007: 1099; Youngs 2006: 45). Many medieval and Tudor authorities emphasised the need for regular periods of unswaddling (Huggett and Mikhaila 2013: 15) some imagine this was the reality of the case (Gilchrist 2012: 79; Hanawalt 1986: 178) whilst others question the likelihood of infants being regularly unswaddled (Coster 2001: 72; Rawcliffe 1997: 201; Shahar 1990: 88; Spaulding and Welch 1994: 260). Mothers were advised to wash their infants regularly, even daily in the early months, in tepid to warm water (Dunn 1997: 76; Mitchell 2014: 25; Ruhräh 1925: 77; Shahar 1990: 83). Swaddling is thought to have lasted two or three months – or perhaps longer (Coster 2001: 72; Gilchrist 2012: 79; Hanawalt 1993: 64; Houlbrooke 1992: 132; Oosterwijk 2007: 321; Pollock 1983: 50; Spaulding and Welch 1994: 263; Wrightson 2003: 11). It is likely impossible to tell from documentary evidence alone.

Bioarchaeologically, it has been postulated that the rate of rickets seen in skeletal material might relate to the length of time spent swaddled. However, drawing a direct line from swaddling to rickets is problematic. Rickets is unlikely to be a helpful source of measurement of swaddling practices, as even those infants who were swaddled for long periods of time would have been unswaddled at some stage and it would be highly unusual for this period of unswaddling to be so limited to cause vitamin D deficiency – if this was the case, this would be evidence of child neglect and cannot inform you about normative medieval and Tudor parental practices (Lewis 2017: 32). The evidence from this study shows that rickets was a relatively minor occurrence, but still certainly a factor in the lives of medieval children. Medieval children aged 2-to-24-months-old had between 1.5% (5/327) of 'diagnosed rickets' and 2.5% (8/327) of 'rickets diagnosed rickets *and* likely cases (e.g. evidence of bowing and flaring)'. The data has been split up into definite examples of rickets and *likely* cases in order to demonstrate

that the prevalence may have been relatively significant. This also appears to have remained the case during Tudor infancy, but is supported by less data. Tudor children aged 2-to-24-months-old had between 2.8% (1/36) of rickets (there were no possible rickets cases). As we shall explore later in the life course, those children suffering from rickets remains a low-key rate year on year from aged 2-to-24-months-old to 6-years-old (see graph 03.19); so, whatever, is causing rickets in these children is not congruent with the timing of the practice of swaddling.



Graph 03.19 – The crude prevalence rate of diagnosed cases of rickets, as well as additional *possible* instances of rickets, during the later medieval and Tudor periods.

However, having said that, there is clearly more rickets prevalence in the earlier months, during swaddling practice and is likely that the overuse of such practice would *promote and contribute* to increasing the likelihood of an infant developing rickets. However, swaddling is unlikely to be the primary cause, therefore, we cannot equate swaddling practices with rickets rates (Van Sleuwen et al. 2007: 1102). It should be remembered that during these early months it was still advised that parents should keep their infant in a warm and dark environment; it is possible some parents took this to different extremes. It is also possible that during the winter months that the potential for developing rickets increased from unlikely to more significant (Giuffra et al 2013: 621). This, in combination with an overextended period of swaddling for many months, combined with poor nutrition (and the health status of the mother), could perhaps collectively contribute to developing rickets that is evidenced in this dataset (Moffat and Prowse 2018: 115). Additionally, clinical evidence suggests that developmental dysplasia of the hip could also be caused by swaddling (Van Sleuwen et al. 2007: 1102). As we have seen, some 0.4% (36/10021) medieval population had some of form of hip dysplasia or perthes disease.

Mitchell and Redfern (2008, 2011) undertook large-scale studies of medieval London hip dysplasia and reported a true prevalence rate of between 1.7% and 2.7% (2008: 62; 2011: 481).

03.16 | breastfeeding

One of the most widely and consistently discussed topics of medieval and Tudor medics and philosophers was that of breastfeeding. Breastfeeding is a dual interaction between mother and infant, one in which the infant can be buffered from a poor maternal diet and provides the infant with vital immunological protections (Lewis 2017a: 6; Miller 2018: 26-35; Moffat and Prowse 2018: 101-102). Aside from maternal death or poor health, the majority of advice seems to favour breastfeeding by the mother for infants, which is likely how the vast majority were fed, especially those of a lower social status (Bailey 2012: 130; Colón and Colón 1999: 110; Cressy 1999: 87; Dunn 1997: 76; Hanawalt 1993: 57; Houlbrooke 1992: 132; Orme 2001: 58; Radbill 1963: 204; Shahar 1990: 59; Shepard 2011: 356; Spaulding and Welch 1994: 11; Wrightson 2003: 116). Colostrum, the first milk produced after birth, was believed by some authorities to be potentially harmful and to be avoided (Cressy 1999: 88; Spaulding and Welch 1994: 11). We do not know how many parents followed such advice – clinically, we now know that this colostrum is vital for the development of the immune system and for combating infective and diarrhoeal diseases (Lewis 2017a: 6; Redfern 2018: 448). If, for whatever reason, a mother, or her milk, is deemed unfit to nurse, or if the social status of the family allowed it, a wet-nurse might be chosen to feed the infant (Cressy 1999: 87; Orme 2001: 58; Ruhräh 1925: 79; Spaulding and Welch 1994: 11; Wrightson 2003: 116). Because of the potency of breast milk and the malleability of infant bodies, it was believed that characteristics of the wet-nurse could be inherited by the nursing infant (Bailey 2012: 131; Cressy 1999: 90; Houlbrooke 1992: 132; MacLehose 1999: 13; Spaulding and Welch 1994: 48). Therefore, the list of traits required for a good wet nurse were extensive – they often included (but were not limited to) that she was required to be of good general health, good character, neither too old, nor too young, with an even temperament, without vice, with her own offspring, well-built, but of average size, not too thin, nor too fat, healthy and tanned, with strong broad breasts, she should not be easily frightened, or prone to anger, but should be industrious, careful, with a good diet (dietary requirements of the wet-nurse were an equally lengthy topic), not-pregnant, with good milk, white and sweet and without bitter taste, not too watery, nor too thick – and in all things, have praiseworthy habits (Berry 1974: 568; Houlbrooke 1992: 133; Ruhräh 1925: 80, 158). Those who avoided nursing altogether might feed their child animal milk, using a feeding rag or horn (Hanawalt 1993: 57).

03.17 | parenting

The idealised medieval family was modelled on the wider natural and divinely ordered social hierarchy; the husband and father was king, and priest, in his domain, followed by the mother, then by the children, oldest to youngest (Bailey 2012: 14; Gilchrist 2012: 114; Goldberg 2004a: 3; Ryrie 2017d: 28; Schnucker 1990: 11; Shepard 2011: 354). During infancy, the child would have been cared for by the family unit. At this age, it has been proposed that infants were cared for predominately by the mother, then other siblings and then the father (Orme 2001: 67). Mothers were the primary caregivers of later medieval and Tudor children (Byrne and Boland

1983: 86; Cartlidge 2006: 235; Hanawalt 1998: 164; Houlbrooke 1992: 148; Shahar 1990: 115; Youngs 2006: 49). As we shall see in later chapters, fathers too played a role, but later in the life course and even then the central role of the mother as carer does not diminish with age (Bailey 2012: 118; Cartlidge 2006: 236; Heywood 2001: 104; Shahar 1990: 116; Youngs 2006: 49). Given this, there is little evidence from a women's perspective regarding the raising of infants during this time and we know few specifics about the experience of infancy (Wrightson 2003: 114). Additionally, it is impossible to infer actual parenting practices from advice manuals alone (Pollock 1983: 46). The infants' world was predominately mediated by adults, but we should not underestimate the care of children for other children (Youngs 2006: 52). Older children would participate in looking after those younger (Fleming 2001: 64; Gilchrist 2012: 147; Heywood 2001: 88; Houlbrooke 1992: 41; Salmivalli 2017: 483-435; Youngs 2006: 80). Grandparents, other relatives and kin may also have played supplementary caring roles, but they are unlikely to have lived under the same roof (Houlbrooke 1992: 192; Orme 2001: 55). Much of the domestic tasks throughout the day are likely to have overlapped in the use of space throughout the household, largely focused around the hearth (Hamling and Richardson 2017: 67). Mothers were tasked with cooking while undertaking childcare, many women then had an additional economic activity, e.g agricultural, animal rearing, laundering, cultivating, spinning, weaving, baking, brewing, wax making, tailoring, etc. (Gilchrist 2012: 145; Hanawalt 1986: 146-147; Woolgar 2016: 28). Although women were not expected to have expertise in all things, evidence suggests that women are more likely to have specialised in one area (Hanawalt 1986: 113). This summary is an approximation; we should remember that the range in the quality and experience of familial relations is likely to have been as diverse in the past they are it is today (Houlbrooke 1992: 216).

03.18 | clothing

There is a surprisingly detailed view of clothing for children during this period gathered from pictorial, documentary and archaeological evidence; however, each of these sources carries a degree of bias (Gilchrist 2012: 23; Huggett and Mikhaila 2013: 11). While it is often assumed that children dressed as miniature adults in portraiture, in a survey of Tudor paintings, only 9% were found to be wearing similar clothing. However, 15% were found to be dressed in matching fabric, likely in order to save on cost (Huggett and Mikhaila 2013: 55). What is clear is that they had their own clothing, distinct to each stage in the life course (Buck 1996, Gilchrist 2012: 68; Huggett and Mikhaila 2013: 7). Additionally, clothing during the later medieval and Tudor period spoke highly of social status, from infancy all the way through to old age (Bailey 2012: 49; Gilchrist 2012: 68; Goldberg 2004a: 4; Hanawalt 1998: 75; Hayward 2009: 17; Huggett and Mikhaila 2013: 7; Huxtable and O'Donnell 2018: 752; Wrightson 2003: 25). Fabric was expensive relative to income for most of society (Huggett and Mikhaila 2013: 51). The poorer classes would likely have had their clothes made out of material scraps and the majority of children would inherit clothes from siblings (Huggett and Mikhaila 2013: 52). Both girls and boys had a seemingly genderless style of clothing during infancy. After the period of swaddling for a number of months, infants would have been dressed in shirts of varying lengths and tailclouts (Buck 1996: 17; Orme 2001: 60). They

would also likely have a biggins (a knitted cap) and footwear of some form (perhaps knitted boots) (Gilchrist 2012: 79; Orme 2001: 60).

03.19 | the seventh month

Classical and medieval evidence indicates that the number *seven* was regarded as important. The seventh month was particularly significant in the life course of the later medieval and Tudor child, coinciding with important thresholds of teething, weaning and early speech (Bower 1999: 51; Newton 2010: 464; Spaulding and Welch 1994: 215; Still 1932: 122). The high infancy death rate from historical evidence also meant that this time was associated as liminal and dangerous. Medieval authors suggested that the seventh month was particularly fragile (Bower 1999: 51; Shahar 1983: 282).

Teething takes up a considerable proportion of treatises on childhood health and disease (Newton 2014: 45; Still 1932: 122). Some infants experienced teething with little difficulty, though it caused others a great deal of pain (Still 1932: 70; Ruhräh 1925: 88). Teething often coincided with the high rate of infant mortality – therefore, it was assumed that teething could be potentially fatal (Lindemann 2010: 37; Williams 2003: 988). Teething was, therefore, a time of anxiety; for infants and parents (Heywood 2001: 90). Medically, there were tinctures, syrups, oils and powders that could help alleviate symptoms, as well as various forms of mixtures in which to bathe (Bower 1999: 51; Ruhräh 1925: 90). Root, bone, ivory or liquorice sticks were useful for chewing on while teething (Spaulding and Welch 1994: 217; Still 1932: 70). They could also rub swollen gums with salt, butter and honey (Heywood 2001: 90; Still 1932: 70, 122). Sympathetic magic seems to have played a significant role in helping alleviate teething. In particular, coral (both red and white) was considered a powerful amulet to lessen teething pain (Colón and Colón 1999: 111; Huggett and Mikhaila 2013: 28; Spaulding and Welch 1994: 215; Wilson 1990a: 366; Still 1932: 122) and amber was believed effective as an amulet (Gilchrist 2012: 143; Young 2016: 23).

> *"About the seventh moneth, somtyme more, sometyme lesse, after the byrthe, it is natural for a chylde for to breede teeth; in which time many one is sore vexed wyth sondrye dyseases and peynes, as swellynge of the gummes and jawes, unquyete cryenge, fevers, crampes, palsies, fluxes, reumes, and other infyrmities, speciallye whan it is longe or the teeth come fourth, for the soner they apere, the better and more ease it is to the chylde…"*
>
> Thomas Phaer
> 1544
> *The Boke of Chyldren*
> (Bower 1999: 51)

Weaning was another crucial time, which often coincided with teething (Gilchrist 2012: 48; Orme 2001: 66; Radbill 1963: 205; Youngs 2006: 53). Weaning is a process, not a singular event (Halcrow and Tayles 2008: 342; Kendall 2017: 43; Millard 2000; Moffat and Prowse 2018: 105). Infants were slowly introduced to food – pap, pureed vegetables and dampened bread – while still breastfeeding (Houlbrooke 1992: 134; Woolgar 2016:). Children were likely weaned on a different diet to that of adults as they are today. This would make humoral

sense and this is possibly reflected the patterns of caries seen of 0-5-years-olds compared to older children and adults during the fifteenth and sixteenth centuries (Penny-Mason and Rose 2018). Many infants must have experience nutritional deficiencies and a reduction of immune system capability during this precarious stage of life (Gilchrist 2012: 48; Hadley and Hemer 2014: 11; Moffat and Prowse 2018: 104).

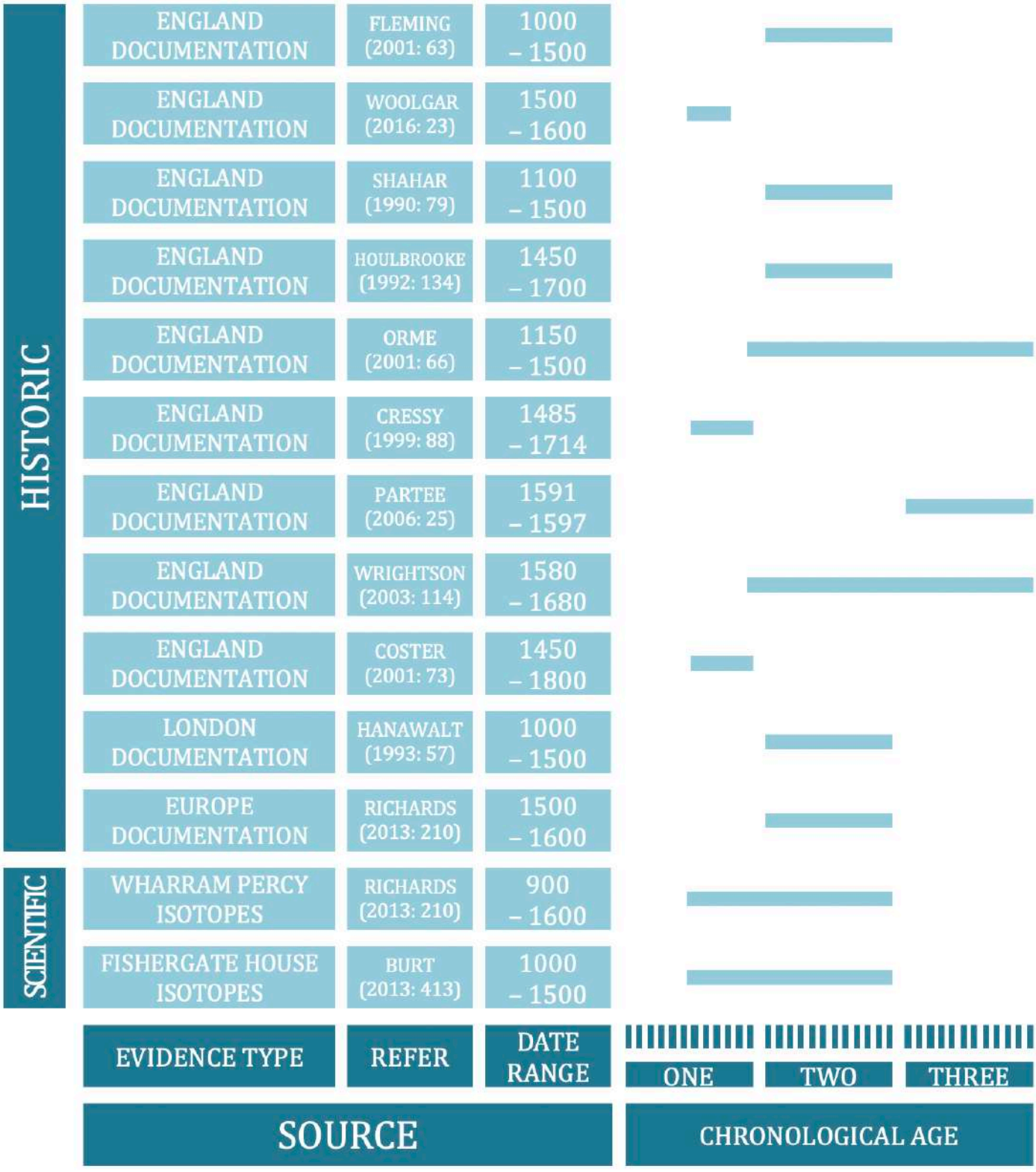


Figure 03.17 – Later medieval and Tudor weaning estimate summary

"'Tis since the earthquake now eleven years,
And she was weaned – I never shall forget it –
Of all the days of the year upon that day,
For I had then laid wormwood to my dug…
When it did taste the wormwood on the nipple
Of my dug and felt it bitter, pretty fool,
To see it tetchy and fall out wi'th' dug!"

William Shakespeare
1595
Romeo and Juliet
1.3:25-34
(2005: 374)

Clinically, we know that infants require exclusive breastfeeding until at least six months (Moffat and Prowse 2018: 102; Redfern 2018: 448). For the medieval period there is evidence for weaning occurring from seven months to more than three years, but the vast majority of the sources quote the end of the second year to coincide with weaning (Coster 2001: 73; Cressy 1999: 88; Dunn 1997: 76; Fleming 2001: 63; Hanawalt 1993: 57; Houlbrooke 1992: 134; Mitchell 2014: 25; Orme 2001: 66; Partee 2006: 25; Shahar 1990: 79; Woolgar 2016: 23; Wrightson 2003: 114) (see figure 03.17). Additionally, isotopic (carbon $\delta^{13}C$ and nitrogen $\delta^{15}N$) archaeological evidence can inform us about the timing of the process of weaning (Kinaston et al. 2019: 774; Redfern 2018: 458, 453).

The evidence suggests that later medieval infants were weaned around 18 months to two years (Burt 2013: 413; Richards et al. 2002: 210). However, we need to be aware that with isotopic results, there is a tendency to distort the results towards the non-survivors (Kendall 2017: 42).

03.20 | the judith problem

Just how gendered was later medieval and Tudor infancy? For the sake of this chapter, 'sex' refers to biological sex and 'gender' to the sociocultural construct of gender identities – while they are by no means the same, in the later medieval and Tudor periods, they are very closely associated to one another (Gilchrist 1991: 497; 1994: 16; 1999: 10; 2009c: 1032; Gowland 2006: 147; Sofaer 1997: 192; 2006a: 98; 2006b: 156; 2007: 88).

Girls are not favoured in history, because for the most part, women are not (Orme 1995: 51). Children, too, tend to be obscured in our view of the past – therefore, female children are typically one of the most difficult groups to investigate. This is very much the case in regard to the historic-archaeological evidence from later medieval and Tudor England (Cunningham 2006: 47; Heywood 2001: 16; Orme 1994: 585; 1995: 51; 2008: 112; Shahar 1990: 23). Medieval children are hard to investigate – when we say this, what we mean is, medieval *boys* are hard to investigate. And of course they are. Learning about medieval boyhood is challenging, as there is a limited amount of evidence with which to work. What little direct evidence that does exists is invariably biased towards the upper-classes and understanding medieval boyhood becomes more difficult the further down the social scale you look. However, this is nothing compared to medieval *girls* (Gittins 2015: 43). Young-middle-and-lower-class-females are without a doubt the most challenging childhood group to discover in the past.

This coincides with what I'm going to call the 'Judith Problem' – in reference to Virginia Woolf's *A Room of One's Own* (Woolf 1928). In her essay, Woolf created the character of Judith, an imaginary sister of William Shakespeare, to conceptualise the experience she might have had of life (Ezell 1990: 583). Woolf concludes that had Judith existed, not only would she not have received the same opportunities as her brother, the patriarchal structure of later medieval and Tudor society simply means we would not know about her at all. Woolf's historical outlook has been critiqued for being historically limited in its view; however, her argument was constrained by the contemporary scholarship of her time, so although the historical detail can be queried, her sentiment holds true (Ezell 1990: 587). Woolf created a character for which there was an evidential vacuum, in order to demonstrate this underlying inequality, during a time when there was almost no scholarship on girlhood in later medieval and Tudor England. She was constructing a feminist argument and not a historical one, but her point is valid. She is correct in concluding that the inequalities between women and men during this period would have meant that female and male childhoods, and subsequent adulthoods, would have differed significantly.

"A very queer, composite being thus emerges. Imaginatively she is of the highest importance; practically she is completely insignificant. She pervades poetry from cover to cover; she is all but absent from history. She dominates the lives of kings and conquerors in fiction; in fact she was the slave of any boy whose parents forced a ring upon her finger. Some of the most inspired words, some of the most profound thoughts in literature fall from her lips; in real life she could hardly read, could scarcely spell, and was the property of her husband."

Virginia Woolf, *A Room of One's Own*, (1929: 45)

The 'Judith Problem', however, goes deeper than inequalities between two talented middle-class siblings. What Woolf touched upon was the central differences between any female and male of this period – and *that* is the central point. Some might argue that it is wrong to suggest that there is *no* evidence for girls during this period, which would be correct, the historical and archaeological records are not totally devoid of evidence – but the point is there is *always less* evidence with girls, in almost every area (Orme 1994: 585). In sum, this is the Judith Problem – for boys, we can *sort of* tell about their lives – for girls, we often simply do not know. The default position, therefore, is to assume girls were doing something *broadly similar* to boys – or we are simply left to guess. Even Shakespeare himself acknowledges, through his works, the patriarchal views of his day, in which young boys were often portrayed more favourably than girls (Fletcher and Novy 2007: 62).

This brings us back to the initial proposition – were *infants* gendered? Exactly when did girls start being treated as the second gender? It is often assumed that during the early years of infancy and into early childhood that medieval girls and boys were mostly treated in a similar manner, that their experiences would have been broadly similar and they were yet to be segregated into gendered roles. Assuming that because infants were dressed similarly and were not segregated meant they therefore treated were equal ignores fundamental views about how medieval culture viewed the female body.

"*One knows nothing detailed, nothing perfectly true and substantial about her. History scarcely mentions her…*"

Virginia Woolf, *A Room of One's Own*, (1929: 46)

Traditionally, Catholic baptismal rites ensured the inclusion of the differentiation of the sexes from the first moment of entry into the Catholic community, whereby the sexes were held on different sides (French 2008: 54; Orme 2001: 27). This may seem trivial, but at one of the most significant moments in the life of a medieval child – gender mattered. Additionally, according to the Church, females were inescapable from Creation, and the Fall, and Eve (Goldberg 2004a: 3). Equally as significant was the very material dissimilarities between women and men in their humoral makeup, women being cold and moist (Goldberg 2004a: 8; Shepard 2017: 334). Humoral views of the body demarcated between the genders and it did so from conception. Additionally, females were slower to be ensouled than men because of the differences between their material bodies. In the one-seed scheme of creation, the female matter is secondary to the male seed. The first female body was secondary to that of the male. Medically, theologically, scripturally and legally, the female body was dissimilar (Fletcher 1994: 345; Hanawalt 2007: 27). How much of this is academic and to what extent most people really believed these views is more difficult to determine. However, the differences in gender placement during baptism and the understanding of humoral disparity between women and men was commonly understood.

The newborn infant represents a tabula rasa, which slowly and gradually, formally and informally, becomes engendered through enculturation (Sofaer 1997: 193). Just as a child might act as an apprentice in order to develop the experience required to carry out skilled work, medieval children of both sexes underwent a sort of 'gendered apprenticeship' which started early and continue throughout childhood. This initially occurred at the side of their same-sexed parent and siblings, and then with friends and kin and then with wider society; which was practiced and performed through *habitus* (Gilchrist 1999: 79; Sofaer 1997: 199; 2007: 89). It has therefore been suggested that in these earlier years infants and younger children were viewed and treated similarly, due to their being of a collective, genderless state. Kim Phillips and Wendy Churchill have both suggested that children's bodies in early modern Britain were essentially 'unsexed' until puberty (Churchill 2005: 19; Phillips 2003). Hannah Newton, too, in her study of childhood medicine in early modern England suggests that treatments for younger children were broadly similar, implying the relative insignificance of gender at this age (Newton 2010: 471). However, this cannot be reconciled with the view of the mediaeval female body which explicitly recognises its distinct biological nature from even prior to birth.

Whether or not infants themselves experienced or embodied their genders is mainly unknowable, but also somewhat beside the point. While gendered roles were gradually acquired, and therefore less of a concern in infants and younger children, it seems highly likely that they were still significant. Just because infants may not be performing gendered roles does not mean they were unaffected by their gender. We need to be careful that we do not conflate a *lessening* of gendered roles in the early years of life for the total absence of them altogether. The *potential* embodiment of all that their eventual gender was to be, would likely have caused infants of a different sex to be viewed and treated dissimilarly. For instance, an infant represented the future expectations of its eventual gendered roles; to a parent, a male infant symbolised a future landowner and a source of labour; while a female infant was representative of the future requirement of a dowry (King 1991: 25). This does not

mean girls were always automatically treated worse, but the prevailing view of the *otherness* of the female body meant that they were likely to have been conceptualised as different to boys and this may have manifested in their treatment.

There is plenty of evidence – in philosophical works, advice literature and parenteral writings – of the necessity and value of early education in both formal learning, informal learning and religious instruction. The wax-like view of the *material* form of children was also conceptualised as extending into their minds too. The minds of the young needed to be moulded like their bodies, for if they were well-instructed from the first, they would be equipped with all the correct qualities needed once their minds were 'set'. The key theme in all the evidence is: the earlier, the better. As we have explored, gender, like any medieval quality, was essential, which was to be gradually learned. Given what we know about views on early education, it would seem unlikely that such an important component required for medieval and Tudor life would be left to a stage in childhood when children were beginning to set more rapidly. Merridee Bailey notes that the sixteenth century humanist Juan Luis Vives, on his work on the education of girls, referred to the concept that gender is formed at birth, in which parents were advised to consider gendered roles from infancy (Bailey 2012: 132-133).

Bioarchaeology holds the potential answer to these historically difficult issues. There is already a wide array of skeletal evidence for girls during youthhood in bioarchaeological assemblages. However, as noted in chapter 2, it is not currently possible to assign biological sex to non-adult remains under the age of 17 through macroscopic skeletal analysis; therefore, gendered differences cannot be explored. However, new chemical methods (Stewart et al. 2017: 13649) and aDNA methods (Buckberry 2018: 66) demonstrate the capacity to determine biological sex. Non-adult bioarchaeology awaits these new methods to become quick, affordable and mainstream. It is hoped that just such analysis will be able to gather entirely new evidence on the early lives of children by their sex. Crucially, it will allow a window into lives of the young-middle-and-lower-class-females and help tackle the Judith Problem altogether.

03.21 | crawling, walking, talking

Sociologically we know infants develop the ability to roll over in months and then crawling occurs afterwards. Gradually infants become more dexterous, handing objects with greater ease. Assisted standing occurs around 9-months-old, standing alone perhaps a month later (Field 2007: 139). Assisted walking happens around 10-11-months-old – perhaps even some infants from families of a higher social status would have practised with the use of 'walkers' (Field 2007: 139; Gilchrist 2012: 155; Langmuir 2006: 139; Shahar 1990: 9; Spaulding and Welch 1994: 270; Wileman 2005: 45). By the 12th month, walking alone usually occurs, with lots of falling over. Over the next four months, walking develops into a more controlled movement (Field 2007: 139). Running occurs from 18-24-months-old in an uncoordinated manner at first (Field 2007: 140). Sociology also informs us, however, that the timing and nature of these developments are very culturally dependent, so the timetable described is simply an approximation (Field 2007: 141). Medieval advice literature consistently supported the

view that parents should not pressure their children into any of these developments and instead should allow nature to take its course (Demaitre 1977: 475; Shahar 1990: 92).

Infancy comes from the Latin 'infantia' quite literally meaning 'inability to speak' (Field 2007: 1). However, just because infants cannot speak, does not mean they are unable to communicate. Non-verbal communication is a key component of infancy (Doherty-Snedddon: 2003: 12). Infants communicate through hand-gesturing, eye gaze and facial expressions and they can comprehend some intentions and emotions in others (Doherty-Snedddon: 2003: 50, 211; Ramsey and Langlois 2002: 188; Svetlova and Carpenter 2017: 421). Between 1-2-years-old most infants begin talking, starting with a few words, to word combinations and then more complex speech, usually from two years onwards. This early talking is mixed in with the pre-verbal forms of communicating through gesture and expression. The mechanism behind how language is acquired is still not entirely understood, but is very dependent on the family unit, especially the parents (Ambridge 2017: 383; Doherty-Snedddon: 2003: 9, 57; Field 2007: 163; 173; Ménard and Davis 2017: 406; Robinson 2008: 143).

Childhood is innately social, even in the early years of life, where infants are not merely 'socialised', but are social participants themselves (Bartoli 2017: 496; Baxter 2005: 27-29; Kamp 2001: 10; 2015: 39; Lewis 2006: 1; Mitchell 2014: 23; Newson and Newson 1976: 16; Schües and Rehmann-Sutter 2013: 200; Svetlova and Carpenter 2017: 415; Woodhead 2015: 22). Through pre-verbal communication and early speech, infants can participate in a social world (Carpendale and Lewis 2006: 80; Doherty-Snedddon: 2003: 213). The experience of infant socialising is invariably intertwined with emotional development, which of course is highly dependent on the individual family unit (Bartoli 2017: 492; Lewis 2002b: 210; Schües and Rehmann-Sutter 2013: 203). Medieval evidence for these early years of socialisation is limited but suggests that infants were very much a part of the social family matrix (Bailey 2012: 15; Baxter 2005: 28, 33; Cunningham 2005: 32; Houlbrooke 1992: 147; Newson and Newson 1976: 17; Wilkie 2000: 107; Youngs 2006: 53). The infant's social world would have revolved around the mother, siblings, father, friends, neighbours and kin – likely, in that order (Hanawalt 1998: 74; Shahar 1990: 112). During the first 12-months of life, infants develop the ability to play, which develops rapidly over the following 12-months to engaging in play with others (Howard 2017: 50-60).

03.22 | church

From baptism, infants became members of the Church and represented the future of the Church (Orme 1994: 587). Conceptually, medieval and Tudor children were considered in need of early instruction; in education, in socialising and in perhaps most importantly, in religion (Houlbrooke 1992: 147). Biblical texts frequently mention the need to educate children from an early age. If children were expected to be religiously educated, did they attend church, and if so, did this extend to the very youngest of infants? It is difficult to know, but there are some statements about it. There is evidence of discussion over the tolerance of infants during church services, therefore, implying that some *were* taken – working out exactly how widespread and how regular this was is another matter (Orme 1994: 570). Additionally, evidence of accidents in court records and hagiographic accounts

suggest infants were often injured when they had been left unattended by their parents who had been attending church (Orme 1994: 570). It is impossible to know just how likely church attendance was in these early years. Infants were in no way barred from attending and may have even been actively encouraged and others are unlikely to have been taken much at all.

"*Start children off on the way they should go, and even when they are old they will not turn from it.*"

Proverbs, *Old Testament*, (22:6)

03.23 | law

Children did not have child-specific laws, but were instead incidentally affected by a complex mix of laws; royal, secular (local), canon and miscellaneous (e.g. summary laws, manorial law, etc.) (Guth 2004: 77, 89; Helmholz 2007: 40). By the sixteenth century, the law adopted the concept that children younger than seven could not be found guilty of a felony (Orme 2001: 324). An Act of 1536 meant that local authorities could put any children over the age of five found begging and without family into service (Houlbrooke 1992: 154). Therefore, children below the age of five were given some protections under the law that older children did not enjoy.

03.24 | family economy

The family unit is essential to the experience of childhood, the family is pertinent to the wellbeing and health of children, so it is relevant to briefly consider the nature of the domestic domain where children were raised. We are each born into an ongoing narrative, threads of individual past histories, woven together, to create the fabric of the family we enter. This family fabric materially defines our life course from the outset –familial structure, social status, health status – these decisions have already been woven into a family's fabric, their histories become ours, and our new lives are strands which are slowly interwoven into an ongoing family tapestry.

'*Family*' – which was not used until the sixteenth century – stems from the Latin *familia,* meaning 'slave' (Orme 2001: 52) was used to denote the *household* (Goldberg 2004a: 14). This essentially sums up the difference between our modern definition of *family* and the medieval view. The household denoted the mother, father, daughters and sons; but also included any servants, labourers, apprentices, etc. (Cartlidge 2006: 235; Fleming 2001: 2; Gilchrist 2012: 114; Goldberg 2004a: 24; Goldberg and Kowaleski 2008: 2; Pollock 2017: 60). The term '*kin'* was broadly used to refer to the broader familial social network (Goldberg 2004a: 14; Houlbrooke 1992: 39; Pollock 2017: 76). The household also differed from our contemporary perceptions of private and closed domains. The medieval and Tudor households did not make a clear distinction between space that was private and public, the household was something of a quasi-public estate, one that was domestic, but also religious, economic and even political (Gilchrist 2012: 114, 121; Hamling and Richardson 2017: 7; 29; Lindemann 2010: 241; Shepard 2011: 352). The archaeology of medieval family and household is currently a surprisingly understudied topic (Crawford 2014: 27). Between the fifteenth and seventeenth centuries there seems to have been relative stability in familial form, most families consisted of the 'nuclear family' of a mother, father and a

few children (Cunningham 2005: 13; Fleming 2001: 67, 77; Gilchrist 2012: 114; Hanawalt 1986: 5, 67; 2002: 452; Houlbrooke 1992: 20; 253; King 2007: 373). Perhaps surprisingly, given the fluidity of the household, it seems less likely to include extended family, such as grandparents, aunts, uncles, etc. (Coster 2001: 23; Fleming 2001: 67, 77; Gilchrist 2012: 39; 114; Hanawalt 1986: 5, 92; Houlbrooke 1992: 20, 192; Orme 2001: 55; Shepard 2011: 353). This family structure remained relatively small, a likely result of the high infant and child mortality rate (Hanawalt 1986: 100). The majority of later medieval families had between one to three living children; evidence suggests wealthier families usually had more and poor families fewer (Coster 2001: 23, 128; Fleming 2001: 67; Gilchrist 2012: 39; 1993: 48; Houlbrooke 1992: 25; Orme 2001: 52; Youngs 2006: 145). As well as the high child mortality rate, it was also likely that children would lose one or both of their parents during childhood (Ben-Amos 1994: 48; Hanawalt 1993: 90; Kroll 1977: 387). Family members would be required, therefore, to cope with regular contextual shifts in the unit. Given mortality and life-cycle service, the household had to adapt and evolve as necessary to accommodate the developing needs of its members (Coster 2001: 108; Gilchrist 2012: 114; Hanawalt 1986: 3; Pollock 2017: 61; Shepard 2011: 357). This degree of flexibility means that there was unlikely to have been a singular experience of the later medieval and Tudor family (Coster 2001: 6).

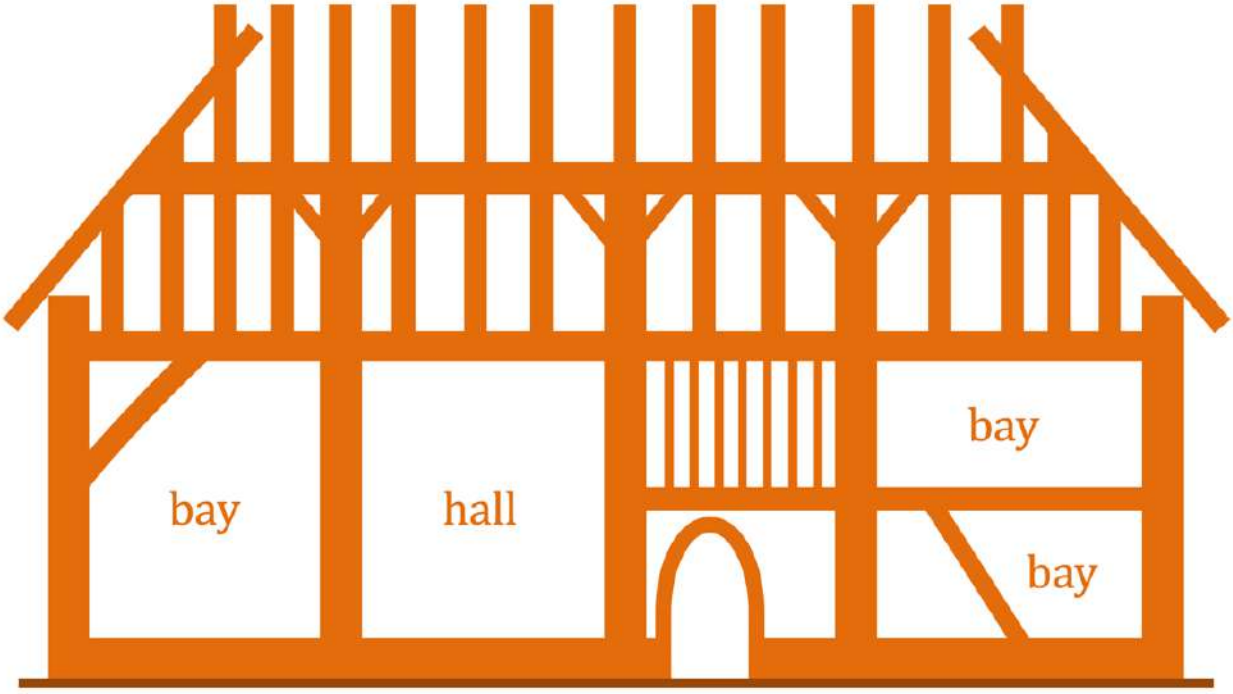


Figure 03.18 – Later Medieval House Layouts - Authors Own

It is briefly worth considering the physical household building too, as this is where the extended life course was predominately experienced, this especially being true of childhood, and is pertinent to the consideration potential sources of trauma and morbidity (Gilchrist 2012: 155). From the fifteenth century, there was a period of intensive domestic rebuilding occurring across England, leading to a gradual increase in the standard and complexity of household buildings (Dyer 2013: 25; 2018a: 124; Hanawalt 1986: 49; Suggett 2018: 232). Archaeological evidence of domestic buildings, especially those owned by those of a lower social status, is

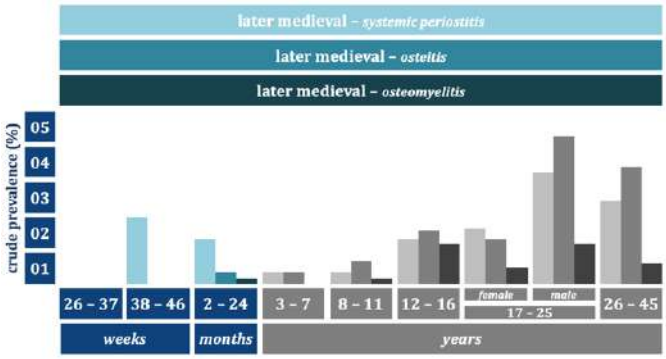
somewhat limited, but we can gain a broad overview. Domestic buildings were most likely to be constructed from timber, but stone was also used. Houses were predominately of a rectangular shape (Dyer 2000: 143; Schofield 1991: 22; Suggett 2018: 228). Roofs were often thatched or tiled with slate (Dyer 2018a: 124; Gilchrist 2012: 115). Internally, there was usually a central single-room-hall (aula), a flexible space which reflected the fluidity of the concept of the medieval family (Dyer 2013: 19; Gilchrist 2012: 115; Suggett 2018: 232) (see figure 03.18). This room would have had an open hearth; during the fifteenth century this would likely have been positioned in the centre of the room and by the sixteenth century it was more often found against a wall of the hall with an associated chimney (Dyer 2000: 141, Gilchrist 2012: 116, 121; Hamling 2011: 600; Hamling and Richardson 2017: 70; Hanawalt 1986: 39; Schofield 2018: 307).

This is likely to have been the only source of heat in the household, possibly apart from portable braziers (Dyer 2018a: 195; Gilchrist 2012: 121). It is thought that households had relatively good ventilation, with space in the roof to allow hearth smoke to escape (Hamling 2011: 600). During the period of rebuilding, larger windows were incorporated into houses (Gilchrist 2012: 121; Hamling 2011: 601). There were often three or more bays at either end of the rectangular building; these could be partitioned as required (Dyer 2013: 19; Gilchrist 2012:121; Hamling 2011: 601; Suggett 2018: 232). At one end, a bay is likely to have acted as a private chamber (camera); principally, the only 'private' space in the household (Gilchrist 2012:121). At the other end, the bays were likely for food processing, storage, pantry, buttery, etc. (Gilchrist 2012: 116; Hamling 2011: 600). Many houses, including those owned by the peasantry, often had small additional outbuilding structures adjacent to the household, which were used for storage, baking, animals, carts, economic activity, etc. (Dyer 2000: 141, 148; 2013: 19; 2018a: 193). There was often a separate space for animals; it is thought that this space would be in a structure separate from the main household building (Dyer 2000: 140; 2018a: 197, Gilchrist 2012: 116, 121; Hanawalt 1986: 33). Levels of furnishing and the standard of living would alter according to wealth (Gilchrist 2012: 115, 121; Hamling 2011: 600; Hamling and Richardson 2017: 29, 172; Hanawalt 1986: 49). Urban housing was often quite different to rural forms, although evidence of housing for the poorer classes is again underrepresented (Dyer 2018b: 327; Schofield 2018: 308; Sloane et al. 2000: 219). The fluid nature of the household domain likely meant that children were free to utilise all the space; the home was central to the experience of childhood (Crawford 2018: 783; Schofield 2018: 308; Shepard 2011: 365). It was a flexible space, especially the openness of the hall, in which mothers would be able to supervise children while attending to several other tasks (Gilchrist 2012: 147).

Infancy would have been predominately focused around the family unit and the family economy. The 'family economy' can be conceptualised as the structure of give-and-take that each member of the family unit would engage in (Annette Grove and Lancy 2018: 93; Shepard 2011: 365; Youngs 2006: 80). For instance, while a child might not contribute directly to the family wealth through money gained in employment, they still contributed to the household through supplementary tasks, such as gathering wood, tending to animals, fetching water, etc. However, infancy was a time in the life course of utter dependency (Cunningham 2005: 84). Additionally, the

arrival of an infant is likely to have called for renegotiation between members of the familial unit of the normative day-to-day family economy practices in order to properly care for the infant (Halcrow and Tayles 2008: 200; 2011: 347; Rosenberg 2017: 242). Infants were not a peripheral member, but were at the very centre of family life.

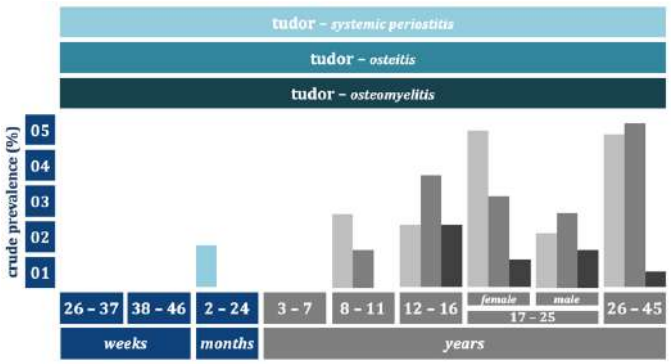
03.25 | the morbidity evidence



Graph 03.20 – Results of later medieval 2-24-month-olds infectious pathology from this study

Later medieval systemic PNBF decreases from 1.9% (1/51) during 38-46-weeks-old to 1.4% (7/504) during 2-12-months-old, which is not a statistically significant difference (p = 0.907) (refer to graph 03.20). This is also not significantly different to the adult 26-45-year-old incidence of 2.4% (87/3599 / p = 0.388). Later medieval osteitis increases from 0% (0/51) during 38-46-weeks-old to 0.4% (2/504) during 2-12-months-old, which is a statistically significant difference (p = 0.000). This is also significantly different to the adult 26-45-year-old incidence of 3.4% (123/3599 / p = 0.000). Later medieval osteomyelitis increases from 0% (0/51) during 38-46-weeks-old to 0.2% (1/504) during 2-12-months-old, which is a statistically significant difference (p = 0.000). However, this is not significantly different to the adult 26-45-year-old incidence of 0.8% (28/3599 / p = 0.145).

Tudor systemic PNBF increases from 0% (0/3) during 38-46-weeks-old to 1.3% (1/79) during 2-12-months-old, which is a statistically significant difference (p = 0.000) (refer to graph 03.21). However, this is not significantly different to the adult 26-45-year-old incidence of 4.4% (37/839 / p = 0.179). Tudor osteitis remains absent at 0% (0/3) during 38-46-weeks-old to 0% (0/79) during 2-12-months-old. However, this is significantly different to the adult 26-45-year-old incidence of 4.8% (40/839 / p = 0.000). Tudor osteomyelitis remains absent at 0% (0/3) during 38-46-weeks-old to 0% (0/79) during 2-12-months-old. However, this is significantly different to the adult 26-45-year-old incidence of 0.5% (4/839 / p = 0.000).

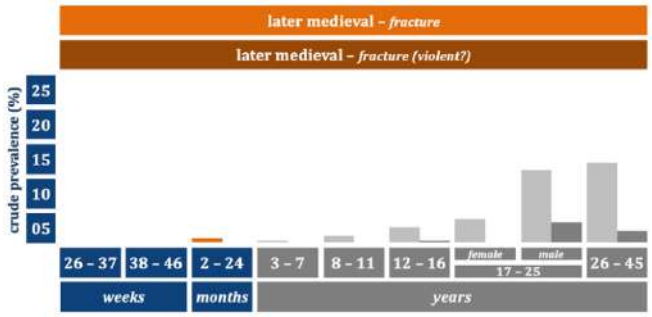


Graph 03.21 – Results of Tudor 2-24-month-olds infectious pathology from this study

Between the later medieval and Tudor periods 2-12-months-old systemic PNBF (p = 0.766) is statistically similar; however, osteitis (p = 0.000) and osteomyelitis (p = 0.000) levels are all statistically different, suggesting that

incidence of infection between the periods during this age were different, with slightly more evidence of infection noted during the later medieval period.

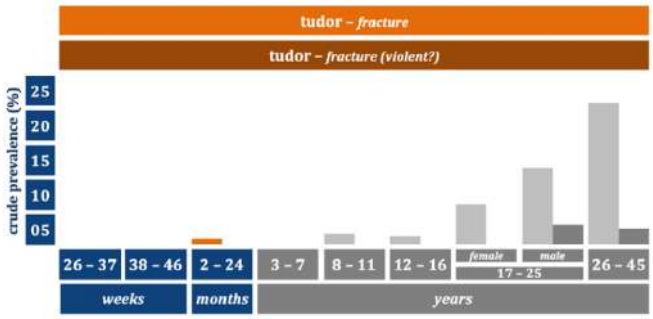
In sum, during 2-12-months-old, later medieval and Tudor systemic PNBF are statistically comparable to 26-45-year-old levels. Caution needs to be maintained in terms of the evidence of systemic PNBF of 2-12-month-olds, as it is not possible to currently determine whether this is reflective of normative growth or pathological lesions in this age cohort. However, the absence of the more advanced pathological conditions of osteitis and osteomyelitis are statistically higher amongst 26-45-year-old adults in comparison to 2-24-month-old infants in both the later medieval and Tudor periods. Collectively, the systemic PNBF suggests that infants at this age were exposed to similar levels of infection as adults, but the osteitis and osteomyelitis evidence suggests that they were not sustaining infections into the same pathological stages as adults were.



Graph 03.22 – Results of later medieval 2-24-month-olds infectious pathology from this study

Later medieval fractures increase from 0% (0/51) during 38-46-weeks-old to 0.6% (3/504) during 2-12-months-old, which is a statistically significant difference (p = 0.000) (refer to graph 03.22). This is also significantly different to the 26-45-year-old adult incidence of 11.5% (415/3599 / p = 0.000). Later medieval violent fractures remain absent at 0% (0/51) during 38-46-weeks-old to 0% (0/504) during 2-12-months-old.This is significantly different to the 26-45-year-old adult incidence of 2.2% (79/3599 / p = 0.000).

Tudor fractures increase from 0% (0/3) during 38-46-weeks-old to 1.3% (1/79) during 2-12-months-old, which is a statistically significant difference (p = 0.000) (refer to graph 03.23). This is significantly different to the 26-45-year-old adult incidence of 20.3% (170/839 / p = 0.000). Tudor violent fractures remain absent at 0% (0/51) during 38-46-weeks-old to 0% (0/504) during 2-12-months-old.



Graph 03.23 – Results of Tudor 2-24-month-olds infectious pathology from this study

However, this is significantly different to the 26-45-year-old adult incidence of 2.4% (20/839 / p = 0.000).

Between the later medieval and Tudor periods 2-12-months-old levels of fractures are statistically comparable (p = 0.501), as is evidence of violent fractures (p = 0.131).

In sum, during 2-12-months-old, later medieval and Tudor fractures and violent fractures are statistically higher than 38-46-weeks-old, but below 26-45-year old adult levels. The collective trauma evidence suggests a similarity in the nature of fractures between the later medieval and Tudor periods during this stage in the life course. It also suggests that 2-12-months-old was a stage in the life course which differed in relation to the earlier stage of 38-46-weeks-old, as well as the 26-45-year old adults stage.

It is possible that these are reflective of accidental trauma, or fractures at this age, and at these locations (ribs, clavicle, radius) could also indicative of child abuse. Evidence of fractures under the age of two, when infants are at the mercy of their carers, are particularly suggestive of abuse (Van de Vijver 2019: 96). Ariès research into medieval childhood and his assertion of parental indifference has led to the notion that child abuse and neglect must have been common (Butler 2007: 64). In modern Britain, at least one child in 1,000 under the age of four years suffers severe physical abuse (Waldron 2007: 197). However, child abuse is socioculturally specific. Medieval parents saw the necessity for 'corrective' action towards their children, which can lead to the implication that abusive behaviours were also justified (Houlbrooke 1992: 141; McGavin 2015: 246; Orme 2001: 306). However, there is plenty of documentary evidence during this period that articulates the view that a good parent was one who was aware of the line between instruction and abuse (Butler 2007: 64; Houlbrooke 1992: 141; McGavin 2015: 250). Bioarchaeologically, skeletal evidence of abuse is never aetiologically certain, it is always interpretive. Due to the rapid rate of bone turnover in non-adult skeletons, evidence of abuse will be underrepresented (Kemp et al. 2008: 1158; Waldron 2007: 200). There is no one pattern of skeletal injuries; however, rib and skull fractures are the most common areas of trauma, followed by vertebrae, clavicles, long bones, hand and foot bones – as well as multiple events of fractures at various stages of healing (Lewis 2018: 476; Redfern and Roberts 2019: 262). It is also possible these fractures were caused in the domestic space by through accidents. As we have seen, the household was a very flexible space, a caring space, where the infant would be nurtured and raised; however, it also had the potentiality to be a hazardous environment. Evidence from the coroner's rolls suggests that 80% of infants who died in the first year of life did so in their homes and in hagiographic accounts it was 70% (Gilchrist 2012: 146; Hanawalt 2002: 448). The central hearth or fireplace was the most apparent form of potential trauma in the household and infant deaths were often caused by burn injuries (Crawford 2018: 783; Gilchrist 2012: 146; Hamling and Richardson 2017: 70; Hanawalt 1986: 175; Orme 2001: 67, 100). Animals, too, were a regular source of accidental trauma and deaths in infants (Hanawalt 1986: 175; Orme 2001: 67, 99; Rawcliffe 1997: 4). Additionally, sources of water in or close to the house seem to have posed a particular danger (Orme 2001: 100; Rawcliffe 1997: 4). The general living environment could also cause ill health, through chronic malnutrition, poor sanitation, damp housing, fuel poverty, etc., were especially harmful to infants (Hall and Elliman 2008: 37; Houlbrooke 1992: 140; King 1991: 6; Lindemann 2010: 37). As infants grow and explore their world, they place objects in their mouths and in unsanitary environments and this can also be a significant source of morbidity (Field 2007: 144; Howard 2017: 47; Oxenham and Willis 2017: 221).

To summarise the 2-12-months-old morbidity data, a broad increase in both infectious and traumatic lesions between the later medieval and Tudor periods occurred, but remain predominately below the levels of 26-45-year old adults, it can therefore be hypothesized that during 2-12-months-old was a unique stage within the life course during childhood.

03.26 | mortality + funerary evidence

Parents could try to protect their fragile infants through magic. Amuletic protection was considered helpful; for example, amber was considered useful for protecting infants against harm (Gilchrist 2012: 143). Toadstone, believed to come from a toad's head, but actually a fossil (lepidotes), was popular for protecting infants (Gilchrist 2012: 143). Eagle stone, also known as aetites, was also considered to protect the young from evil (Young 2016: 5). Malachite was also mentioned as protecting children against the evil eye (Young 2016: 82). Coral, which was considered good for teething, was also used for general protection (Wilson 1990a: 366).

It is often acknowledged that the later medieval and Tudor infant mortality rate was high (Goldberg 2004a: 28; Houlbrooke 1998: 8; Spaulding and Welch 1994: 215). It is notoriously difficult to assess mortality as the evidence is inherently biased, but we can approximate. Mortality estimates seem to agree that between 20-30% of infants would likely have died during their first year (Coster 2001: 25; Cressy 1999: 117; Gilchrist 2012: 46; Hanawalt 1986: 100; 1993: 55; 2002: 451; Orme 2001: 113; Shahar 1990: 149; Shepard 2011: 360; Viazzo 2001: 165; Youngs 2006: 24) (see figure 03.19). Approximately half of the infants who died before their first year did so in the first month of life (Houlbrooke 1992: 137; Shahar 1990: 35). Common causes of mortality in infants included diarrhoea, influenza, consumption, smallpox, plague, etc. (Demaitre 1977: 477; Gilchrist 2012: 48; Hanawalt 2002: 451; King 1991: 6; Lindemann 2010: 37). Parental oversight, too, accounted for accidental trauma and mortality (Orme 2001: 100).

"*Little infant, that were but late born,*
Shaped in this world to have pleasance,
Thou must with other that go here before,
Be led in haste, by fatal ordinance.
Learn of new to go on my dance;
There may none age escape in sooth therefrom.

The child answers,

A, a, a, - a word I can not speak;
I am so young I was born yesterday.
Death is so hasty on me to be wreak,
And list [will] no longer to make no delay.
I came but now, and now I go my way;
Of me no more no tale shall be told;
'The will of God no man withstand may;
As soon dieth a young man as an old."

John Lydgate
Dance of Death
16thc
(Orme 2001: 112-113)

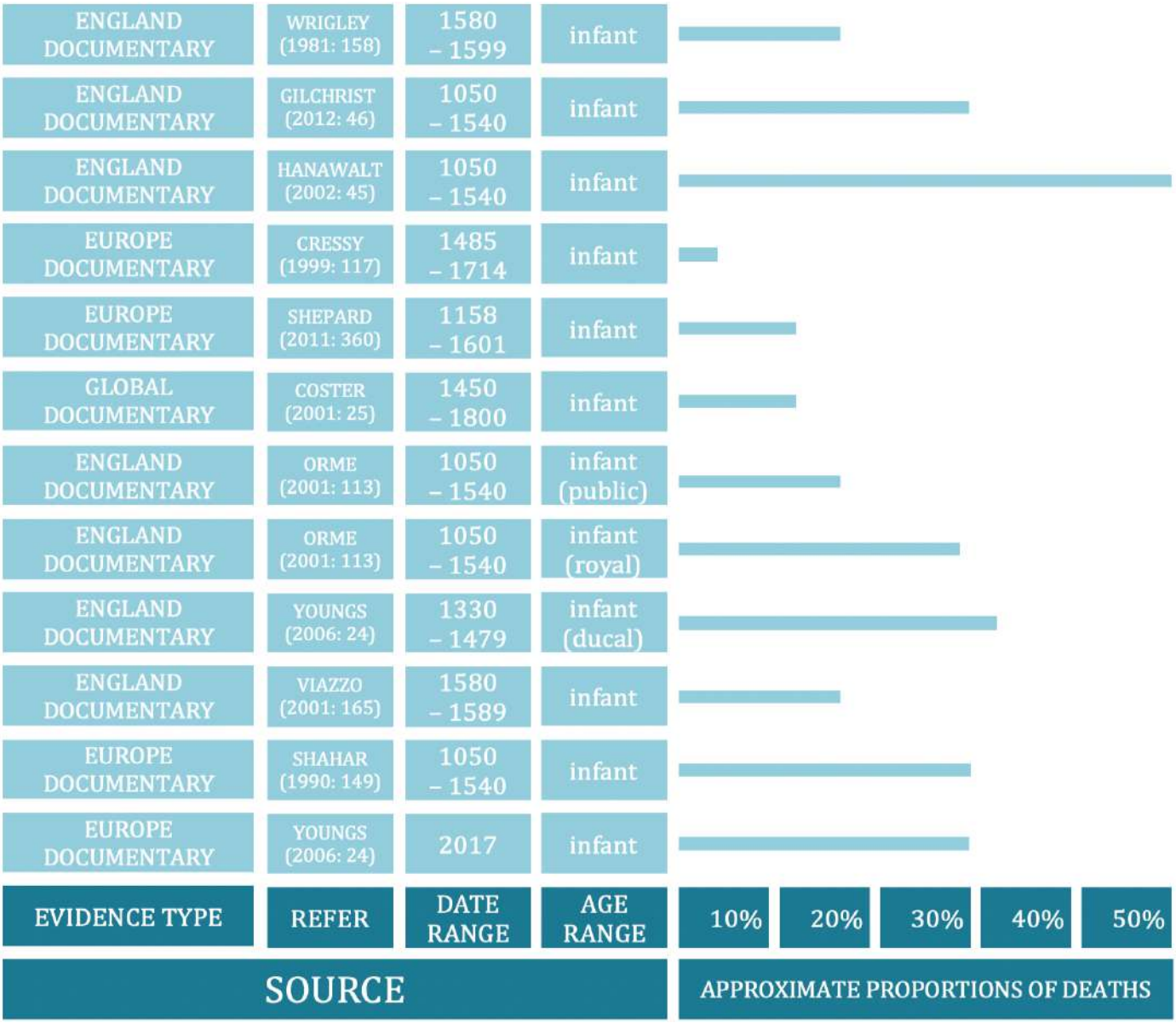
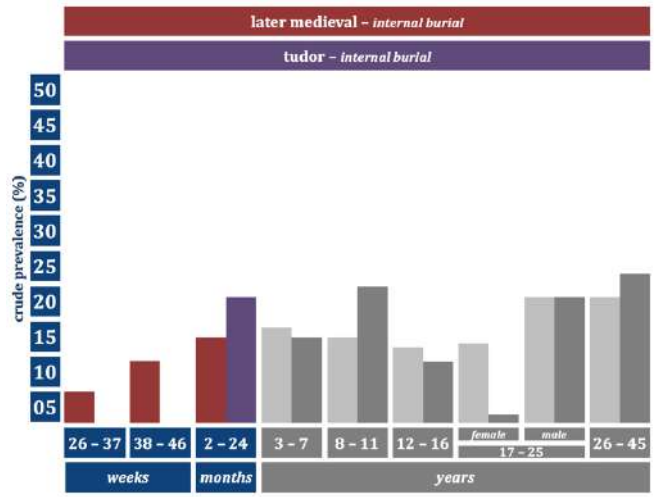


Figure 03.19 – Summary of Mortality Estimates

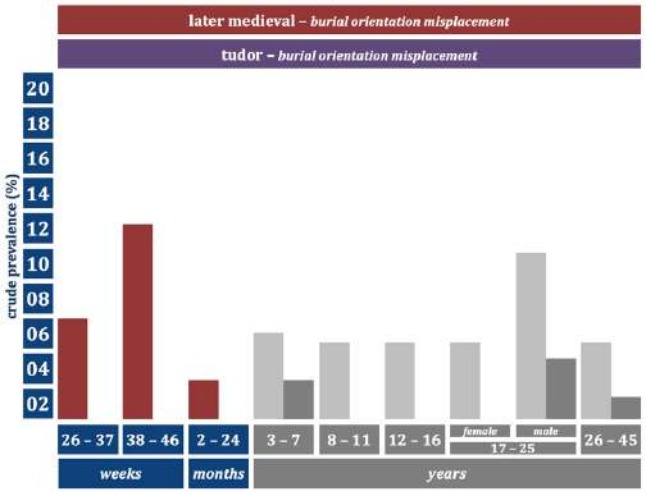


Graph 03.24 – Results of burial location from 2-24-month-olds multiple burials from this study

The burial archaeological evidence from this study reveals that later medieval internal burial increases from 9.1% (4/44) during 38-46-weeks-old to 12.5% (52/417) during 2-12-months-old, which is not a statistically significant difference (p = 0.497) (refer to graph 03.24). However, this is significantly different to the 26-45-year-old adult incidence of 17.9% (362/2019 / p = 0.008). Tudor internal burial increases from 0% (0/3) during 38-46-weeks-old to 17.6% (13/74) during 2-12-months-old, which is a statistically significant difference (p = 0.000).

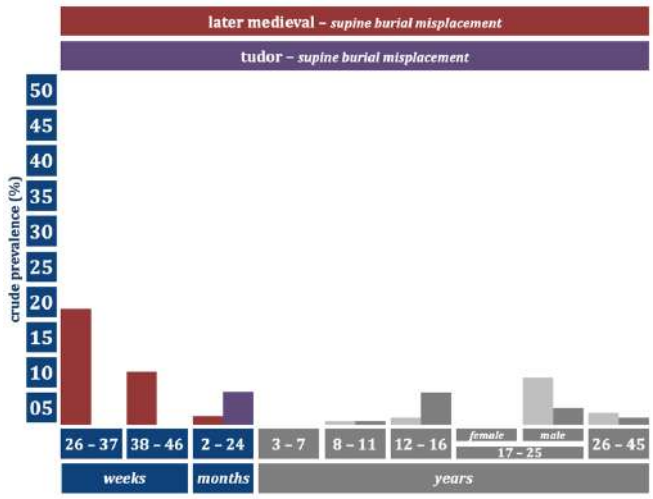
However, this is not significantly different to the 26-45-year-old adult incidence of 21.5% (108/503 / p = 0.942). Between the later medieval and Tudor periods 2-12-months-old levels of internal burial are statistically similar (p = 0.233). It has previously been suggested that between the first and second years of life during the later medieval period that there was a marked difference in burial practices (Gilchrist 2012: 208). At Wharram Percy, the majority of infants were buried in certain zones, which became less likely after the first year, which has been suggested might reflect a transitional point in the life course (Mays 2007: 87). However, in this study, there is no obvious evidence that supports a significant change in burial pattern in placement during infancy. However, this study did not specifically record zoning for each skeleton, so it is possible that this pattern was overlooked in the data.

Later medieval burial orientation misplacement decreases from 13.2% (5/38) during 38-46-weeks-old to 2.5% (9/366) during 2-12-months-old, which is a statistically significant difference (p = 0.000) (refer to graph 03.25). However, this is not significantly different to the 26-45-year-old adult incidence of 3.0% (80/2638 / p = 0.544). Tudor burial orientation misplacement remains absent at 0% (0/2) during 38-46-weeks-old to 0.0% (0/72). This is significantly different to the 26-45-year-old adult incidence of 1.6% (11/667 / p = 0.000).



Graph 03.25 – Results of burial orientation from 2-24-month-olds burial evidence from this study

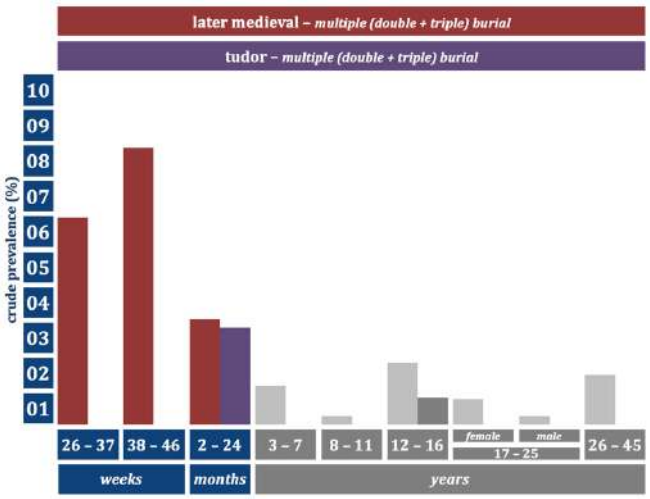
Between the later medieval and Tudor periods 2-12-months-old levels of burial orientation misplacement are statistically similar (p = 0.000).



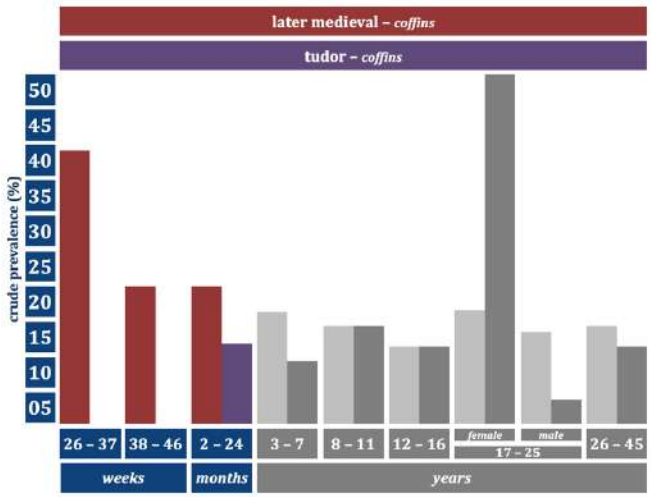
Graph 03.26 – Results of burial misplacement from 2-24-month-olds multiple burials from this study

Later medieval supine burial misplacement decreases from 7.5% (3/40) during 38-46-weeks-old to 0.8% (3/388) during 2-12-months-old, which is a statistically significant difference (p = 0.000) (refer to graph 03.26). However, this is not significantly different to the 26-45-year-old adult incidence of 1.5% (39/2652 / p = 0.271). Tudor supine burial misplacement decreases from 100.0% (3/3) during 38-46-weeks-old to 4.2% (2/48) during 2-12-months-old, but this due to an underrepresentation of the Tudor data and should therefore not be considered.

Later medieval burials of multiple occupancy decreases from 7.9% (3/38) during 38-46-weeks-old to 3.3% (12/366) during 2-12-months-old, which is not a statistically significant difference (p = 0.152) (refer to graph 03.27). However, this is significantly different to the 26-45-year-old adult incidence of 1.4% (36/2638 / p = 0.006). Tudor burials of multiple occupancy increase from 0% (0/2) during 38-46-weeks-old to 2.8% (2/72) during 2-12-months-old, which is a statistically significant difference (p = 0.000). This is also significantly different to the 26-45-year-old adult incidence of 0% (0/2638 / p = 0.000). Between the later medieval and Tudor periods 2-12-months-old levels of burials of multiple occupancy are statistically similar (p = 0.825). Burials of multiple occupancy in the medieval period decrease during this stage in the life course. Although there is evidence for double burials throughout the rest of childhood, the rest of the life course has a low rate of multiple burials, similar to the adult (26-45-year-olds) level of 1.1%. This period of infancy marks the last time in the life course that burials of multiple occupancy were more pronounced in their occurrence of 3.3%. Use of burials of multiple occupancy during this age was likely based upon similar views from earlier in the life course regarding familial ties, the potential agency in death, coincidental deaths, adult accompaniment, etc. (Crawford 2007: 86-0; Gilchrist 2012: 207-209; McKenzie and Murphy 2018: 66; Murphy and Donnelly 2018: 126, 138).



Graph 03.27 – Results of burials of multiple occupancy from 2-24-month-olds burial evidence from this study

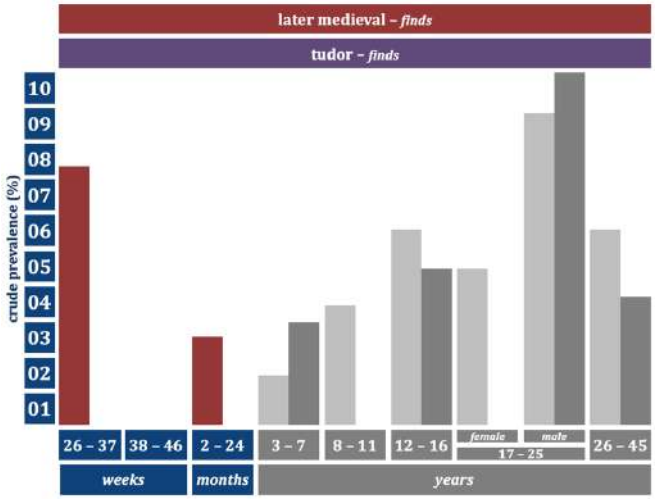


Graph 03.28 – Results of evidence of coffins from 2-24-month-olds burial evidence from this study

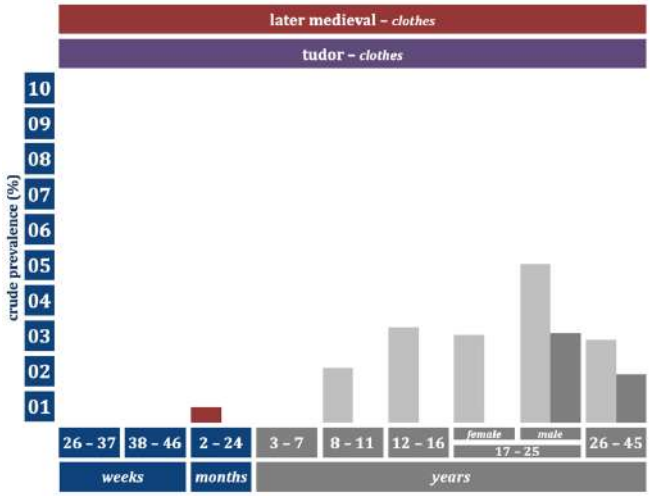
Later medieval coffin evidence remains consistent at 20.0% (8/40) during 38-46-weeks-old to 20.0% (73/365) during 2-12-months-old, which is not a statistically significant difference (p = 1.000) (refer to graph 03.28). However, this is significantly different to the 26-45-year-old adult incidence of 14.0% (344/2457 / p = 0.002). Tudor coffin evidence increases from 0% (0/2) during 38-46-weeks-old to 11.4% (5/44) during 2-12-months-old, which is a statistically significant difference (p = 0.000). However, is not significantly different to the 26-45-year-old adult incidence of 10.8% (41/383 / p = 0.893). Between the later medieval and Tudor periods 2-12-months-old levels of coffin evidence are not statistically different (p = 0.168). Infants had a high rate of burial in coffins, with 20% of later medieval and 10%

of Tudor 2-12-month-old infants receiving some form of coffined burial, which might be a reflection of their fluctuating humoral balance (Gilchrist and Sloane 2005: 222; Gilchrist 2012: 205).

Later medieval finds evidence increases from 0% (0/36) during 38-46-weeks-old to 2.5% (8/320) during 2-12-months-old, which is a statistically significant difference (p = 0.000) (refer to graph 03.29). This is also significantly different to the 26-45-year-old adult incidence of 5.5% (119/2173 / p = 0.023). Tudor finds evidence remain absent at 0% (0/2) during 38-46-weeks-old to 0% (0/45) during 2-12-months-old, which is not a statistically significant difference (p = 1.000). However, this this is statistically similar to that of 26-45-year-old adult of 3.7% (14/382 / p = 0.000). Between the later medieval and Tudor periods 2-12-months-old levels of finds evidence are statistically similar (p = 0.000). Evidence of artefacts included with the burials of infants was low at 2.5% (pins, coins, fragments). The pins likely represent some form of shrouding attachments. Coins have been associated with infants in medieval Britain, perhaps for protective usage against the evil eye (Gilchrist 2008a: 149; 2019: 390; Gilchrist and Sloane 2005: 101). There seems to have been less material with the Tudor infants, with 0% (0/29) having associated finds, or perhaps is also due to low data representation.



Graph 03.29 – Results of 2-24-month-olds evidence of finds from this study



Graph 03.30 – Results of 2-24-month-olds evidence of clothes from this study

Later medieval clothes evidence increases from 0% (0/36) during 38-46-weeks-old to 0.3% (1/320) during 2-12-months-old, which is a statistically significant difference (p = 0.000) (refer to graph 03.30). This is also significantly different to the 26-45-year-old adult incidence of 2.3% (51/2173 p = 0.017). Tudor clothes evidence remains absent at 0% (0/2) during 38-46-weeks-old to 0% (0/45) during 2-12-months-old, which is not a statistically significant difference (p = 1.000). However, this is significantly different to the 26-45-year-old adult incidence of 1.3% (5/382 p = 0.000). Between the later medieval and Tudor periods 2-12-months-old levels of finds evidence are not statistically similar (p = 0.000). There was limited evidence for clothing, with only 0.3% of later medieval infants having evidence for clothing and it has previously been noted that later medieval infants had limited evidence of clothing (Gilchrist and Sloane 2005: 81).

In sum, the material evidence of 2-12-month-old infants suggest there were broadly similar burial packages in comparison to 26-45-year-old adults, with some slight differences between the later medieval and Tudor periods in terms of burial location, orientation and body placement. In the later medieval period of 2-12-month-old infants had a higher incidence of coffin use and burials of multiple occupancy than 26-45-year-old adults. Later medieval 2-12-month-old infants also had a higher incidence of finds when compared to the previous stage of the life course of 38-46-week-old infants, but this incidence remained below that of the 26-45-year-old adults, making this as a transitional period in terms of material culture. In contrast, Tudor 2-12-month-old infants had a similar level of coffins and finds to those of 26-45-year-old adults, suggesting a change had occurred between the later medieval and Tudor period in terms of material culture of 2-12-month-old infants.

03.27 | some conclusions

- In conclusion, the medieval and Tudor extended life courses started before birth at conception.
- The time between ensoulment in utero and baptism was perhaps the most liminal period in the entire life course.
- Baptism marked the release from the burden of original sin, a welcome into Christian society and the bestowing of a name.
- Burial during these earlier ages of premature and newborn infancy were more likely to lead to differences in burial practices in comparison to the rest of the life course.
- The experience of infancy was essentially mediated by the family unit, who would decide about such issues as swaddling, feeding, sleeping arrangements, etc.
- The seventh month was viewed as significant – likely in reflection of important episodes of weaning, teething and speaking.
- The 'Judith problem' indicates that there is still a lot of scholarship to be undertaken before there is equality between the views of medieval and Tudor girls and boys.
- Infant palaeopathology is rare – evidence of fractures is either indicative of accidental trauma or perhaps abuse.
- Infant evidence of PNBF is currently hampered by the lack of aetiological understanding between pathological and normative new bone formation, which limits interpreting this morbidity pattern evidence in these earlier years.

4

CHAPTER 4 | life course – childhood

04.01 | introduction

The purpose of this chapter is to continue to explore the life course of the medieval and Tudor child through a temporal lived perspective. This chapter also explores the differences and similarities between medieval and Tudor childhoods. This chapter is focused on childhood between the ages of 3-11-years-old. This chapter examines the bioarchaeological evidence of 543 3-7-year-old skeletons and 468 8-11-year-old skeletons. This period of life diverged from infanthood as a period of total dependency, to a period of semi-dependency and steadily increasing agency. The first half of the chapter is focused on the period of 'early childhood', relating to the morbidity evidence from 3-7-year-old non-adult skeletons. The second half of the chapter is dedicated to the period of 'later childhood', relating to the morbidity evidence from 8-11-year-old non-adult skeletons.

early childhood

04.02 | development

Children aged 3-7-years-old continue developing at a rapid pace. During this period of life, they develop their sense of self and independence and become more active agents (Bendersky and Sullivan 2002: 16; Slater and Lewis 2002: 15; Robinson 2008: 191). They develop the ability to utilised more complex speech, which becomes more sophisticated throughout this age (Allen 2017: 295; Robinson 2008: 192; Thurtle 2005: 40). Their movements become far more assured and varied, they can walk and run, but also do more complex movement such as throwing, swimming, balancing, jumping, climbing, etc. (Robinson 2008: 192; Thurtle 2005: 40). Additionally, toilet training is usually achieved during the third year (Field 2007: 271; Robinson 2008: 192; Thurtle 2005: 40).

Figure 04.01 - 1500 - Portrait of Two Boys - Painting - English - Marcus Gheeraerts the younger - Birmingham Museums and Art Gallery - Bridgeman Images - BIR100681

04.03 | play

Although infants play, it is not until 3-5-years of age that play becomes very central to the life course. The word '*play*' or '*playes*' comes from the Old English '*plega*' – meaning a quick motion, exercise, recreation, etc. (Greig 2005: 106; Witmore 2007: 40). Determining what play is, however, is somewhat more difficult, as it almost defies specific definition (Brown and Patte 2013: 3; Graham 2017: 476; Hakkarainen and Bredikyte 2019: 457; Howard 2017: 5; Smith 2010: 8). Sociologically, it has been questioned whether play is *essential* for development, but it is known that play provides a bridge to developmental benefits in many areas; such as psychological, dextral, cognitive, social, and cultural (Brown and Patte 2013: 18; Greig 2005: 108; Howard 2017: 15; Pollock 2019: 281; Robinson 2008: 150; Smith 2010: 216; Tamis-Lemonda et al 2002: 229). Play is performative and inquisitive; it allows exploration of agency and teaches negotiation (Hall 2018: 538). Play is contextually sensitive and there is significant sociocultural variation to it (Gosso 2010: 80; Hakkarainen and Bredikyte 2019: 457).

Figure 04.02 – 1568 - Edward, 3rd Baron Windsor, his wife Katherine de Vere, and their family - Painting - British - The Bute Collection at Mount Stuart

"I am called Childhood, in play is all my mind,
To cast a quoit, a cokstele and a ball,
A top can I set and drive it in his kind;
But would to God these hateful bookes all
Were in a fire burnt to powder small;
Then might I lead my life always in play,
Which life God send me to mine ending day!"

Thomas More
1557
Pageant of Life
(Cayley 1808: 11)

Play can be adult mediated, lie in liminality between adult and child contexts, or have been entirely the creation of children themselves (Hakkarainen and Bredikyte 2019: 457; Howard 2017: 7; Lillehammer 1989: 95; Roopnarine et al. 2019: 142; Smith 2010: 194). Play was important and complex during the later medieval and Tudor periods as it is today (Hall 2018: 530). Medieval and Tudor theorists agreed that children should be encouraged to play (Orme 2001: 67; Ruhräh 1925: 83, 96; Shahar 1990: 103; Witmore 2007: 40; Youngs 2006: 54). Younger children in particular were assumed to spend the majority of their time playing (Goldberg 2004a: 261; Hanawalt 2002: 450; Shahar 1994: 254). Archaeological evidence can inform us about medieval play and should be considered when interpreting domestic assemblages (Hammond and Hammond 1981: 634; Lewis 2009: 105). Finally, Flemish artistic impressions provides insights into children's play – such as Pieter Bruegel's painting I *Kinderspill* ('Children's Games') (1560) and Adriaen Pietersz van de Venne's *Kinder-spel* ('Children's Games') (1625) – though we must view these pictures with some caution when interpreting what they might potentially represent about realities of childhood (Gilchrist 2012: 148; Langmuir 2006: 155; Lewis 2014: 150; Pollock 2019: 282; Ryan 2013: 72).

Figure 04.03 – 1618 - Middelburgh abbey - Unknown Artist - Print - In Jacob Cats Silenus Alcibiadis - Getty Research Institute - 29776

Figure 04.04 – 1625 - Children's Games - Adriaen Pietersz van de Venne - Getty Research Institute - PT5630

'*Toy*' – or '*toye*' or '*toie*' – much like play – is hard to define (Forsyth and Egan 2005: 32). The word '*toy*' only became regularly used during the sixteenth century, to denote a trinket, ornament, or a superfluous object (Hall 2014: 43; Forsyth and Egan 2005: 32). Almost any object has the potential to be transformed by children into a toy, either temporarily or permanently, and this can make it particularly challenging to identify toys archaeologically (Crawford 2018: 784; Gilchrist 2012: 149; Hall 2018: 538; Heywood 2001: 92; Howard 2017: 101; Mitchell 2014: 89; Sánchez Romero 2017; Spaulding and Welch 1994: 275; Wileman 2005: 28).

Figure 04.05 – 1580 - 1619 - Three Young Girls - Painting - Follower of William Larkin - Three Unidentified Sisters, yellow lace around 1610, popular for 10 years - The Berger Collection – ID 43

Like play, toys can be mediated by adults, or they can be entirely child made (Baxter 2005: 41; 2015: 29; Kamp 2015: 46; Orme 1995: 51, 86). Many toys are lost to us entirely, with the majority likely to have been made from organic materials such as wood or fabrics (Gilchrist 2012: 149; Orme 1995: 50; 2001: 167). Commercially manufactured toys are known to have existed from the fifteenth century (Goldberg 2004a: 261; Harper 2018: 89; Mitchell 2014: 66; Orme 2001: 167) (see figure 04.06). Pewter toys are found archaeologically with relative frequency (Baxter 2005: 47; Gilchrist 1999: 91; 2012: 150; Mitchell 2014: 65; Orme 1995: 54; 2001: 173; Wileman 2005: 28; Wilkie 2000: 101) (see figure 04.07). Toys could be used as a conduit for the socialisation of gender roles: for instance, boys were encouraged to play with para-chivalric-military figures, such as soldiers (Baxter 2005: 39; Mitchell 2014: 66). It seems likely that girls were given 'puppets' (dolls), made from various materials (perhaps even wax), often painted and there are widespread finds of them from all across England (Forsyth and Egan 2005: 42; Harper 2018: 90; Orme 2001: 168-170; Wilson 1990a: 366) (see figure 04.08). Additional toys known to have existed from artistic, historical and archaeological sources include buzz bones, rattles, hobby-horses, rocking-horses, mechanical figures, dies, blocks, bones, balls, hoops, discs, spinning tops, see-saws, paper windmills, wooden boats, whistles, drums, miniature animals, miniature cooking utensils, marionettes, etc. (Gilchrist 2012: 149; Harper 2018: 87; Heywood 2001: 93; Huggett and Mikhaila 2013: 28; Orme 1995: 54; 2001: 167-168; Shahar 1990: 104) (see figure 04.09).

Figure 04.07 – 1510 - Mounted Knight Toy - Pewter - Thames Foreshore - London - Museum of London - Acc-98.2-408

Figure 04.06 – 15thc. - Toy Stone Mould - Stone - The only known medieval mould for toys - Hereford Museum

Figure 04.09 – 16thc. - English Galleon Toy - Lead Alloy - Billingsgate Foreshore - London - Museum of London - 91.61-1

Figure 04.08 – 16thc. - Toy Doll - Lead - Healeyfield, Durham - Noble woman, ornamented dress - Excavated 2009 - Portable Antiquities Scheme - NCL-DB1E00

04.04 | socialising

Medieval and Tudor children continued to be socialised in the adult sphere. However, gradually, they would have formed friendship groups with other similar-aged children (Cunningham 2005: 32; Woodhead 2015: 22). Children also clearly started to participate in gendered roles in various small, but collectively, significant ways. Toys, as we have seen, could have potential gendered undertones. Sociologically, during this age, children are known to show gendered preferences in toys (Field 2007: 150). Flemish art seems to suggest a gendered divide between games of young girls and boys (Pollock 2019: 296). Medieval toys would have helped emulation and

slowly begin the process of enculturation of the child in their gendered roles (Gilchrist 1999: 91). It is also believed that by three to four years old, children have an awareness of their culturally mandated gender (Robinson 2008: 191).

Figure 04.11 – 1563 - A Puritan Family - Woodcut - London - The Whole Psalms in Four Parts - The Mary Evans Picture Library - 10046505/05

04.05 | church

As previously mentioned, conceptually, later medieval and Tudor children were considered in need of early religious instruction and religious accountability slowly increased with age throughout childhood (Houlbrooke 1992: 147; Stortz 2001: 100). Parents were responsible for religious instruction, enculturating children in religion as soon as possible was important for informing the order of the family and society, the parental hierarchy was a mirror of the religious order and parents were instructed to teach their children their duty to love and obey their parents (Orme 2001: 82; 204). Additionally, parents were to teach their children the *Lord's Prayer, Ave Maria, Creed, Ten Commandments*, as soon as they had the verbal complexity to do so, and there is evidence that children this young could recite these (Giselbrecht 2014: 55; Houlbrooke 1992: 147; Orme 2001: 82; 205).

Figure 04.10 – 1557 - Alice Barnham and Her Sons Martin and Steven - Painting - London - Unknown Artist - Denver Art Museum - TL19034

Although the father essentially played the role of bishop under his roof, it is considered that mothers continued to play more prominent roles in religious instruction during these earlier years of childhood (Houlbrooke 1992: 148).

"*Children, obey your parents in the Lord, for this is right.*
"Honor your father and mother"—which is the first commandment with a promise—
"so that it may go well with you and that you may enjoy long life on the earth."
Fathers, do not exasperate your children; instead, bring them up in the training and instruction of the Lord."

Ephesians, *New Testament*, (6:1-4)

"Honor your father and your mother, so that you may live long in the land the LORD your God is giving you."

Exodus, *Old Testament*, (20:12)

It is imagined that Catholic religious education at home would have been less intense than the Protestant experience, which would double-down on the importance of parental responsibility in the religious instruction of young children (Cunningham 2005: 55; Houlbrooke 1992: 156). Again, it is not possible to know exactly how often children attended church at this stage in the life course, it is possible they did attend, but there is no evidence for the degree of regularity (Orme 1994: 570). Religiosity in children would not likely have been taken too seriously during this age, so interaction with the church would become more regular later on in the life course (Ryrie 2015: 428).

"Listen, my son, to your father's instruction and do not forsake your mother's teaching. They are a garland to grace your head and a chain to adorn your neck."

Proverbs, *Old Testament*, (1:8-9)

"*'Children, obey your parents in everything, for this pleases the Lord.*"

Colossians, *New Testament*, (3:20)

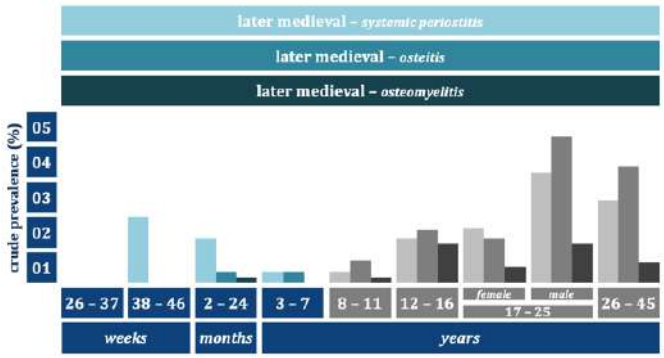
04.06 | the family economy

Young children become more independent compared to the experience of dependency during infancy. However, they are still predominately at the mercy of the family unit for the maintenance of their care and well-being. Medieval children are often depicted as being thrust into adult work at a very early age. However, evidence suggests that children were unlikely to be expected to contribute much at all to the family economy at this age. Instead, they would have had time and freedom to play, although there is very little specific evidence of their activities at this age (Coster 2001: 74). This is the last period in the life course in which extended periods of playing were thought of as 'age appropriate' as such young children were viewed as incapable of making a substantive contribution to the family economy (Cunningham 2005: 84). While they were not performing work, evidence of accidental death records suggest that children may have accompanied their same-sex parent into their work environment (Fleming 2001: 63; Hanawalt 1986: 146, 157). Girls would have observed their mothers

undertake their many domestic tasks and boys would have followed their fathers into their labouring work. It should be remembered that agrarian employment was seasonal, tasks could vary week to week, so child care would likely be organised around these changing needs, which likely did not require child accompaniment in the field all day every day (Cunningham 2005: 84). This shadowing could be viewed as the early stages of gender apprenticeship (Gilchrist 1999: 90).

Figure 04.12 – 1567 - The Family of Lord Cobham - Unknown Artist - Painting - Six children, Maximilian, Henry, William, Elizabeth, (twins) Frances & Margaret - Longleat House Collection

3-7-years-old is the first stage in the life course where it is possible to confidently assess the evidence of infectious lesions within the skeleton confidently.

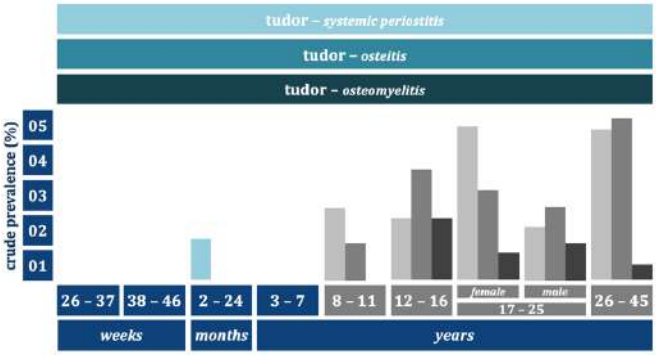


Graph 04.01 – Results of later medieval 3-7-year-old infectious pathology from this study

Later medieval systemic PNBF decreases from 1.4% (7/504) during 2-24-months-old to 0.4% (2/543) during 3-7-years-old, which is not a statistically significant difference (p = 0.213) (refer to graph 04.01). However, this is significantly different to the adult 26-45-year-old incidence of 2.4% (87/3599 / p = 0.002.). Later medieval osteitis remains the same 0.4% (2/504) during 2-24-months-old to

0.4% (2/543) during 3-7-years-old, which is not a statistically significant difference (p = 0.940). However, this is significantly different to the adult 26-45-year-old incidence of 3.4% (123/3599 / p = 0.000). Later medieval osteomyelitis decreases from 0.2% (1/504) during 2-24-months-old to 0% (0/543) during 3-7-years-old, which is a statistically significant difference (p = 0.000). However, is not significantly different to the adult 26-45-year-old incidence of 0.8% (28/3599 / p = 0.122).

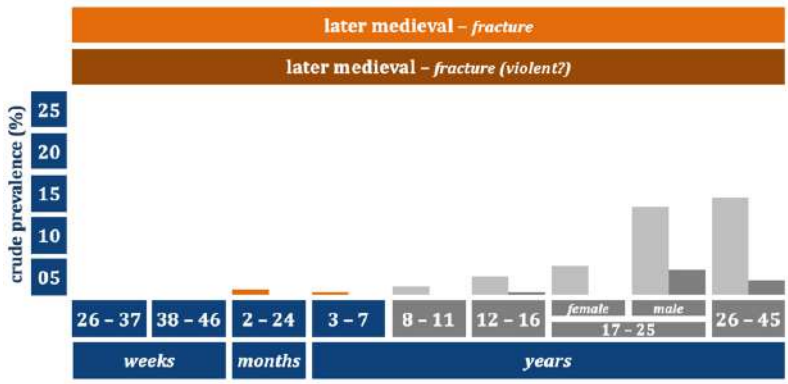
Tudor systemic PNBF decreases from 1.3% (1/79) during 2-24-months-old to 0% (0/70) during 3-7-years-old, which is a statistically significant difference (p = 0.000) (refer to graph 04.02). This is also significantly different to the adult 26-45-year-old incidence of 4.4% (37/839 / p = 0.000). Tudor osteitis remains absent at 0% (0/79) during 2-24-months-old to 0% (0/70) during 3-7-years-old, which is not a statistically significant difference. However, this is significantly different to the adult 26-45-year-old incidence of 4.8% (40/839 / p = 0.000). Tudor osteomyelitis remains absent at 0% (0/79) during 2-24-months-old to 0% (0/70) during 3-7-years-old, which is a statistically significant difference. However, this is significantly different to the adult 26-45-year-old incidence of 0.5% (4/839 / p = 0.000).



Graph 04.02 – Results of Tudor 3-7-year-old infectious pathology from this study

Between the later medieval and Tudor periods 3-7-years-old systemic PNBF (p = 0.231), osteitis (p = 0.231) and osteomyelitis (p = 0.085) levels are all statistically comparable, suggesting that rates of infection between periods during this age were similar.

In sum, this is the lowest reportable rate throughout the life course, based on the new bone formation of non-adult skeletons (Lewis 2007: 163; Lewis 2017a: 3-4). There is no evidence in either period for osteomyelitis. During 3-7-years-old, later medieval systemic PNBF, osteitis osteomyelitis levels are significantly different to adult 26-45-year-old levels. This same pattern is noted during the Tudor period, where systemic PNBF, osteitis osteomyelitis levels are significantly different to adult 26-45-year-old levels. The collective evidence suggests that 3-7-years-old during both the later medieval and Tudor periods were exposed to dissimilar levels of infection as 26-year-old adults.

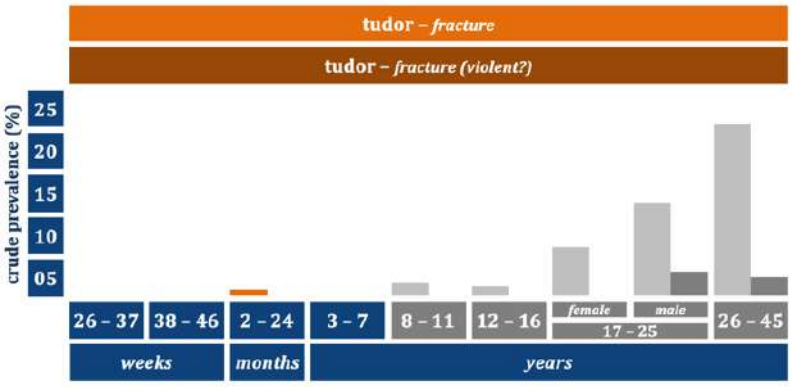


Graph 04.03 – Results of later medieval 3-7-year-old fracture evidence from this study

Later medieval fractures decrease from 0.6% (1/504) during 2-24-months-old to 0.2% (1/543) during 3-7-years-old, which is not a statistically significant difference (p = 0.957) (refer to graph 04.03). However, this is significantly different to the 26-45-year-old adult incidence of 11.5% (415/3599 / p = 0.000).

Later medieval violent fractures remain absent at 0% (0/504) during 2-24-months-old to 0% (0/543) during 3-7-years-old. However, this is significantly different to the 26-45-year-old adult incidence of 2.2% (79/3599 / p = 0.001).

Tudor fractures decrease from 1.3% (1/79) during 2-24-months-old to 0% (0/70) during 3-7-years-old, which is a statistically significant difference (p = 0.000) (refer to graph 04.04). This is also significantly different to the 26-45-year-old adult incidence of 20.3% (170/839 / p = 0.000).



Graph 04.04 – Results of Tudor 3-7-year-old fracture evidence from this study

Tudor violent fractures remain absent at 0% (0/79) during 2-24-months-old to 0% (0/70) during 3-7-years-old, which is not a statistically significant difference. However, this is significantly different to the 26-45-year-old adult incidence of 2.4% (20/839 / p = 0.000).

Between the later medieval and Tudor periods 3-7-years-old levels of fractures (p = 0.085) and violent fractures are all statistically comparable (p = 0.085), suggesting that rates of trauma between periods during this age were similar.

In sum, during 3-7-years-old, later medieval and Tudor periods fractures and violent fractures are statistically below 26-45-year old adult levels. Fracture rates during the later medieval period of 3-7-year-olds are very low in what is well-represented data of 0.2% (1/543) and are similarly low in the Tudor period but in less well represented data at 0% (0/70). Although this low rate is due in part to the high bone remodelling rate of non-adults, this fracture rate is lower than the previous stage in the life course of 2-24-months-old (later medieval 0.9%, Tudor 2.8%). This seems to indicate that there was a lower fracture rate during 3-7-years of age. It is possible that the trauma experienced during this period was largely confined to the soft tissues. However, it could be reflective that this period of life was relatively low in trauma when compared to the rest of the life course. The low rate of nonspecific infection also supports this pattern, perhaps suggesting that 3-7-years-old collective morbidity was low during this stage in the life course.

To summarise the 3-7-years-old -old morbidity data is defined by a general absence of morbidity evidence, both in infectious and trauma lesions. This marks this stage in the life course out as the age when the lowest amount of morbidities were experienced by children, who were either being shielded during 3-7-years-old by their family units, or who were dying before morbidities were able to establish themselves within the skeleton.

04.07 | education

"For a Child like an emptie new vessel being voide of all learning, is most apt to revieved that which is first taught."

William Kempe
1588
The Education of Children in Learning
(Witmore 2007: 35)

Advice literature and parental views indicate than early education was thought vital; like bodies, young minds needed moulding. However, later medieval sources, based on Classical texts, suggested education should wait until later in childhood, to commence from seven-years-old. Tudor sources, based on humanist influences, emphasised the importance of early-as-possible education in raising children correctly (Conrad 1992: 82; Coster 2001: 90; Orme 2001: 245; 2006: 129; Shahar 1990: 170; Witmore 2007: 35). Neither school of thought, however, expected this education to be 'formal learning' at this stage (Coster 2001: 90). It is far more likely that early instruction was a more generalized mix, because of course children need to learn about various things; so early education was likely focused on religious, vocation, cultural and perhaps some 'academic' training too.

"Nature is an effectual thynge, but educacion more effectual"

Desiderius Erasmus
1550
The Education of Children
(Bailey 2012: 1)

04.08 | clothing

Girls aged 3-7-years-old transitioned to a petticoat and gown, perhaps with a kirtle under the gown, while girls from wealthier families might have worn shirts, smocks, sleeves and caps (Huggett and Mikhaila 2013: 20-26). Boys transitioned to a coat and doublet, perhaps with skirts rather than coats instead, boys from wealthier families might alternatively have worn collar, ruffs and cuffs (Buck 1996: 17; Huggett and Mikhaila 2013: 21-28). Both genders would have received small leather shoes (Gilchrist 2012: 79). Both girls and boys had seemingly genderless styles of clothing during infancy (Buck 1996: 17; Orme 2001: 60). While there is significant terminological difference between the clothing of girls and boys during this age, their style of clothing in practice was relatively similar; gowns for girls and coats for boys at this age were somewhat similar for the non-elite children (Huggett and Mikhaila 2013: 21).

Figure 04.13 – 1600 - Child with Apple - Painting - Unknown - British - The Holburne Museum

Figure 04.14 – 1565 - Four Children Making Music - Painting - Unknown - Master of the Countess of Warwick - unidentified English family group - Private Ownership

Figure 04.15 – 1580 - Three unknown Elizabethan children – Painting - Unknown Anglo-Netherlandish Artist - National Portrait Gallery

04.09 | mortality + funerary evidence

Mortality estimates differ, however, most seem to agree that around 12% to 33% died between 1-5-years of age (Carmichael 1993: 280; Hug et al. 2018: 6; Orme 2001: 113; Youngs 2006: 24). As we have seen, the domestic household held a variety of potential dangers (fire, animals, water etc.) which remained similarly potential dangerous during early childhood (Crawford 2018: 783; Dyer 2013: 23; Gilchrist 2012: 146; Hamling and Richardson 2017: 70; Hanawalt 1986: 175).

Orme 2001: 67, 99-100; Rawcliffe 1997: 4-7). Death in under 5-year-olds is caused by a combination of morbid factors e.g. malnutrition, unhygienic environs, unclean water, diarrhoea, pathology, poverty, etc. (Black et al 2003: 2227-2233; Black et al 2008: 5-16; Black et al 2010: 1-17; Demaitre 1977: 477; Gilchrist 2012: 48; Guy 1988: 30; Hall and Elliman 2008: 37; Hanawalt 2002: 451; Houlbrooke 1992: 140; Hug et al 2018: 9; King 1991: 6; Lindemann 2010: 37; Orme 2001: 100) (see figure 04.17).

Figure 04.16 – 1610 - The Family of Sir Henry and Susan Maynard - Effigy - Stone - St Mary, Little Easton - Henry member of parliament, 6 sons, 2 daughters - Authors Own]

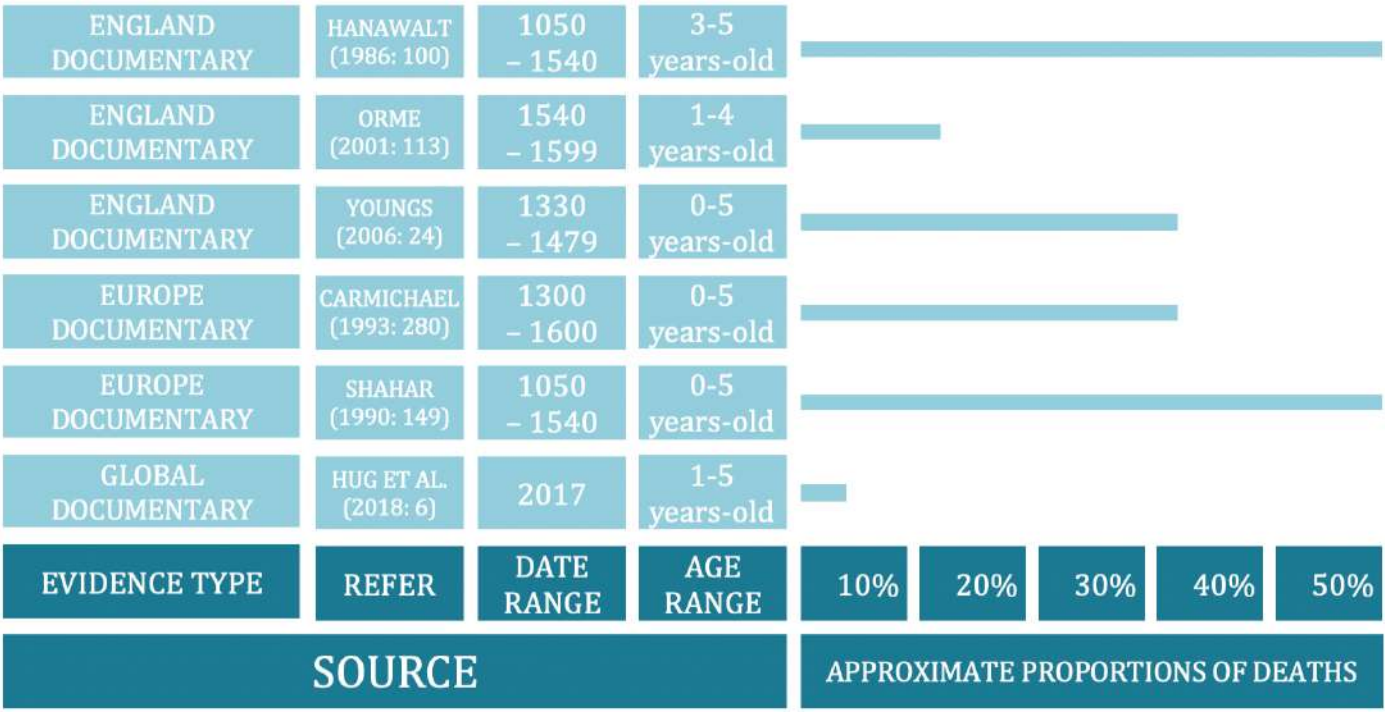
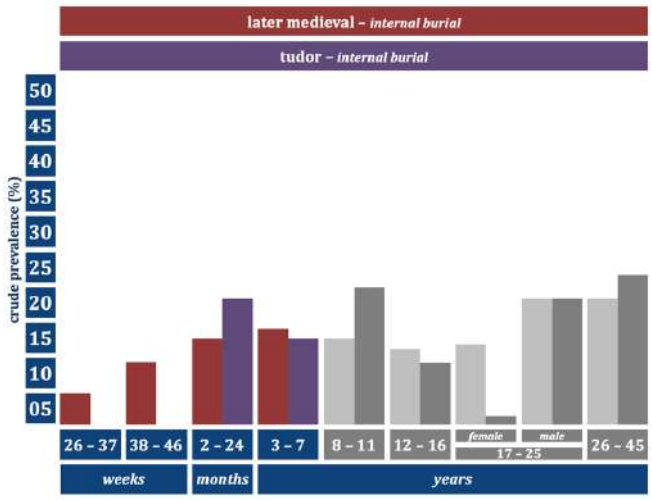


Figure 04.17 – Summary of the mortality evidence estimates

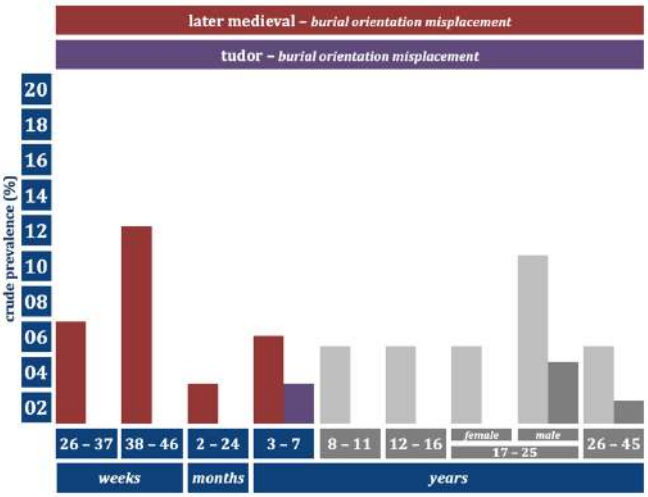


Graph 04.05 – Results of 3-7-year-old evidence of burial placement from this study

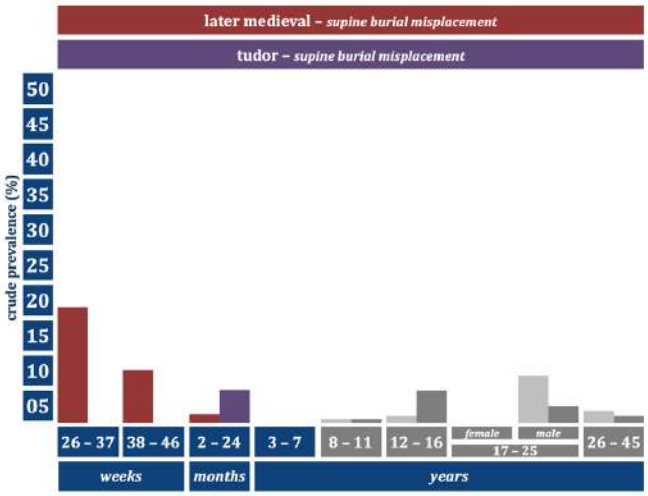
The burial archaeological evidence from this study reveals that later medieval internal burial increases from 12.5% (52/417) during 2-24-months-old to 13.9% (60/430) during 3-7-years-old, which is not a statistically significant difference (p = 0.524) (refer to graph 04.05). However, this is significantly different to the 26-45-year-old adult incidence of 17.9% (362/2019 / p = 0.048). Tudor internal burial decreases from 17.6% (13/74) during 2-24-months-old to 10.3% (6/58) during 3-7-years-old, which is not a statistically significant difference (p = 0.240). However, this is significantly different to the 26-45-year-old adult incidence of 21.5% (108/503 / p = 0.046). Between the later medieval and Tudor periods 3-7-years-old levels of internal burial are statistically similar (p = 0.450).

Later medieval burial orientation misplacement increases from 2.5% (9/366) during 2-24-months-old to 5.1% (20/393) during 3-7-years-old, which is not a statistically significant difference (p = 0.058) (refer to graph 04.06).

However, this is significantly different to the 26-45-year-old adult incidence of 3.0% (80/2638 / p = 0.033). Tudor burial orientation misplacement increases from 0.0% (0/72) during 2-24-months-old to 2.5% (1/40) during 3-7-years-old, which is a statistically significant difference (refer to graph 04.06). This is also significantly different to the 26-45-year-old adult incidence of 1.6% (11/667 / p = 0.000). Between the later medieval and Tudor periods 3-7-years-old levels of burial orientation misplacement are statistically similar (p = 0.467).



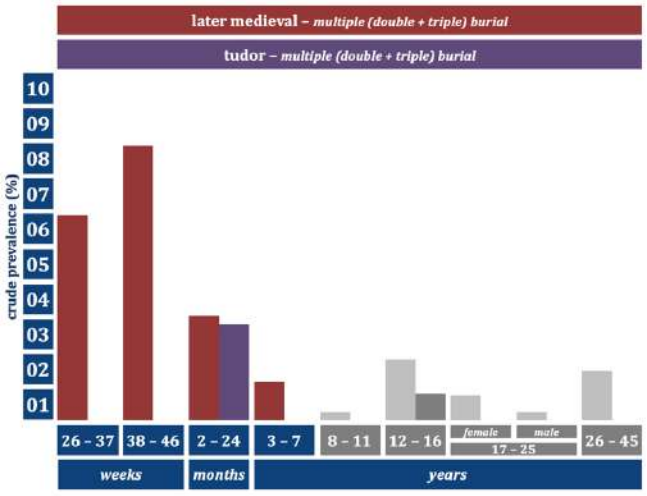
Graph 04.06 – Results of 3-7-year-old evidence of burial orientation from this study



Graph 04.07 – Results of 3-7-year-old evidence of burial misplacement from this study

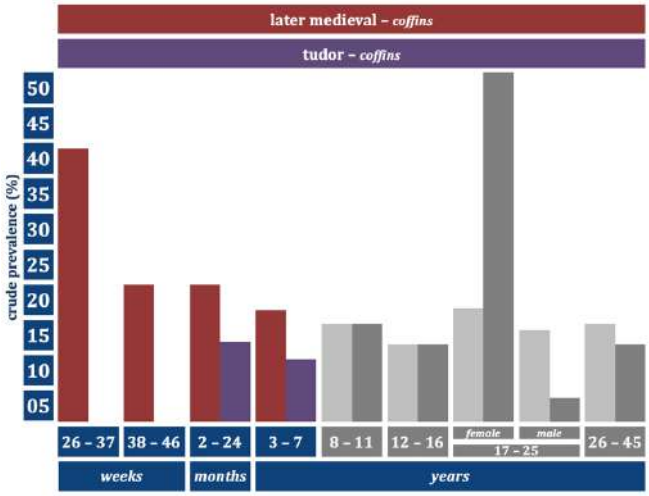
Later medieval supine burial misplacement decreases from 0.7% (3/388) during 2-24-months-old to 0% (0/424) during 3-7-years-old, which is a statistically significant difference (p = 0.000) (refer to graph 04.07). This is also significantly different to the 26-45-year-old adult incidence of 1.5% (39/2652 / p = 0.000). Tudor supine burial misplacement decreases from 4.2% (2/48) during 2-24-months-old to 0% (0/27) during 3-7-years-old, which is a statistically significant difference (p = 0.000). This is also significantly different to the 26-45-year-old adult incidence of 7.9% (30/378 / p = 0.000). Between the later medieval and Tudor periods 3-7-years-old levels of supine burial misplacement are statistically similar (p = 0.855).

Later medieval burials of multiple occupancy decrease from 3.3% (12/366) during 2-24-months-old to 1.3% (5/393) during 3-7-years-old, which is a statistically significant difference (p = 0.046) (refer to graph 04.08). However, this is not significantly different to the 26-45-year-old adult incidence of 1.4% (36/2638 / p = 0.882). Tudor burials of multiple occupancy decreases from 2.8% (2/72) during 2-24-months-old to 0% (0/72) during 3-7-years-old, which is a statistically significant difference (p = 0.000).



Graph 04.08 – Results of 3-7-year-old evidence of burials of multiple occupancy from this study

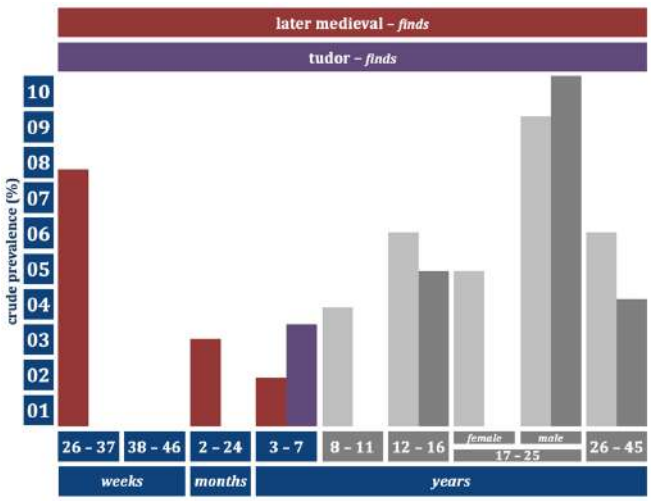
This is not significantly different to the 26-45-year-old adult incidence of 0% (0/667 / p = 0.054). Between the later medieval and Tudor periods 3-7-years-old levels of burials of multiple occupancy are not statistically similar (p = 0.000). Burials of multiple occupancy in the later medieval period continue to decrease during this stage of the life course. Although there is evidence for double burials throughout the rest of childhood, the rest of the life course has a low rate, similar to the adult level of 1.1%. The decrease in the practice of burials of multiple occupancy during 3-7-years-old possibly reflects that this age cohort represented potentially less valuable companions in death, or perhaps required less adult companionship through purgatory by this age (Crawford 2007: 86-0; Gilchrist 2012: 207-209; McKenzie and Murphy 2018: 66; Murphy and Donnelly 2018: 126, 138). There was no evidence for double burials in the Tudor data during this age.



Graph 04.09 – Results of 3-7-year-old evidence of coffins from this study

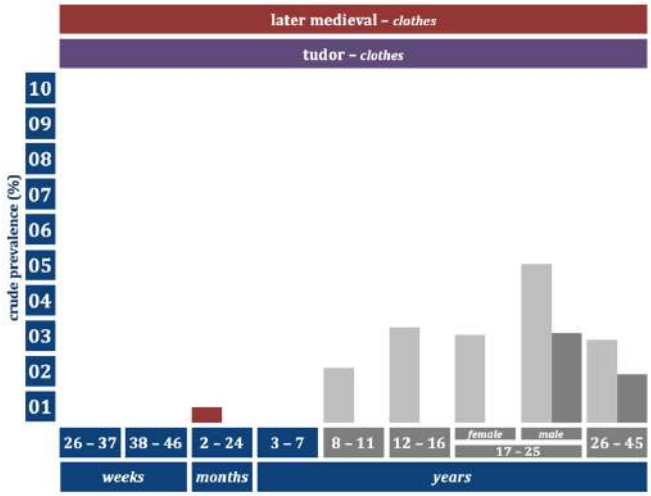
Later medieval coffin evidence decreases from 20.0% (73/365) during 2-24-months-old to 15.6% (59/378) during 3-7-years-old, which not a statistically significant difference (p = 0.113) (refer to graph 04.09). This is also not significantly different to the 26-45-year-old adult incidence of 14.0% (344/2457 / p = 0.418). Tudor coffin evidence decreases from 11.4% (5/44) during 2-24-months-old to 9.1% (3/33) during 3-7-years-old, which is not a statistically significant difference (p = 0.746). This is also not significantly different. to the 26-45-year-old adult incidence of 10.8% (41/383 / p = 0.772). Between the later medieval and Tudor periods 3-7-years-old levels of coffin evidence are not statistically different (p = 0.315). The decrease in coffin evidence might be associated with views on their humors changing with age, therefore decreasing the need for coffins upon burial (Gilchrist and Sloane 2005: 222; Gilchrist 2012: 205).

Later medieval finds evidence decrease from 2.5% (8/320) during 2-24-months-old to 1.4% (5/348) during 3-7-years-old, which is not a statistically significant difference (p = 0.320) (refer to graph 04.10). However, this is significantly different to the 26-45-year-old adult incidence of 5.5% (119/2173 / p = 0.001). Tudor finds evidence increases from 0% (0/79) during 2-24-months-old to 3.0% (1/70) during 3-7-years-old, which is a statistically significant difference (p = 0.000). This incidence of finds evidence is not statistically similar to that of



Graph 04.10 – Results of finds from 3-7-year-old burial evidence from this study

26-45-year-old adult of 3.7% (14/382 / p = 0. 337). Between the later medieval and Tudor periods 3-7-years-old levels of finds evidence are statistically similar (p = 0.995). Evidence of artefacts included with the burials of young children was low at 1.4% (5/348; *wooden rods, pins, coins, fragments)*. Young children were buried (as were adults of both sexes), with wooden rods (often made of willow, hazel, ash, etc.) in what might be a sort of hybrid-Christian-magic practice of protection and healing (Gilchrist 2008a: 126-128, 137; 2019: 395-396; Gilchrist and Sloane 2005: 224). There seems to have been slightly more material 3-7-year-old material finds of 3.0% (1/33) for Tudor children, or perhaps is also due to low data representation.



Graph 04.11 – Results of evidence of clothes from 3-7-year-old burial evidence from this study

Later medieval clothing evidence decreases from 0.3% (1/320) during 2-24-months-old to 0% (0/348) during 3-7-years-old, which is a statistically significant difference (p = 0.000) (refer to graph 04.11). This is also significantly different to the 26-45-year-old adult incidence of 2.3% (51/2173 p = 0.000). Tudor clothes evidence remains absent at 0.0% (0/79) during 2-24-months-old to 0.0% (0/70) during 3-7-years-old, which is not a statistically significant difference (p = 0.931). This is also significantly different to the 26-45-year-old adult incidence of 1.3% (5/382 p = 0.000). Between the later medieval and Tudor periods 3-7-years-old levels of finds evidence are statistically similar (p = 0.206).

In sum, 3-7-year-old burials appear to demonstrate less irregularity of the earlier years in the life course during infanthood. It appears that children during this age were buried with more uniformity than their adult counterparts, something that Heidi Dawson also noted in her study of medieval non-adults in southern England (2014: 117). However, the 3-7-year-old burial package during both the later medieval and Tudor periods remains broadly different to the adult patterns of burial. Although the burial evidence suggests changes at 3-7-years-old with the inclusion of more evidence of material in the later medieval period for instance, the overall pattern of burial has more similarity to earlier stages of the life course to later stages of adulthood.

Figure 04.18 – 1540 - Henry Brandon, 5 years old - 2nd Duke of Suffolk - Hans Holbein the Younger - Painting - Royal Collection - RCIN 422294

Figure 04.19 – 1597 - Portrait of a Young Boy Aged Three - Painting - Unknown Artist - Private Owner

Figure 04.20 – 1541 - Charles Brandon, 3rd Duke of Suffolk - Hans Holbein the Younger - Painting - Royal Collection - RCIN 422295

later childhood

04.10 | development

Development of children continues during 8-11-years-olds; during these years children learn confidence in movement, develop fine motor skills, become more logical, evolve complex vocabularies, become more thoughtful and likely immerse themselves in complex group play that often involves team-working abilities (Thurtle 2005: 40; Robinson 2008: 194).

04.11 | play

Play remained an important part of later childhood. Even though children started to occupy more adult roles during this age, play was still encouraged (Hanawalt 1993:117; Youngs 2006: 54). Sociologically, play during 8-11-years-old becomes more social, structured and requires communication, but also still includes individual play (Greig 2005: 110; Howard 2017: 71). Pretend play changes during this stage in the life course, but it does not cease altogether, instead of diverging into various different outlets (Robinson 2008: 165; Smith 2010: 168). We know from medieval evidence that play now shifted from predominately inside the household to outside, with a subsequent reduction in parental supervision (Gilcrist 2012: 147; Hanawalt 1993: 29; Howard 2017: 122). It is thought that girls were given a fair amount of time to play still, but direct evidence regarding girls play is lacking (Cunningham 2006: 47; Hanawalt 1986: 160; Youngs 2006: 5). Boys, too, were still allowed freedom to play (Youngs 2006: 54). Sociology tells us that children partake in 'rough and tumble' play – which helps them develops skills, to learn kinetically about their bodies, as well as providing mental well-being (Brown and Patte 2013: 148; Hart and Tannock 2019: 200-202, 216; Robinson 2008: 154; Sheets-Johnstone 2003: 413; Smith 2010: 104, 111-113). Medievally, wrestling and mock fighting were important tools for acculturation for eventual adult masculine roles (Orme 1995:61; Sofaer 2015: 82).

04.12 | archery

From the fourteenth century, there was a legal requirement for boys between 7-17-years-old to practice with a bow, which Parliament reinstated with a new statute in 1512 (Gilchrist 2012: 56; 147; Gunn 2010a: 53; Orme 1995: 63; 2001: 183; 2006: 288; Youngs 2006: 84). Butts were set up in every town, so that on Sundays and Feast days men and boys could practice and, theoretically, they were fined for non-attendance (Simons 1966: 68). Bows were widely owned and children's bows were mass produced from at least the late fifteenth century (Gunn 2018: 97; Orme 1995: 63). Archery was also an excellent socialization opportunity and likely gave some young boys a sense of their agency (Gunn 2010a: 61). Archery, especially using the low bow, required a significant amount of strength and therefore required regular practice (Gunn 2018: 101; Sofaer 2015: 83). The scapula (shoulder blade) of the archers from the *Mary Rose* demonstrate os acromiale – a bony anomaly that separates the epiphysis (end of the bone) from the rest of the bone. It is rare in modern populations, only occurring at around 3-6%; at

the later medieval parish church cemetery site of Ballyhanna, Ireland, it is seen at rate of 7.1% (6/84) (McKenzie and Murphy 2018: 311). The rate from the *Mary Rose* skeletons is 19%. Ann Stirland who analysed the skeletons from the *Mary Rose* has made a convincing argument that this very high os acromiale prevalence rate is a reflection of the strain placed on the bodies of soldiers from archery during warfare (Stirland 2000: 121). This hypothesis is additionally supported from a mass grave from the Battle of Towton, where there is a prevalence rate of 4.7% (2/43), again, showing that military individuals had a higher rate than that of the general population (Holst et al. 2000). The medieval population prevalence of os acromiale from the data set is relatively low at 0.3% (31/10021) – the earliest example from a 17-20-year-old. Why might we not see the condition of the Mary Rose soldiers in the general population? It is possible that os acromiale is caused by something other than archery. This would be supported by the data in this study as 53.9% (14/26) were from adult female skeletons, who would not have been participating in regular archery practice. This pattern of female os aromiale rates is evident at Ballyhanna, where out of the six instances recorded, three were female, two were male and one was an indeterminate adult (McKenzie and Murphy 2018: 311). It is also likely that most bows used by the population were dissimilar to heavy war bows, therefore placing less strain on the shoulder joint. Additionally, skeletal alterations are more likely to happen after a long period of regular use (Stirland 2000: 127). It is also possible that in tudor England many boys were not regularly practicing and there may have been regional variation (Gunn 2010a: 54-65). There was also a decline in the use of archery by the end of the sixteenth century, with the expansion of guns in military use (Gunn 2010a: 68).

04.13 | parenting

As we have explored, there was a pervading later medieval and Tudor view, based on humoral theory, that children were materially of wax, which was very steadily solidifying. During this period of 'setting' it was the responsibility of parents to ensure that their wax-like children remained in shape –both materially and metaphorically –so that when the body did set, the child would be equipped with everything it would need during adulthood (Griffiths 2011: 316; Heywood 2001: 35). Children were considered to be unable to commit mortal sin before the age of seven, however, since the writings of St Augustine, they remained implicitly corrupt from the start (Bailey 2012: 194; Houlbrooke 1992: 141; Ruhräh 1925: 9 7). Therefore, strictness, governance and intercession were central to good parenting during this period, both to equip their children, as well as to help them combat their intrinsic vice (Houlbrooke 1992: 141; McGavin 2015: 246; Orme 2001: 306).

Figure 04.21 – 1602 - Sir Walter Raleigh and His Son Walter - Painting - Unknown Artist - England - National Portrait Gallery - NPG 3914

"*…Lorde what folly is in youth?*
Howe vnhappy be chyldren now a dayes?
And the more pitye, to say the truth.
Theyr parentes mainteyn them in euyll wayes:
Which is a great cause that the world decayes,
For chyldren brought vp in ydlenes and play,
Unthrifty and desobedient, continue always
A neyghbour of myne hath chyldren here by,
Ydle, desobedyent, proude, wanton and nyce…"

Unknown Author
1550
Nice Wanton
(McGavin 2015)

A child could be spoiled by allowing its nature to prevail through inadequate parental intervention. An unstrict parent was essentially negligent and parents who did not correct the faults of their children were seen to be setting them up for failure in later life. Documentary evidence reveals the feelings of anxiety around this responsibility (Bailey 2012: 194; Houlbrooke 1992: 140; Ozment 1983: 113; Ryan 2013: 83). Despite the emphasis on the value of parental strictness, this does not mean that medieval and Tudor parents were unaware of the potential for overcorrection and its negative implications; excessive discipline was widely discouraged and restraint in corrective methods was emphasized (Houlbrooke 1992: 141; McGavin 2015: 250). Crucially, there was a balance that needed to be struck between an overabundance of protection, as children needed to learn to manage for themselves, and instances in which parental intervention was vital. Protestantism reemphasized the necessity and centrality of correcting children of their vices, but this had long been a Catholically held view too (Cunningham 2005: 47; Houlbrooke 1992: 143; Orme 2001: 306; Schnucker 1990: 117). While this was likely of significance during earlier stages of the life course, it is during later childhood that such parental strictness appears to begin to be of vital importance (Griffiths 2011: 316; Hanawalt 1993: 66; Shahar 1990: 170).

"*Bring up thy children in uertuous calling*
Teach them to knowe and feare God
Keep them in due obedience
Nourish them not in delicacye"

Unknown Author
16th c
How to Rule one's Self and one's House
(Bailey 2012: 120)

"Those who spare the rod hate their children, but those who love them are diligent to discipline them"

Proverbs, *Old Testament*, (13:24)

"Suffer little children and forbid them not to come to me; for of such is the kingdom of heavan"

Matthew, *New Testament*, (19:14)

"Folly is bound up in the heart of a boy, but the rod of discipline drives it far away"

Proverbs, *Old Testament*, (22:15)

"My child, do not despise the LORD's discipline or be weary of his reproof, for the LORD reproves the one he loves, as a father the son in whom he delights"

Proverbs, *Old Testament*, 3:11-12

Much of the documentary evidence regarding later medieval and Tudor children comes from parental advice manuals and medical treatise, but just how far these ideas were transmitted to the wider population is unknown (Bailey 2012: 157; Conrad 1992: 82; Cunningham 2005: 38-49; Houlbrooke 1992: 146; Orme 2001: 206; Pollock 1983: 46; Schnucker 1990: 112; Shahar 1990: 77; Youngs 2006: 52). We know that during the fifteenth and sixteenth centuries in England that book prices were decreasing, while book production and circulation increased (Bailey 2012: 129; Gilchrist 2012: 43; McLean 1972: 185; Miles 2001: 10; Ryrie 2017d: 7). Many books went through multiple editions implying that there was a demand for them (Conrad 1992: 82; Newton 2014: 14). Most books published in England during the sixteenth century were written in English (Wear 2000: 40). Additionally, Humanist and Protestant influences encouraged the translation of texts into the vernacular in order to assist with the education of wider audiences (Cox Jensen 2011: 520).

Figure 04.22 – 1565 - Sir George Hastings and Son - Painting - Unknown - British - Leicester Arts and Museums Service

The upper and middle classes purchased and engaged with these texts but it is unlikely that the lower classes did so (Bailey 2012: 157; Houlbrooke 1992: 145; Kline 2012: 30; Rawcliffe 1997: 43; Youngs 2006: 52). The majority of the population remained illiterate (Rütten 2011: 61; Wear 2000: 43). Even so, it is thought that some of these 'academic' ideas were disseminated and known amongst the wider population (Gilchrist 2012: 32). For instance, views of Hippocratic-Galenic medicine was understood by a broad spectrum of society; it is believed that there was not much polarity between lay and learned medical cultures during this period (Lindemann 2010: 87; Newton 2014: 62; Rawcliffe 1997: 32; Stolberg 2014: 649; Wear 2000: 132). However, the transmission of the written word was predominately masculine; few women are believed to have written texts, so medical and advice literature is almost entirely devoid the perspective of women (Wrightson 2003: 114).

04.14 | church

Older children required greater religious instruction during later childhood that in previous stages of the life course (Houlbrooke 1992: 147; Orme 1994: 570; Shahar 1990: 171; Stortz 2001: 100). It is likely that the direct instruction of children from parish clergy only occurred after the Reformation (Orme 1994: 565-566). There is some post-Reformation evidence that 8-11-year-olds experienced episodes of piety which were taken to be of spiritual significance and a sign that their religiosity was increasing with age (Ryrie 2015: 433).

04.15 | monastic orders

Through oblation, young boys from the age of 7-years-old, could also be given to the monasteries for early training to possibly enter the orders, although he could refuse to when he reached the age of majority. By the thirteenth century, this practice had decreased significantly, but had not ended altogether. Aside from oblation, young boys could also work as clerks, altarists and choir boys, which could also start from as early as 7-years-old, but was usually during their late teens (Orme 2001: 226-227; Shahar 1990: 191-192).

04.16 | education

Early education may have been considered vital for children, however before this age it was largely to have been informal (Conrad 1992: 82; Coster 2001: 90; Orme 2001: 245; 2006: 129; Shahar 1990: 170; Witmore 2007: 35). However, older children might now have been given the chance to attend more formal schooling (Houlbrooke 1992: 149; Orme 1973: 60). Formal education had no exact start or finish date, school provision was a parental prerogative, one that almost certainly depended on household finances (Orme 2006: 61, 129; Youngs 2006: 86).

Figure 04.23 – 1450 - Unknown Family - Stained Glass - St Mary, Stowting, Kent - South Window - CVMA no. 005866 - Image Copyright N. Morgan

Girls' formal education is believed to have started around 7-year-olds, although very few girls attended elementary school and would have gone to a female only one or one attached to a nunnery school. Most education for girls at this age was semi-formal, taught in the home, likely by the mother, in order to read, write and do basic

arithmetic, if the mother were able. Girls from wealthier households might receive far more extensive education from a tutor for as many years as the parents wished (Bailey 2012: 9, 164; Bowden 1996: 105-106, 113, 122; Cox Jensen 2011: 512; Cunningham 2006: 87; Fox 2017: 129; Gilchrist 2012: 147; Goldberg 2004a: 262; Hanawalt 1973: 52; 1993: 83; 2007: 37; Laurence 2004: 386; Orme 1973: 52; 2006: 6, 129; 2006: 129; Partee 2006: 42; Phillips 2003: 73, 97; Shahar 1990: 174, 221, 230).

Figure 04.24 – 16thc. - Schoolroom scene in Tudor times - Lithograh – English - Private Collection - Bridgeman Images XJF265591

Boys formal education is also believed to have started around 7-years-old. Few boys went to school, but they were more likely to have the opportunity than girls. Most education at this age was semi-formal, taught in the home, likely by the father, in order to read, write and do basic arithmetic and possibly to prepare for further education.

Elite boys, too, might receive one-on-one tutoring (Badham 2015: 52; Bailey 2012: 164; Bowden 1996: 106, 113, 122; Cunningham 2006: 50; Ferraro 2013: 70; Fox 2017: 129; Gilchrist 2012: 147; Goldberg 2004a: 262; McLean 1972: 62; Orme 1973: 60-62; 2001: 240-242; 2006: 60-67; Partee 2006: 41; Phillips 2003: 73; Shahar 1990: 174; 187, 230; Spaulding and Welch 1994: 310; Youngs 2006: 76). Poor girls and boys were unlikely to have received any education at all; but urban children likely had more opportunities than rural children (Badham 2015: 52; King 1991: 164). Sociological evidence suggests that any accumulation of wealth by poorer families for the purposes of providing their children with an education would almost always be focused upon boys before girls (Kane 2013: 68).

Figure 04.25 – 1470 - Boy being taken to school by his parents - Stained Glass - Norwich - Stained Glass Museum, Ely Cathedral - V&A Museum - C.351-1937

Figure 04.26 – 1534 - Children of William and Sebell Este - Brass Rubbing - Radnage, Buckinghamshire - Nave Wall - John Page-Phillips 1970

04.17 | marriage

Marriage during childhood at any age is thought to be rare, but it was legally and socially possible. Although marriage was usually not permitted until puberty (12-years-old for females, 14-years-old for males), they could be pre-contracted in marriage from 7-years-old, although this was almost exclusively restricted to upper-class households (Ben-Amos 1994: 32; Houlbrooke 1992: 65-66, 166; Orme 1994: 571).

04.18 | law

Children gradually acquired legal status through royal, secular (local), canon and miscellaneous law (Guth 2004: 77, 89; Helmholz 2007: 40; Orme 2001: 8; 327). By the sixteenth century the law adopted the concept that children from 7-seven-years-old could now be found guilty of a felony (Fleming 2001: 60; Orme 2001: 324). However, between the ages of 7-12-years-old, in practice, it is believed that most children were not considered guilty of felony crimes (Orme 2001: 324). An Act of 1536 meant that local authorities could now put any children over 5-years-old found begging and without family into service (Cunningham 2006: 95; Houlbrooke 1992: 154; Orme 2001: 91; Partee 2006: 4). However, any child aged 5-12-years-old that refused work was not to be corporally punished, suggesting the children were viewed materially different to the youths (Helmholz 2007: 43; Orme 2001: 91). Therefore, this stage of the life course meant that children *technically* became more liable in the law, but in practice, they still had some view of buffering during this stage of the life course.

04.19 | confirmation

After baptism, the second sacrament was that of confirmation, which remains something of a mysterious rite, as it was rarely documented (Gilchrist 2012: 187; Ives 2012: 28). It is unknown at what specific age confirmation was administered and there was no contemporary consensus. A few believed it could be done shortly after baptism, others from 5-years-old or 7-years-old or 12-years-old and in practice it is likely to have varied as children would have to wait until a bishop was in the vicinity to perform the rite (Gilchrist 2012: 187; Orme 2001: 30, 217-218; Shahar 1990: 109). Confirmation was carried out by a bishop, who would start by asking the child for their name (Orme 2001: 220). The child needed to be presented by a sponsor who was an adult of the same sex (but not a parent or godparent) (Orme 2001: 220). The catholic ceremony saw the bishop make a cross on the forehead in chrism, before reciting "*I sign you with the sign of the cross and confirm you with the chrism of salvation. In the name of the Father, and the Son, and the Holy Spirit. Amen.*" (Gilchrist 2012: 187; Orme 2001: 220). Once anointed, the child had a fabric bandage tied around their head to keep the chrism in place (or at least around the neck), which was to be worn for three to eight days, until the child visited their parish priest who would wash their foreheads in the font to remove the chrism (Orme 1994: 577; 2001: 220; Thomas 1973: 42). Like baptism, confirmation was likely a very social event, one in which the child would experience new elements of their own agency (Orme 1994: 577). Interestingly, confirmation survived the Reformation, changing in nature and becoming only achievable once doctrinal competency was been demonstrated by the child; however, its retention speaks to its value (Hattersley 2018: 92; Orme 2001: 201; Phillips 2003: 31). However, given its ambiguous nature, it cannot be considered a rite of passage in the life course and it did not confer 'adult' status (Orme 1994: 578; 2001: 220; Ryan 2013: 76).

04.20 | clothing

There is limited evidence for the dress of girls at this age; it is imagined that they continued to be dressed in smocks, petticoats and waistcoats, possibly with kirtle, skirts, sleeves, gowns, cloaks, coifs, cuffs, ruffs, kerchiefs, bonnets, hoods, gloves etc. (Buck 1996: 90-91, 165-174; Huggett and Mikhaila 2013: 42-50). Girls' hair is often depicted in sources as unbound and loose; the reality is that it was likely braided or plaited, but there is little evidence to support this (Buck 1996: 170; Huggett and Mikhaila 2013: 49). Boys continued to be dressed in skirts, long coats and hose, possibly with slops, doublets, sleeves, gowns, cloaks, jerkins, ruffs, cuffs, collars, caps, hats, etc. (Buck 1996: 89-91; 150-164; Hayward 2009: 5; Houlbrooke 1992: 150; Huggett and Mikhaila 2013: 30-38).

Figure 04.27 – 16th c. - Boy in White - Painting - English - Private Collection - Philip Mould Ltd - Bridgeman Images MOU1262565

By the sixteenth century, shoes were made of leather or cloth, with square-toes, low heels and buckle fastenings (although this shape narrowed and rounded throughout the century) (Buck 1996: 89; 162, 172; Gilchrist 2012: 82). By this point during later childhood, it is considered that there were distinctive gendered differences in the clothing of girls and boys (Buck 1996: 81,149; Gilchrist 2012: 81, 113).

04.21 | gender apprenticeship

Gender identity altered throughout the life course (Gilchrist 1999: 116; 2012: 38). By 8-11-years of age, gender apprenticeship was continuing and gender roles were increasingly prominent in the lived experience of children (Derevenski 1997: 199; Gilchrist 1999: 90; Gowland 2006; 147). Ethnographic evidence suggests that from approximately 5-7-years-old gendered differentiation increases in prominence (Annette Grove and Lancy 2018: 95). We know that medieval and Tudor family economic duties had subtle differences in activities, clothing was markedly different and educational opportunities were predominately available for boys. There were also social status differences demonstrated through gender expression. It is likely that children from elite families experience more rigid boundaries between genders than experienced in the poorer classes (Gilchrist 1999: 116; Shahar 1990: 239). Additionally, there was likely some gender liminality experienced at this age; with boys theoretically progressing from spending the majority of their time with their mothers, to instead spending most of their time with their father (Chedgzoy 2007b: 185). Importantly, while gender differences may have still been relatively minor and the boundaries still somewhat fluid at this stage, gender was experienced by children themselves, rather than something that they were viewed as; they were now aware of their gender and aware of the burgeoning differences.

04.22 | the seventh inheritance + hebdomadism

Historical documentary evidence consistently suggests that the age of 7-years-old was an important point of divergence within the medieval life course. A multitude of both Classical and medieval sources indicate that the seventh year was significant. 'Hebdomadism', which can be defined as the belief in the uniqueness and sacredness of the number seven, was widespread throughout millennia and various cultures (Sarton 1993: 165, 328; Still 1932: 19; Zaroff 2016: 28). However, establishing the lived reality and experience of the seventh year was in the life course is harder to ascertain. Bioarchaeological evidence can provide us with the ability to potentially age non-adult skeletons within years of their biological age. Therefore, the aim of this section is to provide new evidence about the life course through the application of morbidity data which might be able to help provide evidence the or seventh year, to ascertain whether the seventh year was significant in the life course, or if this is just a self-perpetuating idea.

Later medieval culture adopted hebdomadism – however, determining exactly when, where and how this occurred is complex. There is some direct evidence as far back as the Sumerian period that seven was considered to be an important number, but hebdomadism is considered to almost certainly pre-date this (Zaroff 2016: 28).

The Babylonians are known to have perceived seven as significant (Sarton 1993: 165; Williams 1945: 258; Zaroff 2016: 28). They were able to identify the seven planets visible to the naked eye – the Moon, Venus, Mars, Jupiter, Saturn, Mercury and the Sun (Boll 1950; Sarton 1993: 165; Zaroff 2016: 28). In turn, they were the first to organise the days of the week into seven (Sarton 1993: 327). This broadly fitted into the lunar month of twenty-eight days (four sevens), which also gives the significant of seven some natural rhythm (Sarton 1993: 328; Williams 1945: 257). The Ancient Greeks also placed importance on the number seven (Overstreet 2009: 547). By the Hellenistic period, the week was also divided into seven days according to the seven planets (Archambault 1966: 194; Sarton 1993: 327).

Figure 04.28 – 1591 - An Unknown Boy Aged Seven - Painting - English - Weiss Gallery, London

Importantly, some Greek philosophers also viewed the significance of seven in terms of the life course, attributing it to theoretical divisions of the early ages of man theories. Hippocrates (460-370 BC) was probably the most influential source on this subject, in his writings in *Fleshes,* he signifies the importance of the seventh year within the life course (Archambault 1966: 194; Golden 1990; Overstreet 2009: 550; Still 1932: 5). The essential components of embryonic development was also considered to occur in seven days and disease was often experienced at critical periods which within multiples of seven (Still 1932: 5). Aristotle (384–322 BC) considered that boys should start their formal education from the age of 7-years-old (Orme 2001: 68; 2006: 12). By the first century BC, the Romans had also adopted a division of the week into seven, in accordance with the seven planets (Sarton 1993: 328). Roman philosophers continued to divide life course periods into seven (Overstreet 2009: 547). Philo (20 BC–AD 50), building upon Hippocratic material, also attributed importance to the seventh year (Overstreet 2009: 550). St Augustine (AD 354-430) considered that a child of any age was capable of immorality, they were incapable of *mortal sin* before the age of 7-years-old (Ben-Amos 1994: 12; Ferraro 2013: 6; Houlbrooke 1992: 141; Rubenstein 2003: 54; Schnucker 1990: 114). The significance of seven became widely adopted into Jewish scripture and seven became the most recurrent word in scripture after names of gods, articles, conjunctions and pronouns (Williams 1945: 258). According to Genesis, the world was created in seven days – the seventh day being the Sabbath (Archambault 1966: 204; Williams 1945: 258). In Muslim custom, a child was the duty of the mother until 7-years-old, thereafter they passed into the guardianship of his father (Williams 1945: 259). Medieval Christianity continued to emphasise hebdomadism, with Seven Sacraments, Days of the

Week, Deadly Sins, Penitential Psalms, Wonders of the World, Works of Mercy, Classical Planets, Liberal Arts, Seas, Gifts of the Holy Spirit, Vials of Wrath, Angels, Sages, Sleepers, Champions of Christendom, Wise Men of Greece, etc. (Williams 1945: 258). Classical views of the ages of man were incorporated into the language of the New Testament, in particular, with the word '*Paidíon*' meaning a boy from birth to 7-years-old (Overstreet 2009: 538, 563). Later medieval writers inherited Classical and Jewish theories of *aetates hominum* (ages of man) life course which divided the life course into two, three, four, six, seven or ten stages (Archambault 1966: 200; Witmore 2007: 27). The most common schemes usually placed the first stage in the life course as between birth and the seventh year (Gilchrist 2012: 34; Hanawalt 1986: 189; Heywood 2001: 84; Houlbrooke 1992: 150; Orme 2001: 46; Shahar 1990: 24, 174). The widely translated compendium *De proprietatibus rerum* written by Bartholomaeus Anglicus (AD 1203–1272) considered the first phase of the life course of *infantia* to extend from birth to 7-years-old (Lynch 2017: 26; Witmore 2007: 28). The physician Bernard de Gordon (AD 1270-1330) attributed the seventh as the moment to start moral and intellectual education (Demaitre 1977: 480). The importance of the seventh year in the life course was also adopted into medieval literature.

Figure 04.29 - 1579 - Elizabeth Smythe Aged Seven - Painting - Cornelis Ketel - Christies - Private Ownership

Geoffrey Chaucer (AD 1343 – 1400) depicted childhood of a seven-year-old boy as being a period of immaturity in *The Nun's Priest's Tale* (Lynch 2017: 37). In the *Prioress's Tale*, education is signalled as starting from 7-years-old (Orme 2006: 59). William Shakespeare (AD 1564 – 1616) incorporated the seven ages of man into *As You Like It* (Sarton 1993: 165; Williams 1945: 259; Witmore 2007: 28). Thomas Deloney (AD 1543 – 1600) wrote that when children became 6-7-years-old they were able to provide for themselves (Power 1924: 204). In the advice literature treatise *The Boke named the Governour* written by Sir Thomas Elyot (AD 1490 – 1546) suggests that from 7-years-old boys should be taken from the care of women and placed under the guidance of male tutors (McLean 1972: 62; Spaulding and Welch 1994: 298).

Although much of the views of the significance of seven was inherited, shared and copied; much of it also appears to have been independently attributed. The fixation with the number seven might have something to do with its arithmetical uniqueness, it being a prime number, factorless, etc. (Bellos 2014: 12-16; Williams 1945: 257).

Again, seven is significant in the lunar month (28 days) and therefore gives the number some inherent meaning (Sarton 1993: 328; Williams 1945: 257). It also seems to be pervasive within folklore in many different periods (Williams 1945).

By the later medieval and Tudor periods, there was widespread view of the seventh year being a stage of transition (Ferraro 2013: 6; Gowland and Penny-Mason 2018: 763; Orme 2001: 46; Young 2006: 71). The seventh year was even viewed by some as the age of reason (Gilchrist 2012: 208; Heywood 2001: 84; Shahar 1990: 24). This was widely incorporated into advice literature (Bailey 2012: 133; Lynch 2017: 25). The seventh year had become significant within lived experience of the life course. Although there was no fixed age for confirmation, it is often thought to have occurred around 7-years-old (Gilchrist 2012: 187; Orme 2001: 46). By the twelfth century, canonical law stated that children from 7-years-old could enter marriage contracts, but not marriage itself (Ben-Amos 1994: 32; Fleming 2001: 14; Goldberg 2004a: 26; Houlbrooke 1992: 65-66; Orme 2001: 68). Between 6-8-years-old it is thought that children adopted gendered clothing (Coster 2001: 74; Gilchrist 2012: 81, 112-113; Houlbrooke 1992: 150; Shepard 2017: 340). From the fourteenth century there was a legal requirement of boys from 7-years-old to practice weekly with a bow (Gilchrist 2012: 56; 147; Gunn 2010a: 53; Orme 1995: 63; 2001: 183; 2006: 288; Simons 1966: 68; Youngs 2006: 84). It is also during 7-years-old that children of the nobility could expect to start practicing for later military roles (Gilchrist 2012: 147; Orme 2001: 183; 2006: 288; Youngs 2006: 84). From the age of 7-years-old boys could be given to monasteries through oblation for early training (Orme 2001: 226-227; Shahar 1990: 191-192). If children were to receive some form of schooling, the seventh year was considered the age at which to start formal instruction, especially amongst the nobility (Ferraro 2013: 6; Gilchrist 1999: 117; Orme 2006: 59, 129; Shahar 1990: 187-189). At 7-years-old children could be charged with a felony crime (Fleming 2001: 60; Orme 2001: 68, 324). From the 7-years-old, children are considered to have shifted from a period of relative freedom to more structured roles to contribute to the family economy, which also appear to have been gendered roles (Bowers 1999: 18; Coster 2001: 37, 74; Cunningham 2005: 81; Fleming 2001: 64; Gilchrist 1999: 118; 2012: 146; Goldberg 2004a: 111; Hanawalt 1986: 5, 148; Heywood 2001: 37; Orme 2001: 307; Pelling 1988: 135; Shahar 1990: 243; Youngs 2006: 80). It is believed that until the age of 7-years-old children had been under the care of the mother, but come the seventh year children maintained a greater proximity to the parent of their own gender (King 1991: 19; 2007: 393; Shahar 1990: 115-116, 174; 1994: 257; Shepard 2011: 355; Snook 2016: 4). It is also from 7-years-old that children could enter life cycle service, either as a domestic servant or as an apprentice (Bailey 2012: 12; Cunningham 2006: 37; Ferraro 2013: 69; Fleming 2001: 64; Griffiths 2011: 322; Hindle 2011: 305; Shahar 1990: 232; Shepard 2011: 363). Philippe Ariès pictured medieval children as merging naturally into adult society from about the age of 7-years-old, although this view has since been disputed, the legacy of this view has permeated popular perceptions of medieval childhood (Cunningham 2005: 27; Hanawalt 1986: 183; 1993: 7; Heywood 2001: 115).

Whether or not it was drawn from 'academic' treatises or not, it is clear from the evidence that there was a view of seven as a popular phenomenon. Seven is so pervasive in the source material that it must have been

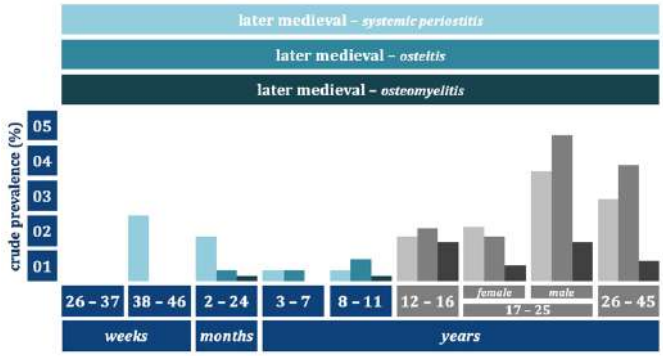
unavoidable for most members society. It was visible in ages of man art, in biblical sources, astrological understandings and in folk culture (Williams 1945). It is also more than possible that academic ideas were transmitted to a wider audience, especially from the introduction of the printing press (Bailey 2012: 129; Gilchrist 2012: 32, 43; McLean 1972: 185; Miles 2001: 10; Ryrie 2017d: 7). For instance, views of Hippocratic-Galenic medicine was understood by a broad spectrum of society; it is believed that there was not much polarity between lay and learned medical cultures, much of which instilled the importance of seven (Lindemann 2010: 87; Newton 2014: 62; Rawcliffe 1997: 32; Stolberg 2014: 649; Wear 2000: 132).

There is additional bioarchaeological evidence relating to the seventh year of age. A study of dental wear in children in later medieval England noted a change in wear patterns from 7-years-old (Dawson and Robson-Brown 2013: 436). Another study investigating dental caries in early medieval Europe also noted an increase in carious lesions from 7-years-old (Stranska et. al 2015: 72). Finally, there is some burial evidence that signifies seven as significant (Gilchrist 2012: 208). At the hospital cemetery site of St James and Mary Magdalene, Chichester, children below the age of 7-years-old were predominately buried in a separate area, with children older being interred with adults (Magilton et. al 2008: 110).

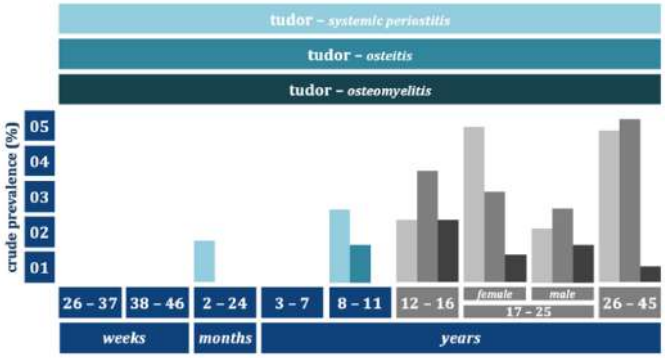
During data collection, non-adult skeletons which had been given more specific age estimations were assigned to their midpoint age (for instance, 3.5-4.5 were assigned to 4) in order to view morbidity on a year-by-year basis. Skeletons of younger non-adults can potentially be aged within a year or so based on a combination of fusion points, dental development, dental eruption and long-bone length (Buckberry 2018: 56; Cunningham et. al 2016; Lewis 2007; 2017; Scheuer and Black 2004). However, it is likely that given the complexities involved in ageing non-adults skeletal remains that in the reporting literature there are degrees of error, likely to within at least a year, resulting in margin of error between 6-8-years-old (Buckberry 2018: 56). Additionally, there is also a fluidity between biological, chronological and social age (Gowland 2006:143, 153, 2018:105; Sofaer 2006:77). Therefore, it can be assumed that non-adults represented between the ages of 6-to-8 years-old will be broadly reflective of the seventh year. Unfortunately, the tudor data was too poorly represented to allow for the exploration for seven within this period (n=7). As previously mentioned, attributing sex under the age of 17-years-old cannot be established (Lewis 2007, 2017; Scheuer and Black 2004).

Data from this thesis revealed that assessing morbidity year-on-year demonstrated limited variation between the different ages. The evidence for PNBF for 6-year-olds is 7.4% (7/95), 7-year-olds is 5.6% (4/71) and 8-year-olds is 6.7% (13/195); there are no statistically significant changes between 6-7-year-olds (p = 0.656) or between 7-8-year-olds (p = 0.760). There was slightly more variation between systemic PNBF in 6-year-olds of 2.1% (2/95), 7-year-olds of 0% (0/71) and 8-year-olds of 1.0% (2/195); but the changes are not statistically significant between 6-7-year-olds (p = 0.738) or between 7-8-year-olds (p = 0.793). There is low evidence of osteitis for 6-year-olds of 1.1% (1/95), 7-year-olds of 1.4% (1/71) and 8-year-olds of 1.0% (2/195); there are no statistically significant changes between 6-7-year-olds (p = 0.609) or between 7-8-year-olds (p = 0.793). None of the ages

presented evidence of osteomyelitis. There is a similarly low pattern of fractures for 6-year-olds of 0% (0/95), 7-year-olds of 0% (0/71) and 8-year-olds of 1.0% (2/195); with a slight increase in fractures during the eighth year, although the changes between 6-7-year-olds (p = 0.835) or between 7-8-year-olds (p = 0.793) are not statistically significant. In sum, the year on year morbidity evidence reveals statistical similarity in patterns between age groups.

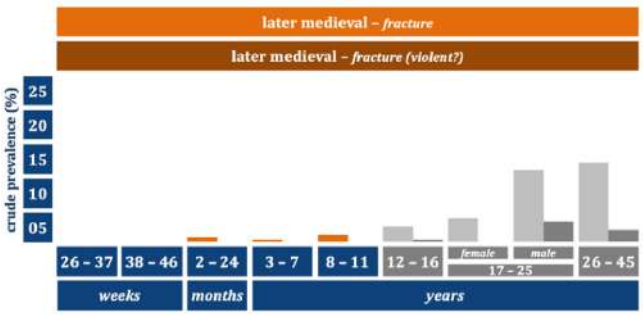


Graph 04.12 – Results of later medieval 8-11-year-olds infectious pathology from this study

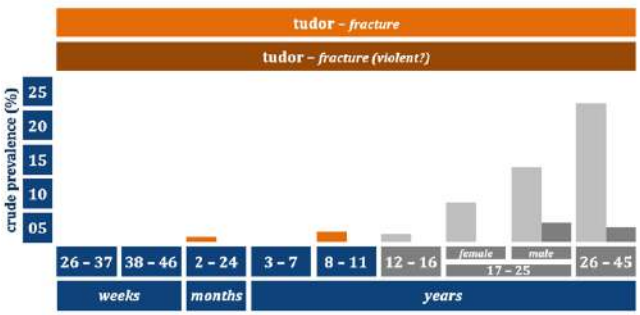


Graph 04.13 – Results of Tudor 8-11-year-olds infectious pathology from this study

Next, it is possible to assess morbidity before and after the of seventh year by comparing the data of 3-7-year-olds and 8-11-year-olds. Again, rates of PNBF are similar between 3-7-year-olds at 6.8% (32/474) and 8-11-year-olds at 6.9% (32/467); there is no statistically significant difference (p = 0.978) and this data is well represented and suggests that there were few differences in PNBF rates during these stages in the life course period. There was a similar pattern seen in the systemic PNBF with of 3-7-year-olds at 0.4% (2/475) and 8-11-year-olds at 0.4% (2/467) (refer to graphs 04.12 & 04.13); again, there is no statistically significant difference (p = 0.986), suggesting these rates were similarly low. However, there was a minor increase in osteitis between 3-7-year-olds of 0.4% (2/475) and 8-11-year-olds of 0.9% (4/467), although this change is not statistically significant (p = 0.400).

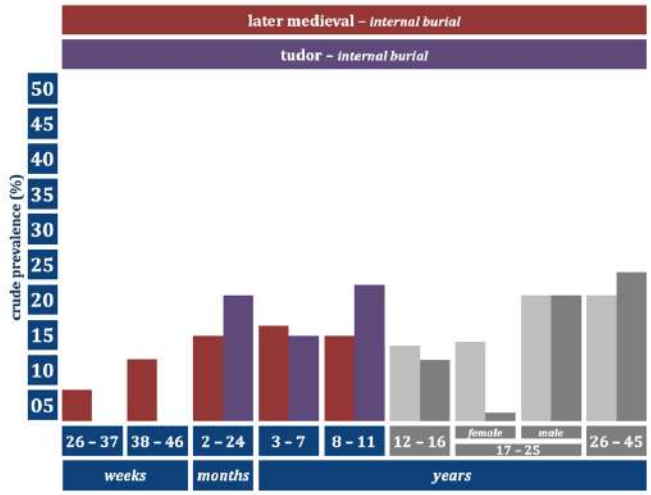


Graph 04.14 – Results of later medieval 8-11-year-olds fractures from this study

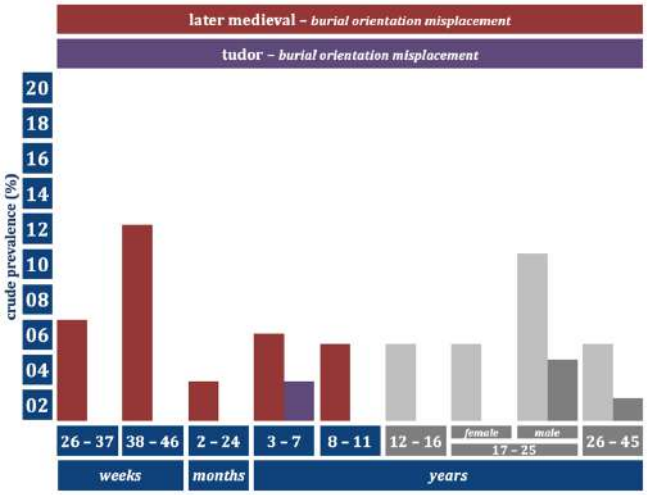


Graph 04.15 – Results of Tudor 8-11-year-olds fractures from this study

There are additional increases in trauma between the ages. There appears to be a small increase in fractures between 3-7-year-olds from 0.2% (1/475), to 8-11-year-olds of 0.9% (4/467), although the changes are not statistically significant (p =0.172) (refer to graphs 04.14 and 04.15). In sum, there are only minor variations in morbidities between 3-7-year-olds and 8-11-year-olds, with no statistically significant changes observable in the morbidity evidence during this period of the life course. Therefore, the there is no morbidity evidence to support the view that the seventh year of life was particularly transitional.

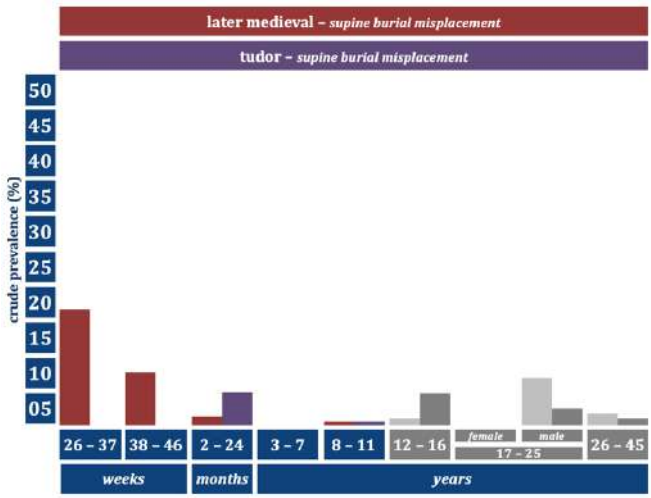


Graph 04.16 –Results of 8-11-year-old evidence of internal burial placement from this study

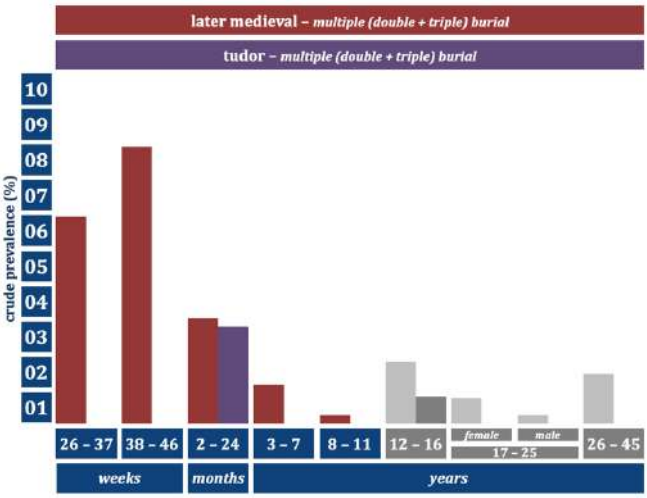


Graph 04.17 –Results of 8-11-year-old evidence of burial orientation misplacement from this study

Finally, beyond pathological evidence, there is also burial archaeological evidence to interpret. In terms of burial location later medieval internal burial decreases from 13.9% (60/430) during 3-7-years-old to 12.2% (48/392) during 8-11-years-old, which is not a statistically significant difference (p = 0.468) (refer to graph 04.16). Later medieval burial orientation misplacement decreases from 5.1% (20/393) during 3-7-years-old to 4.6% (16/347) during 8-11-years-old, which is not a statistically significant difference (p = 0.762) (refer to graph 04.17).

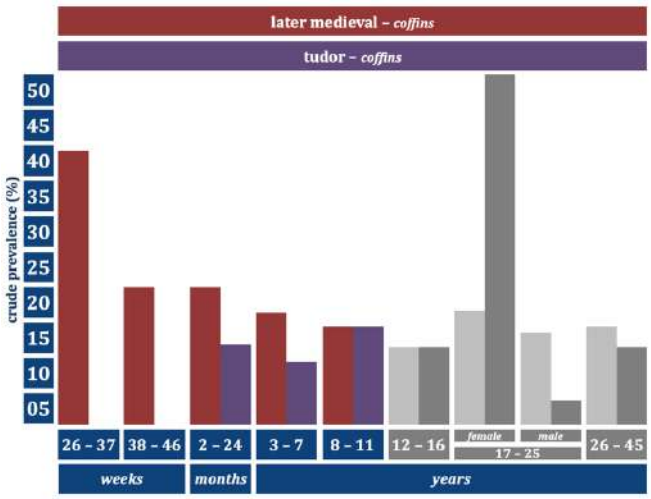


Graph 04.18 –Results of 8-11-year-old evidence of supine burial misplacement from this study



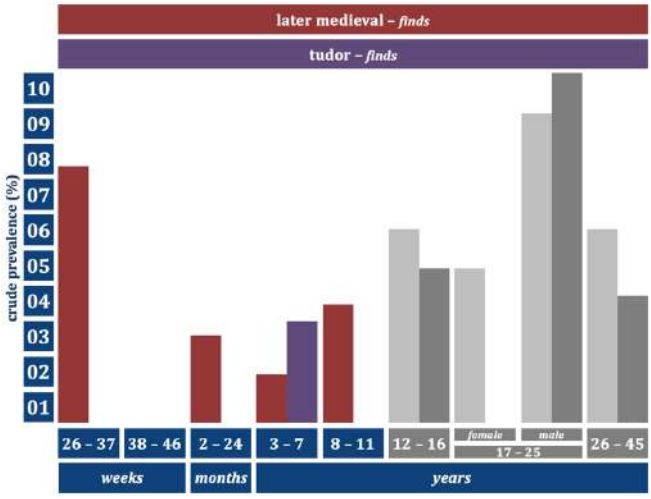
Graph 04.19 – Results of 8-11-year-old evidence of burials of multiple occupancy from this study

Later medieval supine burial misplacement increases from 0.0% (0/424) during 3-7-years-old to 0.3% (1/351) during 8-11-years-old, which is a statistically significant difference (p = 0.000) (refer to graph 04.18). Later medieval burials of multiple occupancy decrease from 1.3% (5/393) during 3-7-years-old to 0.3% (1/347) during 8-11-years-old, which is not a statistically significant difference (p = 0.136) (refer to graph 04.19).

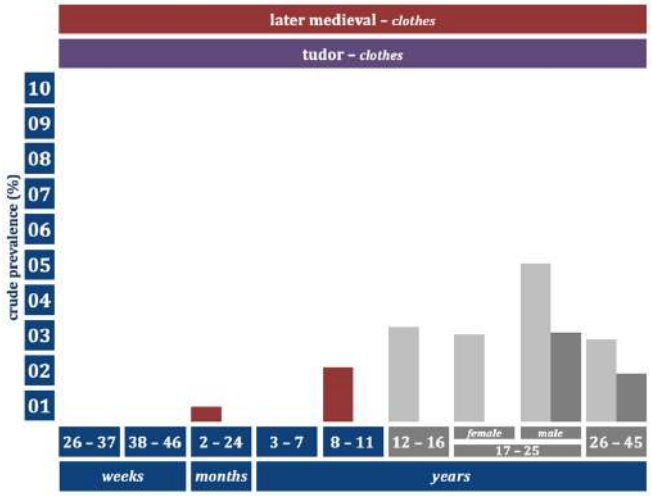


Graph 04.20 – Results of 8-11-year-old evidence of coffins from this study

Later medieval coffin evidence decreases from 15.6% (59/378) during 3-7-years-old to 13.5% (42/310) during 8-11-years-old, which is not a statistically significant difference (p = 0.447) (refer to graph 04.20). There is a stage-on-stage decrease in coffin usage from infancy to adulthood, so this change is likely just reflective of this decrease noted in every age group.



Graph 04.21 – Results of 8-11-year-old evidence of finds from this study



Graph 04.22 – Results of 8-11-year-old evidence of clothing from this study

Later medieval finds evidence increases from 1.4% (5/543) during 3-7-years-old to 3.3% (10/299) during 8-11-years-old, which is a statistically significant difference (p = 0.010) (refer to graph 04.21). Later medieval clothes evidence increases from 0.0% (0/543) during 3-7-years-old to 1.7% (5/468) during 8-11-years-old, which is a statistically significant difference (p = 0.000) (refer to graph 04.22).

In sum, despite a difference in associated burial finds and evidence of clothing, the rest of the collective burial archaeological evidence additionally supports the view of continuity between 3-7-year-olds and 8-11-years-olds and does not have evidence to support a transitional age in the manner of burial.

There is then a point of divergence between the historical and bioarchaeological evidence. This could be due to the importance of the seventh year of the life course being held more as a later medieval and Tudor theory, the importance of which did not extend into lived practice of people lives. It is also possible that measuring skeletal morbidity is not a sensitive enough tool to assess the embodiment of the seventh years within in the life course; bodily markers of differences in morbidity may have been confined to the soft tissues which are lost to us. It is also feasible that in earlier medieval periods and in different geographic regions that there is evidence for the significance of seven in bioarchaeological evidence. There could potentially be gendered differences in relation to the seventh year that cannot currently be determined (Young 2006: 71). It is also entirely possible that seven has been overemphasised as a watershed moment in the life course – this has previously been noted by several historians (Coster 2001: 52; Heywood 2001: 103; Orme 1994: 571; 2001: 68). While we know that such occurrences such as life cycle service, oblation, marriage and apprenticeship could all happen from 7-year-olds, all of these practices of starting at an early age were decreasing significantly by the fifteenth and sixteenth centuries; more significant changes were now more likely to occur around the age of 11-13-years-old (Coster 2001: 52). As we shall see, there were significant morbidity and archaeological burial changes between the ages of 12-16-years-old. In sum, as there is collectively no indication from palaeopathology and funerary archaeology of any significant changes from thousands of burials and skeletons around the threshold of seven, this data can act as negative evidence in regards to the lived experience of the seventh year as transitional in later medieval England.

04.23 | work

Some children might have been employed in more formal occupations from an earlier age. A twelfth to fourteenth century kiln at Olney Hyde in Buckinghamshire, producing roof tiles and pottery revealed evidence of some child-sized fingerprints, suggesting they were involved in the manufacturing process (Gilchrist 2012: 147). Some documentary evidence reveals that girls from the age of 6-years-old were in textile manufacture during the sixteenth century, who, unlike their male counterparts were less likely to be in school (Houlbrooke 1992: 154). However, boys too were also employed from this age, but in fewer numbers than girls (Houlbrooke 1992: 154). Early years work such as this did occur but is believed to have been a relatively uncommon occurrence (Cunningham 2005: 84; Orme 2001: 309). Some children may also have been involved in 'life cycle' employment, that is semi-temporary migration of youths to board in a new household for employment either in domestic service or apprenticeship (Bailey 2012: 12; Ben-Amos 1994: 2; Fleming 2001: 72; Gilchrist 2012: 38; Goldberg 2004a: 21-23; Hanawalt 1993: 173-180; Houlbrooke 1992: 66; Pelling 1988: 148; Ryan 2013: 47; Shepard 2011: 362; Youngs 2006: 110). This practice was beginning to decrease during the sixteenth century but was still prominent (Bailey 2012: 12). The famous quote from the Venetian Ambassador to England described this early

apprenticeship of children from the age of 7-years-old to indicate a lack of parental affection, with the children being subjected to hard service from this age (Houlbrooke 1992: 152; Sneyd 1846: 26). Life cycle service was considered to be in the interests of children, who gained an excellent training experience, vital networking opportunities, a sense of independence and agency and most importantly, the potential for better conditions than the family household, as most service in theory aimed to work socially 'upwards' (Hanawalt 2002: 456; Houlbrooke 1992: 152). Early service was, however, becoming less common throughout the sixteenth century (Hanawalt 1993: 113; Houlbrooke 1992: 153). It is also more likely for children from poorer households to be sent into service or apprenticeship early, from households who struggled to maintain them (Griffiths 2011: 322; Hindle 2011: 30; Shepard 2011: 362-363). However, even aristocratic children undertook life cycle service (Phillips 2003: 108). On the whole, formal employment was delayed until later in the life course, when both girls and boys were perhaps more responsible and practically useful (Ben-Amos 1994: 59; Coster 2001: 52; Hanawalt 1993: 114; Phillips 2003: 130; Shahar 1990: 232).

04.24 | the family economy

Figure 04.30 – 15thc. - The Family of John Bacon and Wife - Painting - St Catherine's, Fritton - Rood Painting - Authors Own

Older children became active contributors to the medieval family economy (Annette Grove and Lancy 2018: 94; Baxter 2005: 11; Cunningham 2005: 84; Ferraro 2013: 65; Gilchrist 2012: 53; Hanawalt 1986: 183; 2002: 450; Kamp 2001: 2; Lewis 2011b: 2; Orme 2001: 307; Wilkie 2000: 108; Youngs 2006: 80). There is no direct evidence of the everyday activities of children, so we are forced to make some assumptions based on the indirect evidence available (Coster 2001: 74; Shahar 1990: 251). In an agrarian society, individuals would be expected to make whatever contribution they could to the family economy (Coster 2001: 37; Shahar 1990: 243; Sharpe 1997: 74). Childhood labour was not intensive, children largely carried out informal tasks and chores were intended to

match capability (Ben-Amos 1994: 43; Hanawalt 2002: 450; Ferraro 2013: 69; Shepard 2011: 367). Girls were thought to craft, spin, knit, gather, forage, tend animals, process food, fetch water, collect fire wood, child care, clean, laundry etc. (Ben-Amos 1994: 41; Coster 2001: 37; Fleming 2001: 63; Goldberg 2004a: 261; Hanawalt 1986: 43, 56; Houlbrooke 1992: 153; Youngs 2006: 80). Boys were thought to undertake supplementary agricultural tasks including, gathering, foraging, animal tending, fetching water, collecting fire wood, child care, cleaning, etc. (Ben-Amos 1994: 41; Hanawalt 1986: 52, 158; Houlbrooke 1992: 153; Orme 2001: 307; Youngs 2006: 80). While there are many tasks which both genders undertook, there were also some gendered distinction in roles.

As we have already previously mentioned the morbidity evidence for 8-11-year-olds (above), we can summarise that non-specific infection patterns were relatively similar as they had been during 3-7-years-old. However, there does seem to be a minor shift in trauma patterns which demonstrate a slight fracture increase. This evidence fits with the historical view that the family economy roles remain predominately based within the household environment, with increasing levels of trauma suggesting a shift in potentially dangerous patterns of work inside and outside the household (Gilchrist 2012: 53). Higher rates of trauma might also be a reflection of the slackening of parental supervision of older children (Dyer 2013: 23; Hanawalt 1986: 181; Orme 2001: 100).

04.25 | dying, mortality + funerary evidence

How did children prepare for death? For later medieval and Tudor adults – *ars moriendi* – the art of dying – in the correct Christian process, was of the utmost importance. Children, like adults, also wished to receive a good death (Houlbrooke 1998: 186; Newton 2017: 101). During the mid-sixteenth century, Thomas Becon wrote that children should "*learn to die*" from a young age (Cunningham 2006: 68).

Figure 04.31 – 1584 - Robert Dudley - Effigy - Stone, Beauchamp Chapel, St Mary, Warwick - Aged 3, son of Robert and Lettuce - Authors Own

Death was to be spiritually prepared for, through repentance, prayer, biblical reading, declaring willingness to die, etc., activities guided by adults (Newton 2014: 98, 223; 2017: 93). Children would likely have first-hand experiences of the death of other siblings (Newton 2017: 92). The documentary evidence suggests that the response of children to dying was predominately ambivalent, because of their belief in salvation (Newton 2014: 5). Of course, there is also evidence that dying was a distressing and traumatic experience (Newton 2014: 5). Despite the similarities between child and adult deaths, there were some distinctive child-specific experiences in dying. The Christian child was viewed as beings closer to God than adults and the dying child grew in proximity to God, possibly exerting flashes of divinity beyond their years due to their proximity to death (Houlbrooke 1998: 18; Kroll 1977: 389; 6; Newton 2014: 183; Walsham 1994: 285). This seems unique to dying children. Additionally, the imaginations of children are often dissimilar to those of adults, so the experience of the prospects of death are likely to have been unlike those of adults (Newton 2014: 223; 2017: 101).

"I would God thou had asked that fellow that made himself so with of things to come, what he perceived of this year: whether he thought it should be a year of health or of sickness."

Anonymous School Teenage Boy
16th c
Letter
(Orme 2001: 117)

Figure 04.32 – 1588 - Nathaniel Bacon - Brass Rubbing - Essex - John Page-Phillips 1970

Figure 04.33 – 1523 - The Child - Woodcut - Hans Holbein - Pictures of Death - Basel - Bibliotheque nationale de France

Figure 04.34 – 1548 - The Family of Sir George and Constantia Blount - Effigy - Stone - St John the Baptist, Kinlet - Authors Own

What were the rates of childhood mortality? Mortality estimates tell us that between 20% to 45% died in the first ten year of life (Coster 2001: 25; Houlbrooke 1992: 136; Orme 2001: 113; Shepard 2011: 360; Viazzo 2001: 165) (see figure 04.35).

SOURCE	REFER	DATE RANGE	AGE RANGE	10%	20%	30%	40%	50%
ENGLAND DOCUMENTARY	COSTER (2001: 25)	1450 – 1800	0–10 years-old					
ENGLAND DOCUMENTARY	ORME (2001: 113)	1540 – 1599	0–10 years-old					
ENGLAND DOCUMENTARY	SHEPARD (2011: 360)	1588 – 1601	0–10 years-old					
ENGLAND DOCUMENTARY	HOULBROOKE (1992: 136)	1450 – 1700	0–10 years-old					
EUROPE DOCUMENTARY	VIAZZO (2001: 165)	1580 – 1589	0–10 years-old					

Figure 04.35 – Summary of Mortality Evidence

Figure 04.36 – 15thc. - Funeral Procession - Illumination - Old St Paul's Cathedral - Project Gutenberg – 16531

As discussed in terms of infancy, there is some historical evidence that suggests children were afforded funeral rites similar to those of adults, but likely to a reduced scale (Daniell 1997: 52; Gilchrist and Sloane 2005: 24; Orme 1994: 571-572; Youngs 2006: 198). There is unfortunately not enough evidence to suggest a relationship between the life course and the changing scale of funerary rites based on the age and status of the individual. However, it is likely that funerals by 8-11-years-old were distinctive from those during infancy. It is currently not possible to identify the point at which funeral provision changed in the life course, so this is just an estimation. Additionally, it is not possible to determine the age at which funeral provision was similar to that of adults.

04.26 | some conclusions

- In conclusion, during younger childhood, play appears been an important part later medieval and Tudor childhood.
- The experience of childhood continued to be mediated by the family unit during this stage of the life course – but individual agency increased significantly.

- Formal education was a possibility during this stage of the life course, but it is unlikely that either boys or girls attended.
- There appear to be more significant gendered splits between roles within the family economy, clothing and employment opportunities – however there was likely to have been a marked difference in the experience of gender according to social status.
- The high rates of childhood mortality were still present, but decreasing during early and later childhood.
- The seventh year was potentially conceptualised by later medieval and Tudor people as a turning point in the life course. It was the age that could see the start of oblation, formal education, apprenticeship, marriage, life cycle service, etc. However, the morbidity and burial archaeological evidence collectively suggests that this was perhaps not the lived reality of this age.
- Confirmation would likely have happened during stage in the life course, but pinpointing exactly when this occurred is not possible
- It is possible, but unlikely, that children were in more formal employment during later childhood. Instead, they are likely to have been making more significant contributions to the family economy and this is pattern is likely evidence similarly in an associated rise in traumatic lesions during this age.
- The palaeopathological evidence from this study revealed that both later medieval and Tudor 3-7-year-olds were defined by their general absence of morbidity during this stage of the life course. 8-11-year-old morbidity saw an overall increase but this proved to be statistically insignificant.
- Burial practices largely revealed overall uniformity between 3-7-year-olds and 8-11-year-olds. Burial was also less varied than expressed during stages of infanthood and adulthood.
- Finally, funerary evidence reveals that during childhood burial was similar between the later medieval and Tudor periods for 3-11-year-olds, with most significant difference being that Tudor child burials had less evidence of associated finds material and clothing.

5

CHAPTER 5 | life course – (early) youthhood

05.01 | introduction

The purpose of this chapter is to explore the life course of the medieval and Tudor child through a temporal lived perspective. This chapter is focused on the start of youthhood, from approximately 12-16-years-old. This chapter examines the bioarchaeological evidence of 561 12-16-year-old skeletons. Youthhood is an important part of both the later medieval and Tudor life courses. Childhood did not end with the start of adulthood. First, children become youths, *then* they become adults. Later medieval and Tudor children did not transition directly from a period of *childhood* to a period of *adulthood* (Orme 2001: 328). There are many studies of medieval *child*hood and *adult*hood – why not *youth*-hood too?

05.02 | youth

"*Youth*" – derived from the Middle English "*youthe*"/"*youhthe*", which derived from the Old English "*geoguð*", meaning 'the condition of being young'. In Latin, this translates as "*iuventas*". In the later medieval and Tudor periods, it was a term applied generally to indicate irresponsibility, as well as being used to distinguish a specific point in life (Schindler 1997: 244). There was no exact point of beginning or ending to youth, but roughly speaking, it is often referred to as falling between 12-25-years of age (Bucholtz 2002: 526; Chedgzoy 2007b: 185; Griffiths 2011: 317; Hanawalt 1986: 189; Houlbrooke 1992: 166). So 12-16-year-olds were regarded as being at the earlier stages of youth.

"*Thou hast nor youth nor age,*
But as it were an after-dinner's sleep
Dreaming on both; for all thy blessed youth"

William Shakespeare, 1603, *Made for Measure*, 3:1:32-34, (2005: 855)

"*By which*
fraile youth
is oft
to follie led"

Edmund Spenser, 1590, *The Faerie Queene*, (Bear 1882)

"*As a decrepit father takes delight,*
To see his active child do deeds of youth,
So I, made lame by Fortune's dearest spite
Take all my comfort of thy worth and truth."

William Shakespeare, 1609, *Sonnets*, 37:1-4, (2005: 809)

Figure 05.01 – 1550 - Children of Unknown Parents - Brass Rubbing - Margaretting, Essex - Chancel Wall - John Page-Phillips 1970

Youth has been conceptualised not as a specific age but instead as more of a temporary state through which individuals traverse (Levi and Schmitt 1997: 2; 7) (refer to figure 05.02). It is a liminal, hybrid and flexible state between childhood and adulthood (Chedgzoy 2007b: 185; Hanawalt 1986: 197; 1993: 110; Kline 2012: 33; Levi and Schmitt 1997: 2; Orme 2001: 328; Schindler 1997: 245). It is defined by its state of quasi-independence – a period of freedom and agency – but one which is still mediated by adult expectations (Ben-Amos 1994: 238; Schindler 1997: 241; Youngs 2006: 115). The experience of youth was gender and social status dependent (Ben-Amos 1994: 9; Hanawalt 1993: 110; Phillips 2003: 9; Youngs 2006: 120). Additionally, entry into youth could be delayed by disease (Hanawalt 1993: 113). Youth constituted a period of chaotic humoral imbalance due to an overabundance of heat and moisture, which rendered them intemperate, recalcitrant and lacking self-control of their passions and impulses (Fletcher 1994: 326; Shepard 2011: 357).

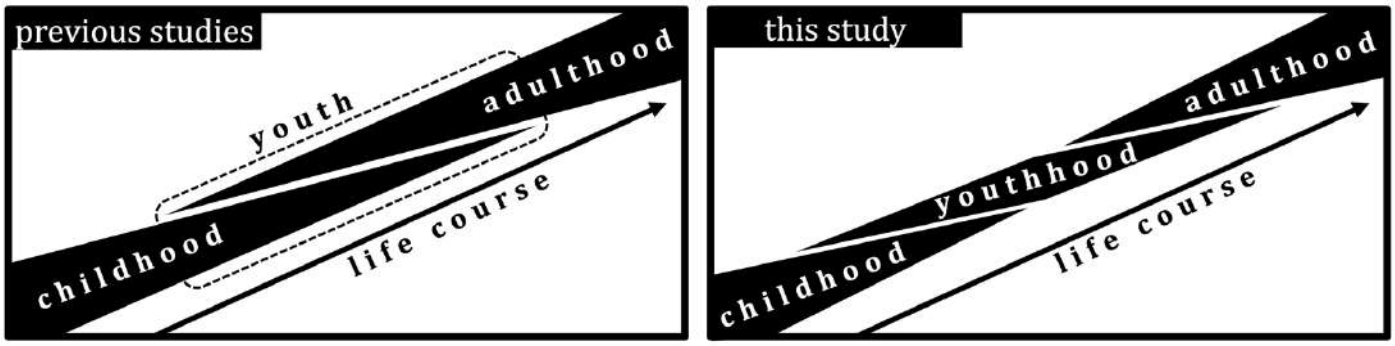


Figure 05.02 – theorising youth within the life course - Authors Own

Later medieval and Tudor moralist despaired of the perilous and precarious nature of youth (Ben-Amos 1994: 12-13; Griffiths 2011: 316-317; Hanawalt 1993: 128; Houlbrooke 1992: 194; Schindler 1997: 242). However, views of youth were often contradictory, as though no one was able to agree quite how to define it (Ben-Amos 1994: 12; Young 2006: 103). Metaphorically, children were perceived as wax-like – ageing was a slow burn – it took time to set fully – extending through childhood into youth (Ben-Amos 1994: 30; Coster 2001: 52). However, there has been less clarity about the nature of the boundaries of youthhood. For instance, was youth something that was experienced during the transition from childhood to adulthood – or was it an entirely separate state in the life course? Without the explicit acknowledgement of youthhood in the life course, we are missing a stage

altogether. Additionally, the omission of youthhood also confuses the nature of *childhood* and where it ends. Medievally, children were *generally* considered as those below the age of 12 – although the word 'child(ren)' could refer to any age under 20. However, after 12-years children were not necessarily perceived to be adults. They went into a period of extended youth, which was heavily dependent on age, gender, social status and wealth. There has been scholarly work around the idea of a protracted period of extended adolescence (Ben-Amos 1994: 31; Gowland and Penny-Mason 2018: 765; Orme 2001: 328). Some could move from youthhood earlier and others could stay in it for far longer, even potentially into the late twenties and early thirties for those few undertaking long apprenticeships. Individuals during this period were *consistently* referred to as being materially in a state of youth, that was humorally different to either childhood or adulthood – a state youthhood. This was a period of humoral flux, where an overabundance of heat and moisture caused them to be materially prone to *youthful* behaviours (Hanawalt 1993: 201, Shepard 2017: 341). Youth is widely discussed in fiction, advice literature, fables, biographies, medical treaties, etc., as a distinct state of being (Ben-Amos 1994: 31). Ages of man also perceived adolescence as a stage of life (Hanawalt 1993: 201). The process of transitioning from youthhood to adulthood was a process of socialisation (Griffiths 2011: 321). Sociology tells us that childhood is spent seeking of *some* form autonomy, while youthhood is the seeking of *complete* autonomy (Field 2007: 230). Youthhood was a period of the discovery of greater agency and the beginnings of the journey of becoming self-sufficient (Youngs 2006: 128). Unfortunately, the evidence of youthhood is almost entirely focused on males; female youthhood is poorly documented (Hanawalt 1993: 201). The evidence that does exist suggests that youth varied significantly between genders, as it also did according to age, social status, morbidity, etc. (Hanawalt 1993: 201). The borders between youthhood at both sides of this stage of the life course were blurred, ambiguous and individually achieved (Hanawalt 1993: 217; Houlbrooke 1992: 166).

05.03 | play

Play was not abandoned during youthhood, instead, the nature of play changed, with larger social groups becoming predominant, overlapping with adult forms of play (Orme 1995: 65; Robinson 2008: 165). Physical play was an important part of youthhood; with chasing, running, wrestling, tennis, football, and possibly swimming too, all being mentioned in historical sources (Orme 1995:61-65; 2001: 178-180). Archery practice too would have theoretically been required of boys during 12-16-years-old (Gilchrist 2012: 56; 147; Gunn 2010a: 53; Orme 1995: 63; 2001: 183; 2006: 288). Boys are recorded as playing with dice, at chess and fishing (Orme 1995: 65; 2001: 180).

Figure 05.03 – 1527 - The Curzon Family - Stained Glass Windows - St Mary the Virgin, Waterperry, Oxfordshire - V&A Museum

Elite boys would have additionally practised horsemanship, hunting and hawking; an important stage in the life of an elite boy during youthhood (Gilchrist 2012: 92; Mitchell 2014: 68; Orme 1973: 30; 2001: 182). However, there is no specific source on youthhood play for girls.

05.04 | the family economy

Youthhood was a transitional period within the family economy where children go from being helpful-but-supplementary contributors, to making contributions closer to those of adults (Cunningham 2005: 84; Ferraro 2013: 65; Gilchrist 2012: 146). Girls who had previously been undertaking supplementary household tasks would now move to cooking, fire making, cultivating; additional tasks including crafting, spinning, knitting, foraging, water gathering, cleaning, childcare, laundering, etc. (Ben-Amos 1994: 41; Coster 2001: 37, 74; Fleming 2001: 63-64; Goldberg 2004a: 261; Hanawalt 1986: 43, 56, 158-159; Houlbrooke 1992: 153; Orme 2001: 307; Shahar 1990: 244; Youngs 2006: 80). Boys who previously were performing more supplementary agricultural tasks would now be undertaking ploughing, herding and reaping; additional tasks included fishing, sowing, collecting peat and wood, foraging, etc. (Ben-Amos 1994: 41; Fleming 2001: 64; Hanawalt 1986: 52-53, 158; Houlbrooke 1992: 153; Orme 2001: 307-308; Shahar 1990: 244; Youngs 2006: 80). Differences in roles within the family economy were now very demarcated according to gender.

Figure 05.04 – 1450 - The Labours of the Months - Stained Glass Windows - Cassiobury Park, Herefordshire - October - V&A Museum

Figure 05.05 – 1450 - The Labours of the Months - Stained Glass Windows - Cassiobury Park, Herefordshire - August - V&A Museum

05.05 | housewifery

"*I schall you telle a prety cace:*
How the gode wyfe taught hyr doughter
To mend hyr lyfe and make her better"

"*Now I have taught thee, my dere doughter,*
The same techynge I hade of my modour.
Thinke theron both nyght and dey,
Forgette them not if that thou may."

Unknown Author, 1425, *How the Good Wife Taught Her Daughter*, (Kline 2012: 31-32)

It was the maternal duty for mothers to prepare their daughters for their eventual womanhood, most significantly, as wives and as mothers (Byrne and Boland 1983: 90; Heywood 2001: 105; Kline 2012: 32; Phillips 2003: 51, 61; Pollock 2017: 72; Shahar 1990: 247). Youthhood was a transitional period, during which 'gender apprenticeship' intensified; due to this stage in the life course overlapping with the oncoming of youth, the intensification of domestic roles and close proximity of marriage (Bailey 2012: 58; Griffiths 2011: 322; Phillips 2003: 23; Shahar 1990: 247; Young 2006: 103). Therefore, girls at this age were in a particularly precarious stage, and their continuing 'mouldable' state meant that it was important during this stage to be carefully trained, in line with their domestic roles and their eventual profession – housewifery (Ben-Amos 1994: 133; Griffiths 2011: 322; Kline 2012: 3). Later medieval and Tudor female gender required girls to deprive themselves agency, to internalise, to submit, they had to be able to embody obedience, modesty and humility; and this behaviour had to be learnt (Fletcher 1994: 342; Phillips 2003: 203; Pollock 2017: 72). However, the experience of this gendered apprenticeship would have varied according to social status (Bailey 2012: 197; Phillips 2003: 61).

"*Learne a pace syster, and after to spyn and sowe, And other honest huswifely poyntes to knowe*"

Unknown Author, 1550, *Nice Wanton*, (McGavin 2015)

Figure 05.06 – 1527 - The Curzon Family - Stained Glass Windows - St Mary the Virgin, Waterperry, Oxfordshire - V&A Museum

05.06 | female autonomy

Figure 05.07 – 1584 - The Family of Henry and Alice Berney - Effigy - Stone - St John the Baptist, Reedham - Authors Own

As noted previously, girls are likely to have predominately remained in the familial household during this stage of the life course (Orme 2001: 308). We have minimal direct evidence of their activities during this time. If they received any education at all, by this stage of the life course it would have ceased. According to evidence from advice literature, mothers would have trained their daughters sufficiently to become effective at housewifery tasks. Marriage, as we shall discuss, likely took place in the next stage of the life course.

So – what were they doing during this in-between space in the life course? Is it possible that these years were potentially a pocket of freedom (Ben-Amos 1994: 228; Gilchrist 2012: 38; Goldberg 1992: 225; Griffiths 2011: 319)? Girls who remained in the familial household would still have been expected contribute towards the family economy. However, previously this would have been a minor role to that of their mothers while they were learning, but by youthhood, they would almost certainly have gained a degree of autonomy and independence due to their now more skilled and substantial contributions. Of course, they would have remained subordinate to their mothers, who in turn was subordinate to her husband. However, it is still likely that there was a higher degree of autonomy than previously enjoyed. Unmarried

Figure 05.08 - 1532 - Frances, Countess of Surrey - Painting - London - Hans Holbein the Younger - aged 16 - Royal Collection - RCIN 912214

Figure 05.09 – 1526 - Portrait study of Anne Cresacre - Painting - Drawing - Hans Holbein the Younger - The Royal Collection – aged around 15 to 16 years old - RCIN 912270

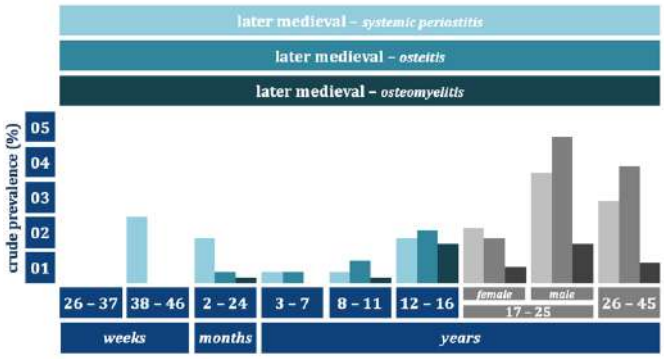
women would retain some form of freedom which – legally, at least – they would lose upon marrying. So, was youthhood a period of freedom for girls? Again, there is limited direct evidence to answer this question. Any potential freedom and autonomy that they may have experienced are likely to have differed according to status and between families (Liedl 2014: 30). Whether or not a period of female freedom was experienced during youthhood would have depended on the wealth of the familial household (Ben-Amos 1994: 230). With parental permission, some may have been employed more formally in labour, services or even trade outside the household; the Black Death had created more opportunities for female employment, but these were not necessarily prestigious positions (Hanawalt 2007: 206). This period could be considered a perilous time; church court records report episodes of impropriety, sexual dalliances, pregnancy and immoral conduct in young unmarried women (Bailey 2012: 61).

The wealth and status of aristocratic girls may have given them greater agency as while they were subordinate to men of their own class, they were not to men of a lower social status (Phillips 2003: 12). However, many of them might already be married at an earlier age or betrothed and this will have curtailed their freedoms (Shahar 1990: 224; Youngs 2006: 134). In sum, female youths *might* have enjoyed a period of freedom during this stage in the life course, the potentiality of this was mediated by their familial household, as well as being social status dependent.

05.07 | work

From 12-years-old it is believed that children would have transitioned into more formal employment than family economy roles; usually either as a farm labourer or a domestic servant (Ben-Amos 1994: 46, 62, 82; Gilchrist 2012: 38; Orme 2001: 309; Phillips 2003: 13). Youthhood is the stage in the life course when both girls and boys were most likely to enter life cycle service (Bailey 2012: 12; Ben-Amos 1994: 2; Fleming 2001: 72; Gilchrist 2012: 38; Goldberg 2004a: 21-23; Hanawalt 1993: 173-180; Houlbrooke 1992: 66; Pelling 1988: 148; Ryan 2013: 47; Shepard 2011: 362; Youngs 2006: 110). This movement out of the family household and into a new household environment would have been a significant moment in the life course of a child (Bailey 2012: 48; Coster 2001: 52; Fleming 2001: 72; Goldberg 2004a: 21; Houlbrooke 1992: 153; Orme 2001: 309; Phillips 2003: 130). Boys might also take up more formal labour employment at this stage if necessary. Work was seasonal, so their roles

would have fluctuated and changed accordingly (Cunningham 2005: 84). It is likely that there was irregularity in working schedules, so it is possible that during the less intensive agricultural months that youths took part in other local industries, e.g. mining, fishing, fuel-gathering, etc. (Ben-Amos 1994: 40, 47; Blanchard 1978: 3; Cunningham 2005: 84).

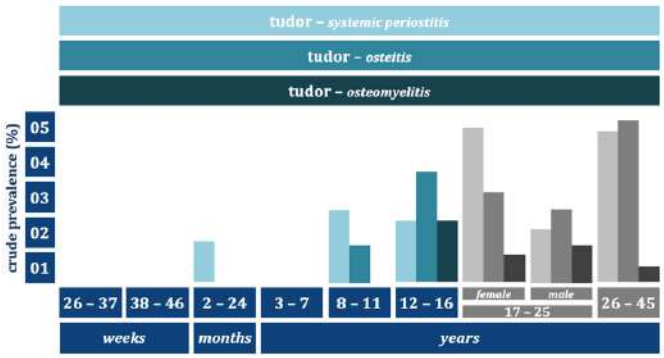


Graph 05.01 – Results of later medieval 12-16-year-old infectious pathology from this study

This period of increased participation in 'adult' tasks is possibly reflected in the morbidity evidence from this study. Later medieval systemic PNBF rises from 0.4% (2/467) during 8-11-years-old to 1.4% (8/561) during 12-16-years-old, although this not a statistically significant increase (p = 0.104) (refer to graph 05.01). This increase in systemic PNBF is significantly similar to the adult 26-45-year-old incidence of 2.4% (87/3599 / p = 0.143).

Later medieval osteitis rises from 0.4% (4/467) during 8-11-years-old to 1.4% (9/561) during 12-16-years-old, although this not a statistically significant increase (p = 0.285) (refer to graph 05.01). This increase in osteitis remains significantly lower than the adult 26-45-year-old incidence of 2.4% (123/3599 / p = 0.028). Later medieval osteomyelitis rises from 0.4% (1/467) during 8-11-years-old to 1.4% (6/561) during 12-16-years-old, although this not a statistically significant increase (p = 0.096). This increase in osteomyelitis is significantly similar to the adult 26-45-year-old incidence of 2.4% (28/3599 / p = 0.464).

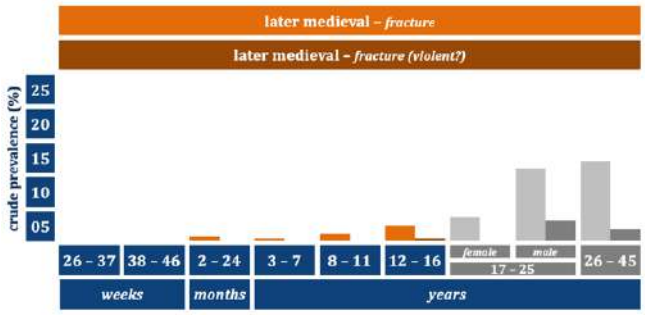
Tudor systemic PNBF decrease from 2.2% (2/92) during 8-11-years-old to 1.9% (3/153) during 12-16-years-old, although this not a statistically significant increase (p = 0.909) (refer to graph 05.02). This increase in systemic PNBF is significantly similar to the adult 26-45-year-old incidence of 4.4% (37/839 / p = 0.156). Tudor osteitis rises from 1.1% (1/92) during 8-11-years-old to 3.3%. (5/153) during 12-16-years-old, although this not a statistically significant increase (p = 0.284). This is increase in osteitis is significantly similar to the adult 26-45-year-old incidence of 4.8% (40/839 / p = 0.412). Tudor osteomyelitis rises from 0% (0/92) during 8-11-years-old to 1.9% (3/153) during 12-16-years-old, although this not a statistically significant increase (p = 0.601). This increase in osteomyelitis is significantly dissimilar to the adult 26-45-year-old incidence of 0.5% (4/839 / p = 0.043).



Graph 05.02 – Results of Tudor 12-16-year-old infectious pathology from this study

Between the later medieval and Tudor periods 12-16-year-olds systemic PNBF (p = 0.635), osteitis (p = 0.188) and osteomyelitis (p = 0.381) levels are all statistically comparable, suggesting that rates of infection between periods during this age were similar.

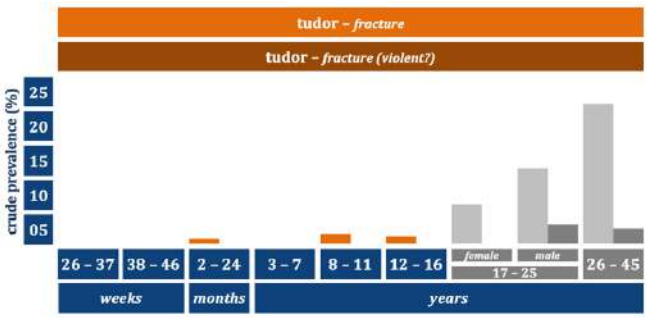
In sum, during 12-16-years-old, later medieval systemic PNBF and osteomyelitis levels are broadly more comparable to 26-45-year-old levels than 8-11-year-old levels. This same pattern is noted during the Tudor period, where osteitis is levels are also similar, although incidences of osteomyelitis are higher than the 26-45-year-old adult levels. The collective evidence suggests that 12-16-year olds during both the later medieval and Tudor periods were exposed to similar levels of infection as 26-year-old adults.



Graph 05.03 – Results of later medieval 12-16-year-old fracture from this study

Later medieval fractures increase from 0.9% (4/467) during 8-11-years-old to 2.5% (14/561) during 12-16-years-old, a statistically significant increase (p = 0.046) (refer to graph 05.03). However, this rise in fractures remains statistically below that of 26-45-year-old adult incidence of 11.5% (451/3599 / p = 0.000). Later medieval violent fractures rise from 0% (0/467) during 8-11-years-old to. 0.2% (1/561) during 12-16-years-old. However, this rise in fractures remains statistically below that of 26-45-year-old adult incidence of 2.2% (79/3599 / p = 0.001).

Tudor fractures decrease from 2.2% (2/92) during 8-11-years-old to 1.9% (3/153) during 12-16-years-old, although this not a statistically significant difference (p = 0.909) (refer to graph 05.04). This level of fractures is significantly similar to the adult 26-45-year-old incidence of 20.3% (170/839 / p = 0.156). There is no evidence of Tudor violent fractures of 0% (0/92) during 8-11-years-old or 0% (0/153) during 12-16-years-old. This level of violent fractures is significantly dissimilar to the adult 26-45-year-old incidence of 2.4% (20/839 / p = 0.000).



Graph 05.04 – Results of Tudor 12-16-year-old fracture from this study

Between the later medieval and Tudor periods 12-16-year-olds levels are all statistically comparable (p = 0.700). However, violent fractures were statistically higher in the later medieval in comparison to the Tudor period (p = 0.000).

In sum, during 12-16-years-old, later medieval fractures and violent fractures are statistically higher than 8-11-year-olds, but below 26-45-year old adult levels. The Tudor period this pattern differs; 8-11-year-olds had similar patterns of fractures and were not statistically dissimilar to those levels of 25-46-year-old adult levels. However, evidence for violent fractures amongst 12-16-year-olds was lower. The collective trauma evidence suggests a difference in nature of fractures between the later medieval and Tudor periods.

To summarise the 12-16-year-old morbidity data, a broad increase in both infectious and traumatic lesions between the later medieval and Tudor periods, it can therefore be hypothesized that during 12-16-years-old was a period of transition from earlier patterns of morbidity in the life course during childhood. The period of youthhood seems to have been largely dissimilar to childhood.

A study undertaken by Mary Lewis analysed palaeopathology in medieval adolescents in England (900-1550) and found that between the ages of 10-13.9-years-old the PNBF rate was 8.6-11.2% and rates of trauma were 2.2-3.9%; a similar pattern to that observed in this study (2016: 153). Significantly, Lewis's study also included sex estimations for non-adults under the age of 17-years-old and this is particularly valuable evidence. The study reports that male children between 10-13.9-years-old had an infection rate of 9.4-12.5% whilst females had a rate of 0-3.9%. Similarly, the male trauma rate of 10-13.9-year-olds was 6.2-7.3% and the female rate was 0-5.1% (Lewis 2016: 154). In addition, the study reports that male children between 14-16.9-years-old had an infection rate of 11.9-12.5% and a female rate of 13.2-18.1%. Similarly, the male trauma rate of 14-16.9-year-olds was 4.2-9.8% and the female rate was 0-4.7% (Lewis 2016: 154). This is clear evidence of a gender spilt and this data represents new evidence of the impact of divergent gender roles during youthhood. Females and males at this age were clearly participating in different patterns of behaviour. It is likely a reflection of the majority of girls' work remaining in and around the family economy within the familial household, while boys were now in full-time work or family economy roles outside the household. During 12-16-years-old, patterns of work transitioned, beginning to become similar to those of adults, without matching them outright (Hanawalt 1986: 159).

05.08 | church

Figure 05.10 – 1578 - A Booke of Christian Prayers - Richard Day - England - communion service - Bodleian Library - RSTC 6429

Figure 05.11 – 1568 - The Family of Richard and Anne Gifford - Memorial - Stone - St Peter, East Tytherley, Hampshire - Authors Own

Before this stage in the life course there is a lack of direct evidence of children's religiosity; however, the little evidence we do have suggests that religious faith might have been of little concern. During youthhood, there is evidence that this started to change. Documentary evidence suggests that around 10-14-years-old children were believed able to achieve piety (Ryrie 2015: 432). Amongst the advice literature created for girls, as a part of her preparation for housewifery, she was encouraged to take her religious self seriously as this would render her a more appropriate marriage partner (Bailey 2012: 62; Orme 1994: 585).

"*Doutter yif thou wilt ben a wif and wisliche to wirche Loke that thou louie ful wel god and holi chirche*"

Unknown Author, 1425, *How the Good Wife Taught Her Daughter*, (Bailey 2012: 62)

Additionally, children made their first confession at Lent, followed by receiving their first communion on Easter Sunday; then a child was 'adult' in line with the view of the Church (as decreed by the Fourth Lateran Council in the thirteenth century). This happened at 12-years for girls and 14-years for boys. These new 'adult' Christians could now make an oath, get married, take monastic vows, receive extreme unction and pay church dues (Orme 2001: 220). During the following years this newfound 'adultness' was practised through habitus, meaning by 12-16-years-old that were likely to be taken seriously in, and take a serious part in, their religious lives (Orme 2001: 220; Ryrie 2015: 432).

Figure 05.12 – 1539 - Parents Teach Children Religion - Drawing - London - The Bible in English - Title Page

05.09 | monastic orders

Girls could potentially go into nunneries during youthhood, although there were few institutions in comparison to monasteries and they often favoured elite girls (less than 150 houses in England). It was less common for girls to enter a nunnery at this young age (King 1991: 82-84; Orme 2001: 223; 2008: 110). Nunneries might have been an attractive option for girls looking to avoid marriage (Phillips 2003: 14). From the fifteenth century, boys could go into monastic orders from 14-years-old (earlier with parental consent), often favouring elite boys, although they could not take monastic vows until later in the life course (Gilchrist 2012: 91; Orme 1994: 578; 2001: 216; 226; 2008: 110; Shahar 1990: 183-185).

05.10 | education

As mentioned during previous chapters, only a very small percentage of boys, and an even smaller fraction of girls, received any form of education. For the very few girls who did receive some elementary schooling, there was virtually no further educational provision for girls after this; they were excluded from grammar schools and could not attend university, so by youthhood their education would have finished (Bailey 2012: 164; Cox Jensen 2011: 512; Laurence 2004: 386; Phillips 2003: 6; Shahar 1990: 175, 229-230). Boys could have the opportunity to move from elementary school to grammar school, but only if it seemed necessary for future vocations and only if he had received some prior education (Orme 2006: 67; Shahar 1990: 226). There was no fixed end of schooling for boys and therefore it is likely that during the early years of youthhood that their education would have ended, if they received any at all, in line with their increasing family economy roles (Goldberg 2004a: 262; Shepard 2011: 367; Youngs 2006: 86). If they did attend grammar schools, then they were almost invariably in urban contexts and boys may have had to have sometimes moved significant distances to attend these schools; only those with the familial financial support could have done this (Ben-Amos 1994: 55; Coster 2001: 74; Goldberg 2004a: 262; Houlbrooke 1992: 152; Orme 2001: 317; 2006: 132-133).

> *"The worlde waxeth worse every day, and all is turnede upside down, contrary to th'olde guyse, for all that was to me a pleasure when I was a childe, from iij yere olde to x (for now I go upon the xij yere), while I was undre my father and mothers kepyng, be tornyde now to tormentes and payne. For than I was wont to lye styll abedde tyll it was forth dais [late in the day], delitynge myselfe in slepe and ease. The sone sent in his beamys at the wyndowes that gave me lyght instead of a candle. O, what a sporte it was every mornynge when the son was upe to take my lusty pleasur betwixte the shetes, to beholde the rofe, the beamys, and the rafters of my chamber, and loke on the clothes that the chambre was hang hanged with! There durste no mann but he were made [mad] awake me oute of my slepe upon his own hede [responsibility] while me list to slepe … But nowe the worlde rennyth upon another whele, for nowe at fyve of the clocke by the monelyght I most go to my booke and lete slepe and slouthe alon, and yff oure maister hape to awake us, he bryngeth a rode stede of a candle."*
>
> Anonymous School Boy, 16thc, *letter*, (Cunningham 2006: 55)

"*In tyme of age he wente to schole, that curtesys and hende, He cowed hys gramer wonder wele, hys fellows cowed hym not amende; He was bothe meke and mylde, as a gode chylde owyth to bee; When he was comen to hys age, a godely man was hee.*"

Unknown Author, 15thc, *A Good Matter of the Merchant and His Son*, (Hanawalt 1993: 87)

05.11 | puberty

Puberty would have started during youthhood; the timing of which varied between the sexes and between individuals (Orme 2001: 328-329; Phillips 2003: 25; Youngs 2006: 96-97). Ethnographic studies evidence the variability in the timing of puberty in various sociocultural contexts (Annette Grove and Lancy 2018: 95). There is also skeletal evidence that suggests puberty was delayed and extended in comparison to the present day (Gilchrist 2012: 42, 53). Skeletons from St. Peter's Church, Barton-upon-Humber and St. Mary Spital, London (data for which is included in this study) suggest that puberty started in females around 12-years-old (similar to modern timing), but later pubertal development was delayed several years, with menarche occurring on average between 14-16-years-old and final development potentially into the twenties (Shapland and Lewis 2013: 302-309; Shapland and Lewis 2014: 151). A further study of medieval cemeteries in England revealed that menarche occurred between 15-16-years-old, with final maturation between 19-22-year-olds (Lewis et al. 2016a: 48-54; Shapland et al. 2015: 277-283). The delay in pubertal development is likely to have been caused by morbidity, malnutrition, social status, environmental conditions, ancestry, etc. (Lewis et al. 2016b: 1-8). Humorally, girls' bodies were materially changing, cooling and becoming like adult women (Youngs 2006: 102). Medieval male puberty is also believed to have extended well into the twenties, which was viewed as a slow social progression (Gilchrist 2012: 42). In scripture, both girls and boys could not achieve maturity until the physical maturity of puberty had occurred (Radbill 1963: 206).

05.12 | apprenticeship

"*Apprenticeship*" – which replaced "*apprenticeshood*" during the fifteenth century – derives from the Middle English "*apprentice*" – which might have derived from the Old French "*aprentiz*" – and the Latin translation of which is "*apprendere*" – meaning: to learn (Griffiths 2011: 323). During the fourteenth century, apprenticeship often started at 14-years-old (Fleming 2001: 74; Gilchrist 2012: 145; Goldberg 2004a: 111; Orme 2001: 312). During the fifteenth century, the age of apprenticeship increased to 16-years of age, but 18-years was more common (Bailey 2012: 53; Ben-Amos 1994: 62, 131; Goldberg 2004a: 111; Hanawalt 1993: 113; 1998: 181; 2002: 450; Houlbrooke 1992: 167; Shahar 1990: 229). During the fifteenth century, apprenticeships were predominately undertaken by the children of yeomen, merchants and artisans, but by the sixteenth century the most significant proportion of recruits came from a husbandmen background; this is likely a reflection of the outcome of compulsory work enforcement (Coster 2001: 55; Cunningham 2006: 95; Hanawalt 1993: 145; 1998: 192; Youngs 2006: 110).

Figure 05.13 – 1540 - Lord Francis Russell - Drawing - Hans Holbein the Younger - Royal Collection - RCIN 912240

However, during the same period, there became an increasing need for literacy amongst potential apprentices in specific trades, so the educated elite were favoured heavily in these instances (Bailey 2012: 54; Hanawalt 1998: 191). The majority of apprentices migrated significant distances to undertake their roles, on average between 20 to 100 miles and 80% of London apprentices migrated there during the sixteenth century (Ben-Amos 1994: 86, 95; Hanawalt 1993: 131, 146). During the same century, around 10% of the of Londoners were apprentices, likely to have been similar in Norwich and York populations, with perhaps 5% in smaller towns (Ben-Amos 1994: 84).

Females could also be apprentices and technically there was no differential access in law (Houlbrooke 1992: 108; 2007: 38).

Despite this, only a very small fraction of apprenticeship places were available to female candidates (Ben-Amos 1994: 135; Phillips 2003: 6; Youngs 2006: 110). In fact, in almost every respect, female apprenticeship was dissimilar to the male experience (Hanawalt 1993: 131). Women were likely to find an apprenticeship predominately through the family network, but also possibly through their own contacts (Hanawalt 1993: 142; 2007: 40). It is unlikely that girls got much choice in terms of trade; they would instead likely be grateful for whatever opportunity they could get (Hanawalt 1993: 132). For female apprentices, these trades could include dressmakers, embroiders, silk makers, shopkeepers, drapers, grocers, haberdashers, apothecaries, fishmongers, brewers, joiners, pinners, cofferer, etc. (Ben-Amos 1994: 137; Hanawalt 1993: 132; Ryan 2013: 56). Female apprenticeship was less regulated, in most cases entirely unregulated as there were no female guilds and it was considered to be less prestigious (although it often cost less in fees) (Hanawalt 1993: 142; 207; 2007: 44). In the agreement of employment, unlike men, they were likely to contain a clause to insist that a fee must be paid to the mistress if a female apprentice left to marry (Hanawalt 1993: 142-3).

Males, too, were likely to find apprenticeship through the family network and potential life cycle contacts; they immediately had more chance than females at securing a place (Hanawalt 1993: 132; Houlbrooke 1992: 174; Orme 2001: 315). They were, however, they are similarly likely to have been forced to take whatever type of trade was on offer (Hanawalt 1993: 132). For male apprentices, these trades could include ironmongers, carpenters, tailors, haberdashers, merchants, butchers, glovemakers, tanners, candlemakers, silversmiths, etc. (Shahar 1990: 233). Male apprenticeship was controlled by an agreement, which was taken seriously enough to

be enforceable by legal authorities, signed by the parents of the candidate and the master, with each party keeping an identical copy (Griffiths 2011: 323; Orme 2001: 312; Shahar 1990: 233). It was regular in these agreements for the candidates to swear not to marry during the period of apprenticeship (Hanawalt 1998: 182; Houlbrooke 1992: 66; Shahar 1990: 238). Male apprenticeship was more formal, controlled by a guild of the specific trade, to which the apprentice paid an annual fee, which increased during the fifteenth century. In addition to this annual fee, candidates also had to pay their masters for their training and upkeep (Hanawalt 1993: 133-139; Orme 2001: 312; Shahar 1990: 233). Apprenticeship must have been a significant time in the life course, whereby a new apprentice is separated from their familial household, migrating over a long distance, likely entering a previously un-encountered level of urbanism, to settle in a new household, perhaps with a significant change in living standards and presenting the individual with entirely new socialisation opportunities (Hanawalt 1993: 146). Apprentices were supposed to avoid drinking, gaming, theatre-going, gossiping and sex (especially sex with a member of the masters' household) (Hanawalt 1998: 182; Youngs 2006: 103). In return, new apprentices were included in a sort of quasi-familial member of the household and were provided with room, clothing, food, drink, bedding, food, and of course, instruction and tutelage (Hanawalt 1993: 129, 137; 1998: 182; Pelling 1988: 154, 165; Shahar 1990: 234; Shepard 2011: 362; Youngs 2006: 110). It was generally uncommon for a master to host more than one apprentice at a time (Hanawalt 1993: 137; Pelling 1988: 154; Shahar 1990: 234).

05.14 | law

As we have explored, children gradually acquired legal status through royal, secular (local), canon and miscellaneous law; but youthhood a was significant stage in legal liabilities (Guth 2004: 77, 89; Hanawalt 1993: 202; Helmholz 2007: 40; Orme 2001: 8; 327). From the age of twelve, children likely to be tried *and* found guilty for felony crimes (Orme 2001: 324). Under the 1536 Statute of Artificers Act, unmarried children from 11-years-old found begging could be placed into service or apprenticeship (Griffiths 2011: 320). Begging children who refused to work were now likely to be corporally punished if they refused work (Helmholz 2007: 43; Orme 2001: 91). From the age of 12-years children, girls and boys, who were employed in agricultural labour had to be in a tithing group, this survived the ending of the feudal system, but this essentially made them responsible for their acts within the law (Hanawalt 1986: 189; 1993: 112; 1998: 161). From the fourteenth century, both girls and boys were responsible for poll-tax from 14-years-old (Goldberg 2004a: 17; Hanawalt 1993: 112, 202; Orme 2001: 322). Boys at 14-years-old and girls at 12-years-old were eligible to make their own testaments (Fleming 2001: 60). As we have seen, Canon law from 12-years-old for girls and 14-years-old for boys were essentially viewed as 'adults' by the Church; making them eligible for communion, marriage, adult sacraments, etc. (Hanawalt 1993: 112; Houlbrooke 1998: 83; Orme 2001: 213–216; 2008: 114). From 16, boys were eligible for conscription in the Kings army (Hanawalt 1993: 202). Youthhood, then, saw a lessening of some legal protections of past ages, with a significant increase in legal accountability; despite this, youths still did not hold all the legal powers of their adult counterparts at this stage in the life course.

05.15 | marriage

Girls from 12-years-old and boys from 14-years-old were of legal age to marry under canon law; with parental consent under 21-years-old (Cressy 1999: 311; Fleming 2001: 6, 14; Goldberg 2004a: 26; Hanawalt 1993: 112; Houlbrooke 1992: 166; Shahar 1990: 224). However, marriage for the majority of the population at this young an age was often met with disapproval (Ben-Amos 1994: 32; Cressy 1999: 312; Shahar 1990: 224). Aristocratic marriages do appear to have occurred from this age, documentary evidence suggests that during the fifteenth and sixteenth centuries girls were marrying between 13-16-years-old (Youngs 2006: 134). However, other late medieval evidence contradicts this, suggesting that on average neither elite girls or boys were marrying this early – early marriages happened, but still seem to have been the exception (Fleming 2001: 19).

05.16 | clothing

There are only limited sources for girl's attire at this age, but it is assumed that they continued to be dressed in smocks, petticoats and waistcoats; possibly with kirtles, skirts, sleeves, gowns, cloaks, partlets, coifs, cuffs, ruffs, keirchiefs, bonnets, hoods, caps, gloves etc. (Buck 1996: 90-91, 165-174; Gilchrist 2012: 81-84; Huggett and Mikhaila 2013: 42-50). Girls' were allowed to wear their hair loose, unlike their married counterparts who were required to cover it (Buck 1996: 170; Gilchrist 2012: 84; Huggett and Mikhaila 2013: 49). Their hair at this age was something of a paradox; on the one hand, it was emblematic of their maidenly virginity, while at the same time symbolising their material youthful beauty (Gilchrist 2012: 84; Phillips 1999: 8). Boys continued to be dressed in shirts, hose and doublets; possibly with slops, codpieces/codflaps, gowns, cloaks, jerkins, ruffs, cuffs, collars, caps, hats, belts, etc. (Buck 1996: 89-91; 150-164; Gilchrist 2012: 81; Hayward 2009: 5; Houlbrooke 1992: 150; Huggett and Mikhaila 2013: 30-38).

In later medieval and Tudor England beards were a sign of adult masculinity *and* of later stages of youth. Earlier youth was defined by what they lacked in comparison with their adult counterparts, early youth was, therefore delineated by beardlessness (Fisher 2001: 155; Shepard 2017: 340). Shoes made of leather or cloth continued to be worn and changed in style throughout time, but they were essentially smaller versions of adult shoes (Buck 1996: 89; 162, 172; Gilchrist 2012: 82). The gendered differences in clothing are distinct during youthhood. Boys undertaking apprenticeships were given clothing to wear – potentially suspending them somewhat from more youthful and masculine clothing (Buck 1996: 155). Additionally, hair now played a role in gendering too – girls' loose hair and boys beardlessness spoke of their youthful gendered roles (Gilchrist 2012: 84).

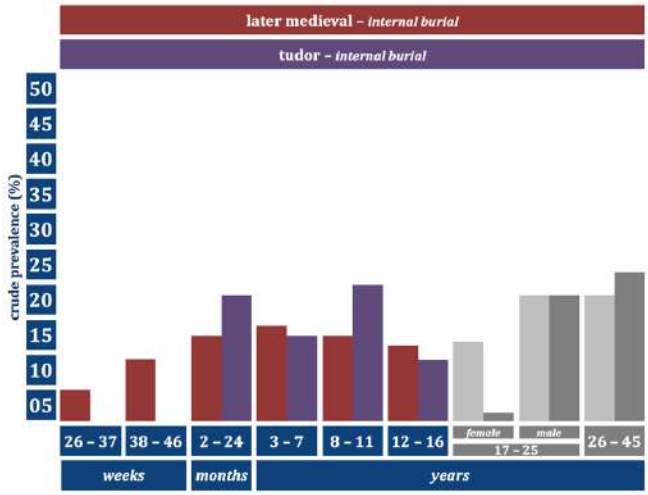
"He that hath a beard is more than a youth, and he that hath no beard is less than a man…"

William Shakespeare, 1599, *Much Ado About Nothing*, 2:1:30-32, (2005: 574)

05.17 | mortality + funerary evidence

Although the threat of mortality decreased with each year of youthhood, mortality estimates still suggest that 36.9% did not reach their 15th year (Wear 2000: 13).

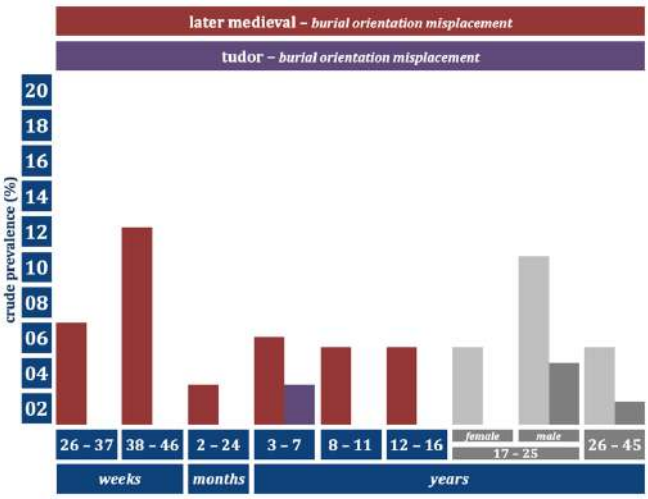
Figure 04.14 – 1598 - The Daughters of Sir Edward & Bridget Coke - Effigy - Alabaster - St Mary, Tittleshall, Norfolk - Authors Own



Graph 05.05 – Results of 12-16-year-old evidence of burial location from this study

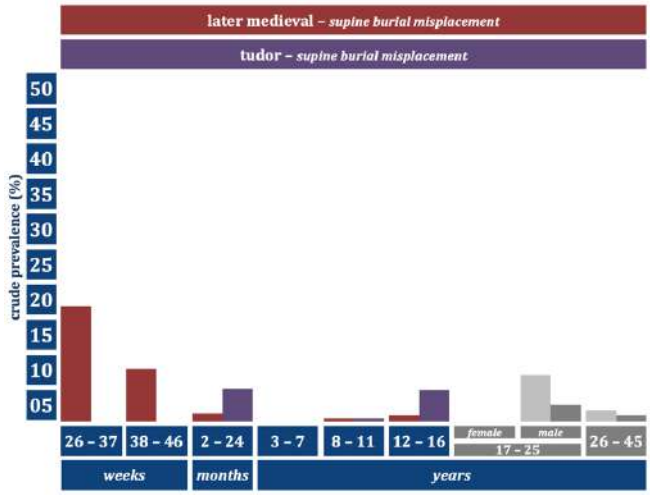
The burial archaeological evidence from this study reveals that later medieval internal burial decreases slightly from 12.2% (48/392) during 8-11-years-old to 11.2% (51/457) during 12-16-years-old, which is not a statistically significant difference (p = 0.623) (refer to graph 05.05). However, this incidence of internal burial is statistically different to that of 26-45-year-old adults of 17.9% (362/2019 / p = 0.000). Tudor internal burial decreases from 19.5% (16/82) during 8-11-years-old to 9.0% (11/122) during 12-16-years-old, which is a statistically significant difference (p = 0.030). This incidence of internal burial is also statistically dissimilar to that of 26-45-year-old adult of 21.5% (108/503 / p = 0.001). Between the later medieval and Tudor periods 12-16-year-olds levels of internal burial are statistically comparable (p = 0.496).

Later medieval burial orientation misplacement decreases slightly from 4.6% (16/347) during 8-11-years-old to 4.4% (19/431) during 12-16-years-old, which is not a statistically significant difference (p = 0.892.). This incidence of burial orientation misplacement is also statistically similar to that of 26-45-year-old adult of 4.5% (119/2638 / p = 0.926). Tudor burial orientation misplacement decreases slightly from 1.6% (1/63) during 8-11-years-old to 0% (0/113) during 12-16-years-old, which is a statistically significant difference (p = 0.000) (refer to graph 05.06). However, this incidence of burial orientation misplacement is statistically



Graph 05.06 – Results of 12-16-year-old evidence of burial orientation from this study

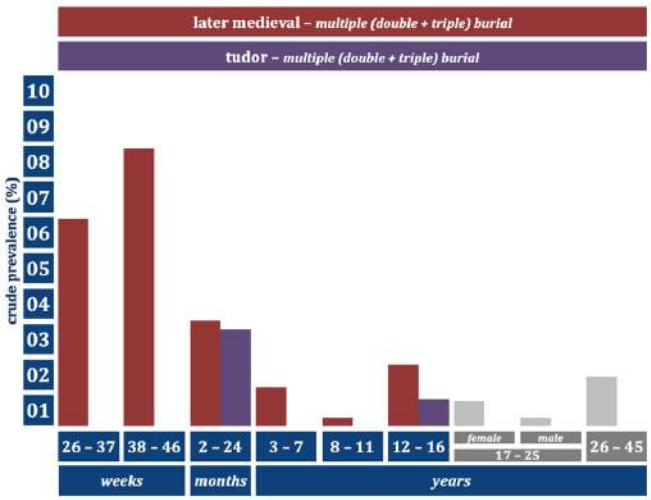
similar to that of 26-45-year-old adult of 1.7% (11/667 / p = 0.970). Between the later medieval and Tudor periods 12-16-year-olds levels of burial orientation misplacement are statistically comparable (p = 0.288).



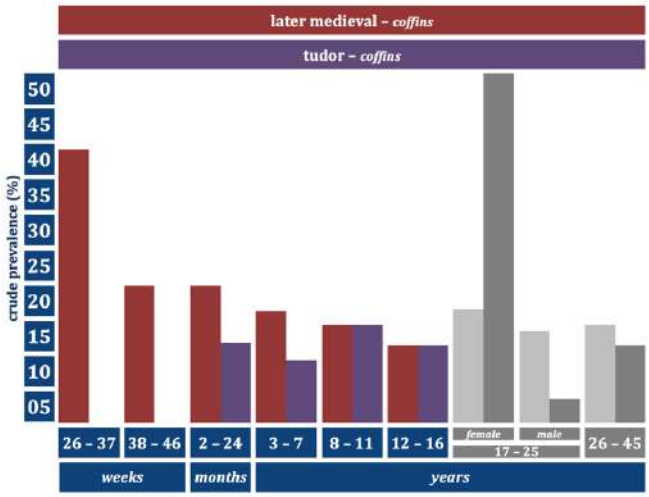
Graph 05.07 – Results of 12-16-year-old evidence of burial misplacement from this study

Later medieval supine burial misplacement increases from 0.3% (1/351) during 8-11-years-old to 0.9% (4/413) during 12-16-years-old, which is not a statistically significant difference (p = 0.242) (refer to graph 05.07). This incidence of supine burial misplacement is not statistically dissimilar to that of 26-45-year-old adult of 1.5% (39/2652 / p = 0.419). Tudor supine burial misplacement increases from 1.6% (1/55) during 8-11-years-old to 5.0% (4/80) during 12-16-years-old, but this is not a statistically significant difference (p = 0.366). This incidence of supine burial misplacement is statistically similar to that of 26-45-year-old adult of 1.7% (30/378 / p = 0.362). Between the later medieval and Tudor periods 12-16-year-olds levels of supine burial misplacement are statistically different (p = 0.008).

Later medieval burials of multiple occupancy increase from 0.3% (1/347) during 8-11-years-old to 1.9% (8/431) during 12-16-years-old, which is a statistically significant difference (p = 0.042) (refer to graph 05.08). This incidence of burials of multiple occupancy is not statistically dissimilar to that of 26-45-year-old adults of 1.4% (36/2638 / p = 0.426). Tudor supine burials of multiple occupancy from 0% (0/63) during 8-11-years-old to 0.9% (1/113) during 12-16-years-old. Between the later medieval and Tudor periods 12-16-year-olds levels of burials of multiple occupancy are statistically similar (p = 0.471).



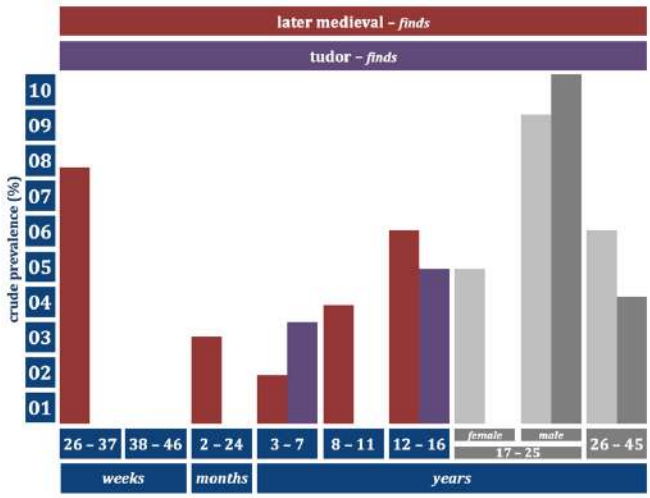
Graph 05.08 – Results of 12-16-year-old evidence of burials of multiple occupancy from this study



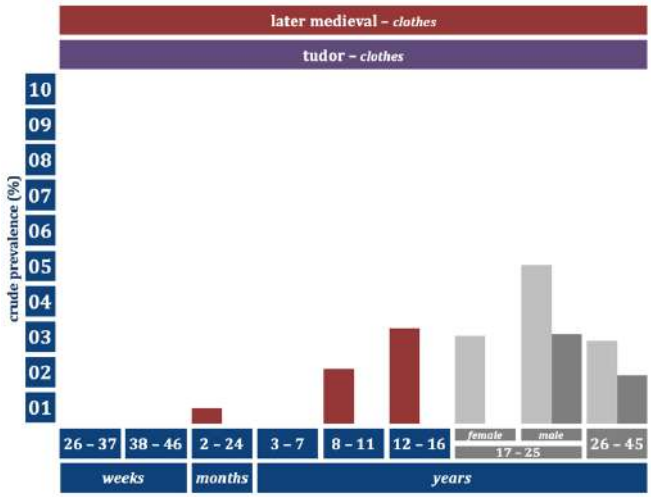
Graph 05.09 – Results of 12-16-year-old evidence of coffins from this study

Later medieval coffin evidence decreases from 13.5% (42/310) during 8-11-years-old to 11.4% (41/359) during 12-16-years-old, which is not a statistically significant difference (p = 0.405) (refer to graph 05.09). This incidence of coffin evidence is statistically similar to that of 26-45-year-old adult of 14.0% (344/2457 / p = 0.212). Tudor coffin evidence increases from 13.8% (4/29) during 8-11-years-old to 11.4% (8/70) during 12-16-years-old, but this is not a statistically significant difference (p = 0.863). This incidence of coffin evidence is statistically similar to that of 26-45-year-old adult of 10.7% (41/383 / p = 0.362). Between the later medieval and Tudor periods 12-16-year-olds levels of coffin evidence are not statistically different (p = 0.998).

Later medieval finds evidence increases from 3.3% (10/299) during 8-11-years-old to 5.6% (18/324) during 12-16-years-old, which is not a statistically significant difference (p = 0.189) (refer to graph 05.10). This incidence of finds evidence is statistically similar to that of 26-45-year-old adult of 5.5% (119/2173 / p = 0.953). Tudor finds evidence increases from 0% (0/28) during 8-11-years-old to 4.4% (3/65) during 12-16-years-old. This incidence of finds evidence is statistically similar to that of 26-45-year-old adult of 3.7% (14/382 / p = 0.711). Between the later medieval and Tudor periods 12-16-year-olds levels of finds evidence are not statistically different (p = 0.759).



Graph 05.10 – Results of 12-16-year-old evidence of finds from this study



Graph 05.11 – Results of 12-16-year-old evidence of clothes from this study

Later medieval clothes evidence increases from 1.7% (5/299) during 8-11-years-old to 2.8% (9/324) during 12-16-years-old, which is not a statistically significant difference (p = 0.405) (refer to graph 05.11). This incidence of clothes evidence is statistically similar to that of 26-45-year-old adult of 2.4% (51/2173 / p = 0.212). Tudor clothes evidence remains elusive from 0% (0/28) during 8-11-years-old to 0% (0/68) during 12-16-years-old. Tudor 26-45-year-old adults had a higher incidence of clothes finds of 1.3% (5/382).

In sum, 12-16-year-old burials appear to continue to appear similar to those of 8-11-year-olds, with no significant change in burial treatment during this stage of the life course. Later medieval and Tudor patterns of burials for 12-16-year-olds were broadly similar during this stage of the life course. This age cohort of both periods are not marked out in their burial organisation, with a similar burial orientation and supine burial placement as their respective 26-45-year-old adults. 12-16-year-olds also had a similar level of both coffin and finds evidence during both periods, which was also comparable to the incidence of 26-45-year-old adults. However, both later medieval and Tudor 12-16-year-olds were significantly less likely to be buried in internal spaces when compared to 26-45-year-old adults. 12-16-year-olds also saw a decrease in the burials of multiple occupancy during this stage of the life course, with the levels becoming similar to the 26-45-year-old adult incidence.

05.18 | some conclusions

- In conclusion, youthhood was perceived by both later medieval and Tudor authors as an extended, liminal and dangerous stage of the life course.
- Girls who remained within the familial household were likely to be approximating the contributions made by their mothers to the family economy.
- Boys are likely to have undertaken more formal employment external to the familial household – predominately in labouring roles.
- Girls were enculturated in preparation for their eventual housewifery and maternal duties in later life.
- However, girls might also might have experienced a period of relative freedom during youthhood – but this would have been mediated by the family unit.
- Puberty was a slow process, the timing of which was delayed in comparison to modern patterns.
- A small percentage of both girls and boys might have undertaken an apprenticeship.
- Clothing and hairstyles were reflective of further divergences between gendered roles.
- The infectious palaeopathological evidence from this study revealed that both later medieval and Tudor 12-16-years-old were exposed to similar levels of infection as adults.
- The traumatic palaeopathological evidence from this study revealed that later medieval 12-16-years-old were exposed to more trauma than during earlier ages of the life course, but still statistically less than adults. However, during the Tudor period, 12-16-years-old were levels of fractures reached a statistically comparable level during this stage of the life course. This suggests a difference in the nature of trauma between later medieval and Tudor 12-16-year-olds.
- The collective morbidity evidence suggests that during both the later medieval and Tudor periods 12-16-year-olds experienced a broad increase in both infectious and traumatic lesions. This evidence might indicate that this stage of the life course was a period of transitional period between childhood and youthhood.
- The funerary evidence suggests a similar pattern to that of 8-11-year-olds. Youthhood burial was similar between the later medieval and Tudor periods, with most significant difference being that Tudor youth burials had less evidence for accompanying finds and clothing.

6

CHAPTER 6 | life course – *(later youthhood + entering)* adulthood

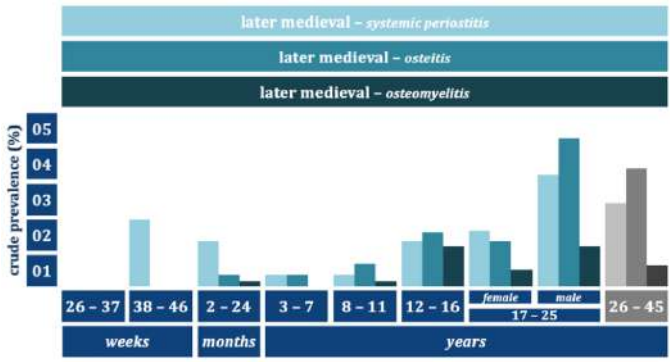
06.01 | introduction

The purpose of this chapter is to explore the end of the period of extended youthhood, the latter half of youthhood in particular and the nature of the transition into later medieval and Tudor adulthood, based on a life course perspective. This chapter examines the bioarchaeological evidence of 1,230 17-25-year-old skeletons. In addition, it is the aim of this chapter to explore the differences and similarities between the transition from youthhood to adulthood between the later medieval and Tudor periods. Finally, the chapter ends with an overview of the patterns of morbidity and funerary evidence noted over the entire life course.

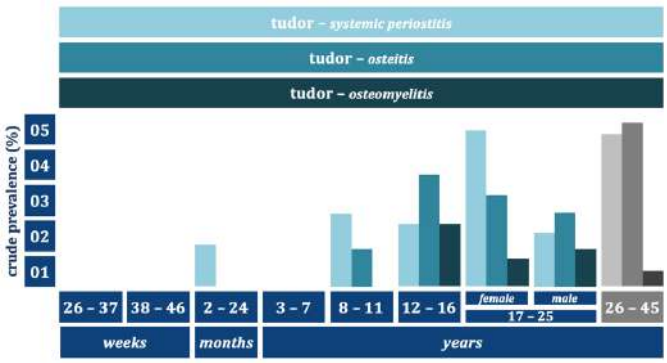
06.02 | the family economy + work

Any individual during 17-25-years-old who remained in the household would be expected to contribute to the family economy. Young men would likely have engaged in formal full-time employment outside the household. Young women would have had skills in a variety of areas that would make them valued members of the household. It is possible that young women continued to enjoy some form of freedom during their youthhood and prior to marriage (Ben-Amos 1994: 228; Gilchrist 2012: 38; Goldberg 1992: 225; Griffiths 2011: 319).

Figure 06.01 – 1528 - Sir Thomas Godsalve and His Son John - Painting - Hans Holbein - British - Web Galley of Art - Gemäldegalerie, Dresden

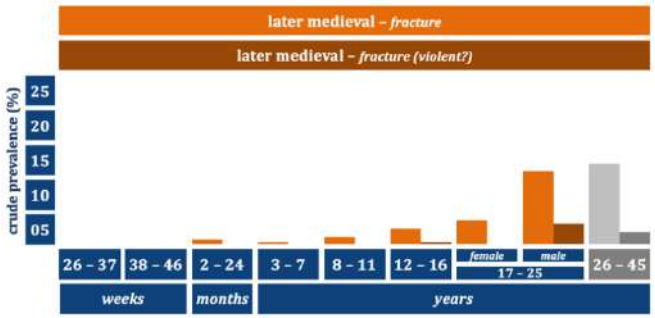


Graph 06.01 – Results of later medieval 17-25-year-olds infectious pathology from this study

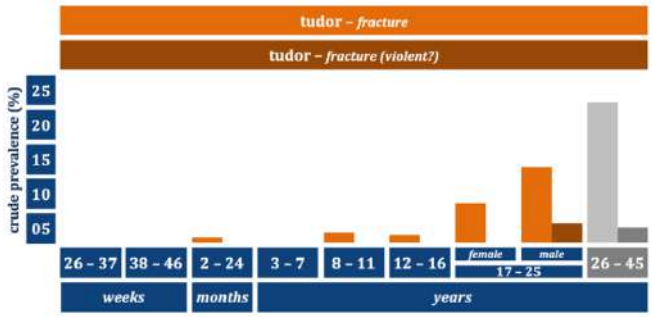


Graph 06.02 – Results of Tudor 17-25-year-olds infectious pathology from this study

This period of increased participation in 'adult' tasks is possibly reflected in the morbidity evidence (refer to graphs 06.01 & 06.02). For the first time in this dataset it is possible to assess differences between females and males because it is possible to determine the sex of skeletons after the age of 17-years-old from this dataset. Some interesting gendered patterns are revealed. During the later medieval period, 17-25-year-old females present less systemic PNBF of 1.7% (6/349) less than males at 3.2% (22/686), although this difference is not statistically significant (p = 0.163). This is also observed in the difference in osteitis prevalence rates between females of 1.4% (5/349) and males of 4.1% (28/686), which is a statistically significant change (p = 0.021). In addition, there are differences in osteomyelitis between females of 0.6% (2/349) and males of 1.0% (7/686), which was not a statistically significant change (p = 0.463). Although not all of these gendered differences are statistically significant, the collective evidence suggests that medieval males aged 17-25-years-old were more likely to experience non-specific infection than females of the same age cohort. Interestingly, however, this pattern is reversed in the 17-25-year-old Tudor data, although none of the changes are statistically significant. 4.6% (5/110) of Tudor females of also had a higher rate of systemic PNBF than males of 1.7% (3/182), which is also not statistically significant (p = 0.271). 2.7% (3/110) of Tudor female has a higher rate of osteitis than in males of 2.2% (4/182), which is also not statistically significant (p = 0.774). 0.9% (1/110) of Tudor females had a higher rate of osteomyelitis males of 1.1% (2/182), which is also not statistically significant (p = 0.876). In sum, it is likely that there are some gendered differences here, but the level of significance suggests that *broadly* speaking burdens of infection of both later medieval and Tudor females and males was generally similar.



Graph 06.03 – Results of later medieval 17-25-year-olds fractures from this study



Graph 06.04 – Results of Tudor 17-25-year-olds fractures from this study

More definitive differences between the genders is evident in the evidence for trauma (refer to graphs 06.03 & 06.04). Fractures of later medieval female 17-25-year-olds of 4.3% (15/349) is lower than in males of 10.6% (73/686), which is also a statistically significant difference (p = 0.000). Fractures of Tudor females 17-25-year-olds of 6.4% (7/110) is also lower than in males of 11.5% (21/182), which is not a statistically significant difference (p = 0.145). Evidence of violent fractures of later medieval female 17-25-year-olds of 0% (0/349) is lower than in males of 3.4% (23/686), which is also a statistically significant difference (p = 0.000). Evidence of violent fractures of Tudor females 17-25-year-olds of 0% (0/110) is also lower than in males of 3.3% (6/182), which is not a statistically significant difference (p = 0.000). The fracture evidence suggests that males were far more likely to incur trauma than females and also appear to have sustained the vast majority of violent trauma. It also suggests consistency between the later medieval and Tudor patterns of gendered trauma. This lower rate of evidence of exposure to trauma during 17-25-years-old in females in comparison with males has previously been noted by Shepard and colleagues in their study of England (900-1600) (Shepard et al 2015: 281). Additionally, they suggested that the rise in violent female trauma they identified during this period of the life course might be associated with post-marital domestic violence (Shepard et al 2015: 281).

If for a moment we view 17-25-year-old youths collectively, irrespective of gender, we can compare their morbidity to that of 26-45-year-old adults. Later medieval systemic PNBF remains at 2.4% (29/1230) during 17-25-years-old and 2.4% (87/3599) during 26-45-years-old, which is not a statistically significant difference (p = 0.906). Later medieval osteitis decreases from 2.6% (32/1230) during 17-25-years-old to 3.4% (123/3599) during 26-45-years-old, which is not a statistically significant difference (p = 0.161). Later medieval osteomyelitis remains at 0.8% (9/1230) during 17-25-years-old and 0.8% (28/3599) during 26-45-years-old, which is not a statistically significant difference (p = 0.872). Tudor systemic PNBF increases from 2.5% (8/362) during 17-25-years-old to 4.4% (37/839) during 26-45-years-old, which is not a statistically significant difference (p = 0.065). Tudor osteitis increases from 2.1% (7/362) during 17-25-years-old to 4.8% (40/839) during 26-45-years-old, which is a statistically significant difference (p = 0.000). Tudor osteomyelitis decreases from 0.9% (3/362) during 17-25-years-old to 0.5% (4/839) during 26-45-years-old, which is not a statistically significant difference (p = 0.462). Later medieval fractures increase from 7.9% (97/1230) during 17-25-years-old to 11.5% (415/3599) during 26-45-years-old, which is a statistically significant difference (p = 0.000). Tudor fractures increase from 9.2% (30/362) during 17-25-years-old to 20.3% (170/839) during 26-45-years-old, which is a statistically significant difference (p = 0.000).

The collective evidence suggests (aside from the incidence of Tudor osteitis) that 17-25-years-old youths during both the later medieval and Tudor periods had crossed a threshold where they were exposed to similar levels of infection as 26-year-old adults. The evidence from this study suggests that the infectious threshold started to be crossed during the previous stage of the life course, during 12-16-years-old, and was continuing into 17-25-year-old youthhood. Similarly, while fractures increase for both later medieval and Tudor 17-25-year-old youths, fracture rates remain statistically below those of 26-45-year-old adults.

Figure 06.02 – 1535 - Portrait of a young Man - Painting - Hans Holbein - likely Gregory Cromwell - aged 18 - Royal Collection of Netherlands

It can therefore be hypothesised that 17-25-years of age was something of a period of transition from earlier patterns of morbidity in the life course during childhood. The latter half of youthhood seems to have been dissimilar to childhood patterns of morbidity, but interestingly, these levels are still not similarly high as during adulthood. This suggests that 'adult' patterns of behaviour might have been more gradually acquired during a long period of youthhood than has previously been assumed during the later medieval and Tudor periods in England.

06.03 | (the end of) apprenticeship

Apprenticeship would still be continuing during 17-25-years of age. An apprenticeship length of service of seven years had been standard for some time, but this was fixed in law in 1562 by the Statute of Artificers, which made seven years a compulsory minimum (Cunningham 2006: 81; Goldberg 2004a: 111; Hanawalt 1993: 135; Orme 2001: 312; Shahar 1990: 233; Shepard 2011: 362). The maximum length of service was less likely to be formally stated and therefore could range; by the fifteenth century the average length was extending even longer (Hanawalt 1993: 135, 203; Shepard 2011: 365). By 1450, the majority of apprentices finished between seven to ten years; however, it was not rare for this to extend to even sixteen years in total – for both women and men (Hanawalt 1993: 135-136, 142; Houlbrooke 1992: 167; Phillips 2003: 134; Shahar 1990: 232). The length of service would primarily be determined by the type of trade, guild rules and the practice of individual masters (Shahar 1990: 232). Of course, a longer duration of apprenticeship favoured masters who had access to long-term cheap skilled labour (Shahar 1990: 233). The later starting of apprenticeships between 16-18-years of age, with a length of apprenticeship between seven to ten years, meant that on average apprentices would finish when they were 23-28-years-old. This means that apprenticeship would not even end for all during our period of life course study; some could even continue into their mid-thirties. Once apprenticeship was

Figure 06.03 – 1533 - Henry Howard, Earl of Surrey - Painting - London. - aged 17 - Hans Holbein the Younger - Royal Collection - RCIN 912215

completed, it culminated in men becoming a full guild member (Ben-Amos 1994: 109; Gilchrist 2012: 92).For the female apprentices who finished their terms, they had no guilds of which to become a member (Hanawalt 1993: 143, 207; Ryan 2013: 56). A very small number of women are recorded as being a *femme sole* business owner under London's law and an even smaller number even eventually acquired citizenship (Hanawalt 1993: 142; 2007: 44). However, for the vast majority of women, the end of apprenticeship did not include a step into freedom and an independent life as it did with their male counterparts. Instead, for the majority, their skills were taken into their marriages to be of use to the family economy (Hanawalt 1993: 142-144; Youngs 2006: 110).

Figure 06.04 – 1565 - Portrait of a Young Man - Painting - Cornelis de Zeeu - Dutch - Bristol Museum and Art Gallery - Bridgeman Images BAG2830914

Apprenticeship transformed a youth into an adult who had now harnessed complicated and valuable techniques (Ben-Amos 1994: 132). Not only did they receive technical skills, but they also received broader socialisation experience, being made responsible for a broad array of business-related tasks and a wider knowledge of their professions (Ben-Amos 1994: 132). Maintaining the wellbeing and health of an apprentice was economically and socioculturally vital, as apprentices represented future market value (Pelling 1988: 150). Despite this, not all apprentices completed per their signed agreements. Evidence from fifteenth century London suggests that of the apprentices enrolled as tailors that approximately only 40% of them became eventual guild members (Youngs 2006: 113). It is possible that some of them did not have the finances for the final guild fee to become a fully-fledged member.

It is also possible that many apprentices felt that after a few years of instruction they had learnt enough to ply their trades independently (Youngs 2006: 113). It is also possible that the liminal state of apprenticeship, where individuals were semi-dependent on their masters, restricted apprentices from full 'adult' freedoms (Youngs 2006: 113). It follows that some probably left to marry, which they had been prohibited from doing during the term of apprenticeship (Hanawalt 1993: 203; 1998: 192; Shahar 1990: 229). Poor treatment of apprentices by exploitative masters is also recorded (Hanawalt 1993: 148; Youngs 2006: 113). Apprentices, who became too sick to work, or left spontaneously, would likely be forced to move back to the familial household (Hanawalt 1993: 148).

Figure 06.05 – 1579 - Mr. Smyth of Ostenhanger Kent - Painting - British - Cornelis Ketel - aged 23 - Yale Center for British Art - B1973.1.14

06.04 | (the end of) puberty

As we have seen, evidence suggests that later medieval puberty would have been slowed, which in turn, delayed its ending to later in the life course, perhaps even during the first years of the early twenties (Gilchrist 2012: 42, 53; Shapland and Lewis 2013: 302-309; Shapland and Lewis 2014: 151).

06.05 | sex

Later medieval and Tudor sex was an act which was performed or 'done' by the active male *to* the passive female (Gilchrist 2012: 98). Each married partner owed a conjugal debt from the point of marriage (Youngs 2006: 142). The Church held the view that sex should only be for procreation purposes, although contemporary medical opinion unanimously believed that pleasure for both male and females was required in order to conceive (Goldberg 2004a: 28; Rider 2016: 253). Humoral theory, too, suggested that too much sex in men reduced their levels of moisture, which in turn could reduce their life-span (Youngs 2006: 20). Canon law technically required couples to avoid sex on Sundays, Wednesdays and Fridays; as well as during Lent, Advent, Easter and Pentecost (Heywood 2001: 46). Married life was often something that occurred during the mid-twenties; therefore, it is unsurprising that pre-marital sex was common (Gilchrist 2012: 109). There is now evidence that later medieval and Tudor people had a clear understanding of herbal contraceptives and suppositories (Lindemann 2010: 23; Pollock 1990: 55). It is also assumed that they were aware of, and practised, coitus interruptus (Goldberg 2004a: 27; Hanawalt 1986: 100). It is imagined that collectively, these precautions only had limited effectiveness at preventing pregnancies (Lindemann 2010: 36). Perhaps the addition of later pubertal development meant that fertility in girls was likely to be less prominent until the twenties. By the fifteenth century, sex often happened from the point of the agreement to marry and pregnant brides were not rare (Ben-Amos 1994: 204; Cressy 1999: 74, 277; 374; Goldberg 2004a: 27). However, perhaps only 3% of births during this period were illegitimate, suggesting that contraceptives practices might have been *somewhat* effective (Cressy 1999: 73; Hanawalt 1986: 103; Houlbrooke 1992: 82; Orme 2001: 57; Pollock 1990: 55). After the Reformation, there was a renewal of belief in the immorality of pre-marital sex (Cressy 1999: 277; Goldberg 2004a: 27). Consequences for illegitimate sex, in a number of ways was potentially more dangerous for women than men (Shepard 2017: 344). With same-sex intercourse, men were at a higher risk, with sodomy being a capital offence; but it is likely that some sexual behaviour between men was *somewhat* tolerated depending on the context (Shepard 2017: 346-367). Evidence of syphilis, discussed in chapter six, suggests that the disease was contracted between 15-25-years-old – perhaps indicating that these years were sexually active – though of course, it is possible sex began before this at an earlier age. Medical authors also thought that sex at a too early age caused pregnancy issues and discouraged it (Shahar 1990: 38).

06.06 | law

Only during youthhood did individuals finally acquire the full suite of legal statuses. By the sixteenth century, individuals could be executors of wills from 17-years-old (Fleming 2001: 60; Orme 2001: 322). Under common law, at the age of 21-years, individuals could inherit land (Coster 2001: 52; Fleming 2001: 59; Hanawalt 1993: 203; Houlbrooke 1998: 84). However, even though the legal age of inheritance was set at 21-years-old, evidence from wills show that some demarcated even later ages for inheritance – often 25-29-years-old (Coster 2001: 52).

Figure 06.06 – 1526 - John More, Son of Thomas - Drawing - British - Hans Holbein the Younger – aged about 18 - The Royal Collection - RCIN 912226

06.07 | clothing

Figure 06.07 – 1569 - Possibly Helena Snakenborg - Painting - London - aged 21 - Tate Britain - Reference T00400

During youthhood, women continued to be dressed in a smocks, petticoats and waistcoats – possibly with kirtle, skirts, sleeves, gowns, cloaks, partlets, coifs, cuffs, ruffs, keirchiefs, bonnets, hoods, caps, gloves etc. (Buck 1996: 90-91, 165-174; Gilchrist 2012: 81-84; Huggett and Mikhaila 2013: 42-50). Girls aged 21-25-years were still allowed to wear their hair loose – unlike their married counterparts who were required to cover it (Buck 1996: 170; Gilchrist 2012: 84; Huggett and Mikhaila 2013: 49). Their hair continued to represent youthfulness and virginity (Gilchrist 2012: 84; Phillips 1999: 8). Men aged 21-25 years continued to be dressed in shirts, hose and doubles – possibly with slops, doublets, codpieces/codflaps, gowns, cloaks, jerkins, ruffs, cuffs, collars, caps, hats, belts, etc. (Buck 1996: 89-91; 150-164; Gilchrist 2012: 81; Hayward 2009: 5; Houlbrooke 1992: 150; Huggett and Mikhaila 2013: 30-38).

However, masculinity could continue to be expressed through the wearing of shorter and tighter fitting clothes (Gilchrist 2012: 84, 103). Shoes were still made of leather or cloth continued to be worn and changed in style throughout time (Buck 1996: 89; 162, 172; Gilchrist 2012: 82). In the middle and upper ranks, male sexuality could be expressed through the wearing of *poulaines*, long pointed shoes, the impracticality of which meant they were uncommonly worn but were fashionable amongst youths during the later fifteenth century (Gilchrist 2012: 103). It is likely during this stage in the life course where men started growing beards comparable to those of adults, signalling in appearance a significant embodiment of their masculinity (Fisher 2001: 155; Shepard 2017: 340). Additionally, men who might have finished their apprenticeship during this stage of the life course would be released from their clothing limbo in which they were ordered to dress in the clothes given by their masters – now they could adopt the youthful male clothing they liked (Buck 1996: 155).

06.08 | marriage

As we have seen, girls from the age of 12-years of age and boys from the age of 14-years-old were eligible under canon law to marry – despite this, marriage in these early years was rare and predominately restricted to those of an elite social status (Cressy 1999: 311-312; Fleming 2001: 6, 14; Goldberg 2004a: 26; Hanawalt 1993: 112; Houlbrooke 1992: 166; Shahar 1990: 224; Youngs 2006: 134). By the Tudor period, the average age of marriage for women was around 25-26-years and 27-28-years for men (Ben-Amos 1994: 32; Coster 2001: 25; Cressy 1999: 285; Hajnal 1965; Houlbrooke 1992: 63; Orme 2001: 55; Shepard 2011: 359) (see figure 06.08).

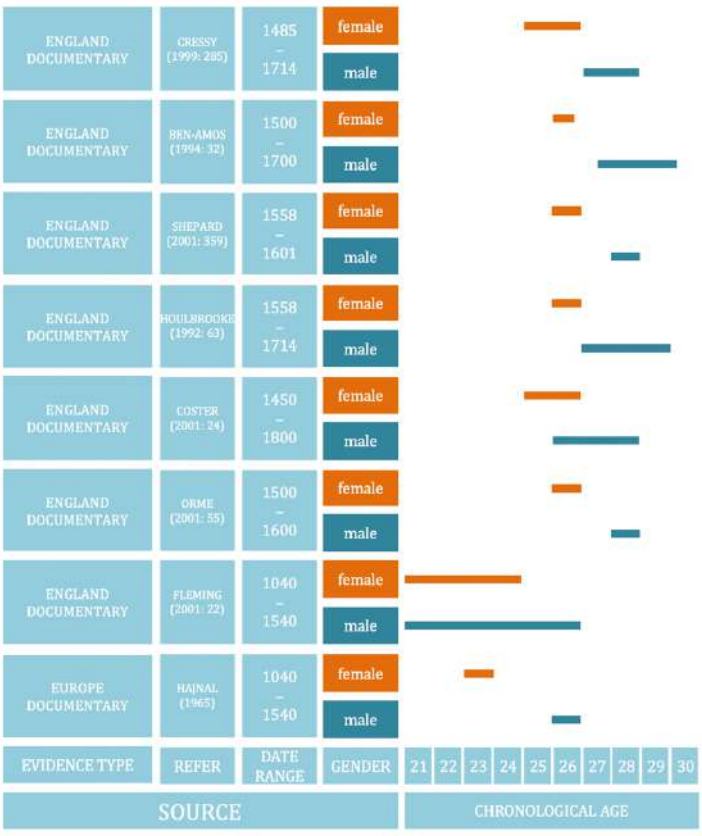


Figure 06.08 – average age of marriage evidence

Examples of earlier marriage are easy to find, but evidence suggests that it was only a small proportion of people who married before they turned 20-years-old (Coster 2001: 25; Cressy 1999: 312; Houlbrooke 1992: 66). Therefore, considering these ages as averages, many would first marry during 21-25-years-old.Marriage was a transformative process – both ritually and economically (Ben-Amos 1994: 208; Cressy 1999: 285; Youngs 2006: 131-132). Two individuals chose a partnership and in doing so set themselves up in a mutually understood sociocultural role to be maintained throughout adulthood (Cressy 1997: 287; Hanawalt 1986: 197; Gilchrist 2012: 114; Goldberg 2006: 422). Even after the Reformation, when marriage lost its position as a sacrament of the church, its practical importance is unlikely to have lessened much (Cressy 1999: 294). It was

significant for both women and men – however, marriage is considered to be the apex of the female life course (Hanawalt 2007: 69; Youngs 2006: 141). Marriage is an experience most later medieval and Tudor people experienced; however, a substantial number remained unmarried, perhaps even 10-20% (Cressy 1999: 285; Gilchrist 2012: 38, 129).

Choosing a marriage partner could be a protracted and complex process (Coster 2001: 57; Fleming 2001: 24). Courtship prefigured marriage, whereby an individual would choose a member of the opposite sex of which to pay court to, which was a serious business for both individuals (Cressy 1999: 234). How did later medieval and Tudor people choose a match? Theoretically, there were few set rules, an individual could pick any member of the opposite sex, who they were unrelated to and who was not a godparent (Orme 2001: 25). Parity of age, religion, social status, wealth, reputation, character and temperament were all key factors in choosing a match – the significance of these attributes could differ considerably from person to person (Ben-Amos 1994: 233; Cressy 1999: 234; Hanawalt 2007: 71; Houlbrooke 1992: 73; Pollock 2017: 62; Shepard 2011: 358; Youngs 2006: 136; Wrightson 2003: 88). Finding a match was not devoid of emotion, sentiment, or even love, but these factors were of secondary importance to practical considerations. While emotions were valued, basing a choice of partner solely on this basis was considered to be irrational (Hanawalt 2007: 71; Houlbrooke 1992: 76-78; Sharpe 1997: 62; Wrightson 2003: 88-90). How much autonomy did individuals have in choosing a potential marriage match? Canonically, the free choice of marriage was vital (Helmholz 2007: 45). Suggestions might come from family, friends and peers or wider social networks, such as apprenticeship masters, lifecycle employers, etc. (Goldberg 2004a: 25; Hanawalt 1993: 207). The sixteenth century was a period of inflation in land value, matched with a decline in wages, meaning that the requisition of land for a household and livestock for individuals who intended to marry would often require financial support (Shepard 2011: 359). Could the late age of marriage reflect individuals who wished to work prior to marriage in order to be economically independent and therefore free to court whom they chose? Even if men had more choice than has been assumed, it is still likely unmarried girls had their choice heavily mediated by their familial household, even if they had some form economic independence (King 1991: 32). Additionally, girls required a dowry – the material contribution from the familial household of the bride to be given to her potential husband – this changed via social status, but women of all statuses were meant to bring something (Cressy 1999: 234; Fleming 2001: 37, 43; Hanawalt 1993: 212; Laurence 2004: 390; Shahar 1990: 224). Therefore, the familial household might feel as though they have significant input into a potential match for females, as the potential marriage would cost them financially. Courting must have been a challenging time for women who might previously have been experiencing some form of autonomy, but now potentially was to have her life signed over to a husband who would exert legal control over her. Generally, it was believed both socioculturally and by the church, that neither women or men should be *coerced* into a match they did not want – most had the right to refuse – exerting *pressure*, on the other hand, is more likely to have been common (Cressy 1999: 235, 311; Fleming 2001: 23-26; Houlbrooke 1992: 69-72; Shepard 2011: 358; Wrightson 2003: 87). There was no exact process to follow in courtship, it was relatively free to be navigated individually, but it aimed to help both parties familiarise with one another's temperaments, clarify their

intentions and explore future expectations (Cressy 1999: 234). Even though courtship was taken seriously, having obvious practical and spiritual stakes at play, it also had a more light-hearted side and some chivalric courting would be involved (Hanawalt 1993: 211). This might be assisted by friends and family who might act as go-betweens (Cressy 1999: 235). The man might pay visits to the woman's familial household (Coster 2001: 57). There might be an opportunity to court during festivals, social events such as baptisms, confirmations, weddings, etc. (Coster 2001: 57; Gilchrist 2012: 109). Gifts could be exchanged – tokens, clothing, coins, rings, ribbons, etc. – monetary value mattered less than their symbolism (Cressy 1999: 234, 263; Gilchrist 2012: 109). It is considered that courtship usually took on average around a year, but could potentially take even longer (Coster 2001: 57). Courtship reached its climax when a couple agreed to marry – with a betrothal (Cressy 1999: 267; Fleming 2001: 42). Betrothal was the expression of the couple's agreement to marry, under English common law once a proposal of marriage was accepted, it was legally binding (Coster 2001: 58; Fleming 2001: 43). Lower down the social scale agreements were simple verbal contracts, often becoming far more complex with increasing social status (Houlbrooke 1992: 83). Some relied on private agreements; others may have made their betrothals publicly known (Cressy 1999: 267).

Figure 06.09 – 1575 - A Betrothal Ceremony - Drawing - London - The Holy Byble - The British Library

After betrothal, the next stage was the reading of the banns at the local parish church door; this made the intention of the couple to marry known throughout the public, in case there was any potential impediment (Coster 2001: 60; Cressy 1999: 305; Fleming 2001: 44). It was every Christian's obligation to inform the priest if there were a reason that the couple should not marry e.g. of pre-contract, bigamy, consanguinity, affinity, etc. (Hanawalt 1993: 215; Fleming 2001: 44).

The banns should be read on three consecutive Sundays, at both parishes of the couple if they came from different areas (Coster 2001: 60; Cressy 1999: 305; Fleming 2001: 44; Gilchrist 2012: 124; Hanawalt 1993: 215).

The third and final stage of the wedding was the solemnization in church (Fleming 2001: 44; Gilchrist 2012: 124; Houlbrooke 1992: 85). The timing of the wedding was regulated by religious and social custom. Wedding ceremonies were prohibited during Lent, Rogationtide, Advent, totalling more than a third of the year; instead marriages often took place during October to November, April to June

"*Man: I take the N. to my wedded wif, to haue and to holde, fro this day forwarde, for bettere*

and January to February, mostly orbiting around the harvest and employment patterns (Cressy 1999: 301; Coster 2001: 59; Fleming 2001: 44; Houlbrooke 1992: 85). Weddings often took place on a Sunday morning, to maximise the potential number of witnesses present (Fleming 2001: 44). The church required an offering, of a fee, to perform the wedding ceremony (Cressy 1999: 348). Weddings also cost money in clothing, there was no wedding 'uniform' but best clothes would likely be adorned, which would have varied according to social status (Cressy 1999: 361; Gilchrist 2012: 94; Hayward 2009: 9). The pre-Reformation marriage ceremony started, as it did in baptism, at the door of the church (Cressy 1999: 336; Gilchrist 2012: 188; Fleming 2001: 44; Hanawalt 1993: 215). The *Sarum Missal* instructed that the woman should be positioned to the left of the man, a reflection of her inheritance from Eve, who was made out of a left rib if Adam's (Cressy 1999: 336). Post-Reformation protestants did away with the ceremony at the door, instead, the entire ceremony occurred inside the church and there was no requirement for the specific positioning of the bride (Cressy 1999: 336-338). The dowry would be publicly exchanged at the door, which was a practice that continued post-Reformation (Cressy 1999: 336; Fleming 2001: 44; Hanawalt 1993: 215). The priest would ask "*who giveth this woman to be married unto this man?*" at which point the bride would be given away by her father to the groom – a symbolic act of transference of masculine authority from one man to another (Cressy 1999: 336-339; Fleming 2001: 45). The priest would ask the bride and groom if they were willing to proceed with the ceremony, the expected answer being affirmative (Cressy 1999: 336-339). The vows would then be exchanged; the vows were essentially the same during the pre-and-post Reformation periods (Cressy 1999: 340; Fleming 2001: 44; Hanawalt 1986: 203).

for wors, for richere for pourer in sycknesse and in hele, tyl dethe us departe, if holy chyrche it woll ordeyne, and thereto y plight the my trouthe.

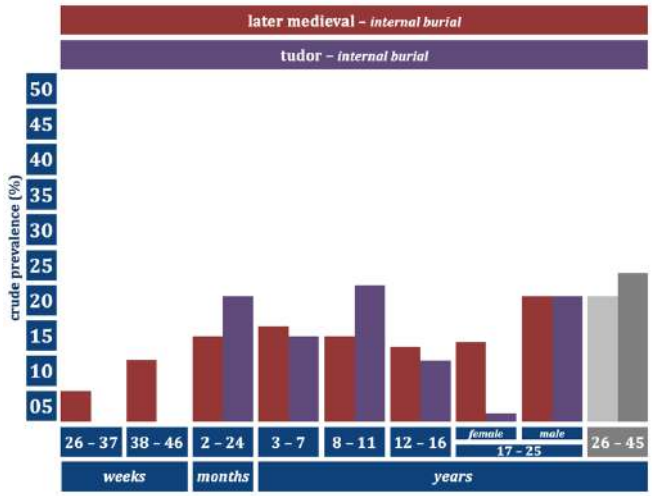
Woman: I take the N to my wedded housbande, to haue and to holde, fro this day forwarde, for better for wors, for richer for pourer in sicknesse and in hele, to be bonere and boxom, in bedde and ate bord, tyll dethe vs departhe, if holy chyrche it wol ordeyne, and therto I plight the my trouthe."

The *Manual*, 15th c, (Cressy 1999: 336-340; Fleming 2001: 45; Hanawalt 1986: 203)

The priest would then ask "*if any man show just cause, why they may not lawfully be joined together, let him now speak, or else hereafter for ever hold his peace*" (Cressy 1999: 339). In accordance with the *Sarum Rite*, the groom then placed a ring (of copper, pewter, brass, or gold) and a coin on a book; the priest blessed the ring, the coin was an offering to the church (Cressy 1999: 336; Fleming 2001: 44-45; Gilchrist 2012: 95, 125, 188). The groom was then to take the ring in his right hand, holding the left hand of his bride in his left hand, with three fingers, in honour of the Trinity, repeating after the priest: "*with this ring I thee wed and this gold and silver I thee give; and with my body I thee worship, and with all my worldy cattle I thee honour*", at which point the groom would place the ring on the thumb of the bride, and would then recite: "*in the name of the Father",* then placing the ring upon the second finger and reciting: "*and of the Son",* then placing the ring upon the third finger, reciting: "*and of the*

Holy Ghost", then placing the ring upon the fourth finger, and concluding with: "*Amen"* (Cressy 1999: 337; Fleming 2001: 45). The ring was left on the fourth finger, as it was considered in the Latin missals that this finger contained a vein that connected to the heart (Cressy 1999: 342). Protestants derided the superfluous rituals of the rings, but the practice of ring-giving outlasted the religious reforms (Cressy 1999: 336-344). With the first stage of the wedding complete, the pre-Reformation wedding party would now move inside; the protestant ceremony would already be inside (Cressy 1999: 338; Fleming 2001: 45). The couple would proceed to the altar for nuptial mass and a blessing (Cressy 1999: 338; Fleming 2001: 45; Gilchrist 2012: 124, 188). With the ritual part of the wedding now being concluded, the social parts continued, with elaborate feasts and celebrations, which would have altered according to social status (Cressy 1999: 350; Fleming 2001: 46; Hanawalt 1993: 216). Though marriage did not legally require consummation to formalise it, socially, it was considered essential to fulfil the conjugal debt (Youngs 2006: 142).

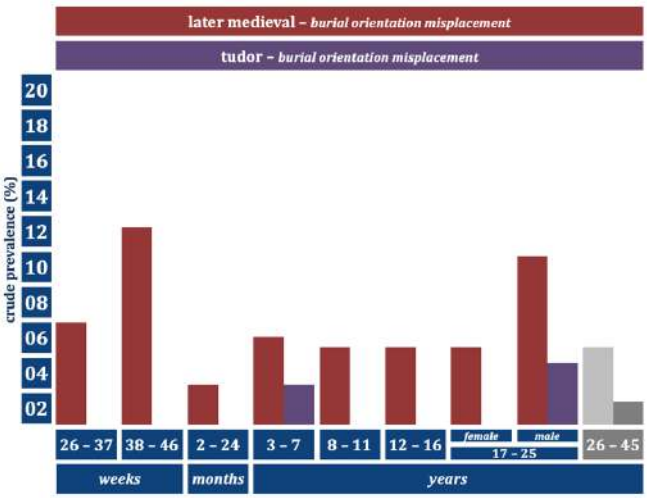
06.09 | funerary evidence



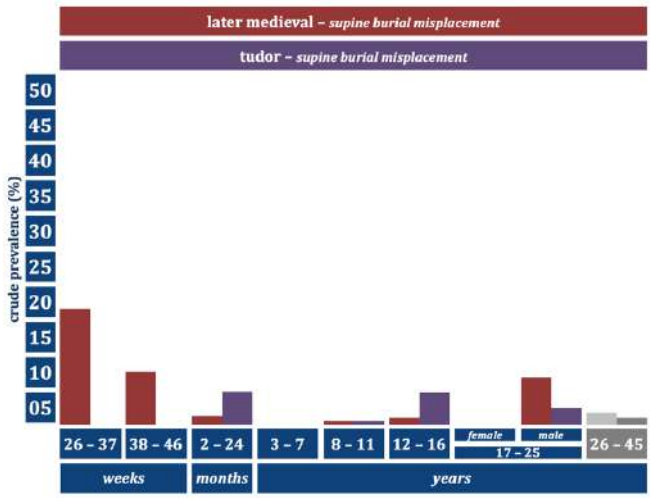
Graph 06.05 – Results of 17-25-year-old evidence of burial placement from this study

The funerary evidence from this study show that 23.8% (117/491) of later medieval 17-25-years-old males were buried in internal spaces (refer to graph 06.05). However, females aged 17-25-years-old were far less likely to be buried in this manner, with only 11.1% (27/244) being found buried in internal spaces, which is a statistically significant difference (p = 0.000). This pattern of male preferential treatment for internal burials can also be seen in the Tudor period where 23.6% (37/157) of men were likely to be buried internally, more than 1.2% (1/85) of females, which is a statistically significant difference (p = 0.000); although there is less Tudor data to represent this pattern.

Later medieval burial orientation misplacement is lower in 17-25-year-old females at 4.5% (12/268), when compared to the 17-25-year-old male incidence of 9.5% (44/464); which is a statistically significant difference (p = 0.014) (refer to graph 06.06). Tudor burial orientation misplacement is higher amongst 17-25-year-old males at 3.7% (4/109), when compared to the 17-25-year-old female incidence of 0.0% (0/70); which is a statistically significant difference (p = 0.000).



Graph 06.06 – Results of 17-25-year-old evidence of burial orientation from this study

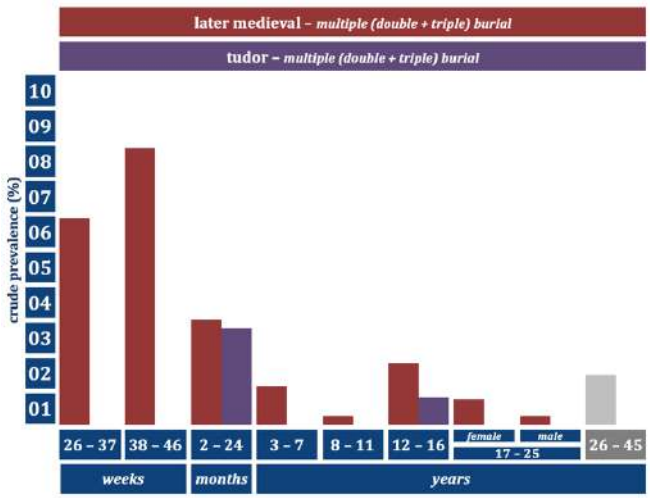


Graph 06.07 – Results of 17-25-year-old evidence of burial misplacement from this study

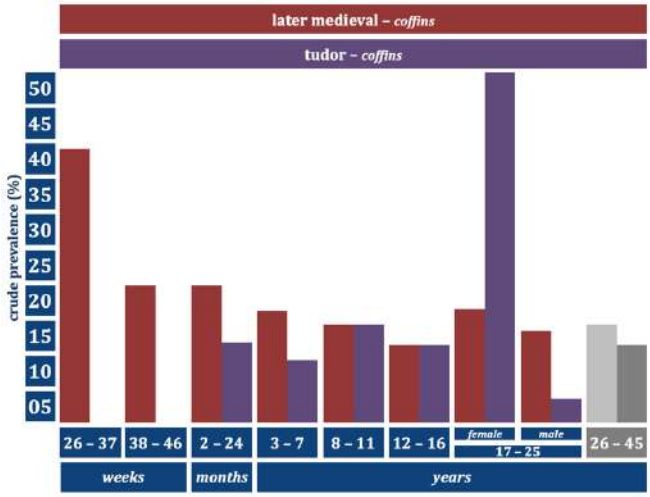
In terms of body positioning, there is high degree of uniformity in positioning amongst later medieval females during 17-25-years-old, with 100% (237/237) being placed supinely. However, 6.7% (34/506) of 17-25-year-olds males, were found to be disarticulated (disarticulation was defined as purposeful misplacement of the body at burial as noted by the reports, rather than instances of intercutting which are common), which is a statistically significant difference (p = 0.000) (refer to graph 06.07).

This pattern is somewhat similar during the Tudor period, with 100% (40/40) females once again placed supinely and 2.1% (2/96) of Tudor 17-25-year-olds males, which is not a statistically significant difference (p = 0.880), were more likely again to diverge from the norm. Tudor females were all found to have been placed supinely 100% (234/234). However, 5.4% (27/498) of later medieval 17-25-year-olds males were found to be disarticulated. This pattern was different during the Tudor period, with 100% (40/40) of females and 100% (96/96) of males placed with their legs extended. This might reflect a higher degree of care in placement or it might reflect a lower representation of data.

Burials of multiple occupancy during the later medieval period decrease again, amongst females of 0.8% (2/268) and males of 0.2% (1/464), but the decrease is not statistically significant (p = 0.278) (refer to graph 06.08). Additionally, there is no evidence for burials of multiple occupancy during the Tudor period of either female or male 17-25-year-olds. This low rate might suggest that double burials were usually reserved for the accompaniment of younger children with adults older than 17-25-year-olds.

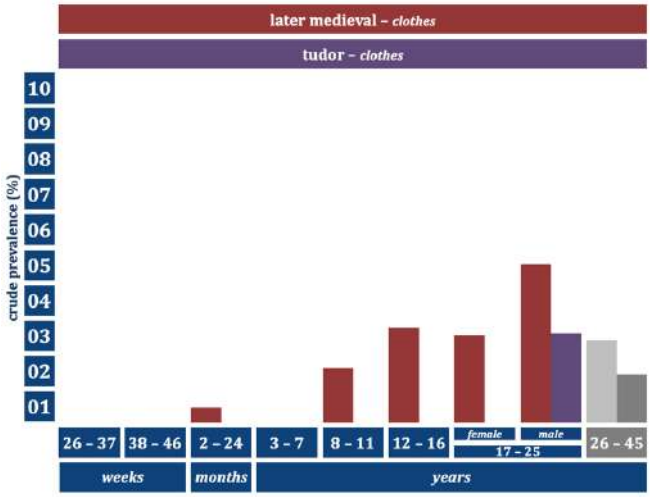


Graph 06.08 – Results of 17-25-year-old evidence of burials of multiple occupancy from this study



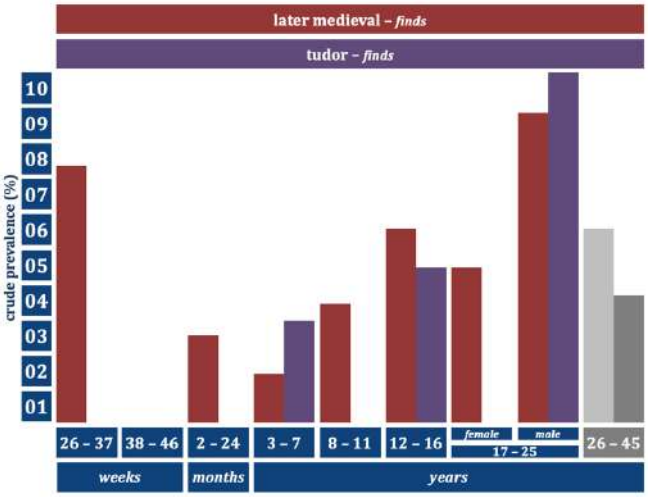
Graph 06.09 – Results of 17-25-year-old evidence of coffins from this study

Later medieval evidence of artefacts included with the burials of 17-25-year-old females of 4.5% (9/201; pins, unknown fragments, jewellery) was more than half of those seen in males of 8.9% (36/403; pins, fragments, coins) (refer to graph 06.10), which is a statistically significant difference (p = 0.049). This pattern can also be seen during the Tudor period too, where 0% (0/14) of 17-25-year-old females had evidence of finds compared to 11.8% (9/76; pins, fragments) of 17-25-year-old males, which is not a statistically significant difference (*p* = 0.607), although there is a lack of data representation in female data here.



Graph 06.11 – Results of 17-25-year-old evidence of clothes from this study

During the later medieval period, 17-25-year-old females at 16.2% (32/197) were more likely than men to be buried in coffins of than 17-25-year-old males at 13.5% (60/446) (refer to graph 06.09), although this is not a statistically significant difference (p = 0.351). This pattern can also be seen during the Tudor period too, where 17-25-year-old females 50.0% (6/12) of were more likely than 3.8% (3/79) of 17-25-year-old males to be buried in coffins, which is a statistically significant difference (p = 0.000), although there is a lack of data representation in female data here.



Graph 06.10 – Results of 17-25-year-old evidence of finds from this study

Later medieval evidence of clothing in the burials of 17-25-year-old females of 2.5% (5/201) was lower than those seen in 17-25-year-old males of 4.5% (18/403) (refer to graph 06.11), which is not a statistically significant difference (p = 0.211). This pattern can also be seen during the Tudor period too, where 0% (0/14) of 17-25-year-old females were less likely than 2.6% (2/76) of 17-25-year-old males to have finds, which is not a statistically significant difference (p = 0.374), although there is a lack of data representation in female data here. Collectively, what this shows is a consistent pattern of less finds in females than in male burials, in both the medieval and Tudor periods.

Figure 06.10 – 1601 - The Family of Sir Richard and Suzanna Saltonstall – Effigy – Stone - St Nicholas, South Ockendon - Authors Own

In sum, 17-25-years old burials appear different from 12-16-year-olds. Importantly, the ability to divide burial types between genders reveals a significant gender split. 17-25-year-old males were statistically more likely than 17-25-year-old females to be buried in internal spaces, more likely to have finds, more likely to have clothing, more likely to have variations in burial positioning – although they were less likely to have evidence of coffins. Although all females and males were buried in a Christian manner and mainly in a similar fashion, there is more consistent evidence for variation amongst males.

06.10 | adulthood – ?

This thesis aimed to view the progression of later medieval and Tudor 'children' from the earliest stages of the extended life course, from conception and arbitrarily aiming to stop at 25-years-old. There is no *medieval* reason for choosing this age as a 'cut-off' point, it is entirely arbitrary in terms of the contextual evidence. It was chosen as it was imagined to encompass the totality of childhood and youthhood; and also to fit with the often used bioarchaeological categorization of 17-25-years of age. However, the evidence from this study suggests that youthhood *was not* "complete" by 25-years of age.

The exact point of acquisition of medieval and Tudor 'adulthood' is unclear. Patrick Ryan has been critical of the appropriateness of the term *'adult'* as this was not widely in use in England before the seventeenth century and although the word *'mature'* might be more contextually appropriate, it does not become applied as an indication of personhood until the seventeenth century either (2013: 74). This is a fair criticism, as our view of *'adulthood'* is a contemporary construct, the view of which will somewhat distort our perception of the medieval period. However, this does not render the exploration of different stages of life and even age, which was perceived medievally. The extended life course was filled with ritual activity, but much of it was flexible within the life course. Therefore, 'stages' and not 'ages' of life is more might be more contextually appropriate, especially when we are referring to an age where we imagine people might only have an approximate idea of their chronological

age (Cressy 1999: 1-6; Orme 2001: 43-48; Youngs 2006: 12-17). However, age did matter, it was a form of sociocultural control, even if it was something of a blunt instrument (Youngs 2006: 17). Aside from baptism and extreme unction, there were no absolute rites of passage in the life course; the other sacraments were too non-specific and flexible to be categorised as such (Gilchrist 2012: 9; 169; Van Gennep 1908: 2-3).

Although there were not rites of passage or specific ages of majority, there were still periods of transition. Between stages of life, there was a period of liminality during the transitioning into new cultural roles, or new biological realities, or physiological developments, etc. (Hanawalt 1993: 10). These periods of transition could be short, or more drawn out, perhaps even overlapping with multiple stages. Because the experience of these transitions between stages of life varied depending on age, gender, social status, etc., the boundaries between stages of life, childhood to youthhood to adulthood, could potentially be rather indistinct (Ben-Amos 1994: 36). There was no singular watershed moment, no single age of majority because there was no chronological age at which both women and men were 'adult' (Hanawalt 1993: 217; Youngs 2006: 127, 157). As Linda Pollock summarised, '*There may have been no modern concept of adolescence in early modern England but there was a recognisable period of youth associated with people in their teens and twenties who were in a state of dependence. This was a dynamic, transformative phase for the young, and there was no single path to adulthood*' (2017: 72). Age related criteria of adulthood were gradually and incrementally acquired. Identities of age categories are – both biologically and socially – acquired and shed – by piecemeal – block by block – this incremental growth – which is why it was not contradictory to be both a youth and an adult at the same time – gaining adult pieces and shedding many youthful pieces – but not entirely desisting from youthhood, nor entirely yet an adult – despite undertaking many adult tasks and roles. This incremental ageing is based on a mix of social and biological factors which are inherently intertwined.

There was also a degree of flexibility in the life course if there was a need for it. For example, wealth and status could lead to an earlier than usual marriage. Economic pressures on a household meant that a child was placed into life-cycle service at an earlier age. Young men might become skilled manual labours; this could happen long before laws conferred them similar adult rights (Shahar 1990: 247). Apprentices are imagined as suspended in a period of perpetual youthhood and were not considered adults (Barron 2007: 52, Hanawalt 1993: 113, 203, Shahar 1990: 29; Youngs 2006: 113). Financial independence could increase adultness, but wealth alone did not confer adult status (Shahar 1990: 29). Marriage was a significant transformation in the life course, but it did not automatically confer adultness (Ben-Amos 1994: 208; Cressy 1997: 4, 287; Gilchrist 2012: 114; Goldberg 2006: 422; Shepard 2011: 359; Youngs 2006: 131-132). It is not possible to define 'adulthood' in terms of marriage as 10-20% potentially never married and yet this did not suspend these individuals in a state of adult-less-ness or a state of perpetual youthhood. Adulthood was incrementally acquired, composited from any number of variables, one of which *could be* marriage. Legal freedoms too were given piecemeal; but age of majority was not a legal threshold as it is today (Amos 1994: 30; Coster 2001: 52; Fleming 2001: 59; Goldberg 2004a: 17, 21; Hanawalt 1993: 202; Orme 2001: 3, 327; Youngs 2006: 127) (see figure 06.11).

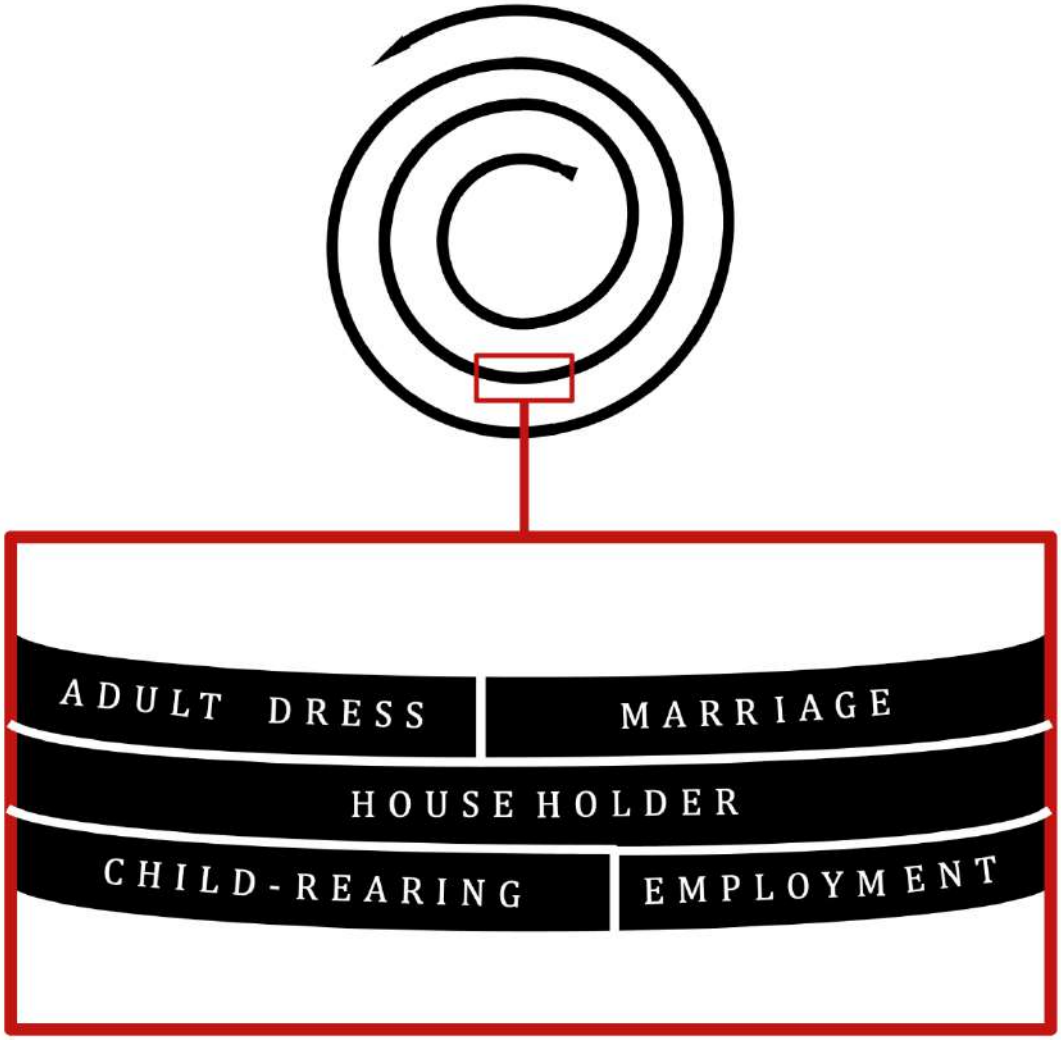


Figure 06.11 – Life Course - incremental ageing - Authors Own

The path to adulthood was different for women and men (Shahar 1990: 30). For men, a moment such as acquiring guild membership could be a significant step into adult power (Hanawalt 1993: 207). Adultness had to be demonstrated through a gendered expression of mature masculinity; manhood was validated through the expression of wisdom, dignity, accountability and strength (Youngs 2006: 129). The transition into adulthood was less clear for females (Hanawalt 1993: 207; Phillips 2003: 6; Shahar 1990: 30). It has been suggested that the female life course was defined as adult in terms of motherhood. Of course, becoming a parent, like marriage, was a significant transitional moment, but this did not stop women without children becoming an adult (Youngs 2006: 156). Adulthood for females had to be demonstrated through a gendered expression of mature femininity – womanhood was validated through the expression of virtue, obedience, housewifery and gentleness. This visual and material element being crucial to being an adult is vital. As Deborah Youngs has argued, adulthood was *performative*; it was a role that had to be played convincingly to be considered 'adult' (2006: 157). Adult status came via a mirrored reflection; it is not something that could be individually claimed.

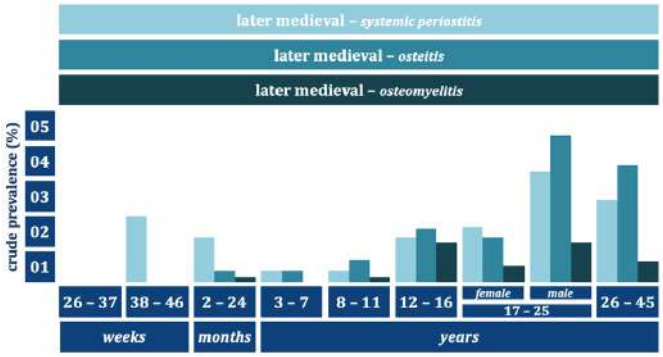
It was through a combination of factors in which adulthood was achieved and no singular thing conferred 'adultness'. Importantly, they required *embodiment* to convey maturity. At the same time, it seems that the materiality of bodily age was a pretty important factor, it outwardly conveyed 'age', and importantly age+gender, in a way that was perceptible to all – it showed physical adultness, but also spoke of humoral change (Youngs 2006: 156). This must have been key to the perception of adulthood generally, that an individual's material humors were seen to be 'adult'. For instance, a 17-year-old female who got married and became pregnant, with a household owning husband, who wore her hair covered, dressing like an adult woman; this individual would likely have been viewed as an adult. Another 17-year-old female who was unmarried, and did not have children, and remained at home with her parents, helping with the family economy, wearing her hair loose as permitted by custom; she was unlikely to be viewed as an 'adult'. A 17-year-old male who married early, was employed in full-time work as a labourer, owned property and visibly looked mature, with masculine clothes and a beard, was likely perceived as an adult. Another 17-year-old male who was just starting out in an apprenticeship, who was unmarried, without property, dressed in the clothes as given by his master; it is less likely this individual would have been viewed as 'adult'. However, even if certain individuals' 'achieved' or were perceived as adults from a young age, any retention of callowness would probably signal out as *young* adults. Their visible youth, even disguised by clothes and hair, would still be perceptible, to a society where *youthfulness* was generally distrusted. It is likely that they would only be *fully* accepted as adults not only when they achieved a combination of the things perceived as being 'adult', but also when they had lived this experience and these roles – through *habitus* – for a number of years. Crucially, these changes in habit have to be interpreted by others as a behavioural plateau in order to be considered 'adult' (Youngs 2006: 128-129). However, determining precisely when this happened is problematic, as the transition to adulthood was ambiguous (Schües and Rehmann-Sutter 2013: 198; Shahar 1990: 29). In the end, pinpointing the transitional period from youthhood to adulthood might be somewhat fruitless; as we have seen, it was individually acquired. In addition, the transition to adulthood is something of an arbitrary milestone. As we have seen, concepts of childhood, youthhood and adulthood are contemporary units of measurement that do not directly relate to the later medieval and Tudor lived experience of the life course (Ryan 2013: 74). That being said, investigating these categories can tell us a lot about the lived experience of the past – marking the exact point of adulthood is somewhat beside the point of this thesis – the aim of which was to investigate the process and experience of the life course.

Morbidity data in 17-25-year-olds during the later medieval period revealed systemic PNBF, osteitis and osteomyelitis rates similar to adult levels of morbidity. In contrast, the 17-25-year-old tudor data reveals much lower systemic PNBF and osteitis morbidity evidence. Therefore, the evidence suggests that youthhood during the Tudor period might have been somewhat different in nature to the later medieval period. In both the later medieval and Tudor periods fracture rates are higher than 12-16-year-olds, but lower than 26+year-olds. The collective morbidity evidence suggest that in both the later medieval and Tudor periods there was a state of youthhood that did not reach the full 'adult' levels until after the age of 25-years-old, with the course of Tudor youthhood potentially being slightly different to that of later medieval youthhood. The evidence compliments

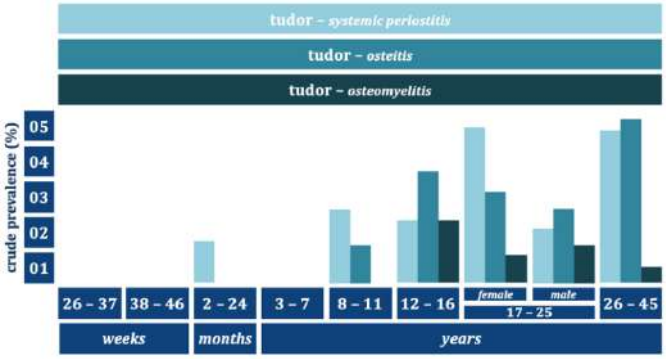
the broad evidence that the full 'acquisition' of adulthood was gradually achieved over a long period of extended youthhood.

06.11 | morbidity + the life course

The purpose of this final section is to summarise the key points of change in morbidity patterns within the life course – crucially, patterns of sustained change and peaks of morbidity (refer to table 06.01 & figure 06.15). Later medieval 26-year-old systemic PNBF rate is 11%. There is a peak of increase systemic PNBF prevalence during 14-16-years-old is 3-6%, a similar but lower rate during 17-25-years of 9% (refer to graph 06.12). The Tudor 26-years-old systemic PNBF rate is again higher at 17% - there is a peak during 14-16-years (4-7%) and the rate is still low at 8% during 17-25-years (refer to graph 06.13). Systemic PNBF rates are more dissimilar to the eventual adult level during the Tudor period. The later medieval adult systemic PNBF rate (defined as bilateral PNBF over 5 or more separate bones) is 2% - there are peaks at 14-15-years-old of 2% and the 17-25-year-old level is similar at 2%. The Tudor adult systemic PNBF rate is again higher at 4% - there is a data peaks at 8-years-old of 3%, but the level during 17-25-years-old is a lower at 2%. Again, systemic PNBF rates are more dissimilar to the eventual adult level during the Tudor period.



Graph 06.12 – Results of later medieval life course infectious pathology from this study

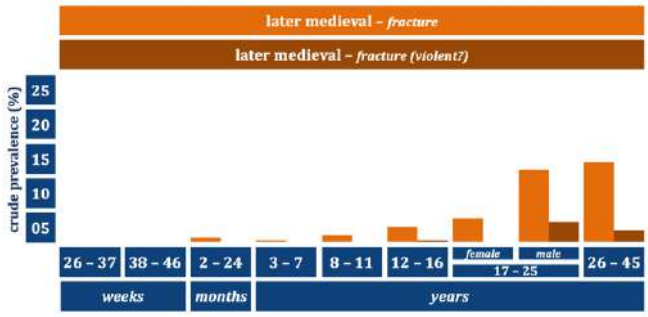


Graph 06.13 – Results of Tudor life course infectious pathology from this study

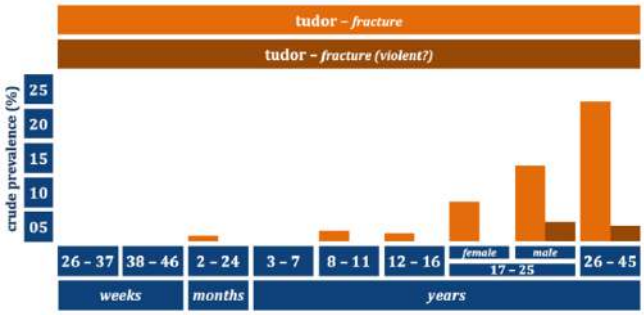
During the later medieval data shows that osteitis bone infections were 3% during 26-45-years-old. There were peaks of increased osteitis prevalence at 5-8-years-old of 2% and 11-12-years-old of 2% – but not reaching 3% until 17-25-years-old. Again, the 26-45-years-old Tudor rate is higher at 5%, with peaks at 12-14-years-old of 4-8%, but this is not sustained until 17-25-years-old at 2%, which is lower than the eventual adult 5%. Again, osteitis rates are more dissimilar to the adult level during the Tudor period.

In sum, it seems that during later medieval 12-16-years-old there is a shift in infectious morbidity, levels increase during 17-25-years-old, but do not quite match adult levels. There are similar peaks in infectious morbidity during Tudor 12-16-years. However, Tudor children appear to differ more significantly from the increase in Tudor infection rates in adults – by 17-25-years, rates of infections are much lower than in the later medieval

period, suggesting adulthood roles might have been more gradually assumed. This pattern was also noted in previously Penny-Mason & Gowland (2014: 186).



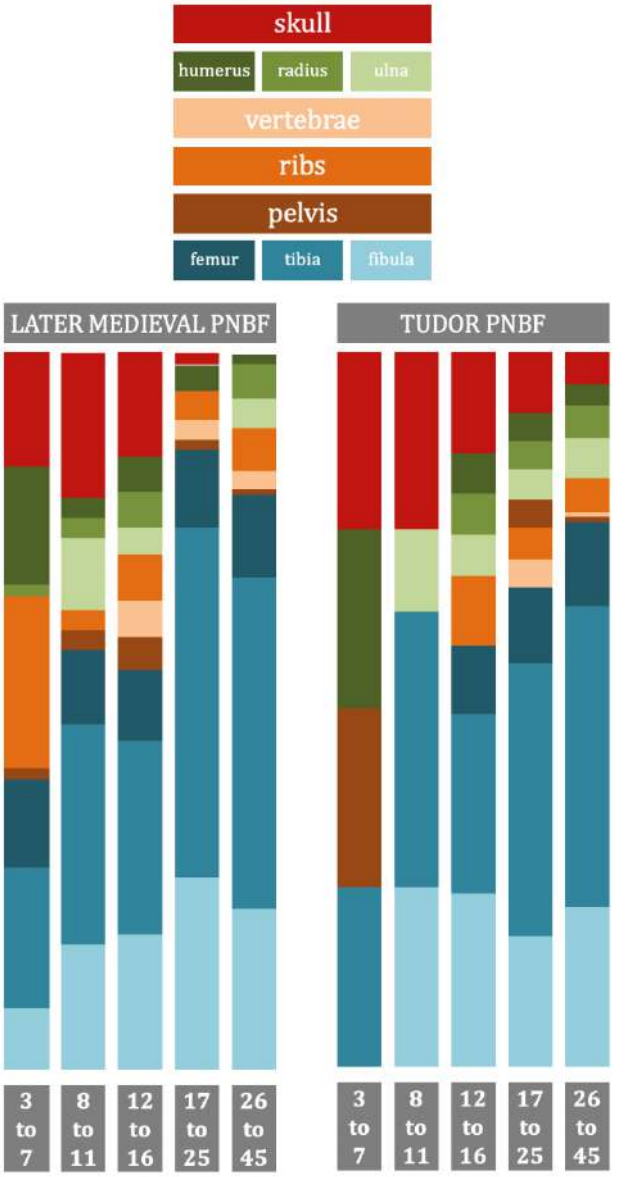
Graph 06.14 – Results of later medieval life course fractures from this study



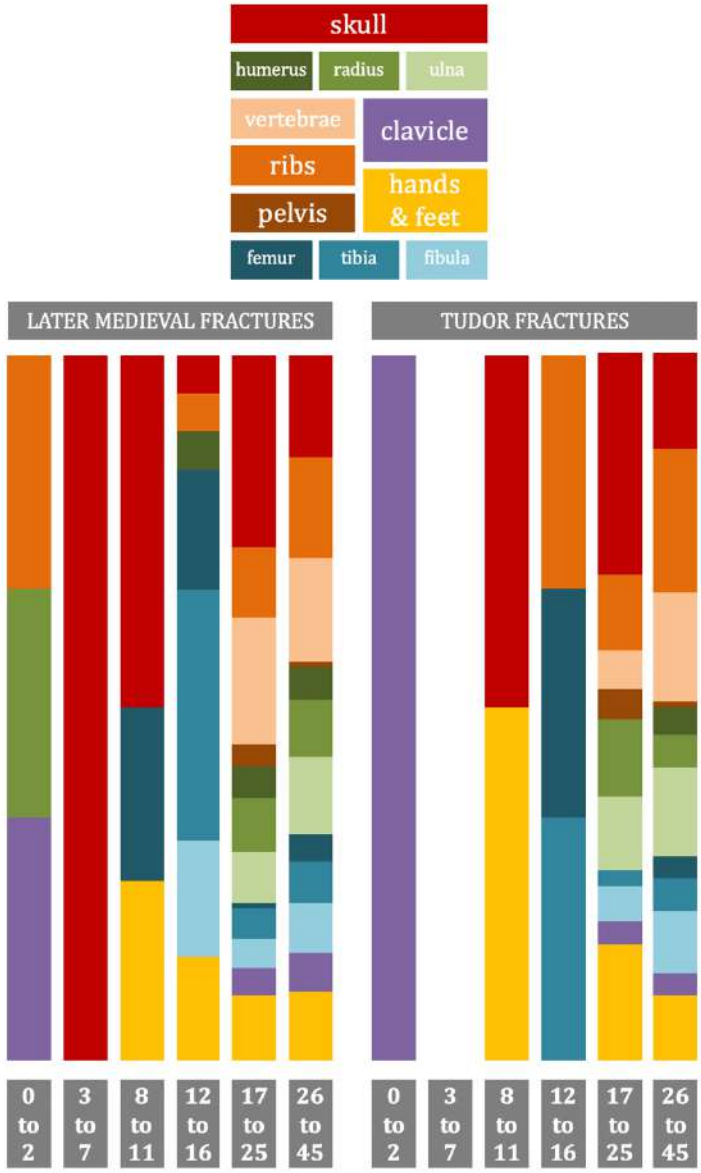
Graph 06.15 – Results of Tudor life course fractures from this study

The later medieval data reveals that 26-45-years-old fracture rates were 12%; there is a peak during 14-16-years-old of 4-7% and the rate remains lower than the adult rate during 17-25-years rate of 8% (refer to graph 06.14). The Tudor rate of adults is again higher at 20% - there is a peak at 8-years-old of 3% and 14-years-old of 3%; but the 17-25-year-old level was again lower than the adults at 9% (refer to graph 06.15). Again, fractures are more dissimilar to the eventual adult level during the Tudor period. Later medieval violent fractures of adults are at 2% - with a peak during 16-18-years-old of 2-5% and a similar level to the 26-45-year-old rate at 2% during 17-25-years. The Tudor violent fracture adult rate is similar at 2% and is also 2% by 17-25-years-old.

In sum, during 14-16-years-old, in both the later medieval and Tudor periods, there is a similar shift in trauma patterns; however, violent trauma during childhood was confined to the later medieval period, with the Tudor period revealing no evidence for it before 17-25-years-old. We know that 12-16-years-old there are many transitional changes – becoming a full adult Christian, paying poll tax, age of marriage, etc. (Ben-Amos 1994: 30; Coster 2001: 52; Fleming 2001: 59; Goldberg 2004a: 17, 21; Hanawalt 1993: 202; Youngs 2006: 127). As Mary Lewis found in her study of medieval England, trauma gradually increased with age, probably in part because individuals have longer to accumulate traumatic lesions (Lewis 2016: 155). However, the evidence of trauma suggests there was more distance between youthhood and adulthood experiences of trauma during the Tudor period. Overall, Tudor infectious and traumatic morbidity was more prevalent than during the medieval period.



Graph 06.16 – Results of life course PNBF by location and age from this study



Graph 06.17 – Results of life course fractures by location and age from this study

17-25-year-olds reveals some interesting patterns between gender splits in the morbidity data between the later medieval and Tudor periods. During the later medieval period, 3% of males is a higher systemic PNBF rate than 2% of females (p = 0.155); 4% of males is a higher osteitis rate than 1% of females (p = 0.021); 11% of males is a higher rate of fractures than 4% of females (p = 0.000); 3% of males is a higher rate of violent trauma than 0% of females (p = 0.001) – all the evidence shows higher levels of morbidity in men during the later medieval period.

		Skeletons	New Periosteal Bone Formation [NPBF]	Osteitis	Osteomyelitis	NPBF Bilateral	NPBF Systemic	Tuberculosis	Treponematosis	Leprosy	Fracture	Blunt/Sharp Force Trauma	Osteochondritis Dissecans	Os Acromiale	Scurvy	Rickets	Rickets [Possible]	Cribra Orbitalia
MEDIEVAL 1200-1600	*non-adult-?-years-old*	99	3	0	0	2	2	0	0	0	0	0	0	0	1	0	0	0
	pre-0-years-old	41	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	0-2-years-old	504	49	2	1	12	7	0	1	0	3	0	0	0	3	2	5	41
	3-7-years-old	543	32	2	0	8	2	2	0	0	1	0	0	0	1	2	5	69
	8-11-years-old	467	32	4	1	9	2	4	1	0	4	0	4	1	5	0	6	56
	12-16-years-old	561	64	9	6	20	8	5	4	0	14	1	12	0	0	0	4	76
	17-25-years-old	1,230	235	32	9	115	29	10	8	33	97	23	14	7	1	1	11	143
	(f) 17-25-years-old	349	58	5	2	28	6	6	2	4	15	0	6	2	0	1	5	41
	(m) 17-25-years-old	686	144	28	7	71	22	3	5	28	73	23	23	1	1	1	6	92
	26-45-years-old	3,599	811	123	28	383	87	22	43	41	415	79	103	19	2	0	32	247
TUDOR 1400-1650	*non-adult-?-years-old*	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	pre-0-years-old	7	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	0-2-years-old	79	5	0	0	3	1	0	0	0	1	0	0	0	1	0	1	4
	3-7-years-old	70	3	0	0	1	0	0	0	0	0	0	0	0	0	2	0	8
	8-11-years-old	92	7	1	0	3	2	0	1	0	2	0	1	0	3	0	0	20
	12-16-years-old	153	25	5	3	12	3	1	4	0	3	0	6	0	0	0	1	27
	17-25-years-old	326	61	7	3	26	8	6	4	0	30	10	8	0	0	0	0	45
	(f) 17-25-years-old	110	23	3	1	12	5	4	2	0	7	0	2	0	0	0	1	16
	(m) 17-25-years-old	182	30	4	2	13	3	2	2	0	21	6	6	0	0	0	3	27
	26-45-years-old	839	248	40	4	145	37	8	37	2	170	20	20	3	2	0	7	121

Table 06.01 – Complete pathological results of later medieval and Tudor skeletons from this study

However, during the Tudor period, this pattern is different – 5% of females is a higher rate of systemic PNBF than the 2% of males (p = 0.101); although 12% of males is still a higher rate of fractures than 6% of females (p = 0.145); 3% of females had a higher rate of osteitis than the 2% of males (p = 0.774); and 3% of males is a higher rate of violent fractures than 0% of females (p = 0.196). None of the differences are statistically significant.

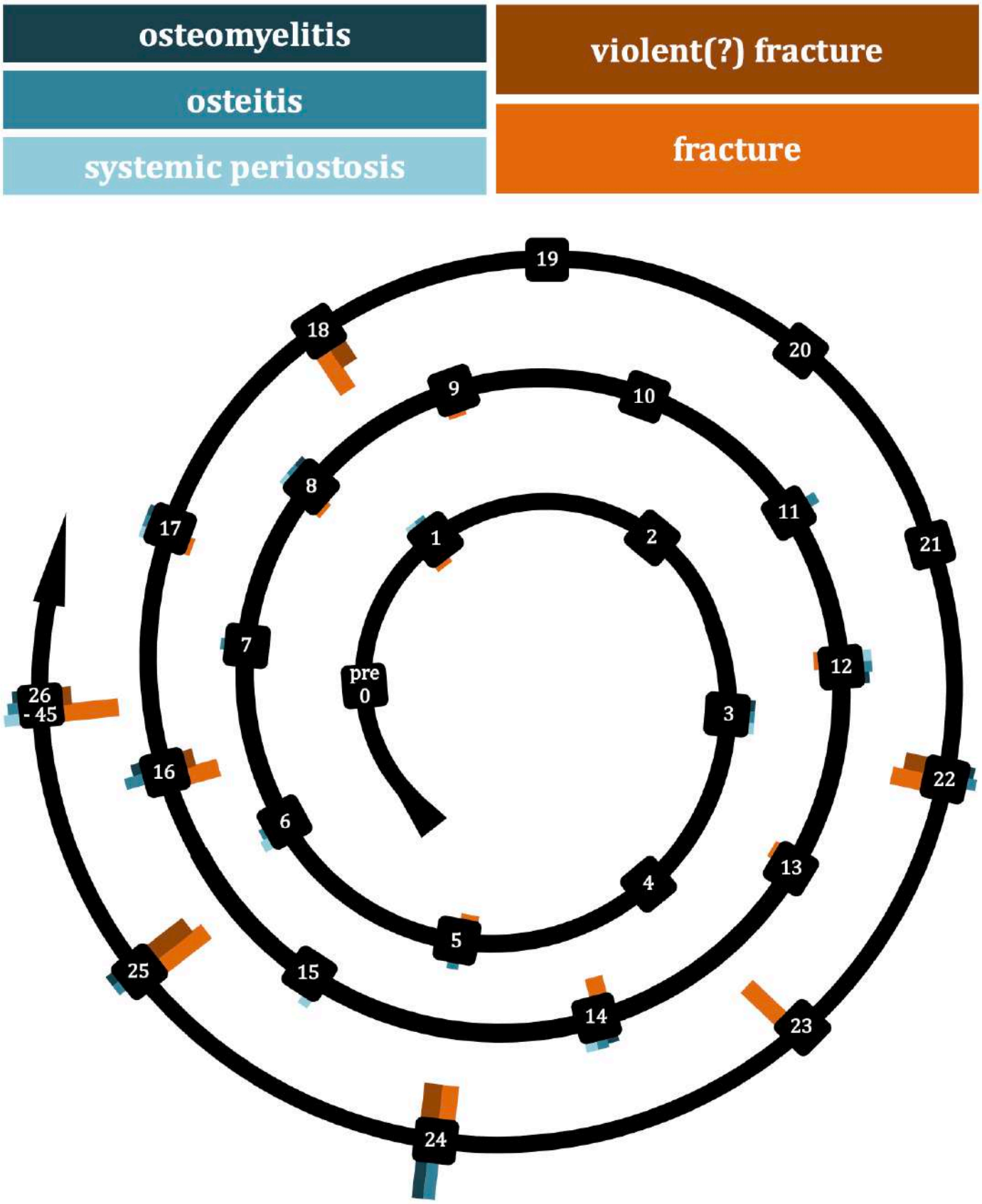
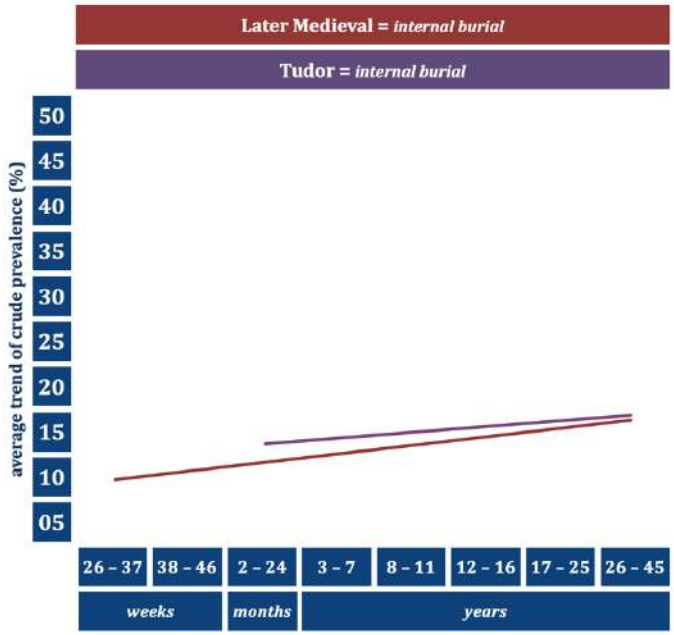


Figure 06.15 – The complete morbidity results from this study for the later medieval period on a year-by-year basis – Authors Own

06.12 | funerary evidence + the life course

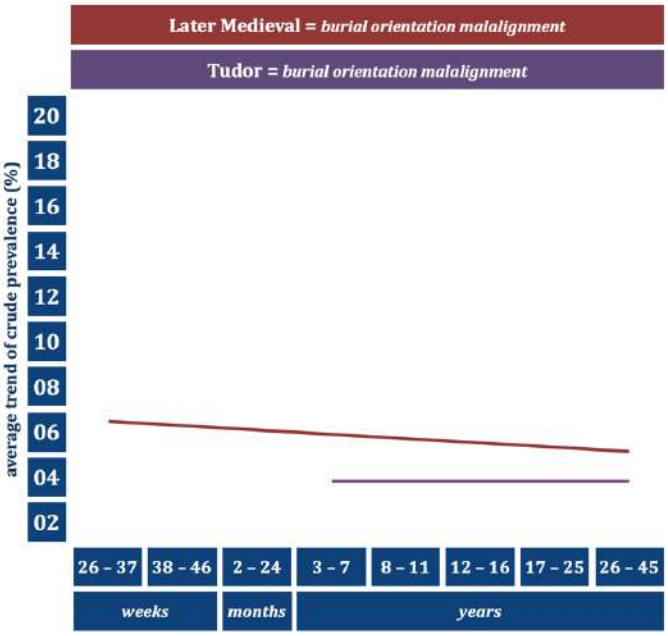


Graph 06.18 – Average trends of burial location over the life course from this study

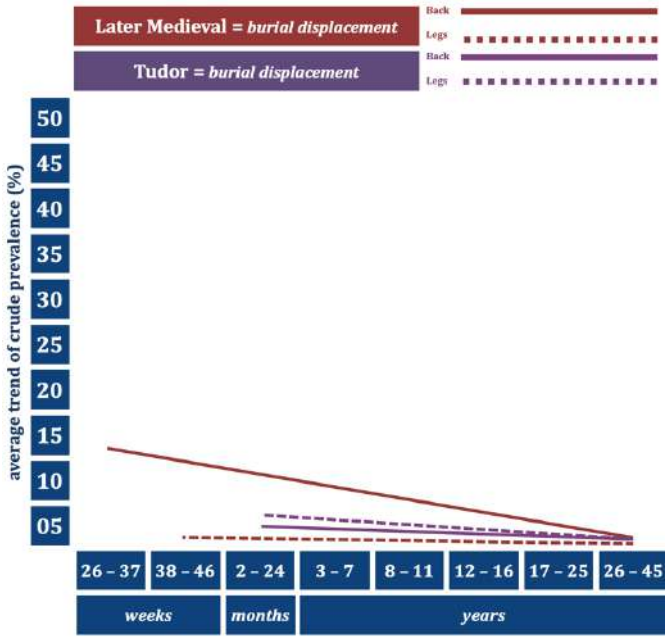
If we look at the collective adult burial package, it is possible to broadly discern changes over life course. During the later medieval period, 17% of adults were buried in internal spaces; there is a peak of internal burial during 3-6-years-old of 11-19%, 11-15-years-old of 10-15%, but this pattern is not sustained until 17-25-years-old (refer to figure 06.18). During the Tudor period, 22% of 26-45-years-olds were buried in internal spaces; there is a peak during 1-4-years-old of 14-40% and 7-11-years-old of 11-75%; but as seen during the later medieval period this pattern is not sustained until 17-25-years-old. Both medieval and Tudor internal child burials were evident, more likely at earlier years during the Tudor period (although there is less evidence to support this completely).

8% of later medieval 17-25-year-old and 3% of 26-45-year-old adults were misaligned. Alignment was broadly consistent after 12-months-old (refer to figure 06.19).

1% of Tudor 17-25-year-old and 1% of 26-45-year-old adults were misaligned. Alignment was broadly consistent after 12-months-old.



Graph 06.19 – Average trends of burial alignment over the life course from this study



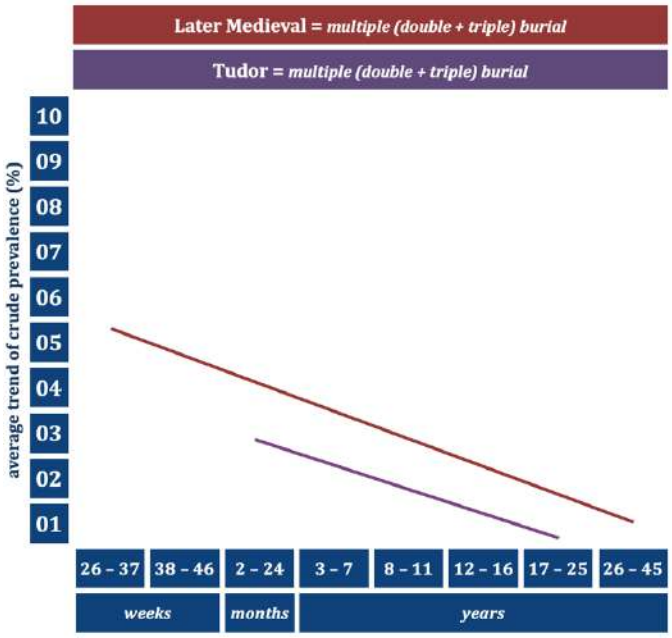
Graph 06.20 – Average trends of burial back and leg displacement over the life course from this study

5% of later medieval 17-25-year-old and 2% of 26-45-year-old adults were misaligned. Alignment was broadly consistent after 12-months-old (refer to graph 06.20).

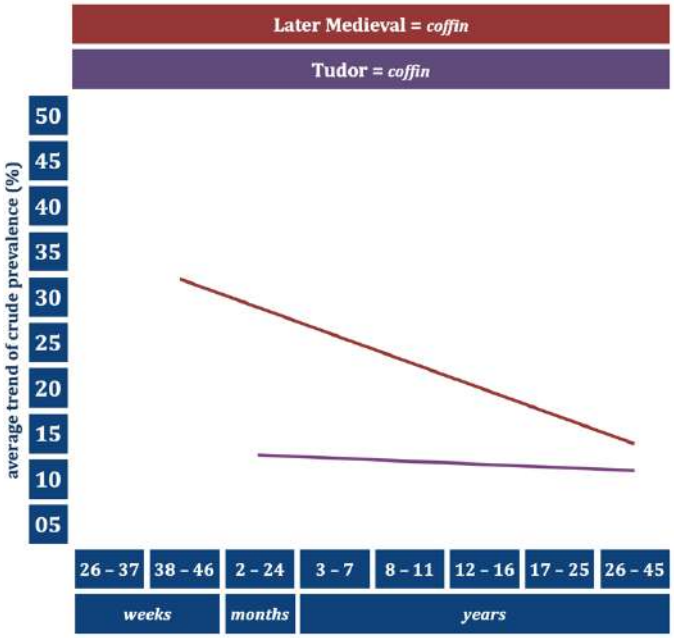
2% of Tudor 17-25-year-old and 2% of 26-45-year-old adults were misaligned. Alignment was broadly consistent after 12-months-old.

In general, during both the later medieval and Tudor periods leg misplacement was broadly consistent with supine back misplacement.

Burials of multiple occupancy also occur during the 1-12-months-old, between 5-8%, then during 2-5-years-old at 1-3% and then is less than 1% for the rest of the life course (refer to graph 06.21).



Graph 06.21 – Average trends of double burials over the life course from this study



Graph 06.22 – Average trends of coffin use over the life course from this study

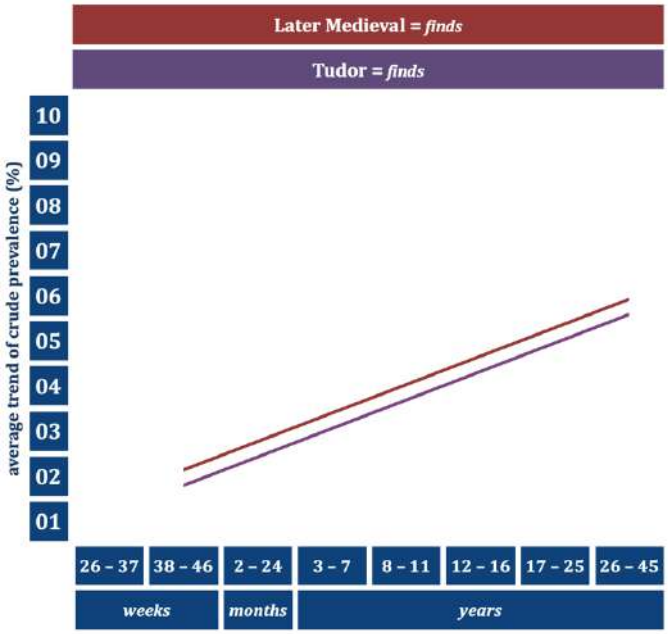
14% of later medieval 26-45-year-old adults were buried with evidence of coffins; this rate becomes similar during 12-16-years-old of 14-16% (refer to figure 06.22).

11% of Tudor 26-45-year-old adults were buried with evidence of coffins, this rate becomes similar only during 17-25-years-old at 9%, the rest of 3-18-year-olds maintains a far higher prevalence rate of coffins of between 8-13%.

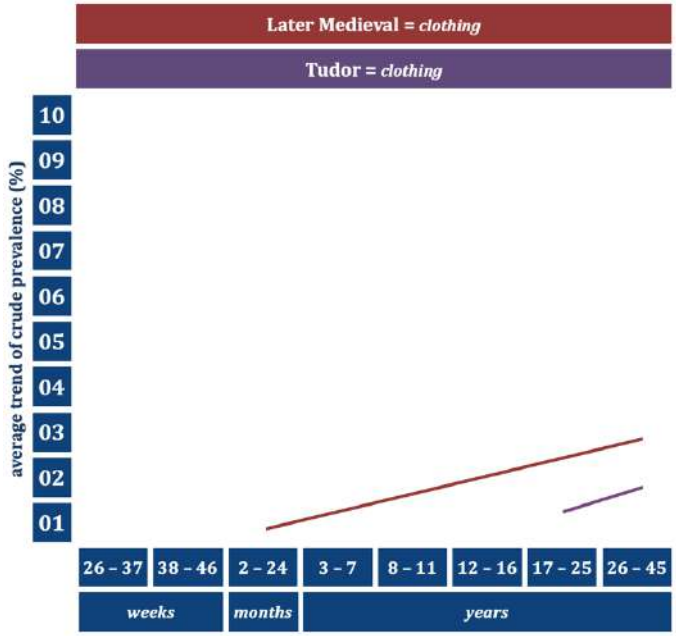
During both later medieval and Tudor periods, there was a higher rate of coffin use during infanthood and childhood than during adulthood.

5% of later medieval 26-45-year-old adults were buried with finds; this is broadly seen between the ages of 9-16-years-old of 3-9% (refer to figure 06.23).

14% of Tudor 26-45-year-old adults were buried with finds; this broadly seen between the ages of 14-17-years-old of 11-13%.



Graph 06.23 – Average trends of burial finds over the life course from this study



Graph 06.24 – Average trends of burial clothing finds over the life course from this study

2% of later medieval 26-45-year-old adults were buried with evidence of clothing; again, this is broadly seen between the ages of 9-16-years-old of 2-4% (refer to figure 06.24).

1% of Tudor 26-45-year-old adults were buried with evidence of clothing; again, this is broadly seen by 17-years-old at 1%.

During the later medieval period, 15% of 17-25-year-old males were more often buried in internal spaces than 9% of females (p = 0.066). 17-25-year-old 9% of males were more likely to have finds than 7% of females (p = 0.398). 4% of 17-25-year-old males were also more likely to have evidence for clothing 2% of females (p = 0.231). However, 16% of 17-25-year-old females were more likely to be buried with evidence of a coffin than the 13% of males (p = 0.351). 1% of 17-25-year-old females were also more likely to be buried in double burials than 0.5% of males (p = 0.278). None of these differences were statistically significant. During the Tudor period, 6% of 17-25-year-old males were more often buried in internal spaces than 1% of females (p = 0.049). 12% of 17-25-year-old males were more likely to have finds than 0% of females (p = 0.607). 3% of 17-25-year-old males were also more likely to have evidence for clothing 0% of females (p = 0.476). However, 50% of 17-25-year-old females were much more likely to be buried with evidence of a coffin than 4% of males (p = 0.000); by the Tudor period, double burials appear to have almost ceased. This shows continuity in the increased likelihood of 17-25-year-old males having finds, being clothed and being buried in internal spaces during the medieval and Tudor period. Similarly, 17-25-year-old females were more likely than males to be buried in coffins during both periods.

06.13 | some conclusions

- In conclusion, youthhood was perceived by later medieval and Tudor authors as an extended, liminal and dangerous stage of the life course, which could often continue past 25-years-old.
- Marriage was potentially an important part of the lives of later medieval and Tudor youths, but marriage did not automatically confer 'adult' status.
- Clothing and hairstyles were reflective of significant differences between gendered roles.

- The infectious palaeopathological evidence from this study revealed that during both the later medieval and Tudor periods, both female and male 17-25-year-olds expressed differences in patterns of morbidity; however, these differences were broadly all statistically similar, suggesting that both genders were exposed to similar levels of infection during this stage in the life course.
- However, the traumatic palaeopathological evidence from this study revealed that during both the later medieval and Tudor periods, male 17-25-year-olds were far more likely to receive fractures than females, as well as being far more likely to incur violent fractures. This suggests that patterns of trauma during this stage of the life course were markedly gendered.
- The collective morbidity evidence suggests that during the later medieval and Tudor periods that 17-25-year-olds experienced a long period of youth where their morbidity increased, but not to the same levels as 26-45-year-olds. As had been the case with 12-16-years-old, 17-25-years-old was a period of the life course which was defined by a slow transition into full adult behaviours.
- Finally, funerary evidence from this study show that only during 17-25-years-old were male youths likely to be buried in internal spaces as 26-45-year-old adults. Tudor funerary evidence is represented by less material finds and greater overall burial package uniformity; but the underrepresentation of data precludes fully concluding this. Both later medieval and Tudor 17-25-years-old females were buried with fewer finds and were less likely to be buried in internal spaces. However, females were more likely to be buried with a coffin and double burials. Although all women and men were buried in a Christian manner and mainly in a similar fashion, there is more consistent evidence for variation amongst men.

7

CHAPTER 7 | life course – scale

07.01 | introduction

"*The pattern of disease or injury that affects any group of people is never a matter of chance. It is invariably the expression of stresses and strains to which they were exposed, to everything in their environment and behaviour. It reflects their genetic inheritance (which is their internal environment), the climate in which they lived, the soil that gave them sustenance and the animals and plants that shared their homeland. It is influenced by their daily occupations, their habits of diet, their choice of dwellings and clothes, their social structure, even their folklore and mythology*"

(Wells 1964: 17)

In order to more fully understand patterns in the palaeopathological data, it is important to consider what the data represents and what else it might reveal when organised to different scales of analysis. The previous chapters, exploring the lives of medieval children through a national-scale view, are inherently generalised. Viewing data at a generalised level is often useful, but it is also likely to mask regional and temporal idiosyncrasies (Robb 2013: 77-78, 97). The purpose of this chapter is to explore the data at varying scales of temporality, regionalism, urbanism and social status. This chapter explores all of the palaeopathological indicators, but will focus predominantly on the periosteal new bone formation and fracture evidence. The analysis will be limited to a crude analysis of these elements as this is an introduction to areas of investigation for future research. The point of this chapter is to emphasise that any view of the life course can alter significantly according to different forms of scale. PNBF and fractures are the two most consistently reported upon morbidities in the published and unpublished literature and are therefore the best representative morbidity evidence to explore (the evidence for other morbidities is so proportionately small that breaking them down by age group and then further into different categories of scale would render any subsequent analysis evidentially under-represented). The evidence of the specific infectious diseases of tuberculosis, treponematosis and leprosy will be explored in chapter 9.

07.02 | regional scale

It may not be appropriate to treat later medieval and Tudor England as a single cultural unit, given regional or even local variation both within and between these time periods (Cressy 1999: 482). Localism was an important element in both the social experience and mentality of people living at this time (Wrightson 2003: 48, 72).

Archaeological evidence for later medieval England has suggested that there were variations in regional burial treatment (Gilchrist 2012: 200).

Medieval childhood is often considered on a pan-European scale. It is unlikely, however, that the lived experiences of children in different countries were comparable. Similarly, the view of the medieval child in England is likely to differ on a regional basis, in comparison to the 'national' view. The 'correct' view of the experience of childhood is dependent on what scale one wishes to interpret the data. It is possible that there was no English orthodoxy in the experience of the life course during this time. Morbidity is reflective of the sociocultural context and local environment (climate, food, vegetation, water, infectious organisms, etc.) and these factors can change between localities (Ortner 2001: 225-226) (see figure 07.01).

> *"Despite its central government and ecclesiastical hierarchy, despite acts of uniformity and disciplinary injunctions, the Tudor and Stuart regime, in practice, exhibited a broad and flexible tolerance for a range of variant behaviour. Life-cycle rituals responses as much to custom and tradition, local needs and popular unruliness, as to the strictures and interpretations of the church."*
>
> (Cressy 1999: 478)

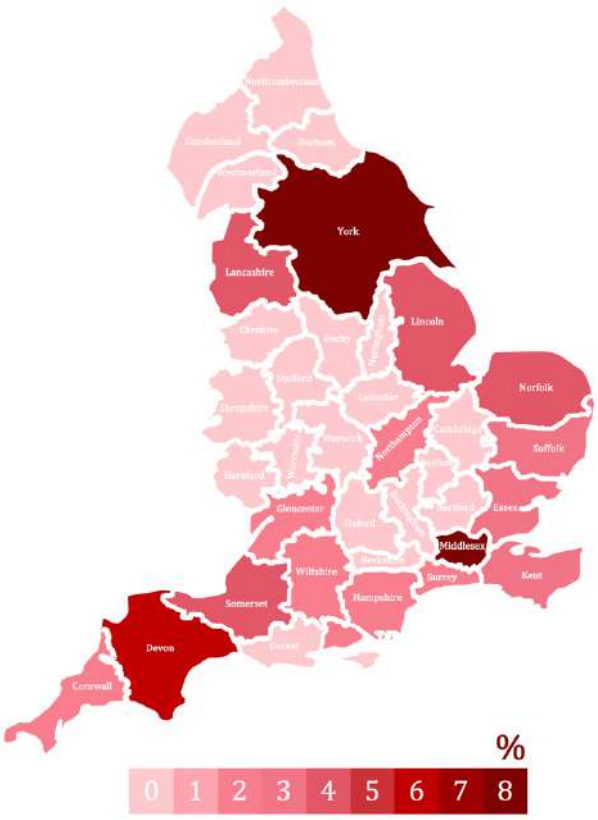


Figure 07.01 – English population density by percentage in the sixteenth century

It is clear that the later medieval and Tudor English population were mobile and migration (for an apprenticeship, life cycle service, work, marriage, etc.) was commonplace (Rawcliffe 2013: 64; Thomas 1971: 778; Wrightson 2003: 49). Determining precisely how much migration occurred and over what distances is more difficult (Goldberg 2004b: 86). From the mid-fifteenth century, migration was increasing, particularly amongst the youth (Beier 1983: 8; Goldberg 2004b: 98; McIntosh 2012: 18). Most youths who left their households to undertake life cycle employment were travelling relatively short distances (Ben-Amos 1994: 69; Crawford 2018: 782). While youths would migrate over significant distances to undertake apprenticeships, we need to remember that this was a small portion of the population and the exception to the rule (Ben-Amos 1994: 95).

Collectively, the evidence suggests that migration was increasing during the Tudor period, but that the majority of the population were either static or migrating to nearby places (Ives 2012: 14). Therefore, later medieval and

Tudor skeletons from England *should* be reflective of the regions from which they were found. Previously, regional patterns have been discernible in the later medieval non-adult dental diseases of caries and calculus, which demonstrated significant variation in non-adult dental disease patterns across England, a pattern which was demonstrated to be dissimilar to the largely homogenous patterns of non-adult dental disease noted in medieval Europe (Penny-Mason and Rose 2018: 113).

As mentioned in the methods chapter, it is possible that the practices of osteoarchaeology specialists within certain catchments might bias a regional study. However, this chapter is focused on evidence PNBF and fractures, which are palaeopathological conditions that are far more likely to be consistently recorded.

	North	***Midlands***	***London***	***South***
pre-0-years-old	0 / 11 = 0%	0 / 7 = 0%	1 / 5 = 20.0%	0 / 18 = 0%
0-2-years-old	25 / 254 = 9.8%	7 / 65 = 10.8%	4 / 39 = 10.3%	6 / 146 = 4.1%
3-7-years-old	17 / 252 = 6.7%	2 / 72 = 2.8%	3 / 39 = 7.7%	10 / 180 = 5.6%
8-11-years-old	13 / 169 = 7.7%	5 / 85 = 5.9%	6 / 91 = 6.6%	8 / 122 = 6.6
12-16-years-old	20 / 208 = 9.6%	11 / 115 = 9.6%	18 / 102 = 17.6%	15 / 136 = 11.0%
(f) 17-25-years-old	8 / 112 = 7.1%	8 / 58 = 13.8%	24 / 97 = 24.7%	23 / 111 = 20.7%
(m) 17-25-years-old	19 / 110 = 17.3%	35 / 186 = 18.8%	24 / 139 = 17.3%	67 / 273 = 24.5%

Table 07.01 – PNBF summary by region and age

The regional PNBF results reveal a higher rate in London in comparison with the rest of the country (refer to table 07.01). If London is taken out of the equation, rates of PNBF between the ages of 3-16-years-old are broadly similar in their pattern between regions. Additionally, London 17-25-year-olds shows the only instance of a higher rate in females than males.

	North	***Midlands***	***London***	***South***
pre-0-years-old	0 / 11 = 0%	0 / 7 = 0%	0 / 5 = 0%	0 / 18 = 0%
0-2-years-old	1 / 254 = 0.4%	0 / 65 = 0%	1 / 39 = 2.6%	1 / 146 = 0.7%
3-7-years-old	0 / 252 = 0%	0 / 72 = 0%	0 / 39 = 0%	1 / 180 = 0.6%
8-11-years-old	0 / 169 = 0%	1 / 85 = 1.2%	2 / 91 = 2.2%	1 / 122 = 0.8%
12-16-years-old	1 / 208 = 0.5%	5 / 115 = 4.4%	3 / 102 = 2.9%	5 / 136 = 3.7%
(f) 17-25-years-old	3 / 112 = 2.7%	3 / 58 = 5.1	7 / 97 = 7.2%	4 / 111 = 3.6%
(m) 17-25-years-old	15 / 110 = 13.6%	15 / 186 = 8.1%	13 / 139 = 9.4%	31 / 273 = 11.4%

Table 07.02 – fracture summary by region and age

The regional fracture results show a similar pattern between 0-7-years-olds in all regions (refer to table 07.02). From 8-16-years-old, fracture patterns begin to emerge and suggest evidence of regional differences. In particular, the north appears to have a far lower fracture rate than children in the midlands, London and the south. 17-25-year-old fracture patterns all show a similar gender split in all regions, suggesting gendered roles were nationwide behaviours.

In sum, this initial crude analysis does suggest at some evidence of early years' uniformity of fractures between different regions. However, there is less evidence on which to rely and it must be remembered that these rates are more likely to be underestimated during earlier ages due to the rapidity of bone remodelling (Lewis 2007, 2017). Fracture patterns suggest an increased variation between regions in prevalence rates during 12-16-years of age. London is unique in its patterns of morbidity. While there is similarity in the early years, the later childhood and youth display evidence for regional differences. Regional studies of childhood morbidity, such as Heidi Dawson's (2014) study of later medieval non-adults in southern England, might be a way to provide better resolution to the regional study of childhood.

07.03 | temporal scale

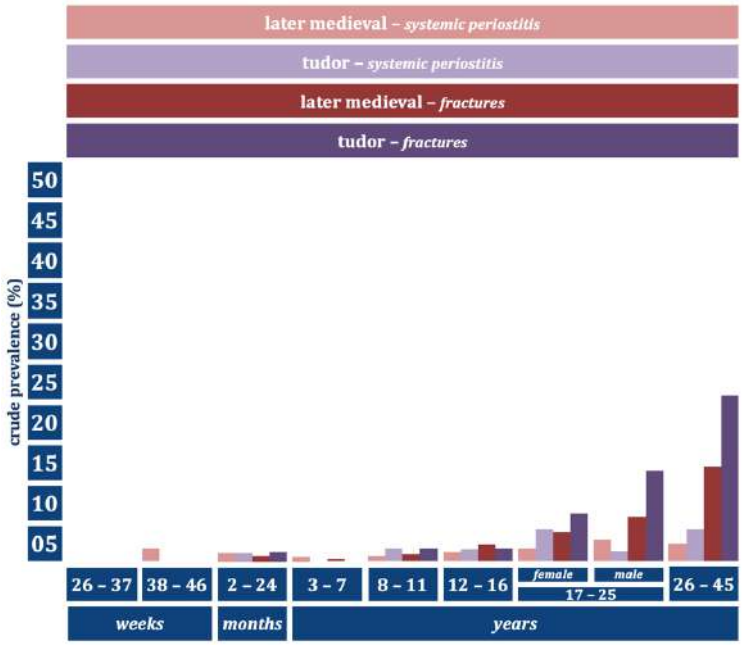
Previous chapters have already explored the temporal differences in morbidity patterns within the life course between the later medieval and Tudor periods. However, a summary of these differences is a useful synopsis of the findings and consider the nature of the data between the two periods (refer to table 07.03).

	PNBF		**FRACTURE**	
	Medieval	***Tudor***	***Medieval***	***Tudor***
pre-0-years-old	1 / 41 = 2.4%	1 / 7 = 14.285%	0 / 41 = 0%	0 / 7 = 0%
0-2-years-old	49 / 504 = 9.7%	5 / 79 = 6.329%	3 / 504 = 0.6%	1 / 79 = 1.3
3-7-years-old	32 / 543 = 5.9%	3 / 70 = 4.285%	1 / 543 = 0.2%	0 / 70 = 0%
8-11-years-old	32 / 467 = 6.9%	7 / 92 = 7.608%	4 / 467 = 0.9%	2 / 92 = 2.2%
12-16-years-old	64 / 561 = 11.4%	25 / 153 = 16.339%	14 / 561 = 2.5%	3 / 153 = 1.9%
(f) 17-25-years-old	58 / 349 = 16.6%	23 / 110 = 20.909%	15 / 349 = 4.3%	7 / 110 = 6.4%
(m) 17-25-years-old	144 / 686 = 20.9%	30 / 182 = 16.483%	72 / 686 = 10.5%	21 / 182 = 11.5%

Table 07.03 – PNBF summary by period (later medieval and Tudor) and age

The PNBF evidence suggests that there were subtle differences between medieval and Tudor childhood between 0-11-years-old (refer to graph 07.01). From 12-16-years-old, there appears to be a marked difference in PNBF between medieval and Tudor youths. Additionally, there is a PNBF switch between genders during 17-25-years-old. During the medieval period 17-25-year-old females had a lower 16.6% (58/349) PNBF rate than the male 20.9% (144/686) (p = 0.097). However, during the Tudor period 17-25-year-old female PNBF rate of 20.9% (23/110) was higher than males 16.5% (30/182) (p = 0.341). This is well-represented data which evidences an

alternation in gender activities between the later medieval and Tudor periods during the later stages of youthhood.



Graph 07.01 – summary of morbidity data by period and age

The fracture evidence suggests a similar pattern of childhood trauma between the medieval and Tudor periods. Additionally, the pattern of fractures between women and men is also similar. In sum, this suggests that there might be evidence from the PNBF results to suggest a difference between the medieval and Tudor periods, but the under-representation of the Tudor data precludes fully determining this. The similarity in fracture patterns suggests that the medieval and Tudor childhood experiences of trauma were broadly similar.

This might be reflective of the fact that while economic and religious changes were rapid, it is considered that social change in the family was more gradual (Wrightson 2003: 129). A similarity in trauma patterns might be reflective of similarity in exposure to trauma. There seems to be a difference in PNBF rates during 12-16-years of age, which increases during the Tudor period. Historians consider that the sixteenth century witnessed profound changes – such as capitalist expansion, religious turmoil, technological change, etc. – all of which would have impacted family life and patterns of behaviour (Gittins 2015: 40). We know that a mixture of factors of inflation, plague, population pressures and impoverishment increased significantly post-Reformation (Boulton 2017: 316; Goldberg 2004a: 213; McKintosh 1988: 230; 2012: 1; Rex 2006: 207; Ryrie 2017d: 4; Ward 2004: 354; Whittle 2017: 168; Wrightson 2003: 150). In turn, this increased morbidity, especially amongst non-adults (Penny-Mason and Gowland 2014: 183). This increase in PNBF may be reflective of these changes. Alternatively, the bias of London data within the Tudor dataset could be misrepresenting the effects of London urbanism for Tudor morbidity. Finally, the results imply that Tudor women had a higher rate of PNBF than seen in males. It is tempting to suggest that this evidence represents a change in gender roles between the two periods, but the similarity of fracture patterns suggest that this was not a total change. If we assume PNBF is *largely* reflective of infectious morbidities, it could be that the higher rate in females is reflective of a shift in the behaviours of women in their sociocultural and environmental contexts – perhaps the factors that a caused higher morbidity in non-adults after the Reformation also affected women more than men.

07.04 | social scale

Historical source material is biased towards the upper classes and this is especially true for the study of childhood (Orme 2001: 86; 2008: 112; Sharpe 1997: 59). This means that there is an overemphasis on the top 10% of the medieval population in academic literature (Kowaleski 2014: 573). The bias of the historical sources makes it difficult for historians to discover evidence regarding the lower social classes (Shahar 1990: 108). While history is often restricted in its view of the few, bioarchaeology can potentially look at the many, it can potentially represent those who are not historically recorded (Walker 2007: 14-15).

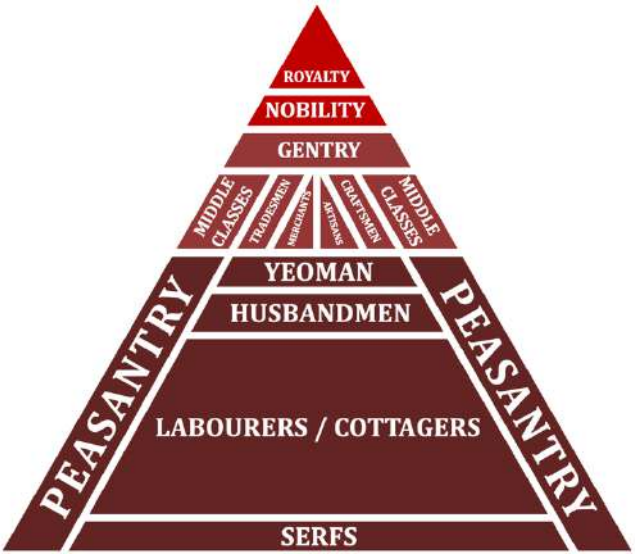


Figure 07.02 – later medieval and Tudor hierarchy – Authors Own

However, we must also acknowledge that the bioarchaeological record is also biased (if to a lesser extent than the historical record) towards certain social classes (Southwell-Wright 2013: 74). As Ellen Kendall has aptly stated, the *"dichotomy envisaged here between the "cultural bias" of written records and the "direct source of evidence" provided by human remains is, regrettably, false. Viewing the archaeological skeletal record as a pure source of immutable data discounts the possibility that the burial environment (which includes the body itself) is a culture-dependent, symbolically significant, ideologically-laden construct (Pearson 1999). It significantly also disregards that the entire process of data collection within bioarchaeology may itself be biased, from assumptions made in the earliest stages of research design to the interpretation finally drawn from this selective sample of data (Perry 2007)"* (2017: 39). Therefore, we need to be critical of assuming that it is possible to find everyone in the past on equal terms through a bioarchaeological approach alone.

Burial practice during later medieval England makes the already difficult task of assessing social status in the archaeological record even more complicated. The use of different types of burial grounds (e.g. parish churches, monasteries, cathedrals, etc.), was more fluid between different social classes than might be expected for this period. It is perhaps more surprising that there is not a more stringent division of classes in burial, given the highly-structured nature of their sociocultural context (Gilchrist 1999: 113) (see figure 07.02). By the fifteenth century, serfdom had diminished; however, around 80% of the population remained beneath the upper social strata of the peers, gentry, yeomen and the urban elite (Dyer 2018a: 193; Guy 1988: 41; Hanawalt 1986: 7; Houlbrooke 1992: 23). At this time, changes were occurring within the social classes, with merchants and yeomanry becoming more affluent, the gentry reacted by delineating themselves from this burgeoning middle-class – although the boundary between these various groups was always in flux (Bailey 2012: 12; Hamling and

Richardson 2017: 9). This complexity and relative fluidity of social classes might in part explain the variation in the palimpsest of later medieval burials.

During this period, the majority of the population would have been buried in their parish church cemetery, but surprisingly few large-scale medieval parish cemeteries have been excavated in comparison to monastic cemeteries. Monastic cemeteries, on the other hand, were utilised by the brethren of their institution, as well as wealthy donors and their families (Gilchrist 1995; Gilchrist and Sloane 2005). It is true to say that parish church burials *broadly* represent the middle and lower classes, with the monastic cemeteries *broadly* representing the upper and gentry classes. However, this is a significant generalisation that masks the variation in burial patterns between these two groups. For instance, a member of the gentry might choose to be buried in a position of prominence in their own local parish church. Alternatively, a local individual from a newly wealthy-merchant family might find burial in the grounds of a monastic institution to which their family donated money.

Additionally, status was not the only factor that played a role in the decision over where to be buried. Evidence from medieval London wills suggest that being buried close to a deceased loved one might be a deciding factor in choosing a burial and there is perhaps archaeological evidence of family burial patterns (Gilchrist 2012: 205; Harding 1992: 127). Therefore, factors such as familial association and generational tradition might take presence over a more prestigious burial locale.

	PNBF		**FRACTURE**	
	Secular	**Monastic**	**Secular**	**Monastic**
pre-0-years-old	0 / 33 = 0%	1 / 8 = 12.5%	0 / 33 = 0%	0 / 8 = 0%
0-2-years-old	27 / 313 = 8.6%	22 / 191 = 11.5%	0 / 313 = 0%	3 / 191 = 1.6%
3-7-years-old	17 / 356 = 4.8%	15 / 187 = 8.0%	0 / 356 = 0%	1 / 187 = 0.5%
8-11-years-old	14 / 248 = 5.7%	18 / 219 = 8.2%	0 / 248 = 0%	4 / 219 = 1.8%
12-16-years-old	24 / 279 = 8.6%	40 / 278 = 14.4%	1 / 279 = 0.4%	13 / 278 = 4.7%
(f) 17-25-years-old	14 / 168 = 8.3%	49 / 210 = 4.8%	5 / 168 = 2.9%	12 / 210 = 5.7%
(m) 17-25-years-old	29 / 181 = 16.0%	116 / 510 = 22.8%	20 / 181 = 11.1%	54 / 510 = 10.6%

Table 07.04 – PNBF and fracture summary by social status and age

Breaking down the data in this study to compare PNBF and fracture rates between secular and monastic burial grounds reveals some variation in morbidity patterns (refer to table 07.04). Interestingly, there is a higher rate of PNBF and fractures in children between the ages of 0-16-years of age in the monastic burial grounds throughout the life course. If we were to imagine that the secular group *did* represent lower-status children, it is surprising to find a lower rate of morbidity in this group at every stage in the life course. It could perhaps be a sign of the osteological paradox at practice, whereby the poor underlying health of the children meant that they could not sustain morbidities into more progressive stages (Wood et al. 1992: 343). However, PNBF only takes a few weeks to develop and fractures can occur independently of underlying health status (Stout et al. 2019: 129).

If we consider the monastic assemblages to represent a mix of junior brethren, hospital in-mates and the children of elite donors, this higher rate of morbidity *might* make sense in terms of social status. Hospital patients would, of course, be more likely candidates to develop skeletal morbidity. Additionally, higher status children were expected to do more 'adult' tasks at an earlier age – such as archery, hunting, hawking, riding, etc. – and they might have been expected to undertake social roles at an earlier age; so it is possible that they were at a higher exposure to trauma and a more comprehensive array of environments in comparison to children of the lower classes. A combination of these two factors *might* explain a higher rate of morbidity. But these hypotheses do seem a little unconvincing considering the significant familial household roles expected of relatively young children of a lower social status. Therefore, it could also be that a blunt division of lay and monastic cemetery types is an unhelpful measure of social status during the later medieval period because there was a lot of mixing of social classes between the two categories.

Instead, if it is particularly complex to assess social status between later medieval cemetery type, perhaps a better measurement of social status might be to look at morbidity according to burial placement. Burials in internal spaces – in parish churches, monasteries, cathedrals, etc. – were the reserve of adults from the upper social stratus, that also might include their children (Daniell 1997: 100; Gilchrist 2012: 205; Gilchrist and Sloane 2005: 22; Orme 2001: 120). Therefore, splitting data into internal and external groupings might help us assess social status – at least between the very upper tiers of the elite classes, in comparison to the rest of the population.

	PNBF		**FRACTURE**	
	external	**internal**	**external**	**internal**
pre-0-years-old	0 / 25 = 0%	0 / 5 = 0%	0 / 25 = 0%	0 / 5 = 0%
0-2-years-old	38 / 366 = 10.4%	5 / 52 = 9.6%	1 / 366 = 0.3%	1 / 52 = 1.9%
3-7-years-old	24 / 370 = 6.5%	0 / 60 = 0%	1 / 370 = 0.3%	0 / 60 = 0%
8-11-years-old	24 / 344 = 6.9%	5 / 49 = 10.2%	4 / 344 = 1.2%	0 / 49 = 0%
12-16-years-old	51 / 402 = 12.7%	1 / 51 = 1.9%	10 / 402 = 2.5%	2 / 51 = 3.9%
(f) 17-25-years-old	46 / 239 = 10.3	2 / 24 = 8.3%	14 / 239 = 5.9%	0 / 24 = 0%
(m) 17-25-years-old	89 / 396 = 22.5%	4 / 87 = 4.6%	54 / 396 = 13.6%	9 / 87 = 10.3%

Table 07.05 – PNBF and fracture summary by social status and age

These results show a clearer trend between morbidity and burial location that would be expected from a big difference in social status (refer to table 07.05). In *almost* every instance between both the PNBF and trauma rates, there is less morbidity noted in those non-adults buried in internal spaces, compared to those in the external cemetery. Unfortunately, the paucity of internal data representation means that although this pattern is convincing, it cannot be determined from this dataset alone, as it is possible that this pattern is reflective of a data bias. However, a similar pattern of morbidity was identified in late medieval and post medieval Flanders

where non-adults buried in internal spaces were far more likely to have evidence for factures of 21.6% than those non-adults buried externally of 3.3% (Van de Vijver 2019: 110-112). Finally, there was not enough data for the Tudor assemblage to assess social status.

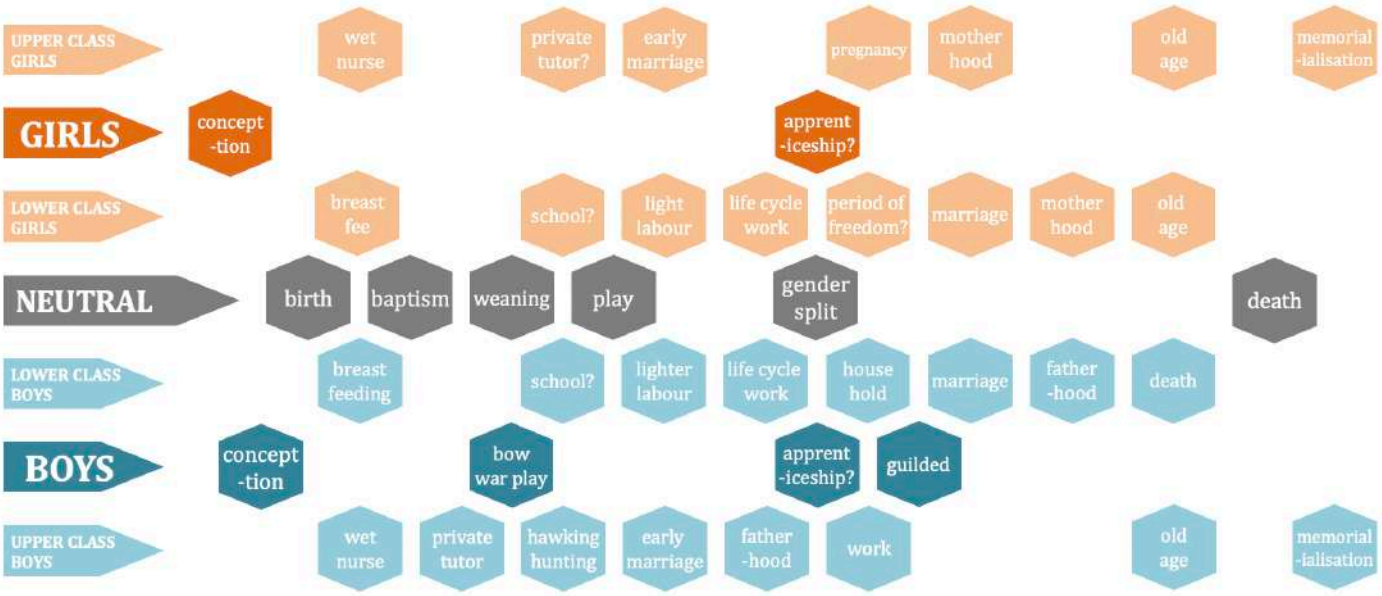


Figure 07.03 – childhood life course differences by gender and social status - Authors Own

In sum, health and disease are mediated by social class (Gowland 2018b: 147). Factors of wealth and social status interplay throughout the life course (Case and Paxson 2010: 66) (see figure 07.03). However, the interplay between social class and morbidity is highly complex (Marmot 2005: 1112-1102). The findings in this chapter suggest there are differences between lay and monastic morbidity patterns, but it is possibly an oversimplification to measure social status based on these two categories. Determining medieval social status by burial location indicates that there were marked differences in PNBF, with higher rates in those buried in the external graveyard; however, this is just an initial suggestion which is based on a lack of underlying data representation.

07.05 | urban scale

During the later medieval and Tudor periods, the vast majority of the population lived in rural areas (Dyer 2004: 331). During the fifteenth and sixteenth centuries, urbanism rose from approximately 5% to 8% of the population (Boulton 2017: 313; Dyer 2004: 331; Ives 2012: 3; Roberts and Cox 2003: 293; Whittle 2017: 177) (see figure 07.04). The rise in urbanism was fuelled by migration by youths looking for employment opportunities (Boulton 2017: 316; Kowaleski 2014: 59; Orme 2001: 311; Whittle 2017: 182) (see figure 07.05). The urban environment is likely to have negatively affected health, through contaminated water supplies, sewage, waste disposal insufficiencies, overcrowding, higher pathogen loads, increased violence, etc. (Hanawalt 1998: 166; 1993: 28; Kowaleski 2014: 591; Rawcliffe 2013: 62, 128, 143; Manchester 1992: 10; Meade and Earickson 2005: 139; Roberts 2009: 315; Roberts et al. 2018: 821). Medieval writers provide evidence that the general population

understood that urbanism negatively affected their health, but the potentiality of a variety of opportunities may have been too lucrative to refuse (Wear 2000: 161). Additionally, of the 0.4% (36/10021) of the population with evidence for some form of congenital hip dysplasia in this study, 80% appear to have come from urban contexts. It might be that those with disabilities would be more attracted to an urban environment where they might find more considerable resources, crucially within a small catchment, to assist their conditions (Waldron 2007: 207).

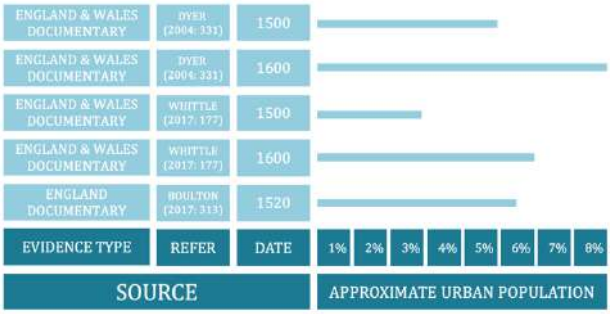


Figure 07.04 – Urban population estimates in England - Authors Own

Previous bioarchaeological studies regarding the morbidity of medieval non-adults have found variation in the effects of urbanism, from minor differences (Lewis 2002: 211) to more marked differences (Lewis and Gowland 2007: 11), to significant differences (Lewis 2016: 152; Penny-Mason and Rose 2018: 116). This variation is unsurprising as rates of PNBF and fractures are two of the most widely ranging inter-site differences (Judd and Roberts 1999: 241).

Figure 07.05 – Largest urban centres by percentage in England during the sixteenth century

For this study, instead of assessing 'urban' and 'rural' categories a third was added of 'suburban' as added. This was to reflect reports of skeletal evidence from locations that did not fit neatly into the urban and rural categorisation. For instance, sites that were on the periphery of an urban location, but not close enough to be considered *in* an urban area were placed in the category suburban. Reports that suggested the site was a 'large town' but would not be considered 'urban' on the same scale when compared to cities of the same period were also placed in the suburban category. This was done in order to ensure that the 'rural' category truly represented evidence of where the majority of the population were living at this time, in the rural countryside, and did not contain a bias in the form of data which was not definitely urban, but was also not particularly rural. Finally, London was given its own categorisation, due to its unique nature and positive bias in its datasets.

	Rural	Suburban	Urban	London
pre-0-years-old	0 / 16 = 0%	0 / 16 = 0%	0 / 4 = 0%	1 / 5 = 20.0%
0-2-years-old	10 / 195 = 5.1%	9 / 99 = 9.1%	26 / 171 = 15.2%	4 / 39 = 10.3%
3-7-years-old	7 / 217 = 3.2%	7 / 101 = 6.9%	15 / 186 = 8.1%	3 / 39 = 7.7%
8-11-years-old	5 / 130 = 3.9%	16 / 67 = 23.9%	15 / 179 = 8.4%	6 / 91 = 6.6%
12-16-years-old	21 / 192 = 10.9%	12 / 100 = 12.0%	20 / 167 = 11.9%	18 / 102 = 17.7%
(f) 17-25-years-old	7 / 102 = 6.9%	16 / 80 = 20.0%	16 / 99 = 16.2%	24 / 97 = 24.7
(m) 17-25-years-old	24 / 132 = 18.2%	53 / 175 = 30.3%	44 / 262 = 16.8%	24 / 139 = 17.3%

Table 07.06 – PNBF summary by urbanism and age

The results reveal that rural children during 0-16-years-old had a far lower rate of PNBF than seen in the various types of urban environment (refer to table 07.06). The difference in the variety of patterns of morbidity between the suburban, urban and London categories of PNBF perhaps suggests that different forms of urbanism produce different patterns of morbidity. This evidence demonstrates again that London was the only environment in which 17-25-year-old females had a higher rate of PNBF than males. However, each of the urban environments does display greater proximity between the genders when compared to the marked differences seen in the rural data. This perhaps indicates that there was a greater chance of equality in patterns of behaviour between females and males in an urban environment. Overall, the suburban environment presents potentially interesting evidence of often higher rates of PNBF than the 'urban' category. This might suggest that the collective factors of urbanism that create poorer health – such as pollution, pathogens, violence, poor water quality, etc. – might only need to be moderately developed to cause higher rates of morbidity.

	Rural	Suburban	Urban	London
pre-0-years-old	0 / 16 = 0%	0 / 16 = 0%	0 / 4 = 0%	0 / 5 = 0%
0-2-years-old	1 / 195 = 0.5%	0 / 99 = 0%	1 / 171 = 0.6%	1 / 39 = 2.6%
3-7-years-old	0 / 217 = 0%	1 / 101 = 0.9%	0 / 186 = 0%	0 / 39 = 0%
8-11-years-old	0 / 130 = 0%	1 / 67 = 1.5%	1 / 179 = 0.6%	2 / 91 = 2.2%
12-16-years-old	0 / 192 = 0%	5 / 100 = 5.0%	6 / 167 = 3.6%	3 / 102 = 2.9%
(f) 17-25-years-old	0 / 102 = 0%	2 / 80 = 2.5%	8 / 99 = 8.1%	7 / 97 = 7.2%
(m) 17-25-years-old	16 / 132 = 12.1%	30 / 175 = 17.1%	28 / 262 = 10.7%	13 / 139 = 9.4%

Table 07.07 – fractures summary by urbanism and age

The results also reveal that rural children during 0-16-years of age had a far lower rate of fractures than all the different types of urban environment (refer to table 07.07). In fact, there is only one instance of a fracture before 17-years of age in all the rural data, which is well-represented. In contrast, there is almost evidence for fractures in every stage of the life course during 0-16-years of age amongst all the varying urban environments. In contrast with the PNBF data, the fracture rates during 0-16-years of age substantially increase with different stages of

urbanism. As with the PNBF, the variety of rates of fractures in 0-16-year-olds between the different types of urban environments suggests that trauma was contingent not only on the urban environment but also differed between types of urbanism. Mary Lewis's (2016) study reported a similar pattern between rural and urban morbidities in non-adults in later medieval England but crucially was also able to determine the sex of individuals under the age of seventeen, providing important insights regarding urbanism and morbidity. Between the ages of 10-16.9-years of age in both rural and urban contexts, males had higher rates of infection than females of the same age cohort. This same pattern was also seen in rates of trauma. Additionally, in every instance of infection and trauma, there was a higher rate amongst the urban compared to the rural populations (Lewis 2016: 154).

The results from this study also show crude evidence of a gender split between 17-25-year-olds, with rural females having no fractures at all and suburban females having a low rate in comparison to males. In contrast, urban and London 17-25-year-old females both have a near similar but reduced rate of fractures compared to males. However, in every type of site, 17-25-year-old males had a higher rate of fractures, suggesting men were likely to be exposed to higher rates of trauma regardless of the type of environment.

In sum, the urban environment in both PNBF rates and fracture rates increase the patterns of morbidity throughout childhood. Additionally, the different types of urbanism appear to produce various types of morbidity trends. There appears to be a marked difference between female and male morbidity during youthhood, with closer similarities between the genders in urban environments.

07.06 | some conclusions

- In conclusion, this chapter was designed to be an introduction to the various forms of scale of morbidity patterns, through a cursory analysis of the data, in order to emphasise the potential areas of interest within the dataset.
- The data suggests that varying forms of scale produce different expressions of morbidity patterns throughout the life course in the same bioarchaeological dataset.
- The evidence from this chapter suggests that there were similar regional patterns in childhood behaviours during early childhood, with more marked variation between different locations during later childhood and youthhood. London childhood and youthhood were particularly distinct in comparison to the rest of the country.
- There appear to have been temporal differences and similarities between later medieval and Tudor childhood. However, the data suggests that they cannot be treated as the same thing as they both produce a distinctiveness in the results.
- Inferring social status from internal/external burial placement might be a way to measure differences in morbidities between social groups. The results show an increase in morbidities in the externally buried lower class children, although more data representation is required before concluding this pattern.

- The urban environment was consistently found to provide greater levels of morbidity in children. Additionally, different types of urbanism appear to produce different types of morbidity. Urban environments provoke a greater degree of gender similarities than in the rural environment.
- These data need further exploration beyond this introductory overview of the data. In particular, morbidity by skeletal element would be vital for any future analysis.

8

CHAPTER 8 | wars of the chyldren

08.01 | introduction

War was a central tenet of medieval culture and warfare was a part of medieval life: however, gauging the extent of children's engagement in warfare is challenging (Gunn 2018: 154; Nicholson 2004: 1). Because the male English population acted as a continual military res%erve, it is likely that a database reflective of the general population, such as compiled here, *should* contain individuals who participated in warfare. In particular, it is known that young men were often targeted for conscription and therefore the aim of this chapter is to explore the relationship between violence, warfare and the life course. The age of non-adult skeletons from violent contexts, patterns of skeletal trauma, evidence of violent trauma and os acromiale, will be explored through a combination of bioarchaeological evidence and historical documentary sources.

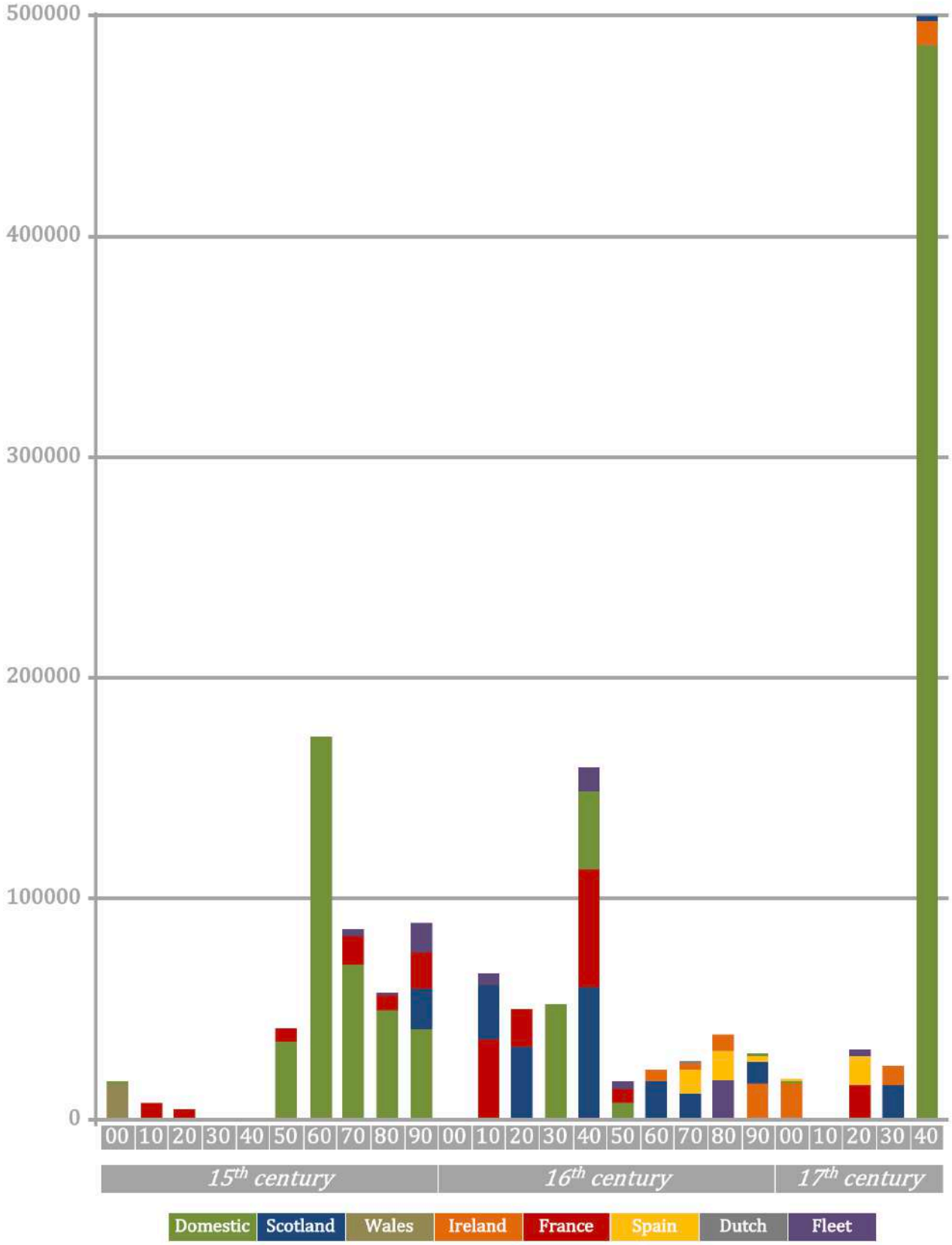
Most people develop some form of skeletal trauma during their life course and this trauma is socioculturally mediated by factors such as age, gender, inequality, agency, etc. (Glencross 2011: 392-393; Grauer and Roberts 1996: 531; Redfern and Roberts 2019: 272). The patterns of trauma in the skeleton accumulate over the life course and act as a record of violent events or accidents throughout the life of an individual (Glencross 2011: 390-394). In the later medieval period, patterns of trauma can vary significantly and also demonstrate variation in patterns of fracture according to age (Grauer and Miller 2017: 50; Glencross and Stuart-Macadam 2000: 198). However, making inferences from skeletal remains about the lived experience requires biocultural contextualisation (Glencross 2011: 394). In adult skeletons, it is usually impossible to determine the age of acquisition of fracture because rates of healing vary (Glencross 2011: 394, Glencross and Stuart-Macadam 2000: 198). Therefore, fractures identified in non-adults' skeletons are arguably more of a reflection of the life course. This is because of the difference in the nature of bone turnover between non-adults and adults. In adults, evidence of fractures can potentially be seen years after they were incurred and it is often impossible to estimate the exact age of the fracture and therefore pinpointing when in the life course adult fractures occurred can only be broadly estimated. In contrast, the rapidity of non-adult fracture healing means that fractures can heal with little macroscopic indication of the original trauma (Glencross and Stuart-Macadam 2000: 198; Lewis 2007: 169; 2014: 39-46; 2017a: 2-3, 91, 100; 2018: 476; Verlinden and Lewis 2015: 411; Waldron 2009: 150). Therefore, positive identification of fractures in non-adult remains is likely to have occurred around the age of death and be more reflective of the life course. At the same time, this rapid remodelling does also mask the true extent of fractures in children in the past and also significantly limits our interpretation of traumatic lesions from non-adults' skeletons.

08.02 | historical context

It has been suggested that later medieval children, like women, were traditionally excluded from participation in warfare (Nicholson 2004: 63). Others have rejected this notion, suggesting that wars did involve children (Orme 2008: 109; Siberry 1994: 419). Children, by which we imply *boys*, were enculturated in chivalric warfare roles early on in their life course. This was not only a sociocultural indoctrination of masculine values, it was something of a necessity, as England was unusual in its lack of a standing army, therefore making its male inhabitants a constant source of military reserve (Gunn 2010b: 53; 2018: 104, 134; Hale 1998: 75). Therefore, boys needed early instruction in warfare in order to best prepare them for their potential roles in war. As discussed, young boys were encouraged to play with para-chivalric-military figures, such as soldiers (Baxter 2005: 39; Mitchell 2014: 66). From the fourteenth century there was a legal requirement for boys to practice weekly with a bow from the age of seven years (Gilchrist 2012: 56; 147; Gunn 2010a: 53; Orme 1995: 63; 2001: 183; 2006: 288; Simons 1966: 68; Youngs 2006: 84). It was also during the seventh year that children of the nobility could expect to start practising for later military roles (Gilchrist 2012: 147; Orme 2001: 183; 2006: 288; Youngs 2006: 84). Archery, especially using the long bow, required a significant amount of strength and therefore required regular practice (Gunn 2018: 101; Sofaer 2015: 83). The scapulae (shoulder blade) of the archers from the *Mary Rose* demonstrate *os acromiale*; a bony anomaly that separates the epiphysis (end of the bone) from the rest of the bone. It is rare in modern populations (around 3-6%), but in the *Mary Rose* skeletons is 19%. Stirland who analysed the skeletons from the *Mary Rose* has made a convincing argument that this is a reflection of the strain placed on their bodies from archery during warfare (Stirland 2000: 121). This argument is supported from the analysis of skeletons from a mass grave from the Battle of Towton, where there is a prevalence of 4.7% (2/43), again, showing that military individuals had a higher incidence than the general population (Holst et al. 2000).

While we can be sure that war was a central component of medieval society which marked the lives of all its subjects in some way, it is more difficult to define the extent to which it directly and indirectly impacted lives (Gunn 2018: 154; Nicholson 2004: 1). Most individuals must have at least known someone who served in the military (Gunn 2018: 18). Despite this, the majority of the population were not directly affected by warfare (Gunn 2018: 18, 30). War was certainly not a rarity though, with nearly three-quarters of the years between 1475 to 1575 seeing English military activity in France or Scotland, the Low Countries, Ireland or domestically (Gunn 2018: 11; Hale 1998: 19). Not all of these instances reflect continual war; much warfare was short-term (Nicholson 2004: 3). During the fifteenth and sixteenth centuries, war intensified in terms of scale and recruitment (Gunn 2018: 17; Hale 1998: 63; Siraisi 1990: 182), thus requiring the participation of increasing numbers of the population.

During the fifteenth and sixteenth centuries, England saw the second half of the Hundred Years War (1337-1453), which saw significant battle sizes involving between 7,000-15,000 soldiers and the largest force of 32,000 (Hale 1998: 63). The Wars of the Roses (1455-1485) saw a number of large-scale battles, the largest of which at Towton (1485) which chroniclers estimated that 100,000 soldiers might have participated (Knüsel 2014: 264).



Graph 08.01 – Wars and Combatants in England from 1400-1650 – adapted from Gunn 2018: 18; Hale 1998: 20, 63, 75; Houlbrooke 1998: 24; Knusel 2014: 264; Stirland 2000: 53-54; Stirland 2005: 2-4 – domestic warfare will be inherently heightened, as numbers are doubled to account for numbers on both sides. Many combatants would also have served in multiple skirmishes, but are counted separately, so numbers are also inflated to an unaccountable proportion due to this -Authors Own

During this same period, England was involved in significant international warfare (see graph 08.01). During the Sieges of Boulogne (1544–46), it has been approximated that 48,000 English soldiers were sent to France (Hale 1998: 63). During the Battle of the Solent (1545), some 12,000 sailors and soldiers participated. This is the battle at which the Mary Rose sank and the skeletal remains of approximately half of the 415 individuals on board were recovered (Stirland 2000: 53-54; Stirland 2005: 2-4). The Spanish Armada (1588), the largest battle of the Anglo-Spanish War (1585–1604), consisted of 34 ships of soldiers and sailors. A further war with France (1589–1594) saw the deployment of 20,000 English soldiers, of whom it is considered half returned (Hale 1998: 63; Houlbrooke 1998: 24). The most substantial force sent to Ireland in 1595, during the Nine Years' War (1594-1603), saw the deployment of approximately 17,000 soldiers (Hale 1998: 63).

In addition, England provided significant supporting roles in international warfare, including the War of the League of Cambrai (1508-1516), the Italian Wars (1521–26, 1542–46, 1551–59), the French Wars of Religion (1562-1598), the Eighty Years' War (1568–1648) and the War of the Portuguese Succession (1580-1583).

In addition to this international warfare, there was also significant combat through domestic revolts and rebellions (Hale 1998: 20). During the fifteenth and sixteenth centuries the main national conflicts included the Percy Rebellion (1403), the Scrope Rebellion (1405), the Oldcastle Revolt (1414), the Jack Cade Rebellion (1450), the Stafford and Lovell Rebellion (1486), the Simmel Rebellion (1486-1487), the Yorkshire Rebellion (1489), the Cornish Rebellions (1497), the Warbeck Rebellion (1497), the Pilgrimage of Grace (1536-1537), the Prayer Book Rebellion and the Buckinghamshire and Oxfordshire Rising (1549), Ketts Rebellion (1549), the Wyatt Rebellion (1554) and the Rising of the North (1569-1570).

In sum, it has been estimated that the national recruitment of men for soldiering from the population (including men, women and children) was around 0.75% during periods of relative peace, increasing to 2% during civil wars and 5% during the most significant international battles or concurrent episodes of warfare (Hale 1998: 75).

From the fifteenth century, youths and men enrolled in military service through indentures or contracts (Nicholson 2004: 49). Local authorities and recruitment agents would raise men when demand required (Gunn 2010b: 57; Hale 1998: 75). They had the power of conscription if required, but they were able to mostly depend on willing participants (Hale 1998: 78-80). Legally, nearly every able-bodied male in England between the ages of 16 to 60 were eligible (Hale 1998: 75; Hanawalt 1993: 202). As we have seen, not everyone would have known their exact ages. It is also possible that boys below the age of 16 might have claimed to have been of age. Soldiering might have been actively sought after by male youths who wanted pay, as well as the potentialities of excitement, travel and loot (Hale 1998: 117; Nicholson 2004: 49).

08.03 | bioarchaeological context

Despite the propensity for warfare during the later medieval and Tudor periods, there is a general lack of violent trauma in the skeletal data from this study – this has previously been noted by other bioarchaeological studies (Knüsel 2014: 274). The burial of individuals outside of consecrated ground during the later medieval period is the exception (Gilchrist and Sloane 2005: 73) and even during war there was an effort made to provide a proper Christian burial (Curry and Foard 2016: 70). Therefore, those burying the bodies of soldiers are likely to have done their best to ensure they were buried in consecrated ground. While many Englishmen participated in warfare, the largest campaigns were usually those outside of England (Houlbrooke 1998: 24). Of those who participated in European warfare, it is estimated that around 40-50% did not return; not just due to warfare, but also disease (Hale 1998: 120; Houlbrooke 1998: 24; Mitchell 2004: 145). Therefore, in terms of soldiers in foreign campaigns, we should perhaps not expect to see peri-mortem violence on a large-scale in normal churchyard burial grounds. Instead, we would be looking for individuals who made it back; therefore, what we would instead expect to see from the bioarchaeological evidence is healing fractures and well-healed fractures. A number of men from Towton had evidence of earlier healed fractures, suggesting some did survive past episodes of violence before their eventual death and burial (Knüsel 2014: 272). In terms of the burial of the dead during domestic warfare, the circumstantial nature of burying the battle dead meant that this could occur in unusual contexts (Curry and Foard 2016: 64; Hadley 2001: 49; Knüsel 2014: 263). It is likely that in instances of a significant proportion of casualties in a limited space of time would mean that many bodies were not recovered (Knüsel 2014: 274). Large-scale decomposing bodies would require rapid burial (Curry and Foard 2016: 66-67). For instance, the discovery of skeletons in a mass grave in close proximity of the Battle of Towton is likely evidence of this. However, this important discovery aside, there has been limited archaeological discovery of victims from English battlefields (Curry and Foard 2016: 62). Exhumation from an initial burial ground into consecrated ground might also have been a common practice (Curry and Foard 2016: 68). In sum, it is likely that episodes of large-scale warfare led to unusual burial practices. However, the evidence also seems to suggest that many of those who participated in warfare would have found their way into normal Christian burial environments.

Interpreting evidence for warfare from skeletal remains is complex. It can be difficult to determine between intentional or accidental fractures from skeletal evidence alone, although certain injuries are characteristic of weapon-induced trauma (Grauer and Miller 2017: 48; Ortner 2003: 143; Redfern and Roberts 2019: 235, 242; Waldron 2009: 156). Additionally, it can also be difficult to determine between peri-mortem and post-mortem fractures (Lewis 2017a: 98; Ortner 2003: 119; Redfern and Roberts 2019: 211; Waldron 2009: 138). However, evidence of sharp, blunt and projectile force fractures are more clear indicators; although they do not automatically reflect violence or warfare. Fracture patterns therefore require biocultural contextualisation, in reference to known patterns of violence. There have been a number of reports and studies on violent trauma in adult skeletons from later medieval England (Browne 2005: 125; 2010: 106; Knüsel 2014: 267; Henderson 1990: 346; Stirland 1996: 92; Stroud and Kemp 1993: 143; Wakely 1996: 76). More recently, Kathryn Krakowka has investigated violent trauma in London, this study importantly included non-adult skeletons, providing evidence

for violent trauma in children (2017a, 2017b). Donnelly and Murphy (2018) reviewed the biocultural evidence for violence in later medieval Ireland, focusing on a review of bioarchaeological markers of violence. They concluded that the violent injuries they encountered in their review were unlikely to be directly reflective of warfare. However, the later medieval Gaelic warfare differed in scale and also in nature, as warfare in Ireland at this time was fought with the intention to capture soldiers rather than kill them (Donnelly and Murphy 2018). This is dissimilar to what we would expect to see in England during this same period. Collectively, these studies have provided a picture of the pattern of traumatic lesions we would expect to see from which violence *might* be attributed. What the collective evidence immediately suggests is that there is still no *absolute* pattern within later medieval English assemblages. If violent trauma was incurred during warfare then a variety of patterns in the resulting trauma should be expected. The constantly changing nature of warfare, variability in types of battle, the evolution of weapons and armoury, mean it is unlikely any two battles would produce identical patterns of trauma (Knüsel 2014: 270; Novak 2000: 101; Roberts and Cox 2003: 275). From the earlier to later medieval there appears to be a shift in patterns of violent fractures, from patterns of trauma directed towards the long bones, instead being directed to the cranium (Knüsel 2014: 270).

Through the archaeological literature a general pattern of later medieval violent trauma still emerges:

1. The cranium by far is the most consistent site of violent trauma (Knüsel 2014: 264, 270; Krakowka 2017a: 496; McKenzie and Murphy 2018: 355; Mitchell 2004: 116; Novak 2000: 99; Redfern and Roberts 2019: 236; Roberts and Manchester 2010: 108).
2. This is followed by facial and dental fractures (Knüsel 2014: 264; Redfern and Roberts 2019: 236).
3. This is followed by the forearms – the radius and ulna – most commonly through parry fractures (although not all parry fractures have a violent cause) (Mitchell 2004: 116; Ortner 2003: 137; Redfern and Roberts 2019: 236-237).
4. Finally, this is followed by the lower leg, or tibia and fibula (Mitchell 2004: 116).
5. Traumatic lesions are more likely to occur on the left side, as they would predominately have been caused by right-handed opponents (Mitchell 2004: 117; Roberts and Manchester 2010: 109).
6. Importantly, traumatic lesions of sharp, blunt and puncture force wounds are often found in assemblages known to have experienced direct violence (Novak 2000: 91; Redfern and Roberts 2019: 236; Waldron 2009: 156).
7. Rib fractures seem to be common generally, often encountered during falls or fights, but appear to be rare in warfare contexts (Brickley 2006: 61; Grauer and Miller 2017: 48; Novak 2000: 93; Roberts and Cox 2003: 301; Stirland 2000: 100; Waldron 2009: 151).
8. It seems that skeletons from later medieval and Tudor violent contexts are also likely to have a number of different traumatic lesions (Novak 2000; Stirland 2000).

08.04 | results + discussion

As fractures to the cranium are the most consistent area of violent trauma, these will be considered first. As a comparative baseline measure, the average skull fracture crude prevalence in this study between 26-45-years of age is between 2.1% (76/3599), which is a statistically similar incidence when compared to the 17-25-year-old skull fracture incidence of 2.4% (29/1230 / $p = 0.609$). The earliest example of cranial fracture is in a non-adult skeleton aged 3-7-years-old, which represents 0.2% (1/543) of this age group, which clearly represents rare occurrence when compared to 26-45-year-old adults ($p = 0.001$). This is similarly seen during the rest of childhood between 8-16-years old with 0.2% (1/467 / $p = 0.004$) and 12-16-year-olds with 0.2% (1/561 / $p = 0.004$) skull fracture prevalence. This demonstrates that below 16 years of age, cranial fractures were statistically far below the incidence than seen in adults.

A similar pattern is observable in the forearm (ulna and radius) fracture data. In adult skeletons the average crude prevalence of forearm fractures between the ages 26-45-years-old is 2.4% (87/3599), which is significantly higher than the 17-25-years old incidence of 1.5% (18/1230 / $p = 0.047$). The earliest example of forearm fractures is during 0-2-years-old of 1.0% (5/504), which demonstrates a relative number of early fractures for this young age group, in comparison to 26-45-year-old adults ($p = 0.042$). During 3-16-years of age, fractures within age groups appear to increase incrementally in comparison to 26-45-year old adults, from 3-7-year-olds of 0.2% (1/543 / $p = 0.000$), 8-11-year-olds of 0.6% (3/467 / $p = 0.014$) and 12-16-year-olds of 1.2% (7/561 / $p = 0.082$). The results demonstrate that ulna and radial fractures are significantly different according to age and increase over the life course. However, in isolation, the increase in traumatic lesions is not automatically an increase in violence as these fractures could be occupational or accidental in nature.

As a comparative baseline measure, the sharp force fracture crude prevalence of 26-45-year-olds is 1.0% (37/3599), which is statistically similar to the 17-25-year-olds incidence of 1.1% (14/1230 / $p = 0.744$). The first and only instance of sharp force trauma in children occurred in a 14-17-year-old skeleton representative of 0.2% (1/441) the age group, this is a statistically lower incidence when compared to 26-45-year-old adults ($p = 0.099$).

The blunt force fracture crude prevalence of 26-45-years-olds is 1.1% (38/3599); this is also statistically similar to the 17-25-year-olds incidence of 0.9% (11/1230 / $p = 0.625$). There are no examples of blunt force trauma under the age of seventeen, although there is other evidence from earlier medieval cemetery sites excluded from this study (excluded as the assemblage dated to outside of this study period) (Krakowka 2017a: 493).

The puncture crude prevalence of 26-45-year-olds of age is 0.2% (6/3599), which is again statistically similar to the 17-25-year-olds incidence of 0.2% (2/1230 / $p = 0.975$). The earliest example for puncture force lesions is during 12-13-years old representing 0.6% (1/166) of the age group, although this statistically higher incidence compared to the adult ($p = 0.202$) is likely to be a statistical anomaly. There are no other examples of punctures force trauma until 17-25-years-old.

Some of these examples of sharp, blunt and puncture force wounds are from the same adult skeletal remains. Therefore, in summary, the range of individuals who exhibit evidence of violent trauma is 1.9% (23/1230) of 17-25-year-olds and 2.2% (79/3599 / $p = 0.502$) in 26-45-year-olds. The earliest possible evidence of violent trauma in non-adults was noted in 12-16-year-olds of 0.4% (2/561), which is significantly rare evidence in comparison to 26-45-year-old adults ($p = 0.003$). There were no examples of violent trauma below the age of 11-years-old. This same pattern of a lack of violent trauma under 11-years-old was also noted by Krakowka (2017a: 492; 2017b: 64). At the parish church of Ballyhanna, a similar pattern of violent trauma was evident. There were two instances of sharp trauma in youths, before increasing during 17-25 adulthood (McKenzie and Murphy 2018: 55-369).

The medieval population prevalence of os acromiale from the data set is relatively low at 0.3% (31/10021), the earliest example is from a 17-20-year-old. Why might we not see the condition of the Mary Rose soldiers in the general population? It is very possible that os acromiale is caused by something other than archery; this would be supported by the data in this study as 53.9% (14/26) were from adult female skeletons, who are not considered to have been participating in regular archery practice. This pattern of female *os aromiale* incidence is also evident at Ballyhanna, where out of the six instances recorded, three were female, two were male and one was an indeterminate adult (McKenzie and Murphy 2018: 311). It is also likely that most bows used by the population were dissimilar to heavy war bows, therefore placing less strain on their shoulders. Additionally, these skeletal alterations are likely to only occur after long periods of regular use with long bows (Stirland 2000: 127). However, it is also possible that many in Tudor England were not regularly practicing with their bows. Historical evidence suggests that there was regional and local variation in the consistency of bow practice (Gunn 2010a: 54-65). By the end of the sixteenth century, bow practice declined significantly, in line with the expansion of guns in military use (Gunn 2010a: 68). Finally, identifying os acromiale can be difficult and it is likely that this condition is often overlooked, which means it is almost certainly under-recorded in the bioarchaeological literature.

Collectively, the earliest evidence of possible violent trauma from the dataset occurs during 12-13-years-old from the Franciscan friary at Gloucester, where it is described that a piece of iron had penetrated the proximal right tibia (Oyler 2001: 139). The next youngest report of violent trauma in entire dataset comes from the monastic hospital cemetery at St James and St Mary Magdalen, Chichester, where it was reported that a 14.6-17-year-old incurred sharp force trauma to the frontal bone (Lee and Magilton 2008: 132).

Even though evidence for violent trauma is rare, it does not automatically imply that youths did not participate in warfare; they were often active participants (Redfern and Roberts 2019: 260). Of the 92 *'Fairly Complete Skeletons'* (*FCS*) from the Mary Rose, there was one 12-13-year-old skeleton, as well as seventeen adolescents (Stirland 2000: 74). Within the disarticulated remains, there was evidence of the unfused epiphyses of a child around 10-years-old (Stirland 2000: 79). While this 10-year-old likely represents a ships boy, who would not be

expected to fight directly, it does suggest that it was acceptable for young individuals to be in dangerous or even deadly warfare contexts (Stirland 2000: 56). Additionally, the number of 12-17-year-olds represented in the *FCS* suggests that there were a number of youths engaged in direct military roles. In addition, from the Towton assemblage, six of the thirty-four skeletons found were aged between 16-20-years old (Boylston et al 2000: 53).

While the average crude prevalence incidence for violent trauma in 17-25-year-olds is 1.9% (23/1230), this masks a gender split. In the database, there is not a single example of violent trauma in females aged 17-25-years-old; 0% (0/349). Therefore, when the average violent trauma is split into males aged 17-25-years-old the incidence rises to 3.4% and is statistically significantly different to the incidence of female violent trauma (23/686 / p = 0.001). A gender split in violent trauma was also noted at Ballyhanna, where violent injuries in males were 3.7% (12/322) compared to only 0.9% (3/333 / p = 0.015) in females (McKenzie and Murphy 2018: 356). This evidence supports the view that women were not directly involved in a warfare context, but children – almost certainly boys, at least – were. Women and young girls could still have played significant roles in accompanying armies in an ancillary capacity which may have exposed them to the broader effects of warfare, but the evidence suggests that front line violence was the reserve of men.

In compiling this database, there was a strong desire to represent the sixteenth century in cemetery evidence (Penny-Mason 2017: 75). The evidence has not provided a single example of firearms trauma within the skeletal evidence, despite the increasingly widespread use of handguns from the sixteenth century (Gunn 2010a: 76). This lack of evidence may be due to the fact that bullets would have predominately affected the soft tissues. Trauma to the skeleton is dependent on the kinetic energy of a bullet, so as guns changed, so would skeletal patterns of trauma; which means signs of gunshot injuries could vary and be difficult to diagnose (Waldron 2009: 158). Many sixteenth century skeletal collections are embedded stratigraphically with skeletons from earlier periods and these later medieval collections might not have been analysed with a view to identifying lesions reflecting gunshots. Finally, despite the best efforts, this period was underrepresented in cemetery phasing and therefore in skeletal evidence too.

If war was so common, why is the incidence of trauma even amongst adults so low? First, as already noted, the absence of soft tissue evidence will mask the true incidence of violent trauma inflicted (Mitchell 2004: 108). Second, the biases of the archaeological record means that taphonomic factors will decrease any prevalence (Glencross and Stuart-Macadam 2000: 204; Grauer and Roberts 1996: 532). Third, without routine radiographic analysis hairline and well-healed fractures will be masked (Grauer and Roberts 1996: 532). Fourth, the rate of non-adult bone healing means that fractures may remodel without any macroscopic sign (Glencross and Stuart-Macadam 2000: 198; Lewis 2007: 169; 2014: 39-46; 2017a: 2-3, 91, 100; 2018: 476; Verlinden and Lewis 2015: 411; Waldron 2009: 150). Fifth, it is considered that most amateur soldiers are likely to have participated in a single campaign, therefore decreasing the potentiality of high incidences of trauma amongst the general population (Gunn 2018: 137).

However, upon second glance, it could also be suggested that the incidence of violent traumatic lesions is not necessarily low. The historical evidence suggests that the recruitment, at either extreme, ranged between 0.75-5% of the *entire* population (Hale 1998: 75). However, the implication is that this proportion of recruitment consisted of an entirely *male* conscription. As mentioned above, the male incidence of violent lesions is 3.35%, a above the average male participation in war campaigns. Therefore, while there is a small amount of evidence for the adult males, proportionally it is broadly in line with what would be expected, suggesting that the evidence for this group may in fact be well represented.

It is harder to determine if the incidence of violent trauma noted in non-adult skeletons is reflective of the reality of child and youth participation in violent warfare. What we can assume from the skeletal prevalence for possible violent trauma in non-adults is that the prevalence is lower than it was in reality. Evidence of trauma in adults is an accumulated record, one which is acquired over many years. In contrast, evidence of trauma in non-adults is essentially a snap-shot of a more temporary record. Therefore, the physiological difference between adult and non-adult skeletons mean that we would automatically expect to see a lower incidence in non-adults when compared to adults. This is compounded by the fact that many reports (in particular older reports) do not routinely report on non-adult trauma (Glencross and Stuart-Macadam 2000: 198). Evidence for bowed and misshapen limbs in skeletons of 0.8% (80/10021) could also be reflective of well-healed childhood trauma. Unfortunately, bowing could be caused by other pathological conditions (such as healed rickets, osteomalacia, congenital abnormalities, etc.) and trauma may be misdiagnosed

The evidence of the low prevalence incidence of non-adult violent trauma can be interpreted in two ways. On the one hand, the general lack of child involvement in war is negative evidence, revealing that while children were able to participate in warfare, their roles were dissimilar to those of adult men. On the other hand, the lack of evidence may just be reflective of the general masking of traumatic lesions due to the rapidity of non-adult skeletal remodelling (Lewis 2014: 40; 2017a: 91).

Although there are only a few instances of non-adult skeletons with trauma between 10-15-years-old, we can assume that this remains an underestimation. Just how far these (likely) boys were involved in either direct combat or supplementary roles is unclear, it is not possible to match patterns of trauma from only two skeletons to the adult patterns of violent trauma. What is clearer from the collective evidence, however, is that there was significant involvement in warfare from seventeen-years-old onwards. This appears to be in line with the legal age of army conscription from 16-years (Hale 1998: 75; Hanawalt 1993: 202). This would make practical sense, as children and youths were unlikely to be expected to fight in the same manner as adult men until their later teens when they would finally develop the necessary abilities and strength for warfare (Nicholson 2004: 63).

The evidence suggests that children and youths, almost certainly boys, were permitted into warfare contexts. As we have explored in the rest of this thesis, it was not a contradiction that children and youths could be viewed as existing in a state of childhood and/or youthhood, while at the same time be active participants in 'adult' contexts. However, the data shows a limited amount of evidence to support the view that their patterns of trauma were similar to those seen in adults and if they were active participants in warfare, it may have been to a more ancillary degree, with exposure to the full realities of warfare increasing with age.

Finally, it should be emphasised that we cannot confirm if the patterns of trauma recorded in the skeletons comprising this dataset are reflective of violently inflicted lesions or instead accidental/occupation-related trauma. Additionally, even if the patterns could be identified as definitive examples of violent trauma, there would still be the matter of the inference that the violent trauma was reflective of warfare, rather than say of a violent domestic brawl. Fifteenth century England is believed to have had a relatively high degree of violent crime (Ryrie 2017d: 2). Additionally, as an agrarian society, farming practices could be particularly hazardous and this context of work would have been unavoidable for the majority of the population (Judd and Roberts 1999: 229). The domestic setting could also contain threats – in particular from animals, ladders, stairs, windows, mills, etc. – these could all potentially produce skeletal patterns of trauma that may appear similar to patterns of violence (Crawford 2018: 783; Dyer 2013: 23; Gilchrist 2012: 146; Hamling and Richardson 2017: 70; Hanawalt 1986: 175; McKenzie and Murphy 2018: 315; Orme 2001: 67, 99-100; Rawcliffe 1997: 4-7). However, contextualisation of the results in reference to known warfare contexts suggest this could be one way in which the skeletal evidence can be interpreted.

08.05 | some conclusions

- Though not constant, war was a medieval reality that is likely to have affected the lives of most people, which included children and youths. This chapter encourages the inclusion of children and youths in consideration of violence and warfare, as both direct participants, supplementary supporters and victims.
- The bioarchaeological and historical evidence demonstrates that direct participation in war seen in violent trauma during youthhood, suggests that children 14-17-years-old were participating in 'adult' war activities, but perhaps with less frequency than their adult counterparts.
- Children younger than this might have been permitted into dangerous war contexts, but perhaps to facilitate ancillary function rather than participating in direct fighting roles.
- There is no documentary or contextual evidence of children below the age of 10-years of age participating in warfare, nor bioarchaeological evidence of violent trauma that might suggest so either.
- Women and girls appear to have been restricted from warfare contexts, but male children and youths were permitted.
- This is just a theoretical interpretation of skeletal signs of violent trauma, which could instead be reflective of accidental or occupation patterns of trauma.

CHAPTER 9 | care of the chyldren

09.01 | introduction

The focus of this chapter is to assess and interpret health-related care provision for non-adults from later medieval and early modern England (AD 1450 – 1600). In order to achieve this, the research will present a new approach to the study of disease and care in the past, by utilising composite osteobiography and life course theory, to examine childhood care and disease (Robb 2002; Gilchrist 2000). The theory of 'composite life course analysis' used in this chapter aims to collectively examine multiple osteobiographical accounts, in order to assess the commonalities of the lived experience of disease during childhood. The *Bioarchaeology of Care* analysis has proved to be a powerful tool for approaching ideas of care in osteobiographic accounts, however, these have predominately focused on the experience of adults (Tilley 2015; Tilley and Schrenk 2017). Oxenham and Willis (2017) were the first to explore the complexities of non-adults in relation to the theory of care, discovering how important ideas of age and the life course are to interpreting the care of children. With that in mind, the focus of this research is to approach childhood care in direct relation to the life course, which is a concept very appropriate to the sociocultural context explored.

09.02 | defining care

What is 'care' and what do we mean by it? Initially, simply defining 'care' is something of a problematic task. Care can be broadly conceptualized as the provision of *something* which is necessary for the maintenance and/or protection of *something else.* For the purposes of this chapter, however, the focus is on 'health-related care' practices – this form of care can be broadly defined as the providing of the necessities required to maintain the health and welfare of another individual (Tilley 2015:1-3). Differentiating between types of care in relation to children is even more difficult. For instance, it is difficult distinguishing between 'normative child-care' (actions required for 'normal' child-rearing) versus 'health-related child-care' (additional actions required to maintain a sick child). These two categories are relatively unspecific, these two 'types' of caring can routinely overlap with one another, regularly blurring the lines that separate them – therefore, it is not always going to be possible to make clear distinctions between them (Oxenham and Willis 2017:230). In order to clarify the care-related terminology used in this chapter, definitions of the terminology have been tabulated (see table 09.01). These summarized definitions, however, should not give the impression that the terms are definitive or discreet – the opposite is in fact true.

TERM	BRIEF DESCRIPTION
care	The provision of *something* which is necessary for the maintenance and/or protection of *something else* (Oxford Dictionary of English).
health-related care	The provision of the necessities required to maintain the health and welfare of another individual. Bioarchaeologically, this can be inferred from human remains, which exhibit pathological signs that are unlikely to have developed into a progressive stage without the assistance of others (Tilley 2015:1).
care provision	The practices and applications, consciously performed, both directly and indirectly, to provide care for another person (Tilley 2015:5).
normative child-care	The actions required for 'normal' child-rearing, necessary to raise a child. These practices rapidly change, being closely related to the age of the child (Oxenham and Willis 2017:230).
health-related child-care	The actions required to care for a sick child, that are required in addition to normative childcare practices (Oxenham and Willis 2017:230).
direct care	Direct supportive practices, such as nursing, food provision, hygiene maintenance, etc. (Tilley 2015:3).
medieval care	The environment of the later medieval period, in which direct and indirect health-related care practices were both theologically and pragmatically at the moral centre of this sociocultural context (Wallis 2010:431).
definitive care case	Defined by this author as the skeletal cases of morbidity which demonstrate that children would have required care beyond normative childhood care to survive and develop.
other progressive cases	Defined by this author as those examples of progressive morbidities where it was possible to suggest a diagnosis, but not progressive enough to meet the Tilley (2015) criteria.
age of onset	The assumed period from when a disease first occurred, based on clinical evidence.

Table 09.01 – Care-related operational definitions

09.03 | measuring care within a population

It is important to initially consider what care on a population-level may potentially be able to inform us about the past? *Bioarchaeology of Care* research has thus far focused exclusively on case-study osteobiographical analysis. These osteobiographical accounts allow for detailed and emotive explorations of individual lives in the

past (Tilley 2015; Tilley and Schrenk 2017). However, even when these accounts are very highly contextualized, they are still *individual* stories. Of course, this is not actually entirely so, especially in the instance of a definitive care example, where the progression of the condition that a person has is effectively a collective achievement. But, their insightful accounts only speak to their experience and the experience of their carer(s). Yet, just how reflective are they of the wider society? A change of scale significantly alters the value and utility of this evidence.

However, viewing ***proportionality*** of 'care' in the bioarchaeological record is likely to be hampered by a multitude of inherent issues. This is because trying to measure the scale of care within a population implies that the sample of human skeletal remains is reflective of the living population of the past. There are inherent difficulties with the representative nature of the material discovered in bioarchaeological. In particular, cemetery assemblages are hindered by representational, methodological and theoretical difficulties. Because of these factors, it is likely that any skeletal samples from archaeological cemeteries will contain some form of intrinsic bias (Halcrow and Tayles 2011:333; Jackes 2011:111; Lewis 2007:20; Pinhasi and Bourbou 2008:32; Southwell-Wright 2013:74). Additionally, even were it possible to source a complete, bias-free, skeletal sample, whether or not a dead population has any relevance to a living population from which the individuals derived from is a matter of discussion (Wood et al 1992:344).

It is important from the start of any population-level study to consider what a dataset represents, as this directly impacts the statements we can make (Jackes 2011:107). For this chapter, the dataset utilized is composed of a disparate set of data which forms a more extensive database (see methods). The dataset is comprised of many varieties of cemetery types, excavated in a variety of ways, all representing various random degrees of bias, does not render it suitable for use for traditional demographic methods.

Care case-study osteobiographies represent individuals who express pathological changes – causing varying levels of impairment, dis/ability[1] and dependability – but who were strong enough to survive into the chronic stages of their pathology, likely due to the assistance of others (Southwell-Wright 2013:73). That being the case, what do we actually gain from *measuring* the numbers of these cases within a population? Given the issues of inherent archaeological record bias, at first glance, probably not much. A plethora of cases of likely care are not going to be able to tell you much about the exact proportionality of care provision in that society. A lack of care cases does not mean that care was not given by a society, when the individual could simply have been cared for, yet died before skeletal changes occurred (Tilley 2015:75). It would be all too tempting to fall into comparing groups of 'care' provision within and between periods – when you simply are not going to know exactly what

[1] There is no universal definition of 'disability'; this is even more true when considering concepts of disability in past societies (Southwell-Wright 2013:67). For the purposes of this chapter, disability will be broadly defined by Tilley's (2015:3) definition of disability as 'a state (temporary of longer-term) arising from an impairment in body function or structure that is associated with activity limitations and/or participation restrictions'. However, the term 'dis/ability' will be adopted throughout this paper as it encompasses and emphasises ideas of ableism and intersectionality which are vital considerations when exploring dis/ability in the past (Goodley 2018:5).

these case studies actually represent in your dataset and how interpretively that relates to your population. Interpreting anything meaningful about dis/abled individuals in the bioarchaeological record in relation to the rest of the population has long been doubted (Waldron 2007:207) and more recently, even Tilley has been sceptical about just what care analysis can inform us on a palaeodemographic level (Tilley 2017:19).

This chapter will next briefly examine how case-study analysis can inform or challenge us about our view of a society and caring for the dis/abled in late medieval and early modern England.

09.04 | the cult of care

The medieval Christian religion quite literally *was* care. By the beginning of the fifteenth century, medieval culture had a long-established sociocultural environment in which care – what we would define as health-related care, care provisioning, direct care, short, medium- and long-term care – was both theologically and pragmatically at its moral centre. Care was the primary medical treatment available to the population at large and there was a long tradition of care-based treatment within the home, hospitals and wider community (Wallis 2010:431).

How these chronically sick or disabled children were viewed is also difficult to assess. Theoretical explorations of disability history have been under the focus of surprisingly little direct focus in later medieval and early modern England (Korhonen 2014: 49). As with all of medieval life, religious conceptions of disability are believed to have structured wider social attitudes towards the disabled, which, like much of the scripture upon which they are based, are likely to have been multifaceted and somewhat ambiguous (Gilchrist 2012: 22). On the one hand, disease, impairment, and disability were conditions ordained by God and often attributed to notions of sin or a moral failing of the individual. Therefore, such outward signs of deformity were interpreted as inward corruptions of the soul (Gilchrist 2012: 22). Children, of any age, were not free from subjection to this rule, given the influential Augustinian view of Original Sin and therefore the fundamental notion that illness was a punishment from God applied to even the youngest of infants (Miles 2001: 15, Newton 2014: 47). On the other hand, disabilities could also be portrayed in a more positive light and the management of long-term suffering could be seen as a worthy attribute – as the Christian person managed – in a way viewed as morally correct by the church, as well as the wider community – a condition which had, after all, been ordained by God to that individual to content with (McIntosh 2012: 15). In addition, the medieval culture of charitable ethics, which promoted a benevolent attitude towards those in need as a basic Christian moral obligation, may also potentially have inspired more of a positive attitude (Gilchrist and Sloane 2005:19). Additionally, disability in later medieval and early modern England did not just affect a small proportion of the community. For most people, it was an everyday experience; either first hand or second hand through care for a family member. Even for those untouched at the present time by the effects of disability personally or in the family, there would have been an awareness and an anxiety over the potential for disability to develop in the near future, which was a very present concern for all members of society in an environment filled with disease, famine, accidents, hard labour, etc.

(Korhonen 2014: 46). This could mean, despite the religious foundations of the involvement of sin in relation to the medieval disabled, that there was generally a more positive community view of disease and disability, which would likely significantly affect most people at some point in the life course of medieval people (McIntosh 2012: 15). This ambivalence of belief means it is very difficult to narrow down exactly how disability was perceived by the masses during this period and it is likely that they are to have adopted a wide variety – and likely often contradictory – opinions.

The complexity of medieval thought surrounding long-term disease and care – as well as the roles of ordinary people in undertaking their religious duties towards care needs – means that we are possibly going to over or underestimate just how variable attitudes were to care. If there was ever a sociocultural context from which there should be plentiful evidence of care, it is this one, where it was embedded in the very fabric of the culture. And yet, exactly how useful would bioarchaeological evidence be in assessing such a topic on a demographic basis? Did everyone in society fully believe *and* act accordingly to care needs? Or was there a lack of participation – and, if so, to what degree? Or by asking such questions, does one underestimate the religious convictions of people in England in late medieval and early modern belief? Unfortunately, some of these interesting questions are not supportable by bioarchaeological evidence alone, for the reasons already explored above. Even the best preserved and most representative of skeletal assemblages will only be able to reveal two things: first, that there was evidence of care in the Christian community (hardly surprising); and second, that the proportion of care was higher or lower than our arbitrarily drawn expectations. Neither of these outcomes are particularly enlightening. Although it is entirely possible that bioarchaeological evidence of such a kind could provide many unforeseen insights into the medieval past, it is not going to challenge the notion of the *proportion* of health-related care in the past on a *population* level.

09.05 | composite life course analysis

The assumptions explored above are just that, inherent and conceptual issues that are assumed to affect this particular dataset. To summarize, these assumptions:

- the database subsampled from the population is biased,
- the dead population does not reflect the living population,
- a lack/plethora of progressive disease cannot confirm/deny the proportion of care,
- population-based care assessment would add little to our understanding of later
- medieval and early modern England.

Despite these initial hurdles, bioarchaeological analysis of health-related care provisioning can still be explored through the utilization of theoretical ideas and frameworks. This section will explore the utility of analysing population-level morbidity, to theoretical views of the composite life course analysis, through an exploration of composite osteobiographies and life course analysis.

Bodies have been described as 'a museum of one's life' (Boric and Robb 2008:2). It is fitting, then, that human skeletal remains have been described as 'biocultural archives' (Schutkowski 2001:220); an often rich, random and incomplete collection of material. Studying an individual skeleton can provide us with direct, albeit incomplete, evidence, which can be interpreted into a biographical account. The term 'osteobiography' was coined by Frank Saul in 1972, who aimed to interpret the human skeleton by means of a holistic, contextually sensitive, research approach (Saul and Saul 1989, Buikstra et al. 2009:10). John Robb (2002) expanded upon this osteobiography of an individual, utilizing evidence from multiple individuals in order to create a *composite* view of past lives. By stitching evidence together from a number of individuals, it is possible to view a shared biographical account of past lives within a particular sociocultural context. This composite idea is key to the theory utilized in this chapter. For instance, if you wish to answer questions about childhood care within a population, then drawing together evidence of progressive morbid conditions into a singular narrative may potentially be able to lend insights into disease and care in the past, that is also reflective of the experience of disease and care within the wider population.

The other core concept utilized in this chapter is the study of disease in relation to life course theory. One of the more consistent propensities in palaeopathological research is the notion of morbidities as a static moment in the life of an individual, when instead, factors such as disease and disablement are "continually renegotiated" throughout the life course (Gowland 2017:248). Therefore, by viewing disease prevalence's as a static outcome of morbidity in a population, such a view overlooks the importance of the life course and intersectionality when analysing pathology in the past. 'Life course' theory developed following analysis of the ideas surrounding the ideas of the 'life-cycle' model. This latter idea was found to be too prescriptive and deterministic. Instead, the life course model gives greater freedom, and importantly, allows concepts of agency, embodiment and the fluidity of identity to be included in its matrix (Gilchirst 2012:2). Adopting a life course approach to this study is also context appropriate. Medieval theology was imbued with the understanding that life progressed through a series of stages, each with its own characteristics: 'the ages of man' (Gilchirst 2012:2; Orme 2001:7). Although life course theory has been readily adopted into archaeological theory, there has been surprisingly little use of it in palaeopathological studies (Gowland 2006). While life course theory could easily be applied to adult age categories, the broad age categories would admittedly give the analysis a somewhat generalized view of the life course. However, physiology of non-adults means that they would be prime candidates to be viewed within the life course, with palaeopathological material having the potential to view the life course, potentially even on a year-by-year basis. Disease and dis/ability in the rapidly maturing child means the embodied experience of a morbidity will change significantly year-on-year. Therefore, it is especially fundamental when studying paleopathology, to consider children in as narrow age categories as the evidence will allow. However, when doing so, it is important to remember the conceptual issues with assessing age in bioarchaeological remains. Age is a multifaceted phenomenon and the relationships between these types of age determinations are complex – and importantly: context specific. Biological, chronological, sociological, functional and psychological are all independent but interlinked categories of aging (Gowland 2006:143, 153, 2018:105; Sofaer 2006:77). Although

generally speaking the categories are related, it is important to not jump to assumptions and make any age-related interpretive outcomes based on a wider understanding of the sociocultural historical context.

The theory utilized in this chapter borrows from both composite osteobiographical analysis and life course theory, to adopt a composite life course approach. Roberta Gilchirst has previously highlighted the potential for utilizing such an approach, noting that osteobiographies and life course theory have the potential to provide linkages between individual skeletons, the wider population and broader social questions (2012:43). Adopting such an approach hopefully presents something new to these previous theories. This theory does not adopt traditional osteobiographical account as such, as it does not focus on one individual – yet at the same time, it is not a traditional population study per se, as it focuses on multiple osteobiographical accounts. So, while this theory loses the intimacy of viewing the individual, it is still focused on a number of *individuals*, rather than a 'population'. However, at the same time, this composite view of different individuals within a population will still hopefully reflect some of the commonalities of the lived experience of disease in the past that is broadly reflective of the experience of the population. This theory could be one way to regain a sense of context from *individual* narratives, by placing the osteobiography within the collective framework of chronological aging in that socio-cultural context. This composite approach borrows from multiple individuals, to present a synthetic view of an individual disease within the life course. By doing so, it is hoped that it will allow a holistic view of how evidence for progressive diseases within the life course can be viewed collectively to present patterns in the morbidity results. It is hoped the patterning of these morbidities can tell us something about disease, childhood, care, and the life course – but, crucially, more about the *lived* experience of each of these factors.

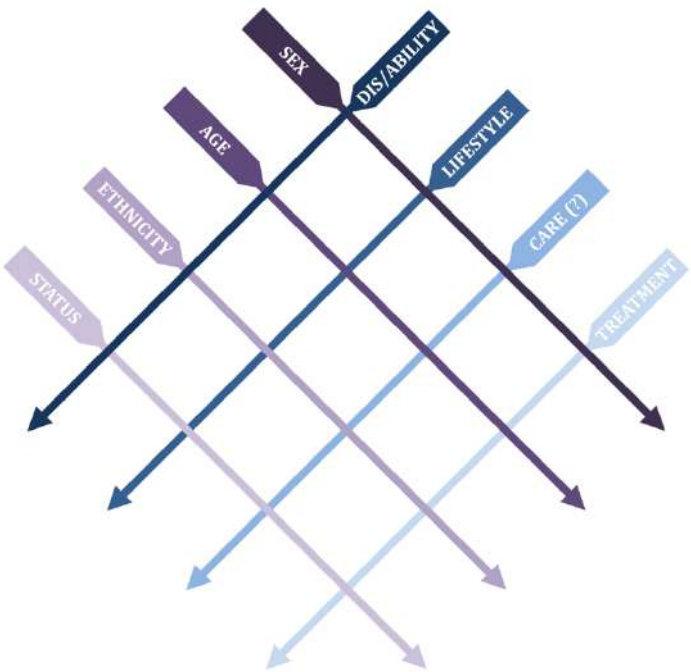


Figure 09.01 – Some intersectional factors relating to care analysis - Authors Own

Milner and Boldsen (2017) have claimed that 'Simple tallies of skeletal lesions are insufficient to gain an impression about the toll diseases and injuries took on human groups in the past. It is, nevertheless, essential to start with skeletal lesion frequencies. But by themselves, they tell us little about life experience' (2017:29). However, it is how the "simple tallies" are utilized and interpreted that render them of value or not. The issues of the inherent biases of the archaeological record (discussed above) are not going away, especially when adopted into a palaeoepidemiological analysis, so it is essential to try and postulate about the data in a variety of engaging ways.

By plotting tallies of collected data from multiple non-adult skeletons, it is possible to give a synthetic structure – a framework into which skeletal data can be placed, displayed and conceptualized – to explore how certain morbidities affected children over the early life course. Disease progression is an individualistic experience, one that will invariably change based on many matters of intersectionality (age, sex, ethnicity, social status, etc.) (see figure 09.01). However, at the same time, it is true to say that there are also some commonalities which certain morbidities will broadly share. Additionally, it is important to consider the progression of a disease through the spectrum of the life course. By considering the scope of disease progression within a spectrum – and how, and at what ages, and with what conditions, and how many – individuals passed along that spectrum will assist with understanding the lived experience of the disease. That being true, it is also central to this study to view the examples of care relationally to the context of the evidence for each disease being studied. By doing so, it will hopefully inform us further about the progression of disease within the life course.

Figure 09.02 – Map of sites used in this analysis from across England - Authors Own

09.06 | care and the composite life course of medieval childhood

In the initial outcome of this analysis, there was only one instance of *definitive* care, based on the Tilley (2015) criteria, which was an infant with congenital syphilis. Initially, this may seem surprising within such a large dataset (see figure 09.03). However, upon second view, many of the instances of 'other progressive diseases' which *did not* strictly meet the criteria of evidence of care based on the Tilley (2015) method, almost certainly

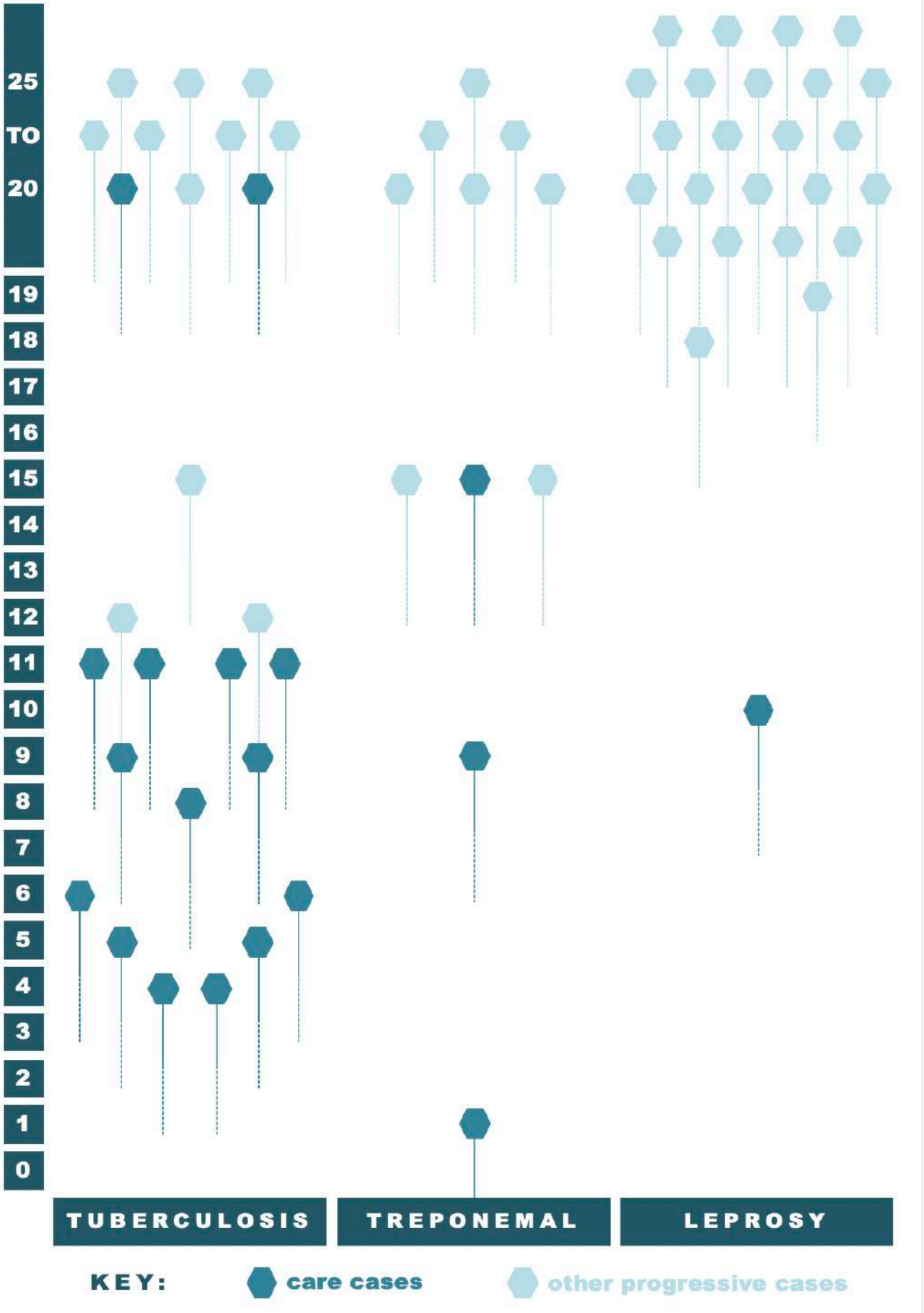


Figure 09.03 – Results of the *Composite Life Course Analysis* - Authors Own

are reflective of evidence of health-related care and these cases were added to the results examples of definitive care. This can be proposed based on the fact that these diseases were found to occur in young children, with those below the age of 11 (at least based on the evidence in this chapter), who almost certainly must have required direct and long-term health-related care to develop their infectious diseases into their progressive stages where skeletal changes occurred. This evidence also overlaps with the sociocultural context of medieval familial health-related care during this period and what we know of the wider culture of care and care provision (discussed below). In the examples of the 12-year-olds and 15-year-old diagnosed with tuberculosis, the evidence in these cases was less severe and also presented in children who were still likely to be receiving health-related care, but the skeletal signs were more minor and the children were of an age which medievally would have been more autonomous than today, so we need to be more cautious about undermining the agency of these older medieval children (Orme 2001). It is important to emphasize here that these results clearly show that children were being sustained throughout their progressive diseases, the question here is, just how dependent on health-related care were they at particular ages, where does this overlap with normative childhood care and how sure can we be that we can interpret this correctly? The next section of this chapter will briefly contextually explore the results for each of the infectious diseases under study in this research.

09.07 | tuberculosis + the non-adult medieval life course

Tuberculosis is an infectious disease caused by a member of the *Mycobacterium* complex (Ortner 2003:227; Roberts 2012: 435, Lewis 2017a: 155, Waldron 2009: 90). Classical antiquity had described the condition in Greek as phthisis and in Latin as consumptione – both broadly meaning to decay or be consumed (Lindemann 2010: 80, Demaitre 2013: 221). These ideas were absorbed by later medieval and early modern culture and people referred to it as phthisis, consumption, or the Kings Evil. The latter of which, also known as scrofula, described a certain subgroup of consumptive symptoms that produced ulceration around the neck and was called the Kings Evil, due to its association with its ability to be healed by divine intervention, mediated by the medieval English and French monarchs (Lindemann 2010: 80, Demaitre 2013: 97). In Latin medicine, consumptive patients were designated as ptisicus (Demaitre 2013: 221). Tuberculosis is primarily contracted by humans through droplet transmission, by passing on infected droplets into the respiratory system and into the lungs, through actions such as touching, coughing, sneezing, etc. It can also be contracted through the gastrointestinal system, by the consumption of meat foodstuffs sourced from animals infected with the bacterium (Roberts 2002: 31; Ortner 2003: 227; Waldron 2009: 90). In children, it can also be passed on shortly after birth through infected breast milk (Lewis 2017:156). Tuberculosis can affect people of all ages, but it is a disease that is often particularly intertwined with childhood (Lewis 2011c: 12, 20; 2017a: 155; Roberts 2012: 435). Children are more susceptible to contracting tuberculosis than adults, with clinical evidence suggesting that the younger a child is, the more susceptible they are (Lewis 2017a: 156; 2018: 473). Primary tuberculosis is often contracted during early childhood and these lesions usually heal (Roberts 2012: 435). Tuberculosis can then be hosted in the body for months or even years, with no visible external signs of its presence (Roberts 2011: 259). It can then cause secondary tuberculosis, whereby the infection is 'reactivated' in later life (Roberts 2011: 259; Lewis 2017a:

155). The mechanism that causes this reactivation is not entirely understood, but a change in the health status of an individual is thought to be a primary cause (Roberts 2011: 259). Additionally, miliary or extrapulmonary tuberculosis is also often a complication in children and spreads the infection around the body. Skeletal changes can occur any time after the primary stage of infection and usually occur around 3 to 5 years following the primary stage (Lewis 2016: 162; 2017: 155; Roberts 2011: 259, 2012: 435). In view of the osteological paradox, skeletal changes indicative of tuberculosis demonstrate that children are in this secondary stage, who had their immune systems compromised enough to contract the disease, but healthy enough to develop chronic pathological bone alterations.

Palaeopathologically, it is more challenging to diagnose tuberculosis in non-adult skeletal remains than adults and this will invariably underestimate its occurrence in bioarchaeological reports and research. Evidence for tuberculosis in non-adult skeletal remains for later medieval England is generally rare, especially in younger children (Dawson and Brown 2012:34, Lewis 2017:158; Shepard et al. 2015: 280). There is a lack of evidence in earlier childhood for tuberculosis, as diagnosing tuberculosis in non-adult under 4-years-old is particularly difficult. Diagnosing tuberculosis in the adult skeleton relies on the ability to interpret patterns of pathological new bone formation around the body (Lewis 2017a: 158; 2018: 473). In non-adults, new bone is naturally forming in the process of the rapidly maturing physiology of the skeleton, so it is very difficult to determine in those under 4-years-old if any new bone formation identified is due to normal growth, or potentially a pathological condition (Lewis 2017).

There are a great number of factors that are believed to contribute to predisposing an individual to the contraction and maintenance of tuberculosis, such as the immune status, secondary conditions, nutrition, age, living environment, proximity to infected animals, geographical location, occupation, travel to name just a few (Lewis 2011c: 20; 2017a: 155, Roberts 2002: 32, Waldron 2009: 91). Tuberculosis is often tied to poverty, almost always affecting those who did not have the material wealth to effectively make decisions that would lower their predisposition to the disease – e.g. to improve diet, or not live in overcrowded areas, etc. (Roberts and Buikstra 2003: 55; Waldron 2009:91).

The composite life course analysis results for tuberculosis show some evidence of the disease between the ages of 1 to 25-years-old. The gap between 13 to 18-years-of-age is interesting – apart from a single case of a 15-year-old, there a large is a gap in the life course of non-adult tuberculosis. It could perhaps be evidence of tuberculosis being difficult to maintain throughout adolescence. For instance, perhaps the majority of children with progressive cases ended in mortality around the ages of 11 to 12-years-old, where there is a cluster of cases in the results. It could have been possible that cases in 20 to 25-year-olds are reflective of tuberculosis which was contracted later in the life course, rather than earlier, and this was not a disease that was maintainable throughout the whole of the childhood life course and into adulthood. However, this gap could alternatively represent a period of latency or hibernation in the procession of the tuberculosis – by which it could have been

contracted earlier in childhood, when clinically it is known to be more likely to do so, presented as primary tuberculosis, which would not have presented skeletal changes, but would have remained present in the body during an incubation period which often varied individually. Finally, perhaps during adolescence, the disease became reactivated and moved into its secondary stage, which eventually would have produced skeletal changes seen in these results. Given the clinical evidence explored above, the evidence is more suggestive of this latter occurrence, with childhood contraction and adolescent secondary onset, which eventually resulted in adult skeletal changes. Clinical evidence demonstrates that it is difficult to determine the duration of the disease, but it can broadly be estimated that death occurred somewhere around 3 years after the onset of symptoms (Tiemersma et al. 2011:10).

The tuberculosis results are also interesting in relation to the life course and ideas of health-related care. For example, while the 13 instances of tuberculosis identified are not progressive enough to suggest these children were immobile or impaired, these 4 to 11-year-olds with progressive tuberculoid symptoms are highly likely to have required assistance to survive. The fact that there are 13 cases here suggests that providing health-related care for a child with tuberculosis was not a rare occurrence during these early years and supports the historical evidence that tuberculosis was very much a later medieval childhood condition. There is a point of divergence with the Tilley (2015) method here. The cases of disease between 0 to 11-years-old would not have been considered definitive cases of 'health-related care' had their skeletal changes been viewed in the remains of adults, where it could be argued that these individuals could have been independent. However, although we know medieval children were proactive members of the family from a young age, the clinical evidence and historical context both suggest it was highly unlikely that they would have progressive infectious diseases unless there was a significant provision of health-related care available to them (Orme 2001).

09.08 | treponemal disease + the non-adult medieval life course

Treponemal disease is caused by bacteria from the genus Treponema (Lewis 2017a: 172; Ortner 2003: 274; Waldron 2009: 102). The routes of transmitting treponematosis can occur in two ways – acquired or congenital. Acquired venereal syphilis occurs when the organism is transferred from an infected and open lesion during sexual contact (Waldron 2009: 102). It is also thought that yaws and bejel can be acquired through contact with infected skin (Lewis 2017a: 172). Congenital syphilis occurs when the organism is transferred transplacentally during pregnancy from the infected mother to her child (Ortner 2003: 278). Treponemal disease during the later medieval period is rare in bioarchaeological assemblages (Lewis 2016: 162). *Syphilis* was first used in 1530, from an allegorical poem, in which the protagonist, a shepherd, is the first person to contract the disease (Duffin 2010: 170).

Based on the Tilley (2015) criteria, only one individual would be a *definitive* care case in the dataset. This infant with congenital syphilis falls into a challenging interpretive category. On the one hand, any infants require normative childcare to survive, so infants with pathological conditions might be reflective of regular care

practices. However, it could also be argued that an infant with physical congenital changes who lived into their first year of life must have required some form of 'extra' health-related care to survive. However, bioarchaeologically it is not possible to determine which type of care an infant receives just from skeletal evidence alone (Oxenham and Willis 2017). However, this is still a rare find, and it should be noted that the infant lived for a least a year with congenital alterations. Clinically, syphilis progression has been divided into three stages: primary, secondary and tertiary. Primary syphilis occurs just after infection, when a chancre or lesion forms at the site of infection, which usually heals within weeks or a few months. Secondary syphilis occurs a short time later, when the individual will develop rashes and experience flu-like symptoms, which resolve without intervention. Tertiary syphilis only occurs in a third of those cases which progress to the secondary stage and this can take years or even decades of a latent period to occur. Once it does, gumma or erosive granulomas form, affecting the skin and eventually bones (Waldron 2009: 103). In the skeleton, it is highly problematic to differentiate and diagnose the different types of treponemal disease (Lewis 2017: 172; Ortner 2003: 278; Waldron 2009: 102). Given that the majority of acquired syphilis is contracted through sexual intercourse, it is not surprising to note in the data that there is little evidence for syphilis before the age of 15+ years. The exception to this is one nine-year-old with evidence for syphilis, although it should be noted with all these diseases that there are invariably elements of misdiagnosis which may occur. It is also possible that this child was the victim of sexual abuse. Additionally, these results suggest that the disease was mostly contracted between the ages of 15 to 25-year-olds and this could possibly indicate an approximate period of the start of sexual activity in later medieval and early modern England.

09.09 | leprosy + the non-adult medieval life course

Leprosy, also known as Hansen's Disease, is an infectious disease caused by *Mycobacterium leprae* or *lepromatosis* (Roberts 2017: 105, 2018: 1; Waldron 2009: 98). It is believed to be transmitted by airborne droplets containing the bacteria, which are inhaled into the respiratory system (Roberts 2017: 105). It has a low virulence and cannot be contracted by touch alone (Waldron 2009:98).

Classical antiquity had described the condition in Greek as elephantiasis and in Latin as *elephantia* – both in reference to the disease causing the skin to appear similar to that of the hide of an elephant (Demaitre 2013: 102). During the next millennia, *elephantia* was displaced by the Greek plural *leprai*, which meant a condition that caused symptoms of scaly skin (Demaitre 2013: 102). Lepra was later chosen during the translation of the Hebrew Bible for *zara'at*, to imply ritual impurity, but only indirectly in reference to bodily disease (Demaitre 2013: 102). *Elephantia* came back into use by a small group of sixteenth century Humanist scholars (Demaitre 2013: 103).

Children are particularly susceptible to contracting leprosy (Lewis 2017a: 164). Levels of leprosy are found generally to increase, when the there is a higher prevalence in their environment (Lynnerup and Boldsen 2012: 466). While adults can incubate the disease for many years, in children, this period can potentially be reduced to

months (Lewis 2017a: 164). In many cases, leprosy can spontaneously heal, although it can then later reappear during later childhood or even into adulthood (Lewis 2017a: 164). Despite this, the evidence for leprosy here is almost entirely absent for younger children. However, this does not mean that medieval children with leprosy were not cared for – there may have been significant amounts of health-related care invested in children who were in an environment where despite all the efforts made to keep them alive, it was largely difficult to sustain children into the progressive stages of leprosy. A lack of health-related care cases may still provide information about the life course progression of childhood leprosy. The expression of symptoms that leprosy provokes in the body can be quite varied, the contraction and progression of the disease are highly dependent on the status of the host. Palaeopathologically, this means that the expression of the disease in the skeleton can vary depending on the individual, which in turn can potentially make diagnosing the disease from skeletal material difficult (Lewis 2017:164; Lynnerup and Boldsen 2012:461; Ortner 2003:264; Waldron 2009:98). Consequently, leprosy is likely to be under-represented in the palaeopathological record. Only a fraction of children – approximately 10% – are likely to have developed into the more progressive stages of the disease, which could include facial alterations and damage to the bones in the hands and feet. These progressive stages can lead to significant bodily alterations and eventually impairment (Lewis 2017:166; Roberts 2011:256, 2017:105). The results of the composite life course analysis show that there was only one instance of a 10-year-old who may have been a rare example of childhood leprosy, or possibly represent a misdiagnosis. The evidence here could suggest that children died before the disease progressed to skeletal alterations. The evidence suggests that broadly, the earliest unequivocal involvement was between 16 to 19-years-old, towards the end of 'adolescence'. Given that such skeletal involvement would have been the culmination of possibly years living with the infection, it is possible that many children were indeed affected by leprosy.

Leprosy in later medieval England is consistently over and underestimated. Its prominence in medieval academic theological debates, medical writing, and high-profile sermons mean that its importance to the broader society is often overstated (Demaitre 2013: 104). This overemphasis regarding the negative perceptions of leprosy sufferers as a medievally universally held belief is a particularly persistent myth. Medieval people were not obsessively frightened of those individuals suffering from leprosy (Wallis 2010: 339). The actual extent of leprosy prevalence is also almost certainly overestimated historically (Demaitre 2013: 104) and given the complexity of the process of leprosy in the body, it is unlikely that bioarchaeology will ever be in a position to suggest any kind of proportional evidence either. The overemphasis on the increase in leper hospitals as a sign of the importance of the disease in the wider community is often argued in isolation of the general wider context of the increase in other hospitals, alms-houses, and other charitable institutions during this same period of time (Demaitre 2013: 104). It is also often stated that leprosy sufferers were isolated from society and even viewed ritually between life and death – this view has now been widely challenged (Wallis 2010: 339). It is often underestimated that there would have been a wide range of complex responses to leprosy, as it is a topic that intersects with religious, cultural and individual factors (Wallis 2010: 339). It is also routinely assumed that all leprosy sufferers were forced into isolationism, despite the fact that the limited amount of bioarchaeological

evidence of leprosy sufferers that does exist is derived from *both* parish and hospital cemeteries (Lewis 2017a: 171). This is not to suggest that those who were suffering from leprosy, including those few children with more progressive symptoms and bodily disfigurement, did not face significant prejudice from wider society, nor that many were viewed as contagious individuals; however, not all would have experienced this treatment and we need to give medieval people the benefit of the doubt that their reactions were more complex than simply fear and rejection.

09.10 | diagnostic difficulties

Palaeopathological diagnosis is often non-specific and this is problematic for interpretation. Given that tuberculosis, leprosy, and syphilis can all cause non-specific responses in the skeleton that can potentially be interpreted as one another, it is possible that some of the results have been misdiagnosed (Cook and Powell 2012: 481; Lewis 2017: 163). The evidence from this large dataset indicates that there were 60+ instances of progressive infectious diseases diagnosed in non-adult skeletal remains. These cases represent only a small fraction of the actual disease prevalence (Waldron 2007: 202). Of those who contract each of the diseases, only a fraction go on to develop progressive symptoms and of those, an even smaller portion develop skeletal alterations. Skeletal involvement is thought to affect approximately 1 to 5% of tuberculosis, 3 to 5% of leprosy, and 1 to 5% of treponematosis patients (Ortner 2003: 118, 264). Given this, as well as the vagaries and complexities of the archaeological record, we should perhaps be positive about the evidence that has been able to be detected.

09.11 | temporality + childhood disease

Although, as discussed above, this dataset is focused on AD 1450 to 1600, due to inherent issues with the dataset, many of the included sites could not be phased more precisely, thus obscuring temporal trends. For example, it is thought that leprosy decreased significantly throughout the fourteenth century, just as tuberculosis was increasing and continued to do so well into the post-medieval period (Roberts 2011:273, 2018:18). Therefore, it is possible the tuberculosis results may represent the later period, while the leprosy cases might represent the earlier period. Additionally, the considerable debate about the antiquity and movement of venereal syphilis during the fifteenth century has recently been concluded with a number of sites with evidence for the pre-Columbian origin for treponemal disease in England - although this is still unlikely to be any earlier than the fourteenth century (Stirland 1991: 39, Mays et al. 2003: 142, Walker et al. 2015: 97).

These results show that at every point of the life course, there is implied evidence of health-related care for children with progressive infectious diseases. It is possible that these children were autonomous, but it is highly unlikely, especially with respect to younger children. It is also vital to view these results contextually too and fortunately for this period, we have a wealth of historical evidence upon which we can draw, to help fortify an argument that medieval children were being cared for.

09.12 | care in context

Tuberculosis, treponematosis, and leprosy each represent long-term infectious conditions, often over years, with periods of incubation and latency, matched with seemingly random reactivations and a staggered presentation of symptoms. However, all of these conditions are likely to have been cared for in *broadly* the same manner during the later medieval period. Phthisis, lepra, and syphilis were believed to have been caused, as with all medieval diseases, by a humoral imbalance. While these imbalances could potentially be caused by any number of external factors, in children, these diseases were often believed to occur primarily due to dietary excess or deficiency, as well as pestilential airs (Demaitre 2013:96; 104; Rawcliffe 2013:237; Wallis 2010:339). Leprosy additionally held connotations of sin in later medieval theology, often sin of a sexual nature, with the physical alterations of leprosy being viewed as evidence of some transgression. However, it should be stressed that while a humoral imbalance caused all medieval disease and imbalances could potentially be attributed to many different types of causative factors, all of them would stem from the agency of God, and therefore, although leprosy could potentially hold additional negative connotations, *all* disease was divinely prescribed (Gilchrist 1995:39). While the diseases all had a common basis of causation, they all had their own symptoms and disease progressions perceived within medieval understandings of the body and medicine. However, despite the differences in symptoms and disease progression, the underlying humoral imbalance meant that they were all dealt with in a broadly similar fashion.

Assessing childhood impairment and the experience of sick children in the past are themes that have been difficult to assess historically, given the fragmentary nature of the evidence (Heywood 2001: 146, Miles 2001: 11). More recently, work by Hannah Newton (2010, 2011, 2014) has been more successful at gaining insights into what it was like to be a sick child in the past and has gathered hitherto unreachable insights into childhood sickness, disease, treatment and care in early modern England. The central thesis of this important work is that children were perceived to be fundamentally different from adults in their physiology, and therefore, so too in their medical treatment (Newton 2014: 2). Additionally, Newton has argued that the child's age was paramount to the concept of the nature of the disease and medical treatment (Newton 2014: 3) – so, therefore, potentially in their care too.

The first line of medicine was religion (Newton 2011: 182; 2014: 48; Rawcliffe 1997: 24). Since the Fall, sickness was divinely prescribed (Siraisi 1990: 8; Wear 2000: 30). The body may have been materially humoral, but the humors were divinely prescribed (Arikha 2007: 87). The body was only a temporary vessel – the wellbeing of the immortal soul always took precedence (Nutton 1995: 77).

Therefore, the first line of defence against bodily sickness was prayer, attending church, confession (if of age), penitence, bible reading, reciting scripture, attending mass (if of age), to go on

"…*fleshe is nothyng but mysery, sycknes, sorrowes, synne, affliction, and deathe, no not so muche strength as by oure owne*

pilgrimage, visit a shrine or tomb of a saint, etc. (Gordon 1991: 145; Ives 2012: 48; Newton 2014: 6; Orme 2001: 109-110, 211; Rawcliffe 1997: 19; Shahar 1990: 146; Thomas 1971: 46, 303). Next, secular medicine could also be sought. Religion was not at odds with secular medicine so long as secular medicine understood the order of precedence. Secular medicine did not threaten the position of religion in healing; technically, medicine only existed because religion had allowed it to – medicine was a divine gift (Wear 2000: 31, 79). Therefore, exploring secular medical treatment was acceptable, so long as people did not expect to be cured, which might be viewed as mortal hubris in the face of sickness and cure that were both within the agency of God to prescribe (Duffin 2010: 250) (see figure 09.04).

> *power, to relieue one member of oure bodyes diseased. As for the knoweledge of medicines, comfort of herbes, maintenanunce of healthe, prosperitie and lyfe, they be his benefites, and procede of hym, to the ende that we shuld in common helpe one an other, and so lyue togyther in his lawes and commandementes…*"
>
> Thomas Phaer, 1554, *The Regiment of Life*, (Garrison 1923: 64, Ruhräh 1925: 147)

Children's bodies were humorally different and more vulnerable – therefore, all childhood medical treatments were supposed to practice restraint (Colón and Colón 1999: 82; Kroll 1977: 386; Newton 2010: 460, 471; 2014: 2-3, 222). With progressive conditions, treatment would have been continually renegotiated on these terms and courses of treatment would have been graduated in relation to the maturation of the child patient (Newton 2014:90). The protection of children from more drastic medical and surgical provisions might be observable through negative evidence in the database. Bioarchaeological evidence of medieval amputations is known to be rare (Huggon 2018: 838; Roberts and Cox 2003: 251). In this dataset, there was a population-wide amputation rate of 0.1% (7/7805; 2 females, 5males). There is no evidence below the age of 17-years-old for surgical intervention in the bioarchaeological record. This could be evidence that supports the historical view that children were only to be treated through medical and surgical intervention based upon their humours own and individual temperaments.

Treatment centred around rebalancing humoral disparity, which could be achieved by adopting a particular diet, seeking environments with clean air and avoiding the cold. After religious considerations, the first thing to do for any sick child would be to appraise the six non naturals – diet, sleep, exercise, passions of mind, evacuation and retention, and air – as one or more of these would be causing a humoral imbalance which in turn was causing the expression of ill-health (Demaitre 2013: 2; Newton 2014: 67). Medieval people could expect to be treated and cared for, but they did not expect to be 'cured' – assistance in alleviating symptoms, even if only to a marginal degree, would have been the primary motivation for most individuals who sought 'medical' treatment (Demaitre 2013:217; Wallis 2010:339). Therefore, care in all its forms was the primary source of treatment on offer. Medical treatment for most medieval children would have been based in the home.

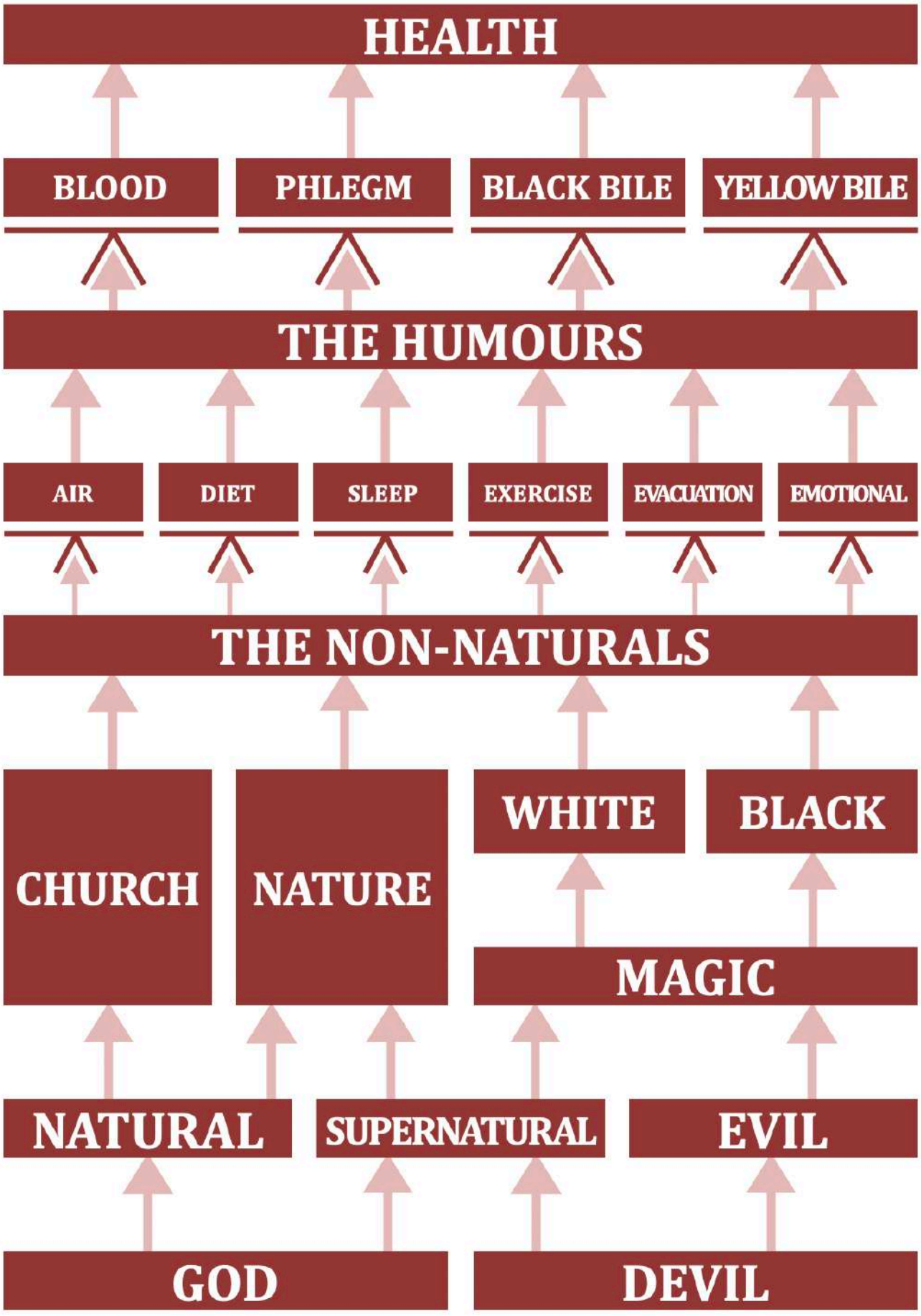


Figure 09.04 – The interplay between health, disease, god, the devil, magic, non-naturals and humoral balance - Authors Own

Care provision was viewed by later medieval culture, as part of the female condition, in a sort of mirrored image of the Virgin Mary's role as the mother of Christ (Gilchrist 2008b: 42). More recently, it has been suggested that medieval fathers may have played a more significant role in the care of their sick children than may have been previously presumed for this period of history (Newton 2014: 93, Lindemann 2010: 123). Newton (2014: 120, 224) found between 1580-1720 that evidence for fathers looking after their sick child was plentiful and that early modern gender roles may have been more flexible than previously acknowledged. The role of the father in providing childcare has been overlooked, although the examples provided are generally restricted to short-term care. Additionally, as Newton acknowledges, this evidence is predominately based on urban elite fathers and there is little evidence for the care of children from poorer and rural families. Therefore, while this evidence is insightful, we should perhaps be sceptical that such behaviour extended to fathers of a lower social status. Temporary subversion of gender roles for upper-class couples is likely to have caused disruption, but this could be mitigated, in part at least, by their material wealth. Given what we know of the rigidity of gender boundaries for this period, it is unlikely that the temporary loosening of gendered roles extended to poorer families. Care of a chronically sick child would have required constant nursing, which would have been provided by all 'nuclear family' members – however, nursing would still have been dominated by mothers. Also overlooked is the role that children played as the carers of other children.

The actions of children are often not recorded by themselves, so their activity in the past as carers is likely to go largely unnoticed (García-Sánchez 2018: 168, Hall and Elliman 2008: 10). Given that relatively young medieval children would have slowly begun to contribute to the household economy as they grew up, in each year they would gain more involved and practical tasks in aid of the family unit. It is therefore very likely that they assisted their parents in caring for sick siblings and this would have likely varied based on their own age and abilities (Oxenham and Willis 2017: 231). However, treatment and care would not only have been a 'family matter'. The impact of maintaining this care on the family in emotional and material capital would have been rather significant (Newton 2014: 110, Oxenham and Willis 2017: 233, Tilley 2015: 116). The experience of a medieval child living with such a progressive disease or disability would have been determined predominately by their family unit (Gilchrist 2012: 67, Lindemann 2010: 244). However, an informal and fluid social-network of extended family, neighbours, friends, etc. would have also played a part in assisting a sick child, especially during the course of a long-term condition – though this evidence is by its very nature hard to define (Korhonen 2014: 30; Lindemann 2010: 122; Rawcliffe 2013: 215; Wear 2000: 22). The line between the family household and the informal network of kin was rather blurred in the later medieval period (Lindemann 2010: 241), so it is likely that individuals dropped in and out of the situation at certain intervals. This is also one way in which families combatted the matter of rising care-related expenses by utilizing this informal network as and when it was required (Newton 2014: 116). This network also usefully contained communal medical knowledge gather mainly by women, which would have been a vital compendium of medical knowledge to draw upon as well as recommendations for 'professional' assistance should it be required (Lindemann 2010: 244).

Domestic roles meant that mothers had some knowledge of the herbs and spices popularly used as medicines (LeJacq 2013: 455; Lindemann 2010: 123, 242; Rawcliffe 1997: 171; Thomas 1971: 14; Wear 2000: 52; Wyman 1984: 31). Spiritual healing would have initially been the most proactive 'treatment' utilized, with prayer at home, visits to church if the child could manage and possibly house visits by the parish priest (Newton 2011: 6, 96, 182; Rawcliffe 1984: 11, 1997: 25; Lindemann 2010: 15). If the condition continued to deteriorate despite these efforts in the home, the next step would have been to seek assistance with local apothecary or physician (Spaulding and Welch 1994: 212). There were no child-specific medical services for medieval children per se, but medical knowledge of the humoral make-up of children meant that treatments were tailored in relation to the age, size and constitution of the child (Newton 2014: 90). Drugges – simples or composite – could be purchased or made at home (Demaitre 2013: 25; Siraisi 1990: 141; Spaulding and Welch 1994: 213; Wallis 2011: 20; Wear 2000: 68).

Figure 09.05 – 15thc - Physicians discuss children presented by parents - Illumination - University of Glasgow - Hunter 9 (S.1.9), folio 68v

Poisons too could be purchased, there being a thin line between poisons and medical drugs and it was believed that poisons could potentially rebalance humors (Cunningham 2018: 1; Hedesan 2018: 81; King 2018: 25; Pieters 2018: 9; Siraisi 1990: 118). Potions, syrups and cordials could be made or purchased (Gilchrist 1995: 34; Lloyd 2011: 569; Newton 2014: 67; Woolgar 2016: 95). Herbal ingredients are mentioned the most in the documentary evidence – many of these herbs could be grown in the family garden or purchased (Gilchrist 1995: 32-35; Newton 2014: 67; Rawcliffe 1997: 149; Spaulding and Welch 1994: 212-213; Simmonds 2016: 7; Thirsk 2006: 6; Wear 2000: 48, 88). Ointments or salves were of particular use to children with irritable skin (Olsan 2003: 344; Rawcliffe 1997: 61; Spaulding and Welch 1994: 230). Honey was viewed as having wide-ranging medicinal properties (Allsop and Miller 1996: 518; Gilchrist 1995: 34) and milk was generally considered beneficial, especially for sick children (Demaitre 2013:221; Rawcliffe 2013: 126; Wallis 2010:339). Sugar, too, was thought to be an effective medicine, but it was limited in its availability and was expensive (Rawcliffe 1997: 150). A variety of spices had various medicinal attributions and could be purchased (Gilchrist 1995: 34; Rawcliffe 1997: 149). Fruits could also potentially be used as medicines and they were also to be avoided in some cases, depending on the author, the publication date and the humoral balance of the patient (Lloyd 2011: 554, 571; Newton 2014: 67). Baths were often suggested, especially for infants and young children, often with the bath water containing specific ingredients, e.g. herbs, honey, milk, etc. (Newton 2014: 68; Olsan 2003: 344). Poultices, plasters and

bandages could be made or purchased too (Huggon 2018: 838; Newton 2014: 68; Rawcliffe 1997: 61). As pestilential air could cause bad health, especially in infants and young children, medicinal perfumes or pomanders were considered beneficial (Demaitre 2013: 191; Demaitre 2013: 191; Spaulding and Welch 1994: 191). Animal based remedies are often mentioned, mostly intended for ingestion, such as ox bile, pig brains, pig feet, hares brain, viper's brain, goat intestines, millipedes, earthworms, etc. (Newton 2014: 67; Spaulding and Welch 1994: 213-214).

Figure 09.06 – 1623 - Apothecary shop sign - Artefact - Dorset, England

The majority of these were intended to have an emetic effect, helping to purge an overabundance of humors (Newton 2010: 465; 2014: 69; Spaulding and Welch 1994: 213). Another reliable way of purging humors was through Classically inherited phlebotomy (bleeding). This was done in relation to age, gender, size and temperament and in reference to children was to be carried out moderately and with caution (Demaitre 2013: 88; Newton 2010: 466; Orme 2001: 108; Rawcliffe 1997: 64-68; Siraisi 1990: 139-140; Spaulding and Welch 1994: 213; Still 1932: 19). Finally, uroscopy was a useful diagnostic test to help determine the exact unbalancing of the humors (Demaitre 2013: 47; Newton 2014: 66; Rawcliffe 1997: 49; Siraisi 1990: 125; Wear 2000: 121).

It is difficult to know precisely what, if any, part hospitals may have played in the treatment of chronically sick children. Hospitals did not focus their provisions on short-term assistance for brief illnesses. Instead, their contributions were predominately through the long-term health-related care, accommodation and nursing within the monastic environment (McIntosh 2012: 62; Orme 2003: 109; Ormand and Webster 1995: 40, 58; Rawcliffe 1984: 3; 1997: 205; 2013: 317). Although this care would have been largely provided for the monastery brethren and elderly adults from the wider community, the number of patients was often restricted in number and admission pressures were common (Orme 2001: 109). Despite all that we know about the medieval hospital, it is still challenging to know what the patient experience was like with any certainty – primary evidence of what the average hospital staff members, visiting physicians and patients did is very limited (Wallis 2010: 348, Horden 2011: 45). In turn, evidence of the experience of the sick child in relation to hospitals is even harder to establish (Pelling 1988: 138). Monastic hospitals were transitional spaces beyond the public realm where patients were

held in a liminal space to heal; here they would receive shelter, bedrest, a balanced diet, water, warmth, cleanliness, and perhaps some monastery grown medicines (Gilchrist 1992: 101; 1995: 32, 37; Huggon 2018: 837; Mahood 2015: 6; McIntosh 2012: 59; Lindemann 2010: 160). Care, then, *was* the predominant medieval medicine (Lindemann 2010: 160). Of course, this would have done many of those suffering from chronic conditions much good and the medieval monastic caretakers are thought to have been effective in their duties (Lindemann 2010: 160). The likelihood is that the vast majority of chronically sick children were cared for at home by their families, rather than being given over to the monastic communities (Lindemann 2010: 241), but the care of children in medieval hospitals is very much an unexplored research topic.

Figure 09.07 – 1500 - Spectacle Case - Ivory - possible physicians glasses case - The Wellcome Trust - M0017197EA

The experience of sickness during childhood would likely have differed significantly according to social status. Wealthy families are likely to have purchased more expensive medicines, special foods and paid medics to attend the household. Children of the peasantry had limited access to such resources (Newton 2014: 98, 174, 223; Orme 2001: 108; Wyman 1984: 23). For chronic child sickness, families could potentially turn to physicians (medicus) (Colson and Ralley 2015: 1102; Demaitre 2013: 78; Gilchrist 1995: 32; Lindemann 2010: 121, 272; Orme 2001: 108; Pearn 2011: 762; Rawcliffe 1988: 62; 1997: 89; 2013: 295; Shahar 1990: 146; Siraisi 1990: 21; Thomas

1971: 10), surgeons (*chirurgiae*) (Chamberland 2011: 557; Colson and Ralley 2015: 1112; Demaitre 2013: 26; Getz 1998: 8; Harkness 2008: 57; Huggon 2018: 837; Kirkup 2006: 1; Lindemann 2010: 131, 267; McLean 1972: 199; Rawcliffe 1997: 62; 2013: 296; Shotwell 2016: 22; Siraisi 1990: 153; Wallis 2010: 361; Wear 2000: 210) and apothecaries (Colson and Ralley 2015: 1111; McLean 1972: 204; Rawcliffe 1997: 149; 2013: 308; Wear 2000: 26). However, physicians and surgeons were often expensive (Gilchrist 1995: 32; Rawcliffe 2013: 300; Thomas 1971: 12; Wear 2000: 21). Poor children might be able to receive remedies from elite women (Newton 2014: 98). Beyond licenced specialists there were 'irregulars' who could be turned to instead, they were likely to have proved more affordable and locatable. These included empirics (both female and male), herbalists, local healers, cunning folk, female healers, etc. (Colson and Ralley 2015: 1117; Harper 2011: 121; Lindemann 2010: 259; Siraisi 1990: 21; Thomas 1971: 14; Wyman 1984: 29). Many of these 'irregulars' cannot be categorised – additionally, there was a blurred line between later medieval and Tudor 'professional' and 'amateur' healers (King 2007: 20; Lindemann 2010: 250; Wyman 1984: 22).

Magic can be defined as ritual practices, that have a practical purpose – such as protection, healing, etc. (Gilchrist 2008a: 119; 2012: 10; 2019: 383; Jones and Oslan 2019: 306; Kieckhefer 2019: 20; Lindemann 2010: 251; Thomas 1971: 761; Wear 2000: 304). Magic can be described as doing *something* pragmatic, to serve a magical end – whether that be good or bad (d'Avary 2019: 52; Gilchrist 2012: 10; Mauss 1972: 88; Thomas 1971: 293). For the most part, 'white magic' was tolerated by the clergy, so long as it did not impinge on Christian practices (Gilchrist 2008a: 119; Lindemann 2010: 258; Rawcliffe 1997: 98). From the early sixteenth century there was a growing assault on these kinds of superstitious practices – despite this, magic seems to have carried on after the Reformation (Lindemann 2010: 252; Thomas 1971: 80). It was possible that a serious sickness in a child could have been caused by witchcraft; however, witchcraft practices were generally believed to occur less during childhood than adulthood (King 1991: 153; Macfarlane 1999: 163, 172; Petry 2011: 49; Thomas 1971: 221; Witmore 2007: 176). Children could be affected by fairies, which were both good and bad spirits, but more commonly considered to be malevolent and they could cause sickness (Thomas 1971: 724-733). While parents might turn to witchcraft to help their sick child, evidence suggests that they often preferred to seek a naturalistic reason before considering a demonic one (Petry 2011: 48). Witchcraft was repressed by authorities more intensely from the fifteenth century and in 1542 it became a statutory offence (Rawcliffe 1997: 178; Ostorero 2019: 502).

Amulets could act as tangible links to supernatural power – potentially protecting, healing, etc. (Gilchrist 2008a: 124; Rawcliffe 2013: 89; Shahar 1990: 47; Spaulding and Welch 1994: 141). There were many publications of lapidaries, although no two lapidaries were the same – of both real and fictive stones with amuletic powers – and lapidaries were inextricably linked to pharmacology as many were intended for medicinal ingestion (Duffin 2013a: 1; 2013b: 20; 2013c: 83; Gilchrist 2008a: 137; Page 2013: 11; Riddle 1970: 44; Young 2016: 7). There are *many* stones mentioned, often cited pearls jet, amber, turquoise, emerald, coral, bloodstone, jasper, beryl, malachite, topaz, lapis lazuli, onyx, quartz, diamonds, rubies, sapphires, pearls, etc. (Duffin 2013c: 83; Young

2016: 23-82). Jet and amber, in particular, were believed to have healing properties – both creating a static reaction when rubbed and emitting smells (Gilchrist 2008a: 139; 2012: 166; 2019: 388; Gilchrist and Sloane 2005: 229). Many stones had specific healing properties and these could differ significantly between lapidaries (Duffin 2013c: 83; Young 2016: 23-82). Textual charms were not just helpful during childbirth, they could be worn by anyone to help promote healing (Gilchrist 2008a: 125; Gilchrist and Sloane 2005: 229; Olsan 2003: 358; Thomas 1971: 211). Powdered fossil remains could also have medicinal properties (Duffin 2013b: 35; Gilchrist 2008a: 136, 145; Liñán et al. 2013: 45). Folded coins (Gilchrist 2019: 390) and pilgrims badges (Archambeau 2017: 209; Gilchrist 2008a: 128) might both have amuletic powers.

As we have seen, care of the chronically ill medieval child was predominately a family issue, but one which would have had significant input from the wider family and neighbourhood network. However, care provision could also proceed further than this, to the community at large, on a broader charitable basis. The majority of the medieval and early modern parents are unlikely to have been able to manage with a chronically ill child for an extended period of time without external material assistance, because the overall costs for looking after a sick child could be significant (Newton 2014: 115). It is very difficult to discuss charitable provision on a national level for this period. Much of the provision available would have varied significantly depending on the local area, both in monastic, almshouse and local authority provisions (Rawcliffe 2013: 349). What was available to one medieval child in the south of England compared to that in the North could have varied significantly and there was also a considerable change in the pattern and scale of charitable provision during this period (Woolgar 2016: 215). However, broadly speaking, medieval society was a founded on the principle of *caritas* (Christian charity) which imbued the culture with values surrounding charitable ethics, which promoted and encouraged financial donations to parish churches and monastic foundations. Feeding those who were unable to feed themselves was one of the seven *acts of mercy* and therefore a core Christian duty for everyone in society (Gilchrist 1995: 9, Wallis 2010: 431, Woolgar 2016: 215). The poor, sick and disabled were essentially a community issue (McKintosh 1988: 214). Carrying out charitable acts would balance favourably in the judgment of the individual upon death, which in turn would shorten the amount of time they would spend in purgatory for their sins (Gilchrist 2012: 190, Sweetinburgh 2004: 14, Rawcliffe 2013: 349). Even after the Reformation, although the concepts of purgatory were lost, charity remained a core principle of Christianity and it was promoted by the newly adopted Protestant theological position (Ryrie 2015).

Charitable care for children was a particularly relevant issue in later medieval and early modern England. Poverty was very much a concern of youth during this period and it has been historically estimated that during the sixteenth and seventeenth centuries in England somewhere between 42 to 53 percent of those in poverty were children, with 25 percent of that total being aged under 10-years-old (Cunningham 2005: 114, Griffiths 2011: 321). Many children in poverty could find themselves entirely dependent on charitable donations and/or parish provisions (Orme 2001: 91, Dyer 2012: 44). Pelling has argued that early modern England held child health as a social value (1988: 141). From an altruistic perspective, children represented significant *potential*

value, in household tasks at a relatively young age, working into labour in later childhood and apprenticeships, or full employment into adulthood (Pelling 1988: 141). Chronically sick children were not only economically a drain to an individual household unit, their loss of potential utility to the community at large held a value (Pelling 1988: 141). This, mixed with the Christian charitable ethics, meant that the majority of medieval people had a motivation to assist in maintaining and assisting the wellbeing of children.

Poverty in England at this time fell into two categories: the deserving and undeserving. Children defaulted to the latter category due to their status as 'impotent' poor, meaning that their poverty, or disability, or illness, or simply their youth, was largely regarded to be not of their volition, which therefore rendered them, through their plight, worthy subjects of charity (Hindle 2011: 302). It should be noted that there were also some levels of anti-charity sentiment by some members of medieval society, but this was not specifically aimed at charitable care for children. This likely indicates that not everyone was necessarily kind and sympathetic to those in need (Orme and Webster 1995: 57, Lindemann 2010: 229). Rising levels of poverty began at the start of the sixteenth century in England and worsened further over the century (Dyer 2012: 42). Prior to the Reformation, provision for poor relief was managed by the church and monastic communities and reliant on charitable donations from the community, with minor state provision. After the break with Rome, the English Parliament took greater proactive measures and established a poor relief system that was enacted by parish authorities (McIntosh 2012: 20, Hanawalt 1986: 111, Dyer 2012: 74). Authorities, both the churchwardens and the Collectors for the Poor, effectively 'means-tested' the individual or family to judge whether their condition merited financial aid, which could have been one-off or regular payments (McIntosh 2012: 296, Beier 1983: 26). This, of course, means that the resulting material provisions that were received would have varied significantly, although chronically sick children are more likely to have been perceived as worthy of receiving assistance (McIntosh 2012: 296). Throughout the sixteenth century, the state passed legislation that made local parishes responsible for providing much needed poor relief provisions, which were increasingly targeted at orphaned, abandoned, illegitimate, injured and impaired children (McIntosh 2012: 245, Korhonen 2014: 30). However, it should also be emphasized that in many parishes the legislative changes were not upheld, and it was found difficult to enforce every parish to act, the result of which meant that many of these provisions were not provided for the majority of the sixteenth century in many areas (McIntosh 2012: 247). In addition, between the Dissolution of the Monasteries and the introduction of effective local provision, there was lag which lasted around 30 to 50 years, in which provision was insufficient (Rushton 2001: 34). This would have exposed the most vulnerable individuals in society to a widespread increase in poverty. It is possible that palaeopathological evidence from England demonstrates that during the Reformation, morbidity in children increased, suggesting that they experienced a period of difficulty (Penny-Mason and Gowland 2014: 183). If this hypothesis is correct, it could also be further hypothesised that this evidence may suggest that the idea that pre-Reformation charitable provision for children in need was largely effective (Penny-Mason and Gowland 2014: 163), or alternatively that charitable provision was poor before the Reformation and then got increasingly worse afterward.

In Christian thought, medical care, charity, and religion have always been tightly interwoven (Lindemann 2010: 229). Through this symbiosis, medieval society inherited theologically conflicting views on disease, disability, children, and charity. When this mixed with wider sociocultural values and a sporadically functioning 'welfare' system it meant that in practice there are likely to have been many different reactions to children in need, the expression of which likely also took on many different forms including kindness and exclusion as well as care given both freely and begrudgingly (Miles 2001: 12). Care, and evidence of it, does not automatically imply accompanying compassion (Roberts 2000, 55, 2017: 102). It is quite likely that many medieval Christians would have undertaken care commitments with reluctance or negativity, but societal constructs and the roles of individuals would have demanded it all the same. Managing such difficult circumstances within the family, the social network and wider community was likely to have been a significant undertaking for all involved (Tilley and Schrenk 2017: 1). Even after such an investment, as disabled children grew up in medieval England they were often to find that their physical impairments increased their chances of encountering social and even legal barriers in life – especially in terms of employment and marriage (Orme 2001: 98, Shahar 1990: 149).

09.13 | future research

The approach utilised in this chapter limited its scope to '*definitive cases*' of care and '*other progressive cases*', in order to introduce a new theory and consider disease in terms of the life course. However, it should be noted for future research that this approach could be further extended to include other pathologies along the spectrum of disease progression. For instance, this theory could be further expanded to include more *potential* evidence which might be reflective of earlier stages of a disease. Incorporating evidence of additional *potential cases* of disease within the long sliding-scale of *definite-to-possible* cases could potentially add much to the theoretical approach presented in this chapter. It could be argued that by extending this approach to allow the inclusion of a greater proportion of *potential cases* would in turn lessen the scientific legitimacy of this method. This introductory chapter purposefully focused upon cases with good evidence of - in this case - tuberculosis, to explore what can be theorised from the *definitive* material. However, this does somewhat limit the full potential of this theoretical approach, thereby overlooking a wealth of valuable potential material which could shed important light upon temporal disease progression. To explore the full potential of the spectrum of disease, broadening this approach out to include these earlier stages could be a potential avenue of future research. Additionally, as long as these pieces of evidence are clearly designated as *potential evidence* from earlier stages of the disease progression, and therefore not diagnosed pathologies, such a study should not be undermined empirically. Presenting multiple potential cases of disease progression collectively may be able to provide new evidence of pathology in the past.

09.14 | some conclusions

Although the historical evidence suggests that it would have been very materially expensive to supply health-related provisions care for a chronically sick child during this period, it can also be evidenced that the experience of being a sick child was also not entirely a negative one. For a child, it could be a mixed experience, one which

may often have been disempowering, agonizing and monotonous – but could at the same time could also often be an experience filled with attention, love, kinship, and agency (Newton 2014:188). Being a chronically sick child was an eclectic experience then; one that required a tessellation of 'spiritual, social, and medical elements' (Newton 2014:120). Progressive morbidities would have meant that conditions were mediated between the child, the family carers, the church, and the parish – and this quadripartite relationship would have been "continually renegotiated" in order for it to have been sustainable (Gowland 2017:248). If multiple definitive cases of care cannot inform us about *proportional* aspects of care in the past, which in turn means this evidence can do little to challenge or support historical evidence, they do still serve to act as totemic evidence of care – the skeletons are the very embodiment of the *likely* care that was invested in them – and this is a powerful expression of agency (Gilchrist 2012:155; Tilley 2015:5, 128).

- The approach in this chapter allows for a new theory for considering diseases as a *lived* experience of morbidity and health-related care in the past.
- This research emphasizes the value of immersing the evidence for health-related care within historical context if the period of study permits, as this can help support or contradict the evidence.
- The results of the analysis of the evidence of progressive infectious diseases – tuberculosis, leprosy and treponematosis – in non-adults suggests that while tuberculosis was very much a childhood experience for many children who were nurtured through the disease throughout the life course, that perhaps syphilis and leprosy were a less prominent experience of later medieval and early modern childhood in England.

10

CHAPTER 10 | conclusion

10.01 | some conclusions

This research has developed a database consisting of data from non-adult bioarchaeological and funerary archaeology evidence for later medieval and Tudor England (BD*f*ME v4.5). The database includes 3,466 later medieval (AD 1200-1600) skeletons under the age of 25-years-old from 146 sites and 753 skeletons from 41 Tudor (AD 1400-1650) from sites across England.

The resulting data gathered were analysed using a transdisciplinary approach, in order to better understand the embodied life courses of children during the periods of investigation. A life course perspective was vital for understanding the *lived experience* of children in the past. The patterning of skeletal lesions indicative of morbidity over the life course was interpreted based on the social age categories of infanthood, childhood, youthhood and adulthood derived from the historical evidence.

However, this research was restricted by both material and theoretical limitations. Despite efforts to improve the dating of the cemeteries utilised in this study, it remains restricted in its temporal resolution. The resulting dataset is biased by an overabundance of pre-Reformation data, while 'Tudor' post-medieval data is underrepresented (much of which still currently resides within later post-medieval datasets). The dataset is also comprised of data from 75% of monastic cemeteries, though only 10% of the contemporary population would have been buried in these sorts of cemeteries. The database is also represented by data from around 25% of burial grounds derived from urban environments, when approximately 95% of the population was living in rural areas. Collectively, these issues will mean that the expressions of morbidity will be skewed towards urban, London and monastic bodies – this biases the view of the 'average' later medieval and Tudor bodies explored in this study.

There is also a residual inherent bias within the dataset due to it comprising of data sourced from a variety of different sources. Therefore, despite this study posing standards upon the data included in it, the quality of the data remains reliant upon the interpretations of secondary sources. Despite the existence of bioarchaeological recording standards, a composite dataset can still be problematic when different datasets are being directly compared to each other. An attempt to mediate some of this bias was undertaken in the adoption of the choice of pathological conditions to assess the life course – PNBF and fractures – which are two of the more easily and consistently identifiable morbidities. However, the resulting data will ultimately underestimate the precise proportion of morbidities within the population. Therefore, only inexact proportions are represented in the dataset.

Figure 10.01 – 1588 - The Family of Edwin Sandys - Effigy - Stone - Southwell Minster, England - North Transept - Authors Own

In order to allow for the inclusion of as much data as possible, this study utilised crude prevalence data (absence vs presence by skeleton) instead of true prevalence data (absence vs presence by skeletal element). Therefore, the resulting crude prevalence data will underrepresent the occurrence of morbidity when compared to the more accurate incidence provided by that of true prevalence.

Any bioarchaeological data set is also affected by factors of taphonomy from the archaeological record which causes inherent and random bias (due to factors such as partial excavation, partial preservation, damage, etc.) and is ultimately unlikely to directly reflect the entire dead population. A further complication of bioarchaeological studies relate to the so-called *Osteological Paradox* (Wood et al. 1992). Even if it had been possible during this study to source a complete, bias-free, skeletal sample, it is not directly evident whether or not a dead population has any relevance to a living population from which they originally derived – skeletons represent individuals who largely suffered morbidities when they were closer to death and therefore collections of skeletons may not be able to act as a proxy of the living population.

Historical evidence utilised in this study regarding medieval childhood is also inherently biased towards the children of the upper classes (the middling-classes, gentry and peerage). The documentary evidence is significantly biased towards children from families who had the material wealth to leave traces in the historical record which is often muted regarding children in the past. Bioarchaeological evidence of children will invariably include evidence of lower status children, however, differentiating between upper- and lower-status individuals in later medieval cemeteries is a difficult practice. Although there are some clear ways to define social divisions (such as internal vs external placement) the bioarchaeological and historical evidence is an understudied topic, one which is highly complex, as well as being regionally specific.

Despite these difficulties, this study was still able to explore the extended life course of later medieval and Tudor children and add evidence through the utility of morbidity data to investigate patterns of the life course. In reference to the theory of the extended life course, infanthood began before birth, at the period of conception.

The period of life between in utero ensoulment and post-birth baptism represented the most liminal period of the entire life course, from which one could not be emancipated from until baptism. Infant mortality was high. The experience of infancy was essentially mediated by the family unit (who would govern factors of swaddling, feeding, sleeping arrangements, etc.). The seventh month was viewed as significant within the life course, likely in reflection of the important episodes of weaning, teething and speaking. Palaeopathological evidence from infants is known to be rare and this was a feature of this study; the only definitive evidence of morbidity was evident in a few factures which are indicative of either accidental trauma or possibly abuse. Burial practices were largely uniform; the variation that was observed reflected a greater degree of difference in premature and newborn infants when compared to older infants.

Aspects of childhood could extend into youthhood and even adulthood, but *broadly* speaking ranged from infancy to youth (in this study it was defined as approximately 2-12-years-old). Rates of mortality continued to be high during childhood but decreased with each year as expected. Childhood represented a period of increasing independence in terms of the total dependency of infanthood. Additionally, it was a period through which children learned and developed their own forms of agency. However, it was still a period of semi-dependency, and therefore, quasi-agency. The experience of childhood would have continued to have been mediated by the family unit during this stage of the life course. It was noted that, that evidence of morbidity during childhood was potentially a period of *relative* buffering by the familial unit. The morbidity data also revealed what appeared to be early significant gendered splits between roles within the family economy, clothing and employment opportunities; these factors appear to become pronounced with increasing age, clothing and employment opportunities – however there was likely to have been a marked difference in the experience of gender according to social status. The seventh year was conceptualised by medieval and Tudor people as a turning point in the life course. It was the age that could see the start of oblation, confirmation formal education, apprenticeship, marriage contracting, life cycle service, etc. However, the morbidity and funerary archaeological evidence collectively suggests that this was perhaps not the lived reality of this period. The collective patterns of funerary archaeology evidence suggest that burial practices largely revealed similarities between 3-11-year-olds.

Youthhood was a flexible period within the life course which started approximately around puberty and extended far into adulthood. Puberty was a slow process, the timing of which was delayed in comparison to modern patterns. Youthhood was a part of the life course. This period of youthhood was perceived by medieval and tudor authors as a period of liminality and danger within the life course. Between 12-16-years-old, morbidity evidence suggests that there was a transition in patterns of behaviour from those of childhood. This suggests that youthhood was a distinct period within the life course. It was also a period in which gendered roles became more demarcated. In particular, the materiality of gender expression was emphasised more prominently through clothing and hair. The majority of girls are likely to have remained within the familial household and were probably approximating the contributions made by their mothers to the family economy. Boys are likely to have undertaken more formal employment external to the familial household; predominately in labouring roles. A

small percentage of both girls and boys might have undertaken apprenticeships. Funerary evidence suggest that burial practices were similar to those seen in 8-11-year-olds.

Figure 10.02 – 1559 - Sir Nicholas Pelham and Ann Sackville - Effigy - Stone - St Michaels - Lewes, England - Authors Own

The 'attainment' of adulthood was variable and depended on the incremental acquisition of sociocultural factors – such gender, age, social status, ancestry, etc. It is possible that only some individuals experienced the full aspects of adulthood during 17-25-years-old and instead many are likely to only have done so during sometime between 26-35-years-old.

The 'Judith problem' emphasised the outstanding evidential bias in favour of boys over girls in the past. There is still a lot of scholarship to be undertaken before there is equality between the views of later medieval and Tudor girls and boys. This study has been unable to gather new data on girls during childhood, although has been able to represent data for girls during youthhood.

The exploration of scale suggests that the experiences of children and childhood differed according to scales of temporality, regionalism, social status and urbanism. The differences in patterns of morbidity between the later medieval and Tudor periods suggest that there was variation in the experience of the life course. The evidence from this thesis suggests that there were similar regional patterns in childhood behaviours during early childhood, with more marked variation between different locations during later childhood and youthhood; with London proving to be particularly distinct in comparison to the rest of the country. Inferring social status from internal/external burial placement might be a way to measure differences in morbidities between social groups. The results show a marked increase in morbidities in the externally buried lower class children, although more data representation is required before concluding this pattern. The urban environment was consistently found to provide greater levels of morbidity in children. Additionally, different types of urbanism appear to produce different types of morbidity. Urban environments appear to provoke a greater degree of gender similarities than in the rural environment.

Figure 10.03 – 1574 - The Family of Sir Robert and Alice Oxenbridge - Effigy - Stone - St Andrew's Church, Hurstborne Priors - Authors Own

In the morbidity and funerary evidence there were aspects of continuity and examples of differences between later medieval and Tudor children. There appears to be an overall continuity of burial practices, although they appear to become marginally more uniform after the Reformation. Rates of fractures are higher amongst the Tudor children than the later medieval children; however, Tudor children have an overall lower PNBF rate than later medieval children. In sum, the collective evidence does suggest that Tudor childhood was different to later medieval childhood, but this cannot be entirely concluded based on the Tudor dataset alone. For instance, it is unfortunately too underrepresented too be certain that this pattern is not instead reflective of the London bias within the Tudor dataset. But the evidence does hint at Tudor childhood being distinct from later medieval childhood.

War was a semi-constant medieval reality that is likely to have affected the lives of most people, including children and youths. A theoretical interpretation of skeletal signs of violent trauma suggest that evidence of fractures in the life course indicates that youths participated in warfare activities from the age of 14-17-years-old. However, the evidence suggests that these children were participating in war activities on a lesser extent than adults (26+years-old). Children younger than this might have been permitted into dangerous war contexts, but perhaps to facilitate ancillary functions rather than participating in direct fighting roles. There is no documentary or contextual evidence of children below the age of 10-years-old participating in warfare, nor

bioarchaeological evidence of violent trauma that might suggest so either. Both women and girls appear to have been restricted from war contexts.

The approach of *composite life course analysis* revealed evidence that progressive infectious diseases were a significant childhood experience and that many children were nurtured through progressive diseases throughout their life course's. The results of the analysis of the evidence of progressive tuberculosis, leprosy and treponematosis in non-adults suggests that while tuberculosis was very much a childhood experience, that perhaps syphilis and leprosy were a less prominent experience of later medieval and early modern childhood in England.

10.02 | further work

This research required the collection and amalgamation of data from a large proportion of commercially produced 'grey literature' reports. Therefore, it is possible to comment upon the quality of these reports in terms of facilitating future grey literature material to better aid prospective bioarchaeological research. However, it should be initially acknowledged that it is only the secondary purpose of a grey literature report, to be organised in terms of the use of potential researchers (Penny-Mason 2017: 73). Instead, the primary function of a grey literature report is to discharge the planning conditions of the developer and to outline the archaeological findings to the commercial client. Therefore, researchers looking to utilise grey literature reports need to be prepared to engage with material which was not primarily intended to enable their research projects. However, this research has highlighted some of the more commonly occurring difficulties with grey literature reports, which with some minor adjustments could significantly improve the utility of the data for future bioarchaeological researchers. First, grey literature reports should always provide within the appendix a full catalogue of skeletal material analysed and discussed within the report, with basic information such as context number, age, sex, height, pathological summary, etc. Meeting this single basic requirement would improve grey literature reports immensely, particularly in terms of bioarchaeological material, as without this information it is often impossible to utilise the valuable data contained within the report. Second, reports need to improve upon providing links between different contextual forms of information contained within the report. For instance, it needs to be possible to link specialist evidence to particular skeletons, therefore, the context numbers between the two forms of evidence need to be associated somewhere within the report, which is often not the case. This could be improved by better analytical editing, but also by perhaps providing lists of context numbers and associated numbers from other specialisms (e.g. context number, skeleton number, finds number, environmental sample number, etc.). Third, lacking a site matrix greatly diminishes the research potential of bioarchaeological sites and a site matrix should always be implemented in a grey literature report appendix (Penny-Mason 2017: 75, 83). Forth, greater standardisation in reporting would improve bioarchaeological data collection greatly (Penny-Mason 2017: 78). Finally, a grey literature report is never going to be able to present itself to facilitate all the varieties of researcher who wishes to utilise its contents; although digital dataset sharing practices are

increasing, this is still not currently regular practice. Therefore, including within the grey literature report an appendix of the full skeletal catalogue (a skeleton by skeleton summary and associated numbers) is by far the best method to ensure bioarchaeology researchers can utilise the report data in whatever means they wish.

The research framework utilised in this study – examining patterns in bioarchaeological morbidity evidence in direct relation to the life course – is a theoretical approach which could be applied to children in other periods and other geographies. In addition, this approach could also be extended to later stages of the life course to explore later medieval and Tudor views of adulthood, old age, death, memorialisation and social memory in England. In addition, gathering evidence of the morbidities of girls during infancy, childhood and youthhood would aid our understanding of the experience of girls in the past; the view of which is currently overshadowed by the evidence for boys. Studies utilising new bioarchaeological sexing techniques could potentially help to evidence more clearly the experience of girls in the past. In addition, far more work needs to be undertaken in terms of life course morbidity and factors of scale. In particular, more diseases and more nuanced detail need to be added to this analysis (e.g. morbidity by limb or specific bone). Osteobiographical and case study focused works can be undertaken on individual skeletons to demonstrate more nuance and detail in life course histories. Additionally, *composite life course analysis* can be applied to further diseases (e.g. hip dysplasia, osteomyelitis and many congenital conditions). Although this study has provided a significant bank of data to represent the life course of the medieval child, more Tudor data is required in order to fully evidence the Tudor life course, which could potentially be achieved through *retrospective Harris Matrix reconstruction* (Penny-Mason 2017) and data from new sites. Also, more transdisciplinary works are needed to fully evidence the lives of children in the past. Finally, the adoption of theory on a more significant scale within medieval studies would benefit this subject enormously.

11

bibliography

11.01 | word count

introduction	17,496
materials + methods	10,001
life course – infanthood	19,469
life course – childhood	11,205
life course – youthhood	6,021
life course – adulthood	8,200
life course – scale	5,572
wars of the chyldren	5,321
care of the chyldren	12,173
conclusion	2,385
total	***97,843***

Figure 11.1 – 2010 - Maurice Mbikayi - Antisocial Network

11.02 | bibliography

AGARWAL S. C. & B. A. GLENCROSS (2011) Building a Social Bioarchaeology, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology*. Chichester: Wiley-Blackwell. 1-12.

ALLEN, M. L. (2017) Cognitive development beyond infancy, in B. Hopkins, E. Geangu & S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. Second Edition. 288-296.

ALQAHTANI, S. J., M. P. HECTOR & H. M. LIVERSIDGE (2010) The London Atlas of Human Tooth Development and Eruption. *American Journal of Physical Anthropology*. 142: 481-490.

AMBRIDGE, B. (2017) *Language acquisition*, in B. Hopkins, E. Geangu & S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. 375-384. Second Edition.

ANDERSON, S. (1991) The Human Skeletons, in D. Allen & S. Anderson (eds) *Excavations Beneath the Great Yew, St Mary's Churchyard, Selborne.* Proceedings of the Hampshire Field Club and Archaeological Society. 47: 149-152.

ANDERSON, S. (1994) *The Human Remains from Gisborough Priory, Cleveland 1985-86.* English Heritage. Ancient Monuments Laboratory. 47/94. Unpublished Report.

ANDERSON, S. (1997) Human Skeletal Remains, in J. Caruth & S. Anderson (eds) *St. Saviours Hospital, Bury St. Edmunds (BSE 013): A report on the Excavations 1989-1994*. Suffolk: Suffolk County Council Archaeological Service. Unpublished Report. 97/20.

ANDERSON, S. (1997) Human Skeletal Remains, in J. Caruth and S. Anderson (eds) *St. Saviours Hospital, Bury St. Edmunds (BSE 013): A report on the Excavations 1989-1994*. Suffolk: Suffolk County Council Archaeological Service. Unpublished Report. 97/20.

ANDERSON, S. (2009a) Human Bone, in E. S. Popescu (ed) *Norwich Castle: Excavations and Historical Survey, 1987-98, Part II: c.1345 to Modern*. Norfolk: East Anglian Archaeology. 132: 898-900.

ANDERSON, S. (2009b) The Human Skeletal Remains, in H. Wallis (ed) *A Medieval Cemetery at Mill Lane, Ormesby, St Margaret, Norfolk.* East Anglian Archaeology Report. 130: 11-27.

ANDERSON, S. & D. A. BIRKETT (1988) *The Human Remains from Jarrow Monastic Site, Tyne & Wear. 1963-1978.* Ancient Monuments Laboratory. 15/88. Unpublished Report.

ANDERSON, T. (1990) The Human Bones, in A. Ward & T. Anderson (eds) Excavations at Rochester Cathedral. *Archaeologia Cantiana*. 108: 97-136.

ANDERSON, T. (2010) The Human Skeletal Material, in I. Sodden (ed) *Life and Death on a Norwich Backstreet, AD 900-1600: Excavations in St Faith's Lane.* East Anglian Archaeology. 133: 23-25.

ANDERSON, T. & J. ANDREWS (2001) The Human Remains, in M. Hicks & A. Hicks (eds) *St Gregory's Priory, Northgate, Canterbury: Excavations 1988-1991*. Canterbury Archaeological Trust. (2): 338-370.

ANNETTE GROVE, M. A. & D. F. LANCY (2018) Cultural Models of Stages in the Life Course, in S. Crawford, D. M. Hadley & G. Shepherd (eds) *The Oxford Handbook of the Archaeology of Childhood.* Oxford: Oxford University Press. 90-103.

ARCHAMBAULT, P. (1966) The ages of man and the ages of the world. A study of two traditions. *Revue d'Etudes Augustiniennes et Patristiques*. 12(3-4): 193-228.

ARCHAMBEAU, N. (2017) Miracle Mediators as Healing Practitioners: The Knowledge and Practice of Healing with Relics. *Social History of Medicine*. 31(2): 209–230.

ARIÈS, P. (1962) *Centuries of Childhood: A Social History of Family Life*. New York: Alfred A. Knopf. Translated by Robert Baldick.

ARIÈS, P. (1981) *The Hour of Our Death.* London: Allen Lane.

ARIKHA, N. (2007) *Passions and Tempers: A History of the Humours.* New York: Harper Prennial.

ATKINS, R. & E. POPESCU (2010) Excavations at the Hospital of St Mary Magdalen, Partney, Lincolnshire, 2003. *Medieval Archaeology.* 54(1): 204-270.

AUDOUY, M. (1981) Excavations at All Saints Church, Earl Barton, Northants 1979-80. *Northamptonshire Archaeology*. 16: 75-6.

AUGENTI, A. & R. GILCHRIST (2011) Life, Death and Memory, in M. Carver & J. Klapste (eds) *The Archaeology of Medieval Europe, vol. 2, Twelfth to Sixteenth Centuries*. Denmark: Narayana Press. 494-515.

BADHAM, S. (2015) *Seeking Salvation: commemorating the dead in the late-medieval English parish*. Donnington: Shaun Tyas.

BAILEY, M. (1996) Demographic Decline in Late Medieval England: Some Thoughts on Recent Research*. Economic History Review.* 49(1): 1-19.

BAILEY, M. L. (2012) *Socialising the Child in Late Medieval England c. 1400-1600.* York: York Medieval Press.

BAILEY, M. L. (2013) Hornbooks. *The Journal of the History of Childhood and Youth*. 6(1): 3-14.

BAKER, D. (1971) Excavations at Elstow Abbey. *Bedfordshire Archaeological Journal*. 6: 55-64.

BALL, H. L. (2002) Reasons to bed-share: why parents sleep with their infants. *Journal of Reproductive and Infant Psychology.* 20(4): 207-221.

BALL, H. L. (2003) Breastfeeding, bed-sharing, and infant sleep. *Birth*. 30(3): 181-188.

BALL, H. L. (2006) Parent-infant bed-sharing behavior: effects of feeding type, and presence of father. *Human Nature: an interdisciplinary biosocial perspective.* 17(3): 301-318.

BARKER, D. J. P. (2007) The origins of the developmental origins theory. *Journal of Internal Medicine*. 261: 412-417.

BARKER, D. J. P. (2012) Developmental origins of chronic disease. *Public Health*. 126: 185-189.

BARRON, C. M. (2007) The Child in Medieval London: the Legal Evidence, in J. T. Rosenthal (ed) *Essays on Medieval Childhood. Reponses to Recent Debates*. Donington: Shaun Tyas. 40-53.

BARTOLI, A. P. (2017) Socialization, in B. Hopkins, E. Geangu & S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development*. Cambridge: Cambridge University Press. 492-497. Second Edition.

BAXTER, J. E. (2005) *The Archaeology of Childhood*. California: AltaMira Press.

BAXTER, J. E. (2008) The Archaeology of Childhood. *Annual Review of Anthropology*. 37: 159-175.

BAXTER, J. E. (2015) The Devil's Advocate or Our Worst Case Scenario, in G. Coşkunsu and P. Biehl (eds) *Children as Archaeological Enigma*. New York: State University of New York Press. 19-35.

BAXTER, J. E., S. VEY, E. H. MCGUIRE, S. CONWAY & D. E. BLOM (2017) Reflections on Interdisciplinarity in the Study of Childhood in the Past. *Childhood in the Past*.

BAYLEY, J. (1975) *Chelmsford Dominican Priory*. English Heritage Ancient Monumetns Laboratory Report. 1890.

BAYLEY, J. (1977) *Six Skeletons from St. Augustine's Abbey, Canterbury.* English Heritage. Ancient Monuments Laboratory. 2175. Unpublished Report.

BAYLEY, J. (1979a) *Skeletons found in the Chapter House at Battle Abbey*. English Heritage. Ancient Monuments Laboratory. 2907. Unpublished Report.

BAYLEY, J. (1979b) The Human Bones, in G. H. Smith (ed) The Excavation of the Hospital of St Mary of Ospringe, Commonly Called Maison Dieu. *Archaeologia Cantiana*. 95: 183-184.

BAYLEY, J. (1979c) *St. Augustine's: Human bone. English Heritage*. Ancient Monuments Laboratory. 2901. Unpublished Report.

BAYLEY, J. (1979d) *The Skeletons Found at Kirkham Priory, Yorkshire. Ancient Monuments Laboratory*. English Heritage. 2797.

BAYLEY, J. (1981) *Doncster, West Street - Human bone report.* English Heritage. Ancient Monuments Laboratory. Unpublished Report.

BAYLISS, A. (2009) Rolling Out Revolution: Using Radiocarbon Dating in Archaeology. *Radiocarbon*. 51: 123–47.

BEAR, R. S. (1882) *The Complete Works in Verse and Prose of Edmund Spenser*. London: Grosart.

BEIER, A. L. (1983) *The Problem of the Poor in Tudor and Early Stuart England*. London: Methuen & Co.

BEKVALAC, J. (2016) Direct Digital Radiographic Imaging of Archaeological Skeletal Assemblages: An Advantageous Technique and the Use of the Images as a Research Resource, in M. Mant & A. Holland (eds) *Beyond the Bones: Engaging with Disparate Datasets*. London Academic Press: 23-36.

BEKVALAC, J. & T. KAUSMALLY (2011) The human bone, in I. Grainger & C. Phillpotts (eds) *The Cistercian abbey of St Mary Graces, East Smithfield, London. London: Museum of London Archaeology Service Monograph*. 166-187.

BEKVALAC, J., COWAL, L., KAUSMALLY, T. & MIKULSKI, R. (2007a). *56-66 Carter Lane, 1-3 Pilgrim Street, 25-33 Ludgate Hill, EC4.* Museum of London Archaeology Service. [Available online] http://www.museumoflondon.org.uk/Collections-Research/LAARC/Centre-for-Human-Bioarchaeology/Database/Medieval+cemeteries/CarterLane.htm (Accessed Thursday 21st June 2012).

BELLO, S. M., THOMANN, A., SIGNOLI, M., DUTOUR, O. & ANDREWS, P. (2006) Age and Sex Bias in the Reconstruction of Past Population Structures. *American Journal of Physical Anthropology*. 120: 24-38.

BELLOS, A. (2014) *Alex Through the Looking-Glass: How Life Reflects Numbers and Numbers Reflect Life.* Bloomsbury Publishing.

BEN-AMOS, I. K. (1994) *Adolescence & Youth in Early Modern England.* Great Britain: St Edmunsbury Press.

BENDERSKY, M. & M. W. SULLIVAN (2002) Basic methods in infant research in, A. Slater & M. Lewis (eds) *Introduction to Infant Development*. Oxford: Oxford University Press. 16-36.

BENNETT, P. & T. ANDERSON (1991) St Nicolas Church, Thanington. *Archaeologia Cantiana*. 109: 308-311.

BERQUIST, J. L. (2009) Childhood and Age in the Bible. *Pastoral Psychology*. 58: 521–530.

BERRY, B. M. (1974) The First English Pediatricians and Tudor Attitudes Toward Childhood. *Journal of the History of Ideas*. 35(4): 561-577.

BIRKETT, D. A. (1986) The Human Burials, in R. Daniels (ed) The Excavation of the Church of the Franciscans, Hartlepool, Cleveland. *The Archaeological Journal*. 143: 291-299.

BIRKETT, D. A. (2002) *Report on the Skeletal Remains from the Cemetery of St. Edmind de Poutenay, Ipswich, in 15-17 Lower Brook Street.* Ipwich Archive Site Summary. Accession No: IPSMG:R.2009.41

BISHOP, M. W. (1983) Burials from the Cemetery of the Hospital of St. Leonard, Newark, Nottinghamshire. *Transactions of the Thoroton Society of Nottinghamshire*. 87: 23-35.

BLACK, R. E., L. H. ALLEN, Z. A. BHUTTA, L. E. CAULFIELD, M. DE ONIS, M. EZZATI, C. MATHERS & J. RIVERA (2008) Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet*. 5-22.

BLACK, R. E., S. COUSENS, H. L. JOHNSON, J. E. LAWN, I. RUDAN, D. G. BASSANI, P. JHA, H. CAMPBELL, C. F. WALKER, R. CIBULSKIS, T. EISELE, L. LIU, C. & C. MATHERS (2010) Global, regional, and national causes of child mortality in 2008: a systematic analysis. *The Lancet*. 1-25.

BLACK, R. E., S. S. MORRIS & J. BRYCE (2003) Where and why are 10 million children dying every year? *The Lancet*. 361: 2226-2234.

BLANCHARD, B. (1978) Labour Productivity and Work Psychology in the English Mining Industry, 1400-1600. The *Economic History Revie*w. 31(1): 1-24.

BODDINGTON, A. (1996) *Raunds Furnells: The Anglo-Saxon Church and Churchyard*. London: English Heritage.

BOGHI, F. (2007) The Human Skeletal Remains, in S. Benfield & H. Brooks (eds) *Crouched Friars: The Medieval Church Structure and its Associated Cemetery. 38-40 Crouch Street, Colchester: January-April 2007*. Colchester Archaeological Trust. 33-42.

BOGHI, F. & A. BOYLSTON (1997) *The medieval cemetery of Pennell Street, Lincoln, Lincolnshire. Report on the human skeletal remains.* Bradford: Calvin Wells Laboratory. Unpublished Report.

BOLL, F. (1950) Die Lebensalter, Ein Beitrag zur antiken Ethologie und zur Geschichte der Zahlen, *Kleine Schriften Zur Sternkunde Des Altertums*. Leipzig: Koehler & Amelang. 156–224.

BOLTON, J. L. (1980) *The Medieval English Economy, 1150-1500.* Guildford: Billing & Sons Ltd.

BOND, J. (2018) The Medieval Monastery and its Landscape, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain.* Oxford: University of Oxford. 565-580.

BORIĆ, D. & J. ROBB (2008) Body theory in archaeology, in D. Borić & J. Robb (eds) *Past Bodies: Body-Centred Research in Archaeology*. Oxford: Oxbow Books. 1-8.

BOSTON, C. (2007) The Human Bones, in K. Brady, A. Smith & G. Laws (eds) Excavations at Abingdon West Central Redevelopment: Iron Age, Roman, Medieval, and Post-medieval Activity in Abingdon. *Oxoniensia*. 72: 130-132.

BOSWELL, J. E. (1984) Expositio and Oblatio: The Abandonment of Children and the Ancient and Medieval Family. *The American Historical Review*. 89 (1): 10-33.

BOULTON, J. (2017) The 'Meaner Sort': Labouring People and the Poor, in K. Wrightson (ed) *A Social History of England 1500-1750*. Cambridge: Cambridge University Press. 310-329.

BOURDIEU, P. (1977) *Outline of a Theory of Practice.* Cambridge: Cambridge University Press.

BOWDEN, C. (1996) Parental attitudes towards the education of girls in late sixteenth and early seventeenth-century England. *Paedagogica Historica*. 32(1): 105-124.

BOWERS, R. (1999) *Thomas Phaer and The Boke of Chyldren (1544).* Arizona: Arizona Centre for Medieval and Renaissance Studies, Tempe.

BOYLE, A. (2003) The Human Skeletal Assemblage, in A. Hardy, A. Dodd & D. Keevill (eds) *Ælfric's Abbey, Excavations at Eynsham Abbey, Oxfordshire, 1989-92.* Oxford: Oxford Archaeological Unit. 433-437.

BOYLSTON, A., M. HOLST & J. COUGHLAN (2000) Physical anthropology, in V. Fiorato, A. Boylston & C. Knüsel (eds) *Blood Red Roses; the Archaeology of a Mass Grave from the Battle of Towton AD1461*. Oxford: Oxbow. 45-59.

BOYLSTON, A. & C. ROBERTS (1995) *Lincoln Excavations 1972-87: Report on the Human Skeletal Remains*. Ancient Monuments Laboratory Report. 13/97.

BOYLSTON, A. & D. WESTON (2002) The human bone, in R. Heawood (ed) Excavations at Warrington Friary 2000. *Journal of the Chester Archaeological Society.* 77: 173-177.

BOYLSTON, A., J. COUGHLAN & C. ROBERTS (1998) *Report on the Analysis of the Human Skeletal Remains from Chevington Chapel, Northumberland.* Bradford: Calvin Wells Laboratory. Unpublished Report.

BREMNER, A. J. (2017) Multisensory development, B. Hopkins, E. Geangu & S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. Second Edition. 330-338.

BRICKLEY, M. (2006) Rib Fractures in the Archaeological Record: A Useful Source of Sociocultural Information? *International Journal of Osteoarchaeology*. 16: 61–75.

BRICKLEY, M. & R. IVES (2008) *The Bioarchaeology of Metabolic Bone Dise*ase. Oxford: Elsevier.

BRICKLEY, M. & S. MAYS (2019) Metabolic Disease, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains*. London: Elsevier. 531-565.

BRICKLEY, M., S. MAYS, M. GEORGE & T. L. PROWSE (2018) Analysis of patterning in the occurrence of skeletal lesions used as indicators of vitamin D deficiency in subadult and adult skeletal remains. *International Journal of Paleopathology*. 23: 43–53.

BRIGDEN (1982) Youth and the English Reformation. *Past & Present*. 95: 37-67.

BROEKMAN, B. F. P. (2017) Resilience and vulnerability, B. Hopkins, E. Geangu and S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. Second Edition. 597-604.

BROOKS S. T. & J. M. SUCHEY (1990) Skeletal age determination based on the os pubis: a comparison of the Acsádi-Nemeskéri and Suchey-Brooks methods. *Human Evolution*. 5: 227-238.

BROTHWELL, D. R. (1971) Medieval Human Remains from the Coventry Cathedral Site (1967), in B. Hobley (ed) Excavations at the Cathedral and Benedictine Priory of St. Mary, Coventry. *Birmingham and Warwickshire Archaeological Society Transactions*. 84: 130-139.

BROTHWELL, D. R. (1981) *Digging Up Bones*. New York: Cornell University Press. Third Edition.

BROTHWELL, D. R. & S. BROWNE (1994) Pathology, in J. M. Lilley, G. Stroud, D. R. Brothwell & M. H. Williamson (eds) *The Jewish Burial Ground at Jewbury. The Archaeology of York*. 12 (3): 457-494.

BROWN, F. & C. HOWARD-DAVIS (2008) *Norton Priory: Monastery to Museum. Excavations 1970-87.* Lancaster: Oxford Archaeology North.

BROWN, F. & M. PATTE (2013) *Rethinking Children's Play*. London: Bloomsbury.

BROWNE, S. (1996) Human Burials, in M. Gardiner, M. Russell & D. Gregory (eds) Excavations at Lewes Friary 1985-6 and 1988-9. *Sussex Archaeological Collection*. 143: 117-121.

BROWNE, S. (2005) Human Bones, W. D. Klemperer & N. Boothroyd (eds) *Excavations at Hulton Abbey, Staffordshire, 1987-1994.* The Society for Medieval Archaeology Monograph. 21: 115-134.

BROWNE, S. (2010) The Human Bone, in L. Barber & L. Sibun (eds) The Medieval Hospital of St Nicholas, Lewes, East Sussex. *Sussex Archaeological Collections* .148: 22-37.

BUCHOLTZ, M. (2002) Youth and Cultural Practice. *Annual Review of Anthropology*. 31: 525-552.

BUCK, A. (1996) *Clothes and the Child. A Handbook of Children's Dress in England 1500-1900*. Bedford: Ruth Bean.

BUCKBERRY, J. (2018) Techniques for Identifying the Age and Sex of Children at Death, in S. Crawford, D. M. Hadley and G. Shepherd (eds) *The Oxford Handbook of the Archaeology of Childhood*. Oxford: Oxford University Press. 55-70.

BUIKSTRA, J. E. (2019) A Brief History and 21st Century Challenges, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remain*s. London: Elsevier. 11-19.

BUIKSTRA, J. E. & C. ROBERTS (2012) *The Global History of Paleopathology: Pioneers and Prospects*. Oxford: Oxford University Press.

BUIKSTRA, J. E. & D. H. UBELAKER (1994) *Standards for data collection from human skeletal remains*. Arkansas Archaeological Survey Research Series. 44.

BUIKSTRA, J. E., A. BAADSGAARD & A. T. BOUTIN (2009) Introdution. In A. Baadsgaard, A. T. Boutin & J. E. Buikstra (Eds.), *Breathing new life into the evidence of death: contemporary approaches to bioarchaeology*. Sante Fe: SAR Press. 3-28.

BURRELL, C. L. AND E. R. DOVE (2015) Post-Excavation Analysis of the Human Skeletal Remains Recovered from Halton Castle: July 2015, in S. Cattell (ed) *Community Archaeological Excavation, Halton Castle, Runcorn.* Salford: University of Salford. 72-125. Unpublished Report.

BURT, N. M. (2013) Stable Isotope Ratio Analysis of Breastfeeding and Weaning Practices of Children From Medieval Fishergate House York, UK. *American Journal of Physical Anthropology*. 152: 407-416.

BUSH, H. (1991) Concepts of health and stress, in H. Bush & M. Zvelebil (eds) Health in Past Societies: Biocultural interpretations of human skeletal remains in archaeological contexts. *BAR International Series*. 567. 11-19.

BUTLER, S. M. (2007) A Case of Indifference? Child Murder in Later Medieval England. *Journal of Women's History*. 19(4): 59–82.

BUZON, M. R. (2012) The Bioarchaeological Approach to Paleopathology, in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 58-75.

BYRNE, M. S. C. & B. BOLAND (1983) *The Lisle Letters: An Abridgement*. London: Martin Secker & Warburg Limited.

CAFFELL, A. & M. HOLST (2006) *Osteological Anlaysis, Whitefriars, Norwich*. York Osteoarchaeology. 0806.

CAMERON, A. (1985) *The Human Bones from Wenlock Priory, Salop.* English Heritage. Ancient Monuments Laboratory. 4494. Unpublished Report.

CARDWELL, P. (1995) The Hospital of St Giles by Brompton Bridge, North Yorkshire. *The Archaeological Journal*. 152: 109-245.

CARMICHAEL, A. G. (1993) Diseases of the Renaissance and Early Modern Europe, in K. F. Kiple (ed) *The Cambridge World History of Human Disease*. Cambridge: Cambridge University Press. 279-286.

CARPENDALE, J. & C. LEWIS (2006) *How Children Develop Social Understanding*. Oxford: Blackwell Publishing.

CARROLL, J. T. (2001) Children in the Bible. *Interpretion*. 55: 121-134.

CARTLIDGE, N. (2006) Marriage, Sexuality and the Family in C. Saunders (ed) *A Concise Companion to Chaucer*. Oxford: Blackwell Publishing. 218-240.

CASE, A. & C. PAXSON (2010) Causes and Conquences of Early-Life Health. *Demography*. 47: 65-85.

CAYLEY, A. (1808) *Memoirs of Sir Thomas More. Volume I.* London: Cadell and Davis.

CHAMBERLAIN, A. T. (2000) Minor concerns: a demographic perspective on children in past societies, in J. S. Derevenski (ed) *Children and Material Culture*. London: Routledge. 206-212.

CHAMBERLAIN, A. T. (2001) Palaeodemography, in D. R. Brothwell & A. M. Pollard (eds) *Handbook of Archaeological Sciences*. Chichester: John Wiley & Sons. 259-268.

CHAMBERLAIN, A. T. (2006) *Demography in Archaeology.* Cambridge: Cambridge University Press.

CHAMBERLAND, C. (2011) Partners and Practitioners: Women and the Management of Surgical Households in London, 1570–1640. *Social History of Medicine*. 24(3): 554–569.

CHAUCER, G. (1992) *Canterbury Tales*. Edited by A. C. Cawley. London: Everyman's Library.

CHEDGZOY, K. (2007a) Introduction: 'What, are they children?' in K. Chedgzoy, S. Greenhalgh and R. Shaughnessy (eds) *Shakespeare and Childhood*. Cambridge: Cambridge University Press. 15-31.

CHEDGZOY, K. (2007b) Shakespeare in the company of boys, in K. Chedgzoy, S. Greenhalgh and R. Shaughnessy (eds) *Shakespeare and Childhood*. Cambridge: Cambridge University Press. 184-200.

CHUNDUN, Z. & C. ROBERTS (1995) Human Skeletal Remains, in P. Cardwell (ed) Excavation of the hospital of St Giles by Brompton Bridge, North Yorkshire. *Archaeological Journal*. 152: 214-219.

CHURCHILL, W. (2005) The Medical Practice of the Sexed Body: Women, Men, and Disease in Britain, circa 1600–1740. *Social History of Medicine*. 18: 3–22.

CLARK, G. (2007) The Long March of History: Farm Wages, Population, and Economic Growth, England 1209-1869. *Economic History Review.* 60(1): 97-135.

CLARKE, N. M. P. (2014) Swaddling and hip dysplasia: an orthopaedic perspective. *Archives of Disease in Childhood*. 99: 5-6.

CLASSEN, A. (2005) Philippe Ariès and the Consequences: History of Childhood, Family Relations and Personal Emotions: Where Do We Stand Today? in A. Classen (ed) *Childhood in the Middle Ages and the Renaissance: The Results of a Paradigm Shift in the History of Mentality*. Berlin: Hubert & Co. 1-66.

CLOUGH, S. (2006) *Excavations of the Litten Medieval Cemetery Newbury West Berkshire. Archaeological Excavation Report.* Oxford: Oxford Archaeology. Unpublished Report.

CLOUGH, S. (2016) Human Skeletal Remains, in J. Moore (ed) *Littlemore Priory, Grenoble Road, Littlemore, Oxford. Archaeological Excavation Report*. 82-107. Unpublished Report.

CLOUGH, S. (2016) Human Skeletal Remains, in J. Moore (ed) *Old St Michael's Cathedral, St Michael's Avenue, Coventry. Archaeological Monitoring and Investigation Report*. Beckley: John Moore Heritage Services. 90-95. Unpublished Report.

CLOUGH, S. & L. LOE (2007) *Human Skeletal Remains: Introduction and Methodology, in St. Ives and Hemingford Flood Alleviation Scheme, Cambridgeshire.* Archaeological Investigation Report. Oxford: Oxford Archaeology. 6-26. Unpublished Report.

COHEENEY, J. (2004) The human bone, in B. Sloane and G. Malcolm (eds) *Excavations at the Priory of Order of the Hospital of St John of Jerusalem, Clerkenwell.* Museum of London Archaeology Service Monograph. 20. 394-405.

COLE, J. (1969) Report on the Bones Found at Spital Chapel, Tamworth, July 1968, in J. Gould (ed) Second Report on the Excavations at Tamworth, Staffs., 1968-Spital Chapel. *South Staffordshire Archaeological & Historical Society Transactions*. 10: 29-31.

COLE, J. (1995) The Charterhouse burials, in I. Soden (ed) *Excavations at St Anne's Charterhouse, Coventry 1968-87.* Coventry Museums Monograph. 4. 64-78.

COLÓN, A. R. & P. A. COLÓN (1999) *Nurturing Children. A History of Pediatrics*. Connecticut: Greenwood Press.

COLSON, J. & R. RALLEY (2015) Medical practice, urban politics and patronage: the London 'commonalty' of physicians and surgeons of the 1420s. *The English Historical Review* 130: 1102-1131.

CONHEENEY, C. (1997) The Human Bone, in C. Thomas, B. Sloane & C. Phillpotts (eds) *Excavations at the Priory and Hospital of St Mary Spital, London.* Museum of London Archaeology Service Monograph. 1: 218-230.

CONHEENEY, C. (2007) The human bone, in P. Miller and P Saxby (eds) *The Augustinian Priory of St Mary Merton, Surrey*. Museum of London Archaeology Service Monograph. 34. 255-277.

CONNELL, B., A.G. JONES, R. REDFERN, R. AND D. WALKER (2012) *A bioarchaeological study of medieval burials on the site of St Mary Spital: Excavations at Spitalfields Market, London E1, 1991-2007*. London: Museum of London Archaeology.

CONNELL, B. AND W. WHITE (2011) Human remains, in T. Dyson, M. Samuel, A. Steele and S. M. Wright (eds) *The Cluniac priory and abbey of St Saviour Bermondsey, Surrey*. Excavation 1984-85. London: Museum of London Archaeology. 50. 263-274.

CONNOLLY, M. (2016) Evidence for the Continued Use of Medieval Medical Prescriptions in the Sixteenth Century: A Fifteenth-Century Remedy Book and its Later Owner. *Medical History*. 60(2): 133–154.

CONRAD, F. W. (1992) The problem of counsel reconsidered: the case of Sir Thomas 77 Elyot, in P. A. Fideler and T. F. Mayer (eds) *Political Thought and the Tudor Commonwealth: Deep structure, discourse and disguise.* London: Routledge. 77-109.

COOK, D. C. AND P. L. POWELL (2012) Treponematosis: Past, Present, and Future, in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 472-491.

CORSARO, W. A. (2015) *The Sociology of Childhood*. Los Angeles: Sage. Fourth Edition.

COSTER, W. (2001) *Family and Kinship in England 1450-1800.* Edinburgh: Pearson Education.

COX JENSEN, F. (2011) Intellectual developments, in S. Doran and N. Jones (eds) *The Elizabethan World*. London: Routledge. 511-530.

CRAIG-ATKINS, E. (2014) Eavesdropping on Short Lives: Eaves-drip burial and the differential treatment of children one year of age and under in early Christian cemeteries, in D. M. Hadley and K. A. Hemer (eds) *Medieval Childhood: Archaeological Approaches*. Oxford: Oxbow Books. 95-113.

CRAIG-ATKINS, E. (2017) Commentary: Interdisciplinary approaches to the study of disease and deformity in past populations, in E. W. Parkinson & L. Talbot (eds) In Sickness and Health: Interdisciplinary approaches to the study of disease and deformity in past populations. *Archaeological Review from Cambridge*. 106-111.

CRAWFORD, S. (2007) Companions, co-incidences or chattels? Children in the early Anglo-Saxon multiple burial ritual, in S. Crawford and G. Shepherd (eds) *Children, Childhood and Society. BAR International Series 1696.* Oxford: Archaeopress. 83-92.

CRAWFORD, S. (2014) Archaeology of the Medieval Family, in D. M. Hadley and K. A. Hemer (eds) *Medieval Childhood: Archaeological Approaches*. Oxford: Oxbow Books. 26-38.

CRAWFORD, S. (2017) SSCIP: The First 10 Years. *Childhood in the Past*. 1-6.

CRAWFORD, S. (2018) Birth and Childhood, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain*. Oxford: University of Oxford. 774-788.

CRAWFORD, S., D. M. HADLEY & G. SHEPHERD (2018) The Archaeology of Childhood: The Birth and Development of a Discipline, in S. Crawford, D. M. Hadley & G. Shepherd (eds) *The Oxford Handbook of the Archaeology of Childhood*. Oxford: Oxford University Press. 3-37.

CRAWFORD, S. & C. LEWIS (2008) Childhood studies and the Society for the Study of Childhood in the Past. *Childhood in the Past*. 1: 5-16.

CRAWFORD, S. & G. SHEPHERD (2007) Children, Childhood and Society: An Introduction, in S. Crawford & G. Shepherd (eds) *Children, Childhood and Society. BAR International Series 1696*. Oxford: Archaeopress. 1-4.

CRESSY, D. (1997) *Birth, Marriage and Death: Ritual, Religion and the Life-Cycle in Tudor and Stuart England*. Oxford: Oxford University Press. First Edition.

CRESSY, D. (1999) *Birth, Marriage and Death: Ritual, Religion and the Life-Cycle in Tudor and Stuart England*. Oxford: Oxford University Press. Second Edition.

CUNNINGHAM, A. (2018) Introduction: Deadly medicine, in O. P. Grell, A. Cunningham and J. Arrizabalaga (eds) *"It All Depends on the Dose": Poisons and Medicines in European History*. Abingdon: Routledge. 1-8.

CUNNINGHAM, C., L. SCHEUER & S. BLACK (2016) *Developmental Juvenile Osteology*. Academic Press.

CUNNINGHAM, H. (2005) *Children and Childhood in Western Society Since 1500*. Harlow: Pearson Longman. 2nd Edition.

CUNNINGHAM, H. (2006) *The Invention of Childhood*. London: BBC Books.

CURRY, A. & G. FOARD (2016) Where are the dead of medieval battles? A preliminary survey. *Journal of Conflict Archaeology*. 11(2-3): 61-77.

D'AVARY, D. L. (2019) The Concept of Magic, in S. Page and C. Rider (ed) *The Routledge History of Medieval Magic*. London: Routledge. 48-56.

DANIELL, C. (1997) *Death and Burial in Medical England, 1066-1550.* London: Routledge.

DAWES, J. D. (1980) The Human Bones, in J. D. Dawes and J. R. Magilton (eds) *The Cemetery of St Helen-on-the-Walls, Aldwark*. The Archaeology of York. 12: 19-111.

DAWES, J. D. (1986) The human bones, in J. J. Gilmour and D. A. Stocker (eds) *St Mark's Church and Cemetery. The Archaeology of Lincoln*. 13(1): 33-34.

DAWES, J. D. (1987) The Human Bones, in P. Armstrong and D. Tomlinson (eds) *Dominican Priory, Beverley, 1960-1983*. Hull: Humberside Heritage. 26-29.

DAWES, J. D. AND MAGILTON, J. R. (1980) *The Cemetery of St-Helen-on-the-Walls, Aldwark*. York: Council for British Archaeology.

DAWSON, H. (2014) *Unearthing Late Medieval Children: Health, status and burial practice in Southern England*. BAR British Series 593. Oxford: Archeopress.

DAWSON, H. & K. ROBSON-BROWN (2012) Childhood tuberculosis: A probable case from late mediaeval Somerset, England. *International Journal of Paleopathology*. 2: 31-35.

DAWSON, H. & K. ROBSON-BROWN (2013) Exploring the Relationship Between Dental Wear and Status in Late Medieval Subadults From England. *American Journal of Physical Anthroplogy*. 150: 433-441.

DEAN, B. (2007) The Human Remains, in L. Loe (ed) *St Mary's Church, Porchester Castle, Hampshire. Archaeological Watching Brief.* Oxford: Oxford Archaeology. 9-26. Unpublished Report.

DECARO, J. A. (2017) Anthropology, B. Hopkins, E. Geangu and S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. Second Edition. 745-740.

DEGNAN, K. A. (2017) Temperament, B. Hopkins, E. Geangu and S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. Second Edition. 498-504.

DEMAITRE, L. (1977) The Idea of Childhood and Child Care in Medical Writings of the Middle Ages. *The Journal of Psychohistory*. 4(4): 461-490.

DEMAITRE, L. (2013) *Medieval Medicine: The Art of Healing, from Head to Toe*. Santa Barbara: Praeger.

DEMAUSE, L. (1974) The evolution of childhood, in L. DeMause (ed) *The History of Childhood*. The University of Michigan: Psychohistory Press. 1-83.

DEWITTE, S. N. (2014) Differential survival among individuals with active and healed periosteal new bone formation. *International Journal of Paleopathology*. 7: 38–44.

DISKI, J. (2016) *In Gratitude*. London: Bloomsbury.

DODWELL, N. (2015) The Cemetery Popuation, in C. Cressford (ed) The St. John's Hospital Cemetery and Environs, Cambridge: Contextualizing the Medieval Urban Dead. *The Archaeological Journal*. 172(1): 84-101.

DOHERTY-SNEDDON, G. (2003) *Children's Unspoken Language*. London: Jessica Kingsley Publishers.

DONNELLY, C. & E. MURPHY (2018). Violence in Later Medieval Ireland: The Osteoarchaeological Evidence and its Historical Context. In E. Campbell, E. FitzPatrick and A. Horning (eds) *Becoming and Belonging in Ireland AD 1200-1600: Essays in Cultural Practice.* Cork: Cork University Press. 108-128.

DUFFIN, C. J. (2013a) Geology as medicine and medics and geologists, in C. J. Duffin, R. T. J. Moody and C. Gardner-Thorpe. *A History of Geology and Medicine.* London: The Geological Society. 1-6.

DUFFIN, C. J. (2013b) Lithotherapeutical research sources from antiquity to the mid-eighteenth century, in C. J. Duffin, R. T. J. Moody and C. Gardner-Thorpe. *A History of Geology and Medicine*. London: The Geological Society. 4-43.

DUFFIN, C. J. (2013c) The gem electuary, in C. J. Duffin, R. T. J. Moody and C. Gardner-Thorpe. *A History of Geology and Medicine*. London: The Geological Society. 81-111.

DUFFIN, J. (2010) *History of Medicine: A Scandalously Short Introduction*. Toronto: University of Toronto Press. Second Edition.

DUHIG, C. (1993) Assessment of Skeletons from Pipe Trenches at Huntingdon, in D. Mitchell (ed) *A Leper Cemetery at Spittal's Link, Huntingdon.* Cambridgeshire County Council Archaeological Field Unit. A20.

DUHIG, C. (1994) Skeletal Remains, in M. Alexander (ed) *Medieval Burials at 25-7 Market Square, St Neots*. Cambridgeshire County Council Archaeology Field Unit Report. 89.

DUNN, C. (1998) Eucharius Rösslin (c 1470–1526) of Germany and the rebirth of midwifery. *Archives of Disease in Childhood*. 79: 77-78.

DUNN, P. M. (1997) Avicenna (AD 980-1037) and Arabic perinatal medicine. *Archives of Disease in Childhood*. 77: 75-76.

DYER, A. (2004) The Urban Economy, in R. Tittler & N. Jones (eds) *A Companion to Tudor Britain*. Malden: Blackwell Publishing. 330-346.

DYER, C. (2000) *Everyday Life in Medieval England*. London: Hambledon & London.

DYER, C. (2012) *Poverty and its Relief in Late Medieval England*. Past and Present. 216 (1) 41-78.

DYER, C. (2013) Living in Peasant Houses in Late Medieval England. *Vernacular Architecture*. 44(1): 19-27.

DYER, C. (2018a) Rural Living 1100-1540, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain.* Oxford: University of Oxford. 193-209.

DYER, C. (2018b) Town and Countryside, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain*. Oxford: University of Oxford. 325-339.

EDWARDS, E. (1976) The Human Remains, in G. Lambrick and H. Woods (eds) *Excavations at the Second Site of the Dominican Priory, Oxford.* Oxford: Oxfordshire Architectural and Historical Society. 226-227.

ELIOT, T. S. (2001) *Four Quartets*. London: Faber and Faber.

EVERTON, R. F. (1976) Human Bones, in P. Rahtz & S. Hirst (ed) Bordesley Abbey. *British Archaeolgoical Reports*. 23: 216-229.

EZELL, M. J. M. (1990) The Myth of Judith Shakespeare: Creating the Canon of Women's Literature. *New Literary History*. 21(3): 579-592.

FAGAN, B. (2001) *The Little Ice Age: how climate made history 1300-1850*. New York: Basic Books.

FAHLANDER, F. (2011) Subadult or subaltern? Children as serial categories, in M. Lally and A. Moore (eds) (*Re)Thinking the Little Ancestor: New Perspectives on the Archaeology of Infancy and Childhood*. BAR International Series 2271. Oxford. Archaeopress. 14-23.

FAHLANDER, F. AND T. OESTIGAARD. (2008) The Materiality of Death: Bodies, Burials, Beliefs, in F. Fahlander & T. Oestigaard (eds) *The Materiality of Death: Bodies, burials, beliefs.* BAR International Series 1768. Oxford: Archaeopress. 1-16.

FASHAM, P. AND KEEVIL, G. (1995) *Brighton Hill South: An Iron Age Farmstead and Deserted Medieval Village at Hatch Warren, Hampshire.* Old Sarum: Wessex Archaeology.

FAY, I. (2006) Text, Space and the Evidence of Human Remains in English Late Medieval and Tudor Disease Culture: Some Problems and Possibilities, in R. Gowland & C. Knüsel (eds) *Social Archaeology of Funerary Remains*. Oxford: Oxbow. 190-208.

FAZEKAS, I. G. & F. KOSA (1978) Determination of the body length and age of foetuses on the basis of the diaphyseal size of the extremity bones, in I. G. Fazekas & F. Kosa (eds) *Forensic foetal osteology.* Budapest: Akademiai-Kiado. 232-277.

FERRARO, J. M. (2013) Childhood in Medieval and Early Modern Times, in P. S. Fass (ed) *The Routledge History of Childhood in the Western World*. Abingdon: Routledge. 61-77.

FERRELL, L. A. (2015) The Church of England and the English Bible, 1559-1640, in K. Killeen, H. Smith & R. Willie (eds) *The Oxford Handbook of The Bible in Early Modern England, c. 1530-1700*. Oxford: Oxford University Press. 261-271.

FIELD, T. (2007) *The Amazing Infant*. Oxford: Blackwell Publishing.

FINK, G. (2010) Stress: Definition and History, in G. Fink (ed) *Stress Science: Neuroendocrinology*. San Diego: Academic Press. 3-9.

FINK, G. (2017) Stress: Concepts, Definition and History. *Reference Module in Neuroscience and Biobehavioral Psychology*. Elsevier: 1-9.

FISHER, W. (2001) The Renaissance Beard: Masculinity in Early Modern England. *Renaissance Quarterly*. 54(1): 155-187.

FLEMING P. (2001) *Family and Household in Medieval England*. Basingstoke: Palgrave.

FLETCHER, A. (1994) Prescription and Practice: Protestantism and the upbringing of children, 1560-1700, in D. Wood (ed) *The Church and Childhood. Studies in Church History*. Oxford: Blackwell Publishers. 31: 325-346.

FLETCHER, H. & NOVY, M. (2007) Father-child identification, loss and gender in Shakespeare's plays, in K. Chedgzoy, S. Greenhalgh and R. Shaughnessy (eds) *Shakespeare and Childhood*. Cambridge: Cambridge University Press. 49-63.

FORSDIKE, C. (2005) New Beginnings: Factors Affecting Health and Well-Being in the Infant, in J. Taylor and M. Woods (eds) *Early Childhood Studies: An Holistic Introduction*. London: Edward Arnold. Second Edition. 23-36.

FORSYTH, H. & G. EGAN (2005) *Toys, Trifles & Trinkets: Base-Metal Miniatures from London 1200 to 1800*. London: Unicorn Press.

FOX, A. (2017) Words, Words, Words: Education, Literacy and Print, in K. Wrightson (ed) *A Social History of England 1500-1750*. Cambridge: Cambridge University Press. 129-151.

FRENCH, K. (2008) *The Good Woman of the Parish: Gender and Religion after the Black Death*. Philadelphia: University of Philadelphia Press.

FRENCH, K. (2016) The Material Culture of Childbirth in Late Medieval London and its Suburbs. *Journal of Women's History*. 28(2): 126-148.

GARCÍA-SÁNCHEZ, I. M (2018) Children as Interactional Brokers of Care. *Annual Review of Anthropology.* 47: 167–184.

GARRISON, F. H. (1965) *History of Pediatrics*. Philadelphia: Saunders.

GERRARD, C. M. (2018) A Last Word: The Study of Later Medieval Archaeology, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain.* Oxford: University of Oxford. 982-996.

GETZ, F. (1998) *Medicine in the English Middle Ages*. Princeton: Princeton University Press.

GIBSON, M. (2008) The Human Remains, in L. Loe (ed) S*t Mary the Virgin, Kirtlington, Archaeological Watching Brief Report*. Oxford: Oxford Archaeology. 7-10. Unpublished Report.

GIBSON, M. AND L. LOE (2011) Human Remains, S. Rowland (ed) *Brunel Court, Marsh Lane/Landwell Street, Preston, Lancashire. 19-23. Post-Excavation Assessment. Execution Stage 3.* Lancashire: Oxford Archaeology North. Unpublished Report.

GILCHRIST, R. (1991) Women's archaeology? Political feminism, gender theory and historical revision. *Antiquity*. 495-501.

GILCHRIST, R. (1992) Christian bodies and souls: the archaeology of life and death in later medieval hospitals, in S. Bassett (ed) *Death in Towns: Urban Responses to the Dying and the Dead, 100-1600*. Leicester: Leicester University Press. 101-118.

GILCHRIST, R. (1994) *Gender and Material Culture: The Archaeology of Religious Women*. London: Routledge.

GILCHRIST, R. (1995) *Contemplation and Action: The Other Monasticism*. London: Leicester University Press.

GILCHRIST, R. (1997) Ambivalent bodies: gender and medieval archaeology, in J. Moore and E. Scott (eds) *Invisible People and Processes: Writing Gender and Childhood into European Archaeology.* London: Leicester University Press. 42-58.

GILCHRIST, R. (1999) *Gender and Archaeology: Contesting the Past*. London: Routledge.

GILCHRIST, R. (2000) Archaeological Biographies: Realizing Human Lifecycles, -Courses and -Histories. *World Archaeology*. 31(3): 325-328.

GILCHRIST, R. (2003) 'Dust to Dust'; Revealing the Reformation Dead, in D. Gaimster & R. Gilchrist (eds) *The Archaeology of Reformation 1480-1580.* Leeds: Maney. 399-414.

GILCHRIST, R. (2004) Archaeology and the life course: a time and age for gender, in L. Meskell & R. W. Preucel (eds) *A Companion to Social Archaeology*. Malden: Blackwell Publishing. 142-160.

GILCHRIST, R. (2008a) Magic for the Dead? The archaeology of magic in later medieval burials. *Medieval Archaeology*. 52: 119-159.

GILCHRIST, R. (2008b) Nurturing the dead: medieval women as family undertakers, in S. Monton-Subias and M. Sanchez-Romero (eds) *Engendering Social Dynamics: The Archaeology of Maintenance Activites*. BAR International Series 1862. Oxford: Archaeopress. 41-47.

GILCHRIST, R. (2009a) Rethinking later medieval masculinity: the male body in death, in D. Sayer and H. Williams (eds) *Mortuary practice and social identities in the Middle Ages: Essays in burial archaeology in honour of Heinrich Harke*. Exeter: University of Exeter Press. 236-252.

GILCHRIST, R. (2009b) Medieval archaeology and theory: a disciplinary leap of faith, in R. Gilchrist and A. Reynolds (eds) *Reflections: 50 Years of Medieval Archaeology, 1957- 2007*. Leeds: Maney. 385-408.

GILCHRIST, R. (2009c) Sex and gender, in B. Cunliffe, C. Gosden and R. A. Joyce (eds) *The Oxford Handbook of Archaeology*. Oxford: Oxford University Press. 1029-1047.

GILCHRIST, R. (2012) *Medieval Life: Archaeology and the Life Course*. Woodbridge: The Boydell Press.

GILCHRIST, R. (2019) Magic and Archaeology: Ritual Residues and "Odd" Deposits, in S. Page and C. Rider (eds) *The Routledge History of Medieval Magic*. Abingdon: Routledge. 383-401.

GILCHRIST, R. & B. SLOANE (2005) *Requiem: The Medieval Monastic Cemetery in Britain*. London: Museum of London Archaeology Service.

GINN, J. & S. ARBER (1995) Only Connect: gender relations and ageing, in S. Arber and J. Ginn (eds) *Connecting Gender and Ageing: A Sociological Approach*. Buckingham: Open University Press. 1-14.

GISELBRECHT, R. A. & J. A. CHAPPELL (2014) Religious Intent and the Art of Courteous Pleasantry: A Few Letters from Englishwomen to Heinrich Bullinger (1543-1562), in J. A. Chappell & K. A. Kramer (eds) *Women during the English Reformations: Renegotitating Gender and Religious Identity*. New York: Palgrave Macmillan. 45-68.

GITTINGS, D. (2015) The historical construction of childhood. In M. J. Kehily (ed) *An Introduction to Childhood Studies.* Maidenhead: Open University Press. Third Edition. 34-47.

GIUFFRA, V., A. VITIELLO, D. CARAMELLA, A. FORNACIARI, D. GIUSTINI & G. FORNACIARI (2015) Rickets in a high social class of Renaissance Italy: the Medici children. *International Journal of Osteoarchaeology*. 25(5): 608-624.

GLENCROSS, B. (2011) Skeletal Injury Across the Life Course: Towards Understanding Social Agency, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology*. Chichester: Wiley-Blackwell. 390-409.

GLENCROSS, B. & S. STUART-MACADAM (2000) Childhood Trauma in the Archaeological Record. *International Journal of Osteoarchaeology*. 10: 198-209.

GOLDBERG, P. J. P. (1992) *Women, Work, and Life Cycle in a Medieval Economy: Women in York and Yorkshire, c. 1300-1520*. Oxford: Clarendon Press.

GOLDBERG, P. J. P. (2004a) *Medieval England: A Social History, 1250-1550*. London: Hodder Arnold.

GOLDBERG, P. J. P. (2004b) Migration, Youth and Gender in Later Medieval England, in P. J. P. Goldberg & F. Riddy (eds) *Youth in the Middle Ages*. Woodbridge: York Medieval Press. 85-99.

GOLDBERG, P. J. P. (2006) Life and death: the ages of man, in R, Horrox and W. M. Ormrod (eds) *A Social History of England, 1200-1500.* Cambridge: Cambridge University Press. 413-434.

GOLDBERG, P. J. P. (2008) Childhood & Gender in Later Medieval England. *Viator*. 39(1): 249-262.

GOLDBERG, P. J. P., F. RIDDY & M. TYLER (2004) Introduction: After Aries, in P. J. P. Goldberg and F. Riddy (eds) *Youth in the Middle Ages*. Woodbridge: York Medieval Press. 1-10.

GOLDBERG, P. J. P. & M. KOWALESKI (2008) Introduction, in M. Kowaleski and P. J. P. Goldberg (eds) *Medieval Domesticity: Home, Housing and Household in Medieval England*. Cambridge: Cambridge University Press. 1-13.

GOLDEN, M. (1990) *Children and Childhood in Classical Athens*. Baltimore: Johns Hopkins University Press.

GOLDFIELD, E. C. & P. H. WOLFF (2002) Motor development in infancy, in A. Slater & M. Lewis (eds) *Introduction to Infant Development.* Oxford: Oxford University Press. 61-82.

GOODLEY, D. (2018) The Dis/Ability Complex. DiGeSt. *Journal of Diversity and Gender Studies*. 5(1): 5–22.

GOODMAN, A. H. (1991) Health, adaptation, and maladaptation in past societies', in H. Bush & M. Zvelebil (eds) *Health in Past Societies: Biocultural interpretations of human skeletal remains in archaeological contexts*. BAR International Series 567. 31-37.

GOODMAN, A. H. (1993) On the Interpretation of Health from Skeletal Remains. *Current Anthropology*. 34 (3): 281-288.

GOODMAN, A., R. BROOKE THOMAS, A. C. SWEDLUND & G. J. ARMELAGOS (1988) Biocultural Perspectives on Stress in Prehistoric, Historical, and Contemporary Population Research. *Yearbook of Physical Anthropology*. 31: 169-202.

GOODMAN, A. H. & G. T. ARMELAGOS (1989) Infant and Childhood Morbidity and Mortality Risks in Archaeological Populations. *World Archaeology*. 21 (2): 225-243.

GOOSSE, H., J. GUIOT, M. E. MANN, S. DUBINKINA & Y. SALLAZ-DAMAZ (2012) The Medieval Climate Anomaly in Europe: Comparison of the Summer and Annual Mean Signals in Two Reconstructions and in Simulations with Data Assimilation. *Global and Planetary Change.* 84 & 85: 35-47.

GORDON, E. C. (1991) Accidents Among Medieval Children as Seen from the Miracles of Six English Saints and Martyrs. *Medical History*. 35: 145-163.

GOSSO, Y. (2010) Play in Different Cultures, in P. K. Smith (ed) *Children and Play*. Chichester: Wiley-Blackwell. 80-98.

GOWLAND, R. (2001) Playing dead: implications of mortuary evidence for the social construction of childhood in Roman Britain, in G. Davies, A. Gardner and K. Lockyer (eds) *TRAC 2000: Proceedings of the Tenth Annual Theoretical Roman Archaeology Conference*. Oxford: Oxbow. 152-68.

GOWLAND, R. (2002) *Age as an aspect of social identity in fourth- to sixth- century AD England: The archaeological funerary evidence*. PhD. Thesis: University of Durham.

GOWLAND, R. (2006) Age as an Aspect of Social Identity: The Archaeology Funerary Evidence, in R. Gowland & C. Knüsel (eds) *Social Archaeology of Funerary Remains.* Oxford: Oxbow. 143-154.

GOWLAND, R. (2015) Entangled Lives: Implications of the Developmental Origins of Health and Disease Hypothesis for Bioarchaeology and the Life Course. *American Journal of Physical Anthropology*. 158: 530–540.

GOWLAND, R. (2017) Growing Old: Biographies of Disability and Care in Later Life in, in L. Tilley & A. A. Schrenk (eds) *New Developments in the Bioarchaeology of Care. Further Case Studies and Expanded Theory.* Springer International Publishing. 237-252.

GOWLAND, R. (2018a) Infants and Mothers: Linked Lives and Embodied Life Courses, in S. Crawford, D. M. Hadley and G. Shepherd (eds) *The Oxford Handbook of the Archaeology of Childhood*. Oxford: Oxford University Press. 104-119.

GOWLAND, R. (2018b) 'A Mass of Crooked Alphabets': The Construction and Othering of Working Class Bodies in Industrial England, in P. K. Stone (ed) *Bioarchaeological Analyses and Bodies. New Ways of Knowing Anatomical and Archaeological Skeletal Collections.* Springer. 147-163.

GOWLAND, R. & B. J. PENNY-MASON (2018) Overview: Archaeology and the Medieval Life Course, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain*. Oxford: University of Oxford. 759-773.

GOWLAND, R. & R. REDFERN (2010) Childhood Health in the Roman World: Perspectives from the Centre and Margin of the Empire. *Childhood in the Past*. 3: 15-42.

GOWLAND, R. & T. THOMPSON (2013) *Human Identity and Identification*. Cambridge: Cambridge University Press.

GRAHAM, K. L. (2017) Play, in B. Hopkins, B. Hopkins, E. Geangu and S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. Second Edition. 476-481.

GRAUER, A. L. (2012) Introduction: The Scope of Paleopathology, in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 2-14.

GRAUER, A. L. (2019) Themes in Paleopathology, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains*. London: Elsevier. 21-33.

GRAUER, A. L. & A. G. MILLER (2017) Flesh on the Bones: A Historical and Bioarchaeological Exploration of Violence, Trauma, Sex, and Gender in Medieval England. *Fragments*. 6: 38-79.

GRAUER, A. L. & C. A. ROBERTS (1996) Paleoepidemiology, Healing, and Possible Treatment of Trauma in the Medieval Cemetery Population of St. Helen-on-the-Walls, York, England. *American Journal of Physical Anthropology*. 100: 531-544.

GREEN, M. H. (2008a) *Making Women's Medicine Masculine. The Rise of Male Authority in Pre-Modern Gynaecology*. Oxford: Oxford University Press.

GREEN, M. H. (2008b) Gendering the History of Women's Healthcare. *Gender & History*. 20(3): 487–518.

GREENE, J. P. (1992) *Medieval Monasteries*. Leicester: Leicester University Press.

GREIG, A. (2005) Play, Language and Learning, in J. Taylor & M. Woods (eds) *Early Childhood Studies: An Holistic Introduction.* London: Edward Arnold. Second Edition. 99-116.

GRELL, O. P. & A. CUNNINGHAM (1993) Introduction, in O.P. Grell & A. Cunningham (eds) *Medicine and the Reformation.* London: Routledge. 1-10.

GRENVILLE, J. (1997) *Medieval Housing*. Leicester: Leicester University Press.

GRIFFITHS, P. (2011) Tudor Troubles: Problems of youth in Elizabethan England, in S. Doran and N. Jones (eds) *The Elizabethan World*. London: Routledge. 316-334.

GRIFFITHS, R. (1978) The Human Skeletal Remains, in J. H. Williams (ed) Excavations at Greyfriars, Northampton, 1972. *Northamptonshre Archaeology*. 13: 96-160.

GUNN, S. (2010a) Archery Practice in Early Tudor England. *Past and Present*. 209: 53-81.

GUNN, S. (2010b) War and the emergence of the state: western Europe, 1350–1600, in F. Tallett and D. J. B. Timm (eds) *European Warfare, 1350–1750.* Cambridge: Cambridge University Press. 50-73.

GUNN, S. (2018) *The English People at War in the Age of Henry VIII*. Oxford: Oxford University Press.

GUTH, D. J. (2004) Law, in R. Tittler & N. Jones (eds) *A Companion to Tudor Britain*. Malden: Blackwell Publishing. 77-97.

GUY, H., C. MASSET & C. A. BAUD (1997) Infant Taphonomy. *International Journal of Osteoarchaeology*. 7: 221-229.

GUY, J. (1988) *Tudor England*. Oxford: Oxford University Press.

HAAS, L. & J. T. ROSENTHAL (2007) Historiographical Reflections and the Revolt of the Medievalists, in J. T. Rosenthal (ed) *Essays on Medieval Childhood. Reponses to Recent Debates*. Donington: Shaun Tyas. 13-28.

HACKING, P. (2006) Human Bones, in A. Norton (ed) *Oxford Castle Development Oxford. Post Excavation Assessment and Research Design.* Oxford: Oxford Archaeology. Unpublished Report.

HADLEY, D. M. (2001) *Death in Medieval England: an archaeology*. Stroud: Tempus Publishing.

HADLEY, D. M. & K. A. HEMER (2014) Introduction: Archaeological appoaches to medieval childhood, c. 500-1500, in D. M. Hadley & K. A. Hemer (eds) *Medieval Childhood: Archaeological Approaches*. Oxford: Oxbow Books. 1-25.

HAIGH, C. (1993) *English Reformations: Religion, Politics, and Society under the Tudors.* Oxford: Claredon Press.

HAJNAL, J. (1965) European marriage pattern in historical perspective, in D. V. Glass and D. E. C. Eversley (eds) *Population History*. London: Arnold. 101-143.

HAKKARAINEN, P. & N, BREDIKYTE (2019) The Adult as a Mediator of Development in Children's Play, in P. K. Smith & J. L. Roopnarine (eds) *The Cambridge Handbook of Play. Developmental and Disciplinary Perspectives*. Cambridge: Cambridge University Press. 457-474.

HALCROW, S. E. & TAYLES, N. (2008) The Bioarchaeological Investigation of Childhood and Social Age: Problems and Prospects. *Journal of Archaeological Method and Theory*. 15: 190-215.

HALCROW, S. E. & TAYLES, N. (2011) The Bioarchaeological Investigation of Children and Childhood, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology*. Chichester: Wiley-Blackwell. 333-360.

HALCROW, S. E., C. L. KING, A. R. MILLARD, A. M. E. SNODDY, R. M. SCOTT, G. E. ELLIOT, D. R. GROCKE, H. R. BUCKLEY, V. G. STANDEN AND B. T. ARRIAZA (2018) Out of the Mouths of Babes and Sucklings: Breastfeeding and Weaning in the past, in C. Tomori, A. E. L. Palmquist and E. A. Quinn (eds) *Breastfeeding: New Anthropological Approaches*. Abingdon: Routledge. 155-169.

HALE, J. R. (1998) *War and Society in Renaissance Europe 1450-1620*. Stroud: Sutton Publishing.

HALL, D. M. B. & D. ELLIMAN (2008) *Health for All Children*. Oxford: Oxford University Press.

HALL, M. A. (2014) 'Merely players'? Playtime, material culture and medieval childhood, in D. M. Hadley & K. A. Hemer (eds) *Medieval Childhood: Archaeological Approaches*. Oxford: Oxbow Books. 39-56.

HALL, M. A. (2018) Play and Playfulness in Late Medieval Britain: Theory, Concept, Practice, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain*. Oxford: University of Oxford. 530-542.

HAMLING, T. (2011) Architecture in S. Doran and N. Jones (eds) *The Elizabethan World*. London: Routledge. 587-610.

HAMLING, T. & C. RICHARDSON (2017) *A Day at Home in Early Modern England, Material Culture and Domestic Life, 1500-1700*. New Haven: Yale University Press.

HAMMER, Ø, D. A. T. HARPER AND P. D. RYAN (2001) Past: Paleontological Statistics Software Package for Education and Data Analysis. *Palaeontologia Electronica*. 4(1): 1-9.

HAMMOND, G. & N. HAMMOND (1981) Child's Play: A Distorting Factor in Archaeological Distribution. *American Antiquity.* 46(3): 634-636.

HANAWALT, B. A. (1977) Childrearing Among the Lower Classes of Late Medieval England. *The Journal of Interdisciplinary History*. 8 (1): 1-22.

HANAWALT, B. A. (1986) *The Ties That Bound: Peasant Families in Medieval England.* Oxford: Oxford University Press.

HANAWALT, B. A. (1993) *Growing Up In Medieval London: The Experience of Childhood in History*. Oxford: Oxford University Press.

HANAWALT, B. A. (1998) *Of Good and Ill Repute: Gender and Social Control in Medieval England*. Oxford: Oxford University Press.

HANAWALT, B. A. (2002) Medievalists and the study of children. *Speculum*. 77: 440-460.

HANAWALT, B. A. (2007) *The Wealth of Wives. Women, Law, and Economy in Late Medieval London*. Oxford: Oxford University Press.

HARDING, V. (1992) Burial choice and burial location in later medieval London, in S. Bassett (ed) *Death in Towns: Urban Responses to the Dying and the Dead, 100-1600*. Leicester: Leicester University Press. 119-135.

HARDING, V. (1993) Burial of the plague dead in early modern London, in J. A. I. Champion (ed) *Epidemic Disease in London*. London: Centre for Metropolitan History: 53-64.

HARDING, V. (2003) Choices and Changes: Death, Burial and the English Reformation (eds) *The Archaeology of Reformation 1480-1580*. Leeds: Maney. 386-398.

HARKNESS, D. E. (2008) A View from the Streets: Women and Medical Work in Elizabethan London. *Bulletin of the History of Medicine.* 82(1): 52-85.

HARRISON, K. (1983) *Sir Gawain and the Green Knight*. Translated from Middle English by K. Harrison. London: The Folio Society.

HARMAN, M. (1985) The Human Bone, in S. Scull (ed) Excavations in the Cloister of St. Frideswide's Priory, 1985. *Oxoniensia*. 53: 52-56.

HARMAN, M. (1985) The Human Remains, in G. Lambrick (ed) Further Excavations on the Second Site of the Dominican Priory, Oxford. *Oxoniensia*. 50: 188-190.

HARMAN, M. (1998) The skeletal material, in D. Wilkinson and A. McWhirr (eds) *Cirencester Anglo-Saxon Church and Medieval Abbey. Cirencester Excavations IV.* Cirencester: Cotswold Archaeological Trust. 167-168.

HARMAN, M. & E. EDWARDS (1989) Human Remains from Greyfriars (Site B), in T. G. Hassall, C. E. Halpin and M. Mellor (eds) Excavations in St. Ebbe's, Oxford, 1967-1976: Part I: Late Saxon and Medieval Domestic Occupation and Tenements, and the Medieval Greyfriars. *Oxoniensia*. 54: 255-257.

HARPER, A. (2011) The Image of the Female Healer in Western Vernacular Literature of the Middle Ages. *Social History of Medicine*. 24(1): 108–124.

HARPER, E. (2018) Toys and the Portable Antiquities Scheme: A Source for Exploring Later Medieval Childhood in England and Wales. *Childhood in the Past*. 11(2): 85-99.

HARRIS, A. P. & R. M. J ISSERLIN. (In Press) *Excavations on Medieval and Post-Medieval Chelmsford: The Town of Essex, and its Hamlet Moulsham*. East Anglian Archaeology.

HARRISON, C. (2013) *St Ebba's Chapel, Beadnell, Northumberland. Archaeological evaluation and Assessment of Result.* Sheffield: Wessex Archaeology. Unpublished Report.

HART, J. L. & M. T. TANNOCK (2019) Rough Play. Past, Present, and Potential, in P. K. Smith & J. L. Roopnarine (eds) *The Cambridge Handbook of Play. Developmental and Disciplinary Perspectives*. Cambridge: Cambridge University Press. 200-221.

HARTNELL, J. (2018) *Medieval Bodies: Life, Death and Art in the Middle Ages.* London: Profile Books.

HARVEY, L. (2014) Human Remains, in L. Harvey, S. Denis and G. Williams (eds) *An Archaeological Excavation at All Saints' Church, Faringdon, Oxfordshire*. Beckley: John Moore Heritage Services. 16-68. Unpublished Report.

HATTERSLEY, R. (2018) *The Catholics*. London: Vintage.

HAYWARD, M. (2009) *Rich Apparel: Clothing and the Law in Henry VIII's England.* Farnham: Ashgate.

HEDESAN, G. D. (2018) Alchemy, potency, imagination: Paracelsus's theories of poison, in O. P. Grell, A. Cunningham & J. Arrizabalaga (eds) *"It All Depends on the Dose": Poisons and Medicines in European History*. Abingdon: Routledge. 81-102.

HEIGHWAY, C. (2007) The attributes of burials, in in S. Mays., C. Harding, and C. Heighway (eds) *Wharram: A Study of Settlement on the Yorkshire Wolds, Volume 11, The Churchyard.* York: York University Archaeology Publications. 13: 216-242.

HELMHOLZ, R. H. (2007) Children's rights and the canon law: law and practice in later medieval England. *The Jurist*. 67: 39-57.

HENDERSON, D. (2005) The Human Bone, in A. Barber, M. Collard and E. McSloy (eds) *Old Cinema Site, Market Cross, Malmesbury, Wiltshire. Post-Excavation Assessent and Update Project Design*. Cirencester: Cotswold Archaeology. 37-41. Unpublished Report.

HENDERSON, J. (1981) *The Human skeletal remains from Guildford Friary, Surrey.* Ancient Monuments Laboratory Report. English Heritage. 3234.

HENDERSON, J. (1984a) The Burials, in R. Poulton and H. Woods (eds) Excavations on the Site of the Dominican Friary at Guildford in 1974 and 1978. *Research Volume of the Surrey Archaeological Society*. 9: 58-143.

HENDERSON, J. (1984b) *The Human Skeletal Remains - Carlisle, Blackfriars Street. Ancient Monuments Laboratory Report*. English Heritage. 4350.

HENDERSON, J. (1990) The Human Skeletal Remains, in M. R. McCarthy (ed) Roman, Anglian and medieval site at Blackfriars Street, Carlisle: excavations 1977-9. Carlisle: *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*. 4: 330-355.

HERLIHY, D. (1978) Medieval Children, in K. Lackner and K. R. Philp (eds) *Essays on Medieval Civilization*. Arlington: University of Texas. 109-141.

HEYWOOD, C. (2001) *A History of Childhood: Children and Childhood in the West from Medieval to Modern Times*. Cambridge: Polity Press.

HILLSON, S. (2014) *Tooth Development in Human Evolution and Bioarchaeology*. Cambridge: Cambridge University Press.

HINDLE, S. (2011) Poverty and the poor laws, in S. Doran and N. Jones (eds) *The Elizabethan World*. London: Routledge. 301-315.

HINKLE, L. E. (1961) Ecological Observations of the Relation, of Physical Illness, Mental Illness, and the Social Environment. *Psychosomatic Medicine*. 23(4): 289-296.

HOCKEY, J. & J. DRAPER (2005) Beyond the women and the tomb: identity, (dis)embodiment and the life course. *Body and Society*. 11(2): 41-57.

HODDER, M. (1991) Excavations at Sandwell Priory and Hall. *South Staffordshire Archaeological Historical Society Transactions.* 31: 115-136.

HODSON, C. M. (2017) *Stressed at Birth: Investigating Fetal, Perinatal and Infant Growth and Health Disruption.* Durham: Durham University. Unpublished PhD Thesis.

HODSON, C. M. & R. L. GOWLAND (2020) Like Mother, Like Child: Investigating perinatal and maternal health stress in Post-Medieval London, in R. L. Gowland & S. Halcrow (eds) *The Mother Infant Nexus in Anthropology and Archaeology: Small Beginnings, Significant Outcomes*. Springer, New York. In Press.

HOLST, M. (2004a) *Osteological Analysis: Towton Hall & Towton Battlefield, Towton, North Yorkshire.* York: York Osteoarchaeology. 0504. Unpublished Report.

HOLST, M. (2004b) *Osteological Analysis, Lincoln Cathedral Street, Lincoln*. York: York Osteoarchaeology. Unpublished Report.

HOLST, M. (2004c) *Osteological Analysis, Mulgrave Place, Scarsborough, North Yorkshire*. York: York Osteoarchaeology. Unpublished Report.

HOLST, M. (2005a) *Osteological Analysis, Main Street, Torksey, Lincolnshire*. York Osteoarchaeology Report.

HOLST, M. (2005b) The Human Bone, in C. A. Spall and N. J. Toop (eds) *Blue Bridge Lane & Fishergate House, York, Report on Excavations July 2000 to July 2002.* Archaeological Planning Consultancy Monograph. 1.

HOLST, M. (2006a) *Osteological Analysis, St Andrew's, Corbridge, Northumberland*. York Osteoarchaeology Report.

HOLST, M. (2006b) *Osteological Assessment, Kirkham Priory, North Yorkshire.* York Archaeology Report.

HOLST, M., J. COUGHLAN & A. BOYLSTON (2000) Towton 96 - catalogue of the palaeopathology, in V. Fiorato, A. Bolyston and C. Knüsel (eds) *Blood Red Roses. The archaeology of a mass grave from the Battle of Towton AD 1461.* Oxford: Oxbow Books. 201-210.

HOLST, M., L. ISAAC, C. ROBERTS & A. BOYLSTON (2001) *Hull Magistrates' Court (HMC94) Report on the human skeletal remains*. Bradford: University of Bradford.

HORDEN, P. (2011) Medieval Medicine, in M. Jackson (ed) *The Oxford Handbook of the History of Medicine*. Oxford: Oxford University Press. 40-59.

HOSKINS, W. G. (1964) Harvest Fluctuations and English Economic History, 1480-1619. *Agricultural History Review.* 12: 28-47.

HOULBROOKE, R. A. (1986) *The English Family, 1450-1700*. London: Longman Group Ltd. Third Edition.

HOULBROOKE, R. A. (1992) *The English Family, 1450-1700*. London: Longman Group Ltd. Seventh Edition.

HOULBROOKE, R. A. (1998) *Death, Religion and the Family in England 1480-1750*. Oxford: Oxford University Press.

HOWARD, J. (2017) *Mary D. Sheridan's Play In Early Childhood From Birth to Six Years*. London: Routledge.

HOWE, G. M. & D. R. PHILLIPS (1983) Medical Geography in the United Kingdom, 1945-1982, in N. D. McGlashan & J. R. Blunden (eds) *Geographical Aspects of Health.* London: Academic Press Inc. 33-52.

HOYLE, R. W. (2011) Rural economies under stress: 'A world so altered', in S. Doran & N. Jones (eds) *The Elizabethan World.* London: Routledge. 439-460.

HUG, L., D. SHARROW, K. ZHONG & D. YOU (2018) *Levels & Trends in Child Mortality, Report 2018, Estimates developed by the UN Inter-Agency Group for Child Mortality Estimation*. New York: United Nations Children's Fund.

HUGGETT, J. & N. MIKHAILA (2013) *The Tudor Child: Clothing and Culture 1485 to 1625.* Guildford: Fat Goose Press.

HUGGON, M. (2018) Medieval Medicine, Public Health, and the Medieval Hospital, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain.* Oxford: University of Oxford. 836-855.

HUMPHREY, L. (2000) Interpretation of the Growth of Past Populations, in J. Sofaer Derevenski (ed) *Children and Material Culture*. London: Routledge. 193-205.

HUTCHINSON, R. (2007) *Thomas Cromwell. The Rise and Fall of Henry VIII's Most Notorious Minister*. London: Weidenfeld & Nicolson.

HUXTABLE, M. J. & R. P. O'DONNELL (2018) Medieval Colour, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain*. Oxford: University of Oxford. 742-755.

INGLIS, R. M. & S. E. HALCROW (2018) The Bioarchaeology of Childhood: Theoretical Development in the Field, in P. Beauchesne & S. C. Agarwal (eds) *Children and Childhood in Bioarchaeology: Bioarchaeological Interpretations of the Human Past: Local, Regional, and Global Perspectives*. Florida: University Press of Florida. 33-60.

IŞCAN M.Y., LOTH S. R. & R. K. WRIGHT (1985) Age estimation from the rib by phase analysis: white females. *Journal of Forensic Sciences*. 30(3): 853-863.

IVES, E. (2012) *The Reformation Experience: Living Through the Turbulent 16th Century*. Oxford: Lion Hudson.

IVES, R. & M. BRICKLEY (2014) New findings in the identification of adult vitamin D deficiency osteomalacia: Results from a large-scale study. *International Journal of Paleopathology*. 7: 45–56.

JACKES, M. (2011) Representativeness and Bias in Archaeological Skeletal Samples, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology*. Chichester: Wiley-Blackwell. 107-146.

JONES, P. M. & L. T. OSLAN (2015) Performative Rituals for Conception and Childbirth in England, 900–1500. *Bulletin of the History of Medicine*. 89(3): 406-433.

JONES, P. M. & L. T. OLSAN (2019) Medicine and Magic, in S. Page and C. Rider (ed) *The Routledge History of Medieval Magic*. London: Routledge. 299-311.

JUDD, M. A. & C. A. ROBERTS (1999) Fracture Trauma in a Medieval British Farming Village. *American Journal of Physical Anthropology*. 109: 229–243.

KAMP, K. (2001) Where Have All the Children Gone?: The Archaeology of Childhood. *Journal of Archaeological Method and Theory*. 8(1): 1-34.

KAMP, K. (2015) Making Children Legitimate. Negotiating the Place of Children and Childhoods in Archaeological Theory, in G. Coşkunsu and P. Biehl (eds) *Children as Archaeological Enigma*. New York: State University of New York Press. 37-52.

KANE, E. W. (2013) *Rethinking Gender and Sexuality in Childhood*. London: Bloomsbury.

KAUFMAN, A. S. (2016) Muscular Medievalism. *The Year's Work in Medievalism*. 31: 56-66.

KAUFMANN, A. (2017) *Black Tudors: The Untold Story.* London: Oneworld Publications.

KEMP, A. M., F. DUNSTAN, S. HARRISON, S. MORRIS, M. MANN, K. ROLFE, S. DATTA, P. THOMAS, J. R. SIBERT & S. MAGURIE (2008) Patterns of Skeletal Fractures in Child Abuse: Systematic Review. *British Medical Journal*. 337: 1158-1166.

KENDALL, E. (2017) The "Terrible Tyranny of the Majority": Recognising Population Variability and Individual Agency in Past Infant Feeding Practices, in W. Southwell-Wright, L. Powell & R. Gowland (eds) *Care in the Past: Archaeological & Interdisciplinary Perspectives*. Oxford: Oxbow Books. 39-51.

KENWARD, R. (1977) Human Bones, in M. Lyne (ed) *Lewes Priory: Excavations by Richard Lewis, 1969-82*. Lewes: Lewes Priory Trust. 151-157.

KIECKHEFER, R. (2000) *Magic in the Middle Ages*. Cambridge: Cambridge University Press.

KIECKHEFER, R. (2019) Rethinking How to Define Magic, in S. Page & C. Rider (ed) *The Routledge History of Medieval Magic.* London: Routledge. 15-25.

KINASTON, R., A. WILLIS, J. J. MISZKIEWICZ, M. TROMP AND M. F. OXENHAM (2019) The Dentition: Development, Disturbances, Disease, Diet, and Chemistry, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains*. London: Elsevier. 749-797.

KING, H. (2007) *Midwifery, Obstetrics and the Rise of Gynaecology*. London: Routledge.

KING, H. (2018) "First Behead Your Viper" Acquiring knowledge in Galen's poison stories, in O. P. Grell, A. Cunningham & J. Arrizabalaga (eds) *"It All Depends on the Dose" Poisons and Medicines in European History*. Abingdon: Routledge. 25-42.

KING, M. L. (1991) *Women of the Renaissance*. Chicago: The University of Chicago Press.

KING, M. L. (2007) Concepts of Childhood: What We Know and Where We Might Go. *Renaissance Quarterly*. 60(2): 371-407.

KIRKUP, J. (2006) *The Evolution of Surgical Instruments: An Illustrated History from Ancient Times to the Twentieth Century*. Novato: historyofscience.com.

KLAUS, H. D. (2014) Frontiers in the Bioarchaeology of Stress and Disease: Cross-Disciplinary Perspectives From Pathophysiology, Human Biology, and Epidemiology. *American Journal of Physical Anthropology*. 155: 294–308.

KLINE, D. T. (2012) 'That child may doon to fadres reverence': Children and Childhood in Middle English Literature, in A. E. Gavin (ed) *The Child in British Literature Literary Constructions of Childhood, Medieval to Contemporary*. London: Palgrave Macmillan. 21-37.

KNIGHT, H. (2002) *Aspects of Medieval and Later Southwark: Archaeological Excavations (1991-8) for the London Underground Limited Jubilee Line Extension Project*. Museum of London Archaeology Service Monograph.

KNOWLES, D. & R. N. HADOCK (1971) *Medieval Religious Houses of England and Wales*. London: Longman.

KNOWLES, D. D. (1948) *The Religious Orders in England. Volume I.* Cambridge: Cambridge University Press.

KNOWLES, D. D. (1955) *The Religious Orders in England. Volume II.* Cambridge: Cambridge University Press.

KNOWLES, D. D. (1959) *The Religious Orders in England. Volume III.* Cambridge: Cambridge University Press.

KNUDSON, K. J. & C. M. STOJANOWSKI (2008) New directions in bioarchaeology: Recent contributions to the study of human social identities. *Journal of Archaeological Research*. 16(4): 397-432.

KNÜSEL, C. (2014) Courteous Knights and Cruel Avengers. A consideration of the changing social context of medieval warfare from the perspective of human remains, in C. Knüsel and M. J. Smith (eds) *The Routledge Handbook of the Bioarchaeology of Human Conflict*. London: Routledge. 263-281.

KNÜSEL, C. J. & S. GÖGGEL (1993) A Cripple from the Medieval Hospital of Sts James and Mary Magdalen, Chichester. *International Journal of Osteoarcbaeology*. 3: 155- 165.

KORHONEN, A. (2014) Disability Humour in English Jestbooks of the Sixteenth and Seventeenth Centuries. *Cultural History*. 3(1): 27-53.

KOWALESKI, M. (2014) Medieval People in Town and Country: New Perspectives from Demography and Bioarchaeology. *Speculum*. 89(3): 573-600.

KRAKOWKA, K. (2017a) Patterns and prevalence of violence-related skull trauma in medieval London. *American Journal of Physical Anthropology*. 164: 488–504.

KRAKOWKA, K. (2017b) Violence-Related Trauma from the Cistercian Abbey of St Mary Graces and a Late Black Death Cemetery. *International Journal of Osteoarchaeology*. 27: 56–66.

KRENZ-NIEDBALA, M. (2016) Did Children in Medieval and Post- medieval Poland Suffer from Scurvy? Examination of the Skeletal Evidence. *International Journal of Osteoarchaeology*. 26: 633–647.

KROLL, J. (1977) The Concept of Childhood in the Middle Ages. *Journal of the History of the Behavioral Sciences*. 13: 384-393.

KROLL, J. & BACHRACH, B. (1986) Child Care and Child Abuse in Early Medieval Europe. *Journal of the American Academy of Child Psychiatry*. 25(4): 562-568.

LANGMUIR, E. (2006) *Imagining Childhood*. Yale: Yale University.

LARSEN, C. S. (1999) *Bioarchaeology: Interpreting Behavior from the Human Skeleton*. Cambridge: Cambridge University Press. First Edition.

LARSEN, C. S. (2015) *Bioarchaeology: Interpreting behavior from the human skeleton*. Cambridge: Cambridge University Press. Second Edition.

LAURENCE, A. (2004) Women in the British Isles in the Sixteenth Century, in R. Tittler & N. Jones (eds) *A Companion to Tudor Britain*. Malden: Blackwell Publishing. 381-399.

LAZARUS, R. S., & C. W. ERIKSEN (1952) Effects of failure stress upon skilled performance. *Journal of Experimental Psychology*. 43: 100-105.

LEE, F. & J. MAGILTON (2008) Physical Anthropology, in J. Magilton, F. Lee & A. Boylston (eds) *Lepers Outside the Gate: Excavations at the Cemetery of the Hospital of St James and St Mary Magdalene, Chichester, 1986-87 and 1993*. York: Council for British Archaeology. 158: 150-156.

LEJACQ, S. S. (2013) The Bounds of Domestic Healing: Medical Recipes, Storytelling and Surgery in Early Modern England. *Social History of Medicine*. 26(3): 451–468.

LEVI, G. & J. C. SCHMITT (1997) Introduction, in G. Levi and J. C. Schmitt (eds) *A History of Young People in the West*. Cambridge: Harvard University Press. 1-11.

LEWIS, C. (2009) Children's Play in the Later Medieval English Countryside. *Childhood in the Past*. 2: 86-108.

LEWIS, C. (2014) Interdisciplinarity, Archaeology and the Study of Medieval Childhood, in D. M. Hadley & K. A. Hemer (eds) *Medieval Childhood: Archaeological Approaches*. Oxford: Oxbow Books. 145-170.

LEWIS, M. (2002a) Early emotional development in, A. Slater & M. Lewis (eds) *Introduction to Infant Development*. Oxford: Oxford University Press. 192-209.

LEWIS, M. (2002b) Social development, A. Slater & M. Lewis (eds) *Introduction to Infant Development*. Oxford: Oxford University Press. 210-228.

LEWIS, M. & A. SLATER (2002) A brief history of infancy research, in A. Slater & M. Lewis (eds) *Introduction to Infant Development*. Oxford: Oxford University Press. 3-15.

LEWIS, M. E. (2000) Non-Adult Palaeopathology: Current Status and Future Potential, in M. Cox & S. Mays (eds.) *Human Osteology in Archaeology and Forensic Science*. Cambridge: Cambridge University Press. 39-56.

LEWIS, M. E. (2002) Impact of Industrialization: Comparative Study of Child Health in Four Sites From Medieval and Postmedieval England (A.D. 850-1859). *American Journal of Physical Anthropology*. 119: 211-223.

LEWIS, M. E. (2007) *The Bioarchaeology of Children: Perspective from Biological and Forensic Anthropology*. Cambridge: Cambridge University Press.

LEWIS, M. E. (2008) The Children, in J. Magilton, F. Lee & A. Boylston (eds) *Lepers Outside the Gate: Excavations at the Cemetery of the Hospital of St James and St Mary Magdalene, Chichester, 1986-87 and 1993*. Council for British Archaeology Research Report. 158: 174-187.

LEWIS, M. E. (2011a) Tuberculosis in the Non-Adults from Romano-British Poundbury Camp, Dorset, England. *International Journal of Palaeopathology.* 1: 12-23.

LEWIS, M. E. (2011b) The Osteology of Infancy and Childhood: Misconceptions and potential, in M. Lally and A. Moore (eds) *(Re)Thinking the Little Ancestor: New Perspectives on the Archaeology of Infancy and Childhood*. BAR International Series 2271. Oxford. Archaeopress. 1-13.

LEWIS, M. E. (2013) Children of the Golden Minster: St. Oswald's Priory and the Impact of Industrialisation on Child Health. *Journal of Anthropology*. 1-11.

LEWIS, M. E. (2014) Sticks and Stones. Exploring the nature and significance of child trauma in the past, in C. Knüsel & M. J. Smith (eds) *The Routledge Handbook of the Bioarchaeology of Human Conflict*. London: Routledge. 39-63.

LEWIS, M. E. (2016) Work and the Adolescent in Medieval England AD 900–1550: The Osteological Evidence. *Medieval Archaeology*. 60(1): 138-171.

LEWIS, M. E. (2017a) *Paleopathology of Children. Identification of Pathological Conditions in the Human Skeletal Remains of Non-Adults.* London: Academic Press.

LEWIS, M. E. (2017b) Childcare in the Past: The Contribution of Palaeopathology, in W. Southwell-Wright, L. Powell & R. Gowland (eds) *Care in the Past: Archaeological & Interdisciplinary Perspectives*. Oxford: Oxbow Books. 23-37.

LEWIS, M. E. (2018) Disease and Trauma in the Children from Roman Britain, in S. Crawford, D. M. Hadley & G. Shepherd (eds) *The Oxford Handbook of the Archaeology of Childhood.* Oxford: Oxford University Press. 467-482.

LEWIS, M. E., F. SHAPLAND & R. WATTS (2016a) On the Threshold of Adulthood: A New Approach for the Use of Maturation Indicators to Assess Puberty in Adolescents from Medieval England. *American Journal of Human Biology*. 28: 48–56.

LEWIS, M. E., F. SHAPLAND & R. WATTS (2016b) The influence of chronic conditions and the environment on pubertal development. An example from medieval England. International. *Journal of Paleopathology*. 12: 1–10.

LEWIS, M. E. & R. GOWLAND (2007) Brief and Precarious Lives: Infant Mortality in Contrasting Sites from Medieval and Post-Medieval England (AD 850 – 1859). *American Journal of Physical Anthropology*. 134: 117-129.

LIEDL, J. (2014) "Rather a Strong and Constant Man": Margaret Pole and the Problem of Women's Independence, in J. A. Chappell & K. A. Kramer (eds) *Women during the English Reformations: Renegotitating Gender and Religious Identity.* New York: Palgrave Macmillan. 29-43.

LILLEHAMMER, G. (1989) A child is born. The child's world in an archaeological perspective. *Norwegian Archaeological Review*. 22(2): 89-105.

LILLEHAMMER, G. (2000) The World of Children, in J. Sofaer. Derevenski (ed) *Children and Material Culture*. London: Routledge. 17-26.

LILLEHAMMER, G. (2010) Archaeology of Children. *Complutum*. 21(2): 15-45.

LILLEHAMMER, G. (2015) Steps to Children's Living Spaces, in M. Sanchez Romero, E. Alarcon Garcia and G. Aranda Jimenez (eds) *Children, Spaces and Identity.* Oxford: Oxbow Books. 10-24.

LILLEHAMMER, G. (2018) The History of the Archaeology of Childhood, in S. Crawford, D. M. Hadley and G. Shepherd (eds) *The Oxford Handbook of the Archaeology of Childhood*. Oxford: Oxford University Press. 38-51.

LIÑÁN, E., M. LIÑÁN & J. CARRASCO (2013) Cryptopalaeontology, in C. J. Duffin, R. T. J. Moody & C. Gardner-Thorpe. *A History of Geology and Medicine.* London: The Geological Society. 45-64.

LINDEMANN, M. (2010) *Medicine and Society in Early Modern Europe*. Cambridge: Cambridge University Press. Second Edition.

LIVERSIDGE, H. M. (1994) Accuracy of age estimation from developing teeth of a population of known age (0–5.4 years). *International Journal of Osteoarchaeology* 4(1): 37-45.

LIVERSIDGE, H. M. & T. MOLLESON (2004) Variation in Crown and Root Formation and Eruption of Human Deciduous Teeth. *American Journal of Physical Anthropology*. 123: 172-180.

LLOYD, P. S. (2011) Dietary advice and fruit-eating in late Tudor and early Stuart England. *Journal of the History of Medicine and Allied Sciences.* 67(4): 553-586.

LOCKAU, L. (2016) The Present Informs the Past: Incorporating Modern Clinical Data Into Paleopathological Analyses of Metabolic Bone Disease, in M. Mant & A. Holland (eds) *Beyond the Bones*: *Engaging with Disparate Datasets.* London: Academic Press. 113-130.

LOE, L. (2005) *Specialist Report on the Human Skeletons from Lichfield Cathedral Nave.* Bournemouth: Bournemouth University. Unpublished Report.

LOE, L. (2006) Analysis of the Human Bone from Sites 1 and 2, in R. Jackson (ed) *Excavations at St. James's Priory, Bristol*. Oxford: Oxbow Books: 105-120. B43

LOTT, T. (2017b) We mark the growth of our children on the door – but what for? *The Guardian*. 14 July 2017.

LOVEJOY C. O., R. S. MEINDL, R. P. MENSFORTH & T. J. BARTON (1985) Multifactorial determination of skeletal age at death: a method and blind tests of its accuracy. *American Journal of Physical Anthropology*. 68(1): 1-14.

LYNCH, A. (2017) 'he nas but seven yeer olde': Emotions in Boy Martyr Legends of Later Medieval England, in K. Barclay, K. Reynolds & C. Rawnsley (eds) *Death, Emotion and Childhood in Premodern Europe*. London: Palgrave Macmillan. 25-44.

LYNNERUP, N. & H. D. KLAUS (2019a) Fundamentals of Human Bone and Dental Biology: Structure, Function, and Development, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains.* London: Elsevier. 35-58.

LYNNERUP, N. & H. D. KLAUS (2019b) Abnormal Bone: Considerations for Documentation, Disease Process Identification, and Differential Diagnosis, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains*. London: Elsevier. 59-89.

LYNNERUP, N. & J. BOLDSEN (2012) Leprosy (Hansen's disease), in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 458-471..

MACCULLOCH, D. (2003) *Reformation.* London: Penguin Books.

MACCULLOCH, D. (2016) *All Things Made New: Writings on the Reformation.* London: Allen Lane.

MACFARLANE, A. (1999) *Witchcraft in Tudor and Stuart England A regional and comparative study*. London: Routledge. Second Edition.

MACLEHOSE, W. F. (1996) Nurturing Danger: High Medieval Medicine and the Problem(s) of the Child, in J. C. Parsons & B. Wheeler (eds) *Medieval Mothering.* New York: Garland Publishing. 3-24.

MADDERN, P. (2017) Rhetorics of Death and Resurrection: Child Death in Late-Medieval English Miracle Tales, in K. Barclay, K. Reynolds & C. Rawnsley (eds) *Death, Emotion and Childhood in Premodern Europe*. London: Palgrave Macmillan. 45-63.

MAFART, B., R. KÉFI & E. BÉRAUD-COLOMB (2007) Palaeopathological and Palaeogenetic Study of 13 Cases of Developmental Dysplasia of the Hip with Dislocation in a Historical Population from Southern France. *International Journal of Osteoarchaeology.* 17: 26–38.

MAGILTON, J., F. LEE & A. BOYLSTON (2008) *'Lepers Outside the Gate': Excavations at the Cemetery of the Hospital of St James and Mary Magdalene, Chichester, 1986-87 and 1993.* York: Council for British Archaeology.

MAHAN, S. T. & J. R. KASSER (2008) Does Swaddling Influence Developmental Dysplasia of the Hip? *Pediatrics*. 121: 177-178.

MAHNKE, C. B. (2000) The Growth and Development of a Specialty: The History of Pediatrics. *Clinical Pediatrics*. 39: 705-714.

MAHONEY, D. (2005) Human Bone - Quaker Inhumations, in R. Brown (ed) *Vancouver Center and Clough Lane Car Park, King's Lynn, Norfolk. Post Excavation Assessment and Updated Project Design*. Oxford: Oxford Archaeology. 77-123. Unpublished Report.

MAHOOD, H. (2015) The Liminality of Care: Caring for the Sick and Needy on the Boundaries of Monasteries' Selected Proceedings from 'The Maladies, Miracles and Medicine of the Middle Ages*. The Reading Medievalist: A Postgraduate Journal*. 2: 50-70.

MALONEY, C. (2009) *General Standards for the Preparation of Archaeological Archives Deposited with the Museum of London*. London: Museum of London.

MALT, R. & B. WHITE (1987) *Excavations at Broad Street Station: the Broadgate Development LSS 85.* London: Museum of London Archive Report

MANCHESTER, K. (1989) The Burials, in M. Farley and K. Manchester (ed) The Cemetery of the Leper Hospital of St Margaret, High Wycombe, Buckinghamshire. *Medieval Archaeology*. 33: 84-88.

MANCHESTER, K. (1992) The palaeopathology of urban infections, in S. Bassett (ed) *Death in Towns: Urban Responses to the Dying and the Dead, 100-1600*. Leicester University Press. 8-14.

MANIFOLD, B. E. (2010) The Representation of Non-Adult Skeletal Elements Recovered for British Archaeological Sites. *Childhood in the Past.* 3: 43-62.

MANN, M. E. (2002) Little Ice Age, in M. C. MacCracken, J. S. Perry & T. Munn (eds) *Encyclopedia of Global Environmental Change*. New Jersey: Wiley. 504-509.

MÀRQUEZ-GRANT, N. & L. LOE (2015) Bone, in A. Hicks (ed) *Medieval Town and Augustinian Friary: Settlement c.1325-1700. Canterbury Whitefriars Excavations 1999-2004*. Canterbury: Canterbury Archaeology Trust. 319-338.

MASON, J. W. (1975a) A Historical View of the Stress Field. Part I. *Journal of Human Stress*. 1(1): 6-12.

MASON, J. W. (1975b) A Historical View of the Stress Field. Part II. *Journal of Human Stress*. 1(1): 22-36.

MAUSS, M. (1972) *A General Theory of Magic*. London: Routledge. Translated by R. Brain.

MAUSS, M. (1973) Techniques of the body. *Economy and Society*. 2(1): 70-88. (Originally published 1934)

MAYS, S. (1985) *The Human Remains from West Cotton, Raunds, Northamptonshire*. English Heritage. Ancient Monuments Laboratory. 56/90. Unpublished Report.

MAYS, S. (1991) *The Medieval Burials From the Blackfriars Friary, School Street, Ipswich, Suffolk.* English Heritage Ancient Monuments Laboratory Report. 16/91.

MAYS, S. (1994) The Burials from the Whitefriars, Friary Site, Buttermarket, Ipswich, Suffolk, (Excavated 1986-88). English Heritage. Ancient Monuments Laboratory. 17/91. Unpublished Report.

MAYS, S. (1995) *A Medieval Burial Recovered During the 1988 Excavations at Fountains Abbey, North Yorkshire. English Heritage.* Ancient Monuments Laboratory. 8/95. Unpublished Report.

MAYS, S. (1998) *The Archaeology of Human Bones*. London: Routledge.

MAYS, S. (2006) The Osteology of Monasticism in Medieval England, in R. Gowland & C. Knüsel (eds) *Social Archaeology of Funerary Remains.* Oxford: Oxbow. 179-189.

MAYS, S. (2007) The Human Remains, in S. Mays, C. Harding & C. Heighway (eds) *The Churchyard. A Study of the Settlement of the Yorkshire Wolds*. Oxford: Oxbow Books. Vol 6. 77-440.

MAYS, S. (2012) The Relationship Between Paleopathology and the Clinical Sciences in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 285-309.

MAYS, S. (2014) The palaeopathology of scurvy in Europe. *International Journal of Paleopathology*. 5: 55–62.

MAYS, S. (2016) The Ghostly Child in Medieval North-west Europe. *Childhood in the Past*. 9(2): 109-119.

MAYS, S., G. CRANE-KRAMER & A. BAYLISS (2003) Two Probable Cases of Treponemal Disease of Medieval Date From England. *American Journal of Physical Anthropology*. 120: 133-143.

MAYS, S., J. SIDELL, B. SLOANE, W. WHITE & J. ELDERS (2015) *Large Burial Grounds: Guidance on sampling in archaeological fieldwork projects.* Advisory Panel on the Archaeology of Burials in England. Information Press.

MAYS, S., R. GOWLAND, S. HALCROW & E. MURPHY (2017) Child Bioarchaeology: Perspectives on the Past 10 Years. *Childhood in the Past*. 10(1): 38–56.

MCCLAIN, M. (2012) Theory, Disciplinary Perspectives and the Archaeology of Later Medieval England. *Medieval Archaeology*. 56(1): 131-170.

MCGAVIN, J. J. (2015) Nice Wanton, c.1550, in T. Betteridge and G. Walker (eds) *The Oxford Handbook of Tudor Drama.* Oxford: Oxford University Press. 246-261.

MCINTOSH, M. K. (1988) Local responses to the poor in late medieval and Tudor England. *Continuity and Change*. 3(2): 209-245.

MCINTOSH, M. K. (2012) *Poor Relief in England 1350-1600*. Cambridge: Cambridge University Press.

MCINTRYE, L. & D. M. HADLEY (2011) *Archaeological Excavations at Bawtry Masonic Hall South Yorkshire, July 2010: the cemetery of the medieval hospital of St Mary Magdalene*. Sheffield: University of Sheffield.

MCKENNA, J. J. (2017) Sudden infant death syndrome, B. Hopkins, E. Geangu and S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. 723-729. Second Edition.

MCKENZIE, C. J. & E. M. MURPHY (2018) *Life and Death in Medieval Gaelic Ireland. The Skeletons from Ballyhanna, Co. Donegal.* Wiltshire: Four Courts Press.

MCLEAN, A. (1972) *Humanism and the Rise of Science in Tudor England*. London: Heinemann Educational Books.

MEADE, M. S. & R. J. EARICKSON (2005) *Medical Geography*. New York: The Guildford Press. Second Edition.

MÉNARD, L. & B. L. DAVIS (2017) Speech development, B. Hopkins, E. Geangu & S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development*. Cambridge: Cambridge University Press. Second Edition. 403-414.

MEYER, L. E. & T. ERLER (2011) Swaddling: a traditional care method rediscovered. *World Journal of Pediatrics*. 7(2): 155-160.

MILES, M. (2001) Martin Luther and Childhood Disability in 16th Century Germany. *Journal of Religion, Disability & Health*. 5(4): 5-36.

MILLARD, A. R. (2000) A model for the effect of weaning on nitrogen isotope ratios in humans, in G. A. Goodfriend, M. J. Collins, M. L. Fogel, S. A. Macko & J. F. Wehmiller (eds) *Perspectives in Amino Acid and Protein Geochemistry*. New York: Oxford University Press. 51-59.

MILLER, M. E. (2018) Beyond Passive Immunity: Breastfeeding, milk and collaborative mother-infant immune systems, in C. Tomori, A. E. L. Palmquist & E. A. Quinn (eds) *Breastfeeding: New Anthropological Approaches*. Abingdon: Routledge. 26-39.

MILNER, G. R. & J. L. BOLDSEN (2012) Estimating Age and Sex from the Skeleton, a Paleopathological Perspective, in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 268-284.

MILNER, G. R. & J. L. BOLDSEN (2017) Life not death: Epidemiology from skeletons. *International Journal of Paleopathology*. 17: 26–39.

MILNER, G. R., J. W. WOOD & J. L. BOLDSEN (2008) Advances in Paleodemography, in M. A. Katzenberg & S. R. Saunders (eds) *Biological Anthropology of the Human Skeleton*. New Jersey: John Wiley & Sons Inc. Second Edition. 561-600.

MITCHELL, J. A. (2014) *Becoming Human: The Matter of the Medieval Child*. Minneapolis: University of Minnesota Press.

MITCHELL, P. D. (2004) *Medicine in the Crusades: Warfare, Wounds and the Medieval Surgeon*. Cambridge: Cambridge University Press.

MITCHELL, P. D. (2012) Integrating Historical Sources with Paleopathology, in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 310-323.

MITCHELL, P. D. (2017) Improving the use of historical written sources in paleopathology. *International Journal of Paleopathology*. 19: 88–95.

MITCHELL, P. D. & R. C. REDFERN (2008) Diagnostic Criteria for Developmental Dislocation of the Hip in Human Skeletal Remains. *International Journal of Osteoarchaeology*. 18: 61–71.

MITCHELL, P. D. & R. C. REDFERN (2011) Brief Communication: Developmental Dysplasia of the Hip in Medieval London. *American Journal of Physical Anthropology*. 144: 479–484.

MOFFAT, T. & T. PROWSE (2018) Biocultural and Bioarchaeological Approaches to Infant and Young Child Feeding in the Past, in P. Beauchesne & S. C. Agarwal (eds) *Children and Childhood in Bioarchaeology: Bioarchaeological Interpretations of the Human Past: Local, Regional, and Global Perspectives*. Florida: University Press of Florida. 98-126.

MOORREES, C. F. A., E. A. FANNING & E. E. HUNT (1963a) Formation and Resorption of Three Deciduous Teeth in Children. *American Journal of Physical Anthropology*. 21: 205-213.

MOORREES, C. F. A., E. A. FANNING & E. E. HUNT (1963b) Age Variation of Formation Stages for Ten Permanent Teeth. *Journal of Dental Research*. 42: 1490-1502.

MORPURGO, M. (2006) Introduction, in H. Cunningham (ed) *The Invention of Childhood*. London: BBC Books. 12-16.

MORTIMER, J. T. & N. N. DUKE (2017) Sociology, B. Hopkins, E. Geangu and S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development*. Cambridge: Cambridge University Press. Second Edition. 812-820.

MÜLDNER, G. (2009) Investigating Medieval Diet and Society by Stable Isotope Analysis of Human Bone, in R. Gilchrist & A. Reynolds (eds) *Reflections: 50 Year of Medieval Archaeology, 1957-2007.* Society for Medieval Archaeology Monograph. 30: 327-346.

MÜLDNER, G. & RICHARDS, M. P. (2005) Fast or Feast: Reconstructing Diet in Later Medieval England by Stable Isotope Analysis. *Journal of Archaeological Science*. 32: 39-48.

MÜLDNER, G. & RICHARDS, M. P. (2007) Diet and Diversity at Later Medieval Fishergate: The Isotopic Evidence. American *Journal of Physical Anthropology*. 134: 162-174.

MUNRO, L. (2017) Speaking Like a Child: Staging Children's Speech in Early Modern Drama, in R. Preiss & D. Williams (eds) *Childhood, Education and the Stage in Early Modern England*. Cambridge: Cambridge University Press. 81-99.

MURPHY, E. M. (2011) Children's Burial Grounds in Ireland (Cilliní) and Parental Emotions Toward Infant Death. *International Journal of Historical Archaeology*. 15: 409-428.

MURPHY, E. M. & C. DONNELLY (2018) Together in Death: Demography and Funerary Practices in Contemporary Multiple Interments in Irish Medieval Burial Grounds. G. Lillehammer & E. Murphy (eds) *Across the Generations: The Old and the Young in Past Societies.* Stavanger: Museum of Archaeology: 119-142.

MURPHY, E. M. & M. LE ROY (2017) Introduction: Archaeological Children, Death and Burial, in E. Murphy, & M. Le Roy (eds) *Children, Death and Burial: Archaeological Discourses*. Oxford: Oxbow Books. 1-18.

NEIL, B. (2017) Human Bones, in C. Cessford (ed) *Former Old Examination Hall, North Range Buildings, New Museums Site, Cambridge. An Archaeoelogical Excavation.* Cambridge: Cambridge Archaeological Unit. 1377: 77-87. Unpublished Report.

NEWSON, J. & E. NEWSON (1976) *Seven Years Old in the Home Environment*. London: George Allen & Unwin Ltd.

NEWTON, H. (2010) Children's Physic: Medical Perceptions and Treatment of Sick Children in Early Modern England, c. 1580–1720. *Social History of Medicine*. 23(3): 456–474.

NEWTON, H. (2011) 'Very Sore Nights and Days': The Child's Experience of Illness in Early Modern England, c.1580–1720. *Medical History*. 55: 153-182.

NEWTON, H. (2014) *The Sick Child in Early Modern England, 1580-1720*. Oxford: Oxford University Press.

NEWTON, H. (2015a) 'Nature Concocts & Expels': The Agents and Processes of Recovery from Disease in Early Modern England. *Social History of Medicine*. 28(3): 465–486.

NEWTON, H. (2015b) The Dying Child in Seventeenth Century England. *Pediatrics*. 136(2): 1-3.

NEWTON, H. (2017) ''Rapt Up with Joy': Children's Emotional Responses to Death in Early Modern England', in K. Barclay, K. Reynolds & C. Rawnsley (eds) *Death, Emotion and Childhood in Premodern Europe*. London: Palgrave Macmillan. 87-107.

NICHOLSON, H. J. (2004) *Medieval Warfare: Theory and Practice of War in Europe 300-1500*. Basingstoke: Palgrave Macmillan.

NIXON, T., B. SLOANE & H. SWAIN (2000) Introduction, in K. Frederick, P. Garwood, P. Hinton, M. Kendall & E. McAdam (eds) *The archaeology of Greater London. An assessment of archaeological evidence for human presence in the area now covered by Greater London.* London: Museum of London Archaeology Service. 1-8.

NORRIS, M. (1992) Later medieval monumental brasses: an urban funerary industry and its representation of death, in S. Bassett (ed) *Death in Towns: Urban Reponses to the Dying and the Dead, 100-1600*. Leicester: Leicester University Press. 184-209.

NORTON, E. (2014) The Depiction of Children on the Fifteenth and Sixteenth Century Tombs in Kinlet Church. *Transactions of the Shropshire Archaeological and Historical Society*. 87: 35-46.

NOVAK, S. A. (2000) Battle-related trauma, in V. Fiorato, A. Bolyston & C. Knüsel (eds) *Blood Red Roses. The archaeology of a mass grave from the Battle of Towton AD 1461*. Oxford: Oxbow Books. 90-102.

NUTTON, V. (1995) *The Western Medical Tradition: 800 BC to AD 1800, Volume 1.* Cambridge: Cambridge University Press.

NUTTON, V. (2011) Humours & Pneumas, in W. Bynum & H. Bynum (eds) *Great Discoveries in Medicine*. London: Thames & Hudson. 26-29.

O'CONNOR, T. P. (1975) The Human Remains, in T. P. Bedwin (ed) The Excavation of the Church of St. Nicholas, Angmering, 1974. *Sussex Archaeological Collections*. 113: 33-34.

O'CONNOR, T. P. (1984) *Rivenhall Church, Essex. A report on the human remains*. English Heritage. Ancient Monuments Laboratory. 2202. Unpublished Report.

O'CONNOR, T. P. (1986) *Five human skeletons from the Chapter House of Jervaulx Abbey, North Yorkshire*. English Heritage. Ancient Monuments Laboratory. Unpublished Report.

O'CONNOR, T. P. (1992) *Wooton Wawen Churchyard, Warwickshire*. English Heritage. Ancient Monuments Laboratory. Unpublished Report.

O'MEARA, D. P. (2018) The Riddle of the Sands: Sieving Methodology in the Recovery of Human Remains, in M. Holst and M. Alexander (eds) *Trends in Biological Anthropology. Volume 2.* Oxford: Oxbow Books. 83-93.

OLSAN, L. T. (2003) Charms and Prayers in Medieval Medical Theory and Practice. *Social History of Medicine*. 16(3): 343-366.

OOSTERWIJK, S. (2000) Chrysoms, shrouds and infants on English tomb monuments: A question of terminology? *Church Monuments.* 15: 44-64.

OOSTERWIJK, S. (2003) A swathe feire graue: the appearance of children on medieval tomb monuments, in R. Eales and S. Tyas (eds) *Family and Dynasty in Later Medieval England: Proceedings of the Harlaxton Symposium of 1997.* Donington: Shaun Tyas. 172-192.

OOSTERWIJK, S. (2007) 'I cam but now, and now I go my wai'; The Presentation of the Infant in the Medieval Dance Macabre, in J. T. Rosenthal (ed) *Essays on Medieval Childhood. Reponses to Recent Debates*. Donington: Shaun Tyas. 124-150.

OOSTERWIJK, S. (2007) Swaddled or shrouded? The interpretation of 'chrysom' effergies on late medieval tomb monunments, in K. M. Rudy and B. Baert (eds) We*aving, Veiling and Dressing: Textiles and their Metaphors in the Middle Ages*. Turnhout: Brepols. 307-348.

OOSTERWIJK, S. (2018) Adult Appearances? The Representation of Children and Childhood in Medieval Art, in S. Crawford, D. M. Hadley and G. Shepherd (eds) *The Oxford Handbook of the Archaeology of Childhood*. Oxford: Oxford University Press. 590-607.

ORME, N. (1973) *English Schools in the Middle Ages*. London: Methuen & Co Ltd.

ORME, N. (1994) Children & the Church in Medieval England. *Journal of Ecclesiastical History*. 45(4): 563-588.

ORME, N. (1995) The Culture of Children in Medieval England. *Past & Present*. 148: 48-88.

ORME, N. (1996) John Holt (d. 1504), Tudor Schoolmaster and Grammarian. *The Library*. 18(4): 283-305.

ORME, N. (2001) *Medieval Children*. Yale: Yale University Press.

ORME, N. (2006) *Medieval Schools: From Roman Britain to Renaissance England*. Yale: Yale University Press.

ORME, N. (2008) Medieval Childhood: Challenge, Change and Achievement. *Childhood in the Past.* 1: 106-119.

ORME, N. & M. WEBSTER (1995) *The English Hospital, 1070-1570*. Yale: Yale University Press.

ORTNER, D. J. (2001) Disease Ecology in D. R. Brothwell & A. M. Pollard (eds) *Handbook of Archaeological Sciences.* Chichester: John Wiley & Sons. 225-235.

ORTNER, D. J. (2003) *Identification of Pathological Conditions in Human Skeletal Remains*. San Diego: Academic Press. Second Edition.

ORTNER, D. J. (2008) Differential Diagnosis of Skeletal Lesions in Infectious Disease, in R. Pinhasi & S. Mays (eds) *Advances in Human Palaeopathology*. Chichester: John Wiley & Sons Ltd. 191-214.

ORTNER, D. J. (2011) Human skeletal paleopathology. *International Journal of Paleopathology*. 1: 4–11.

ORTNER, D. J. (2012) Differential Diagnosis and Issues in Disease Classification, in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 250-267.

ORTNER, D. J. & S. MAYS (1998) Dry-bone Manifestations of Rickets in Infancy and Early Childhood. *International Journal of Osteoarchaeology*. 8: 45-55.

OSBORNE, C. (1977) *The Human Skeletal Remains from Dartford Priory, Kent, 1977.* English Heritage. Ancient Monuments Laboratory. Unpublished Report.

OSBORNE, C. (1979) *The Human Skeletal Remains from Romsey Abbey, Hants., 1973-1979*. English Heritage. Ancient Monuments Laboratory. 100/88. Unpublished Report.

OSBORNE, C. & A. STIRLAND (2001) The Human Skeletal Remains, in O. Beazley and B. Ayers (eds) Two Medieval Churches in Norfolk. *Norfolk East Anglian Archaeology*. 96: 47-48.

OSTORERO, M. (2019) Witchcraft, in S. Page and C. Rider (ed) *The Routledge History of Medieval Magic*. London: Routledge. 502-522.

OSWELL, D. (2013) *The Agency of Children. From Family to Global Human Rights*. Cambridge: Cambridge University Press.

OVERSTREET, R. L. (2009) The Greek Concept of the "Seven Stages of Life"and Its New Testament Significance. *Bulletin for Biblical Research.* 19(4): 537–563.

OXENHAM, M. F. & A. WILLIS (2017) Towards a Bioarchaeology of Care of Children (eds) *New Developments in the Bioarchaeology of Care. Further Case Studies and Expanded Theory.* Springer International Publishing. 219-236.

OXFORD ARCHAEOLOGY (2014) *St Mary's Church, Church Walk, Ambrosden, Oxford. Archaeological Watching Brief Report*. Oxford: Oxford Archaeology. Unpublished Report.

OYLER, C. R. (2001) Human Remains, in I. M. Ferris (ed) Excavations at Greyfriars, Gloucester, in 1967 and 1974-5. *Transactions of the Bristol and Gloucestershire Archaeological Society*. 119: 139-140.

OZMENT, S. (1983) *When Fathers Ruled: Family Life in the Reformation*. Cambridge: Havard University Press.

PAGE-PHILLIPS, J. (1970) *Children on Brasses*. London: George Allen & Unwin.

PAGE, S. (2013) *Magic in the Cloister: Pious Motives, Illicit Interests, and Occult Approaches to the Medieval Universe.* Pennsylvania: The Pennsylvania State University Press.

PARKER PEARSON, M. (2003) *The Archaeology of Death and Burial*. Stroud: Sutton Publishing Limited.

PARKINSON, E. W. & K. TALBOT (2017) Introduction: Interdisciplinary approaches to the study of disease and deformity in past populations, in E. W. Parkinson & L. Talbot (eds) In Sickness and Health: Interdisciplinary approaches to the study of disease and deformity in past populations. *Archaeological Review from Cambridge*. 31(1): 1-5.

PARTEE, M. H. (2006) *Children in Shakepeare's Plays*. New York: Peter Lang.

PASTOUREAU, M. (1997) Emblems of Youth: young people in medieval imagery, in G. Levi & J. C. Schmitt (eds) *A History of Young People in the West.* Cambridge: Harvard University Press. 222-239.

PEARN, J. (2011) Paediatrics: the etymology of a name. *Archives of Disease in Childhood*. 96: 759–763.

PEARSON, S. (2005) Rural and urban houses, 1100-1500: 'urban adaption' reconsidered, in K. Giles and C. Dyer (eds) *Town and Country in the Middle Ages*. Leeds: Maney. 65-84.

PELLING, M. (1988) Child Health as a Social Value in Early Modern England. *Social History of Medicine*. 1(2): 135–164.

PENNY-MASON, B. J. (2017) A Bioarchaeological Matrix Retrospective: Quantifying the Value of Post-Excavation Harris Matrix Reconstruction of Skeletal Assemblages. *Bioarchaeology International*. 1 (1–2): 72–85.

PENNY-MASON, B. J. & A. ROSE (2018) Medieval Odontology, Maturation & The Reformation: An Introduction to Trends in Non-Adult Dental Disease in England, c. 1000-1700. *The Mediaeval Journal*. 8(2): 79-128.

PENNY-MASON, B. J. & R. L. GOWLAND (2014) The Children of the Reformation: Childhood Palaeoepidemiology in Britain, ad 1000–1700. *Medieval Archaeology*. 58. 162-194.

PETRY, Y. (2011) 'Many Things Surpass our Knowledge': An Early Modern Surgeon on Magic, Witchcraft and Demonic Possession. *Social History of Medicine*. 25(1): 47–64.

PHILLIPS, K. M. (1999) Maidenhood as the perfect age of woman's life, in K. J. Lewis, N. J. Menuge & K. M. Phillips (eds) *Young Medieval Women*. Palgrave Macmillan. 1-24.

PHILLIPS, K. M. (2003) *Medieval Maidens: Young women and gender in England, 1270-1540.* Manchester: Manchester University Press.

PHILLIPS, K. M. (2004) Desiring Virgins: Maidens, Martyrs and Femininity in Late Medieval England, in P. J. P. Goldberg & F. Riddy (eds) *Youth in the Middle Ages*. Woodbridge: York Medieval Press. 45-59.

PHILLIPS, K. M. (2005) The invisible man: body and ritual in fifteenth-century noble household. *Journal of Medieval History*. 19(1): 22-42.

PHILLIPS, K. M. (2007) Masculinities and the medieval English sumptuary laws. *Gender and History*. 19(1): 22-42.

PIETERS, T. (2018) Poisons in the historic medicine cabinet, in O. P. Grell, A. Cunningham & J. Arrizabalaga (eds) *"It All Depends on the Dose": Poisons and Medicines in European History.* Abingdon: Routledge. 9-24.

PINHASI, R. (2008) Growth in Archaeological Populations, in R. Pinhasi & S. Mays (eds) *Advances in Human Palaeopathology*. Chichester: John Wiley & Sons Ltd. 363-380.

PINHASI, R. & C. BOURBOU (2008) How Representative Are Human Skeletal Assemblages for Population Analysis? in R. Pinhasi & S. Mays (eds) *Advances in Human Palaeopathology*. Chichester: John Wiley & Sons Ltd. 32-44.

PINTER-BELLOWS S. (1993a) The Human Skeletons, N. A. Smith and P. Crummy (ed) *Excavations in the St Giles Masonic centre, 1975. Colchester Archaeological Report. Excavations of Roman and later cemeteries, churches and monastic sites in Colchester, 1971-88.* 9: 230-231.

PINTER-BELLOWS S. (1993b) Human Skeletons, D. Shimmin (ed) *Excavations at No 42 Crouch Street, Colchester, 1988. Colchester Archaeological Report. Excavations of Roman and later cemeteries, churches and monastic sites in Colchester, 1971-88*. 9: 254-255.

PINTER-BELLOWS, S. (2004) The human skeletons from St. Mary Magdalen's, in C. Crossan (ed) Excavations at St Mary Magdalen's Hospital, Brook Street, Colchester. *Essex Archaeology and History*. 34: 143-149.

POLLOCK, L. A. (1983) *Forgotten Children: Parent-child relations from 1500 to 1900*. Cambridge: Cambridge University Press.

POLLOCK, L. A. (1990) Embarking on a rough passage: the experience of pregnancy in early-modern society, in V. Fildes (ed) *Women as Mothers in Pre-Industrial England. Essays in memory of Dorothy McLaren*. Abingdon: Routledge. 39-67.

POLLOCK, L. A. (2017) Little Commonwealths I: The Household and Family Relationships, in K. Wrightson (ed) *A Social History of England 1500-1750.* Cambridge: Cambridge University Press. 60-83.

POLLOCK, L. A. (2019) Children at Play in Western Europe, 1500–1800, in P. K. Smith & J. L. Roopnarine (eds) *The Cambridge Handbook of Play: Developmental and Disciplinary Perspectives.* Cambridge: Cambridge University Press. 281-301.

POORE, D., A. NORTON & A. DODD (2009) Excavations at Oxford Castle: Oxford's Western Quarter from the Mid-Saxon Period to the Late Eighteenth Century (Based on Daniel Poore's Tom Hassall Lecture for 2008). *Oxoniensia*. 74: 1-18.

PORTEUS, S. (2009) *An Archaeological Watching Brief at St Nicholas Church, Charlwood, Surrey. Archaeology South-East Project*. 2291. Unpublished Report.

POWER, E. (1924) *Medieval People*. London: The Folio Society.

POWERS, R. (1980) The Burials, C. Saunders and A. B. Havercroft (ed) Excavations at St Helen's Church, Wheathampstead. *Hertfordshire Archaeology*. 8: 105-109.

POWERS, R. & C. A. KEEPAX (1974) *Report on the Human Bones.* English Heritage. Ancient Monuments Laboratory. Unpublished Report.

PRŮCHOVÁ, E., L. CHROUSTOVSKÝ & P. KACL (2017) Maximising Skeletal Data Collection in Commercial Archaeology. *International Journal of Osteoarchaeology*. 7: 527–536.

RADBILL, S. X. (1963) Pediatrics in the Bible. *Clinical Pediatrics*. 2(4): 199-212.

RAES, A. (2005) Palaeopathological Investigations into the Articulated Human Skeletal Remains from Old St Andrew's Church, Portland, Dorset. *Proceedings of the Dorset Natural History and Archaeological Society.* 127: 67-76.

RAHTZ, P. A. (1969) Upton, Gloucestershire, 1964-1968. *Transactions of the Bristol and Gloucestershire Archaeological Society*. 88: 74-126.

RAMSEY, J. L. & J. H. LANGLOIS (2002) How infants perceive faces, in A. Slater & M. Lewis (eds) *Introduction to Infant Development.* Oxford: Oxford University Press. 167-191.

RATCLIFFE-DENSHAM, H. B. A. (1964) Notes on the Excavated Graves Including Macroscopic Palaeopathology, in G. D. Lewis (ed) The Cemetery of St. Mary Magdalen, Bidlington. *Sussex Archaeological Collections*. 102: 7-8.

RAWCLIFFE, C. (1984) The Hospitals of Later Medieval London. *Medical History*. 28: 1-28.

RAWCLIFFE, C. (1988) The Profits of Practice: the Wealth and Status of Medical Men in Later Medieval England. *Social History of Medicine.* 1(1): 61–78.

RAWCLIFFE, C. (1995) *Medicine for the Soul: The Life, Death and Resurrection of an English Medieval Hospital*. Woodbridge: Boydell.

RAWCLIFFE, C. (1999) *Medicine & Society in Later Medieval England*. London: Sandpiper Books Ltd.

RAWCLIFFE, C. (2003) Women, childbirth and religion in medieval England, in D. Wood (ed) *Women and Religion in Medieaval England*. Oxford: Oxbow. 91-117.

RAWCLIFFE, C. (2013) *Urban Bodies: Communal Health in Late Medieval English Towns and Cities*. Woodbridge: The Boydell Press.

RAWCLIFFE, C. (2016) A Crisis of Confidence? Parliament and the Demand for Hospital Reform in Early-15th- and Early-16th-Century England. *Parliamentary History*. 35(2): 85–110.

REDFERN, R. C. (2017) *Injury and Trauma in Bioarchaeology. Interpreting Violence in Past Lives*. Cambridge: Cambridge University Press.

REDFERN, R. C. (2018) Feeding Infants from the Iron Age to the Early Medieval Period in Britain, in S. Crawford, D. M. Hadley and G. Shepherd (eds) *The Oxford Handbook of the Archaeology of Childhood.* Oxford: Oxford University Press. 447-466.

REDFERN, R. C. & C. A. ROBERTS (2019) Trauma, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains*. London: Elsevier. 211-284.

REITSEMA, L. J. & B. K. MCILVAINE (2014) Reconciling "Stress" and "Health" in Physical Anthropology: What Can Bioarchaeologists Learn From the Other Subdisciplines? *Americal Journal of Physical Anthropology*. 155: 181–185.

REX, R. (2006) *Henry VIII and the English Reformation*. Basingstoke: The Macmillan Press Ltd.

REYNARD, L. M. & N. TUROSS (2015) The known, the unknown and the unknowable: weaning times from archaeological bones using nitrogen isotope ratios. *Journal of Archaeological Science*. 53: 618-625.

RICHARDS, M. P., S. MAYS & B. T. FULLER (2002) Stable Carbon and Nitrogen Isotope Values of Bone and Teeth Reflect Weaning Age at the Medieval Wharram Percy Site, Yorkshire, UK. *American Journal of Physical Anthropology*. 119: 205-210.

RICHARDSON, R. (2003) Human Remains, in K. Arnold and D. Olsen (eds) *The Medicine Man: The Forgotten Museum of Henry Wellcome*. London: The British Museum Press.

RIDDLE, J. M. (1970) Lithotherapy in the Middle Ages . . . Lapidaries Considered as Medical Texts. *Pharmacy in History*. 12(2): 39-50.

RIDER, C. (2016) Men and Infertility in Late Medieval English Medicine. *Social History of Medicine*. 29(2): 245–266.

ROBB, J. (2002) Time and biography: osteobiography of the Italian Neolithic lifespan, in Y. M. Hamilakis, M. Pluciennek & S. Tarlow (eds) *Thinking through the Body: Archaeologies of Corporeality*. London: Kluwer/Plenum. 153-171.

ROBB, J. (2010) Beyond agency. *World Archaeology*. 42(4): 493-520.

ROBB, J. (2013) History in the Body: The Scale of Belief, in J. Robb & T. P. Pauketat (eds) *Big Histories, Human Lives: Tackling Problems of Scale in Archaeology*. Santa Fe: School for Advanced Research Press. 77-99.

ROBERTS, C. (1985) *Human Remains, Redbridge Museum Archive*. ILF59. Unpublished Report.

ROBERTS, C. (2002) Tuberculosis: a multidisciplinary approach to past and current concepts, causes and treatment of this infectious disease, in P. A. Baker & G. Carr (eds*) Practitioners, Practices and Patients: New Approaches to Medical Archaeology and Anthropology.* Oxford: Oxbow Books. 30-46.

ROBERTS, C. (2009) Health and Welfare in Medieval England: The Human Skeletal Remains Contextualized, in R. Gilchrist & A. Reynolds (eds) *Reflections: 50 Year of Medieval Archaeology, 1957-2007.* Society for Medieval Archaeology Monograph. 30: 307-326.

ROBERTS, C. (2011) The bioarchaeology of Leprosy and Tuberculosis: A Comparative Study of Perceptions, Stigma, Diagnosis, and Treatment, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology*. Chichester: Wiley-Blackwell. 252-281.

ROBERTS, C. (2012) Re-Emerging Infections: Developments in Bioarchaeological Contributions to Understanding Tuberculosis Today, in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 434-457.

ROBERTS, C. (2017) Applying the 'Index of Care' to a Person Who Experienced Leprosy in Late Medieval Chichester, England in, in L. Tilley & A. A. Schrenk (eds) *New Developments in the Bioarchaeology of Care. Further Case Studies and Expanded Theory.* Springer International Publishing. 101-124.

ROBERTS, C. (2018) The Bioarchaeology of Leprosy: Learning from the Past, in D. M. Scollard & T. P. Gillis (eds*) The International Textbook of Leprosy*. 1-26.

ROBERTS, C. (2019) Infectious Disease: Introduction, Periostosis, Periostitis, Osteomyelitis, and Septic Arthritis, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains*. London: Elsevier. 285-319.

ROBERTS, C., J. BEKVALAC & R. REDFERN (2018) Health and Well-Being: The Contribution of the Study of Human Remains to Understanding the Late Medieval Period in Britain, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain*. Oxford: University of Oxford. 819-835.

ROBERTS, C. & J. E. BUIKSTRA (2003) *The Bioarchaeology of Tuberculosis: A Global View On A Reemerging Disease.* Tampa: University Press of Florida.

ROBERTS, C. & J. E. BUIKSTRA (2019) Bacterial Infections, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains.* London: Elsevier. 321-439.

ROBERTS, C. & K. MANCHESTER (2010) *The Archaeology of Disease*. Gloucestershire: The History Press. Third Edition.

ROBERTS, C. & M. COX (2003) *Health & Disease in Britain. From Prehistory to the Present Day*. Stroud: Sutton Publishing Limited.

ROBINSON, A. M. (2008) *Child development from birth to eight. A journey through the early years*. New York: Open University Press.

ROBINSON, A. M. (2018) Let's Talk About Stress: History of Stress Research. *Review of General Psychology*. 1-9.

RODWELL, W. (2007) Burial archaeology, in T. Waldron (ed) *St Peter's Barton-upon-Humber, Lincolnshire: A Parish Church and its Community, Volume 2, The Human Remains*. Oxford: Oxbow. 1-32.

ROGERS, J. (1980) *The Skeletons from the Cemetery of Taunton Priory*. Calvin Wells Laboratory Report.

ROGERS, J. (1984) Skeletons From The Lay Cemetery at Taunton Priory, in P. Leach (ed) *The Archaeology of Taunton. Western Archaeological Trust Excavation Monograph*. 8: 194-199.

ROGERS, J. (1999) Burials: the Human Skeletons, in C. Heighway & R. Bryant (ed) *The Golden Minster: The Anglo-Saxon Minster and Later Medieval Priory of St Oswald at Gloucester.* The Council for British Archaeology Research Report. 117: 229-246.

ROGERS, J. (2001) Burials, in W. Rodwell (ed) *Wells Cathedral, Excavations and structural studies, 1978-93. Archaeological Report.* London: English Heritage. 21: 537-568.

ROMANO, G. (1997) Images of Youth in the Modern Period, in G. Levi & J. C. Schmitt (eds) *A History of Young People in the West.* Tranlated by Carol Volk. Cambridge: Harvard University Press. 1-10.

ROOPNARINE, J. L., E. D. YILDIRIM & K. L. DAVIDSON (2019) Mother–Child and Father–Child Play in Different Cultural Contexts, in P. K. Smith and J. L. Roopnarine (eds) T*he Cambridge Handbook of Play. Developmental and Disciplinary Perspectives.* Cambridge: Cambridge University Press. 142-164.

ROSENBERG, K. R. (2017) Childbirth, in B. Hopkins, E. Geangu & S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. Second Edition. 242-248.

ROSENTHAL, J. T. (2007) Introduction, in J. T. Rosenthal (ed) *Essays on Medieval Childhood. Reponses to Recent Debates*. Donington: Shaun Tyas. 1-12.

ROSEWELL, R. (2008) *Medieval Wall Paintings in English and Welsh Churches*. Woodbridge: Boydell.

RUBENSTEIN, R. E. (2003) *Aristotle's Children. How Christians, Muslims, and Jews Rediscovered Ancient Wisdom and Illuminated the Dark Ages*. Orlando: Harcourt.

RUHRÄH, J. (1925) *Pediatrics of the Past*. New York: Paul B. Hoeber Inc.

RUSHTON, N. H. (2001) Monastic Charitable Provision in Tudor England: Quantifying and Qualifying Poor Relief in the Early Sixteenth Century. *Continuity and Change*. 16 (1): 9-44.

RÜTTEN, T. (2011) Early Modern Medicine, in M. Jackson (ed) *The Oxford Handbook of the History of Medicine.* Oxford: Oxford University Press. 60-81.

RYAN, P. J. (2013) *Master-Servant Childhood: A History of the Idea of Childhood in Medieval English Culture*. Basingstoke: Palgrave Macmillan.

RYRIE, A. (2015) *Being Protestant in Reformation Britain*. Oxford: Oxford University Press.

RYRIE, A. (2017a) *Protestants: The radicals who made the modern world*. London: William Collins.

RYRIE, A. (2017b) Facing Childhood Death in English Protestant Spirituality, in K. Barclay, K. Reynolds and C. Rawnsley (eds) *Death, Emotion and Childhood in Premodern Europe*. London: Palgrave Macmillan. 109-127.

RYRIE, A. (2017c) Reformations, in K. Wrightson (ed) *A Social History of England 1500-1750*. Cambridge: Cambridge University Press. 107-128.

RYRIE, A. (2017d) *The Age of Reformation. The Tudor and Stewart Realms 1485-1603*. Abingdon: Routledge. Second Edition.

SALMIVALLI, C. (2017) Peers and siblings, B. Hopkins, E. Geangu & S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development.* Cambridge: Cambridge University Press. Second Edition. 482-486.

SALMON, A. (2011) Aboriginal mothering, FASD prevention and the contestations of neoliberal citizenship. *Critical Public Health.* 21(2): 165-178.

SÁNCHEZ ROMERO, M. (2017) Landscapes of Childhood: Bodies, Places and Material Culture. *Childhood in the Past*. 10(1): 16-37.

SARTON, G. (1993) *Hellenistic science and culture in the last three centuries BC*. London: Constable and Company.

SAUL, F. P. & J. M. SAUL (1989) Osteobiography: A Maya Example, in M. Y. Isçan & K. A. R. Kennedy (eds.) *Reconstruction of life from the skeleton.* New York: Alan R. Liss. 287-302.

SAUNDERS, S. R. (1992) Subadult skeletons and growth-related studies, in S. R. Saunders & M. A. Katzenberg (eds) *Skeletal Biology of Past Populations: Advances in Research Methods*. New York: Wiley-Liss: 1-20.

SAUNDERS, S. R. (2008) Juvenile Skeletons and Growth-Related Studies, in M. A. Katzenberg & S. R. Saunders (eds) *Biological Anthropology of the Human Skeleton*. New Jersey: John Wiley & Sons Inc. Second Edition. 117-148.

SCHEUER, L. & S. BLACK (2000) Development and ageing of the juvenile skeleton, in M. Cox & S. Mays (eds) *Human Osteology: In Archaeology and Forensic Science*. London: Greenwich Medical Media. 9-22.

SCHEUER, L. & S. BLACK (2004) *The Juvenile Skeleton*. London: Academic Press.

SCHINDLER, N. (1997) Guardians of Disorder: Rituals of Youthful Culture at the Dawn of the Modern Age, in G. Levi & J. C. Schmitt (eds) *A History of Young People in the West.* Cambridge: Harvard University Press. 240-282.

SCHNEIDERMAN, N., G. IRONSON & S. D. SIEGEL (2005) Stress and Health: Psychological, Behavioral, and Biological Determinants. *Annual Review of Clinical Psychology*. 1: 607-628.

SCHNUCKER, R. V. (1990) Puritan attitudes towards childhood discipline, 1560-1634, in V. Fildes (ed) *Women as Mothers in Pre-Industrial England. Essays in memory of Dorothy McLaren*. Abingdon: Routledge. 108-121.

SCHOFIELD, J. (1991) The Construction of Medieval and Tudor Houses in London. *Construction History.* 7: 3-28.

SCHOFIELD, J. (2000) Post-Medieval London: The Expanding Metropolis, in K. Frederick, P. Garwood, P. Hinton, M. Kendall & E. McAdam (eds) *The archaeology of Greater London. An assessment of archaeological evidence for human presence in the area now covered by Greater London*. London: Museum of London Archaeology Service. 256-281.

SCHOFIELD, J. (2011) *London 1100-1600: The Archaeology of a Capital City*. Sheffield: Equinox Publishing Ltd.

SCHOFIELD, J. (2018) Urban Housing, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain*. Oxford: University of Oxford. 297-311.

SCHÜES, C. & C. REHMANN-SUTTER (2013) The Well- and Unwell-Being of a Child. *Topoi*. 32: 197–205.

SCHUTKOWSKI, H. (2001) Human Palaeobiology as Human Ecology, in D. R. Brothwell & A. M. Pollard (eds) *Handbook of Archaeological Sciences.* Chichester: John Wiley & Sons. 219-224.

SCOTT E. C. (1979) Dental wear scoring technique. *American Journal of Physical Anthropology*. 51 (2): 213–217.

SELYE, H. (1936) A Syndrome produced by Diverse Nocuous Agents. *Nature*: 138: 32.

SELYE, H. (1950) Stress and the General Adaptation Syndrome. *British Medical Journal*. 17: 1(4667): 1383-1392.

SELYE, H. (1956) *The Stress of Life*. New York: McGraw-Hill.

SELYE, H. (1976) Stress Without Distress, in G. Serban (ed) *Psychopathology of Human Adaptation*. Boston: Springer. 137-146.

SHAHAR, S. (1983) Infants, Infant Care, and Attitudes Toward Infancy in the Medieval Lives of Saints. *The Journal of Psychohistory*. 10(3): 281-309.

SHAHAR, S. (1990) *Childhood in the Middle Ages*. London: Routledge.

SHAHAR, S. (1994) The Boy Bishop's Feast: A cast-study in Church attitudes towards children in the High and Late Middle Ages, in D. Wood (ed) *The Church and Chilhood. Studies in Church History*. Oxford: Blackwell Publishers. 31: 243-260.

SHAHAR, S. (1997) *Growing Old in the Middle Ages*. London: Routledge.

SHAKESPEAERE, W. (2005) *William Shakespeare. The complete works.* Edited by J. Jowett, W. Montgomery, G. Taylor & S. Wells. Oxford: Clarendon Press. Second Edition.

SHAPLAND, F. & M. E. LEWIS (2013) Brief Communication: A Proposed Osteological Method for the Estimation of Pubertal Stage in Human Skeletal Remains. *American Journal of Physical Anthropology*. 151: 302–310.

SHAPLAND, F. & M. E. LEWIS (2014) Brief Communication: A Proposed Method for the Assessment of Pubertal Stage in Human Skeletal Remains Using Cervical Vertebrae Maturation. *American Journal of Physical Anthropology*. 153: 144–153.

SHAPLAND, F., M. LEWIS & R. WATTS (2015) The Lives and Deaths of Young Medieval Women: The Osteological Evidence. *Medieval Archaeology*. 59(1): 272-289.

SHARPE, J. A. (1997) *Early Modern England: A Social History 1550-1760*. London: Arnold. Second Edition.

SHEETS-JOHNSTONE, M. (2003) Child's Play: A Multidisciplinary Perspective. *Human Studies.* 26: 409–430.

SHEPARD, A. (2011) Family and Household, in S. Doran & N. Jones (eds) *The Elizabethan World*. London: Routledge. 352-371.

SHEPARD, A. (2017) Gender, the Body and Sexuality: Labouring People and the Poor', K. Wrightson (ed) *A Social History of England 1500-1750*. Cambridge: Cambridge University Press. 330-351.

SHOESMITH, R. (1984) St Guthlac's Priory, Hereford. *Transactions of the Woolhope Naturalists Field Club*. 44(3): 321-357.

SHORTER, E. (1975) *The Making of the Modern Family*. New York: Basic Books.

SHOTWELL, A. (2016) The Great Pox and the Surgeon's Role in the Sixteenth Century. *Journal of the History of Medicine and Allied Sciences.* 72: 21–33.

SIBERRY, E. (1994) Fact and Fiction: Children and the Crusades, in D. Wood (ed) *The Church and Chilhood. Studies in Church History*. Oxford: Blackwell Publishers. 31: 417-426.

SIMMONDS, M., M. J. HOWES & J. IRVING (2016) *The Gardener's Companion to Medicinal Plants: an A-Z of healing plants and home remedies*. London: Frances Lincoln Limited.

SIMONS, E. N. (1966) *The Reign of Edward IV*. London: Frederick Muller Ltd.

SIRAISI, N. G. (1990) *Medieval and Early Renaissance Medicine. An Introduction to Knowledge and Practice.* Chicago: The University of Chicago Press.

SLATER, G. & L. LOE (2007) Human Skeletal Remains, in J. Munby, A. Simmonds, R. Tyler & D. R. P. Wilkinson (eds) *From Stadium to Station, Rewley Abbey and Rewley Road Station, Oxford.* Oxford: Oxford Archaeological Unit: 61-63.

SLATER, A. & M. LEWIS (2007) *Introduction to Infant Development*. Oxford: Oxford University Press.

SLOANE, B., C. HARDING, J. SCHOFIELD & J. HILL (2000) From the Norman Conquest to the Reformation, in K. Frederick, P. Garwood, P. Hinton, M. Kendall & E. McAdam (eds) *The archaeology of Greater London. An assessment of archaeological evidence for human presence in the area now covered by Greater London*. London: Museum of London Archaeology Service. 208-254.

SMITH, P. K. (2010) *Children and Play*. Chichester: Wiley-Blackwell.

SNEYD, C. A. (1846) *A Relation or Rather a True Account, of the Island of England; with sundry particulars of the customs of these people, and of the royal revenues under king Henry the seventh, about the year 1500*. Translated from Italian. London: John Bowyer Nichols and Son.

SNOOK, E. (2016) 'The Women Know': Children's Diseases, Recipes and Women's Knowledge in Early Modern Medical Publications. *Social History of Medicine*. 30(1): 1–21.

SOFAER DEREVENSKI, J. (1997) Engendering children, engendering archaeology, in J. Moore & E. Scott (eds) *Invisible People and Processes: Writing Gender and Childhood into European Archaeology.* London: Leicester University Press. 192-202.

SOFAER DEREVENSKI, J. (2000) Material culture shock. Confronting expectations in the material culture of children, in J. Sofaer Derevenski (ed) *Children and Material Culture*. London: Routledge: 3-16.

SOFAER, J. (2006a) *The Body as Material Culture: A Theoretical Osteoarchaeology*. Cambridge: Cambridge University Press.

SOFAER, J. (2006b) Gender, Bioarchaeology and Human Ontogeny, in R. Gowland & C. Knüsel (eds) *Social Archaeology of Funerary Remains*. Oxford: Oxbow. 155-167.

SOFAER, J. (2011) Towards a Social Bioarchaeology of Age, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology.* Chichester: Wiley-Blackwell. 285-311.

SOFAER, J. (2012) Touching the Body: The Living and the Dead in Osteoarchaeology and the Performance Art of Marina Abramovic. *Norwegian Archaeological Review*. 45(2): 135-150.

SOFAER, J. (2015) Bodies and encounters. Seeing invisible children in archaeology, in G. Coşkunsu and P. Biehl (eds) *Children as Archaeological Enigma*. New York: State University of New York Press. 73-89.

SOUTHWELL-WRIGHT W. (2013) Past Perspectives: What Can Archaeology Offer Disability Studies?, in M. Wappett & K. Arndt (eds) *Emerging Perspectives on Disability Studies*. New York: Palgrave Macmillan. 67-95.

SOUTHWELL-WRIGHT W., R. GOWLAND & L. POWELL (2017) Foundations and Approaches to the Study of Care in the Past, in W. Southwell-Wright, L. Powell & R. Gowland (eds) *Care in the Past: Archaeological & Interdisciplinary Perspectives.* Oxford: Oxbow Books. 1-19.

SPAULDING, M. & P. WELCH (1994) *Nurturing Yesterday's Child. A Portrayal of the Drake Collection of Paediatric History*. Toronto: National Heritage/Natural History Inc.

STEWART, N. A., R. F. GERLACH, R. L. GOWLAND, K. J. GRON & J. MONTGOMERY (2017) Sex determination of human remains from peptides in tooth enamel. *Proceedings of the National Academy of Sciences*. 114(52): 13649-13654.

STILL, G. F. (1931) *The History Paediatrics. the Progress of the Study of Diseases of Children up to the End of the XVIIIth Century*. Oxford: Oxford University Press.

STILL, G. F. (1957) *The Boke of Chyldren*. Reprint, Edinburgh: E & S Livingstone. Transcribed by Still.

STIRLAND, A. J. (1981) The Human Bones, in J. E. Mellor & T. Pearce (eds) The Austin Friars, Leicester. *Council for British Archaeology Research Report*. 35: 168-169.

STIRLAND, A. J. (1987) Human bone, in E. Baker (ed) *La Grava. The Archaeology and History of a Royal Manor and Alien Priory of Fontevrault*. York: Council for British Archaeology. 167.

STIRLAND, A. J. (1991) Pre-Columbian Treponematosis in Medieval Britain. *International Journal of Osteoarchaeology*. 1: 39-47.

STIRLAND, A. J. (1996) Patterns of Trauma in a Unique Medieval Parish Cemetery. *International Journal of Osteoarchaeology*. 6: 92-100.

STIRLAND, A. J. (1997) Care in the Medieval Community. *International Journal of Osteoarchaeology*. 7: 587-590.

STIRLAND, A. J. (2000) *Raising the dead: the skeleton crew of Henry VIII's great ship, the Mary Rose*. Chichester: John Wiley & Sons.

STIRLAND, A. J. (2001) The Human Bones, in O. Beazley & B. Ayers (eds) Two Medieval Churches in Norfolk. *Norfolk East Anglian Archaeology*. 96: 91-92.

STIRLAND, A. J. (2005) *The Men of the Mary Rose, Raising the Dead.* Stroud: The History Press.

STRING, T. C. (1996) Henry VIII's Illuminated 'Great Bible'. *Journal of the Warburg and Courtauld Institutes*. 59: 315-324.

STOBER, K. (2007) *Late Medieval Monasteries and Their Patrons, England and Wales, c.1300-1540*. Woodbridge: The Boydell Press.

STODDER, A. L. W. (2008) Taphonomy and the Nature of Archaeological Assemblages, in M. A. Katzenberg & S. R. Saunders (eds) *Biological Anthropology of the Human Skeleton*. New Jersey: John Wiley & Sons Inc. Second Edition. 71-116.

STODDER, A. L. W. (2012) Data and Data Analysis Issues in Paleopathology, in A. L. Grauer (ed) *A Companion to Paleopathology*. Chichester: Wiley-Blackwell. 339-356.

STOLBERG, M. (2014) Learning from the Common Folks. Academic Physicians and Medical Lay Culture in the Sixteenth Century. *Social History of Medicine*. 27(4): 649–667.

STONE, L. (1977) *The Family, Sex and Marriage in England 1500-1800*. New York: Harper & Row.

STORTZ, M. E. (2001) "Where or When Was Your Servant Innocent?" Augustine on Childhood, in M. J. Bunge (ed) *The Child in Christian Thought.* Cambridge: William B. Eerdmans Publishing Company. 78-102.

STOUT, S. D., M. E. COLE & A. M. AGNEW (2019) Histomorphology: Deciphering the Metabolic Record, in J. E. Buikstra (ed) Ortner's Identification of Pathological Conditions In Human Skeletal Remains. London: Elsevier. 91-168.

STRÁNSKÁ, P. P. VELEMÍNSKÝ & L. POLÁČEK (2015) The prevalence and distribution of dental caries in four early medieval non-adult populations of different socioeconomic status from Central Europe. *Archives of Oral Biology*. 60: 62-27.

STROUD, G. (1984) *The Human Skeletal Remains from Barton Bendish All Saints.* English Heritage Ancient Monuments Laboratory Report. 4251.

STROUD, G. (1993a) Human Skeletal Material, in C. Dallas (ed) Excavations in Thetford, by B. K. Davison Between 1964 and 1970. *East Anglian Archaeology Report*. 62: 168.

STROUD, G. (1993b) The Human Bones, in G. Stround and R. L. Kemp (eds) Cemeteries of the Church and Priory of St Andrew, Fishergate. *The Archaeology of York*. 12: 160-275.

STROUD, G. (1998) Human Bone, R. Price & M. Ponsford (eds) St Bartholomew's Hospital, Bristol: The Excavation of a Medieval Hospital: 1976-8. *Council for British Archaeology Research Report*. 110: 175-181.

STROUD, G. & R. L. KEMP (1993) *Cemeteries of St Andrew, Fishergate, York.* York: Council for British Archaeology.

SUGGETT, R. (2018) Peasant Houses, in C. M. Gerrard & A. Gutierrez (eds) *The Oxford Handbook of Later Medieval Archaeology in Britain*. Oxford: University of Oxford. 226-241.

SVETLOVA, M. & M. CARPENTER (2017) Social development, B. Hopkins, E. Geangu & S. Linkenauger (eds) *The Cambridge Encyclopedia of Child Development*. Cambridge: Cambridge University Press. Second Edition. 415-423.

SWEETINBURGH, S. (2004) *The Role of the Hospital in Medieval England: Gift-Giving and the Spiritual Economy*. Dublin: Four Courts Press Ltd.

TAMIS-LEMONDA, C. S., J. C. KATZ AND M. H. BORNSTEIN (2002) Infant play: functions and partners, in A. Slater & M. Lewis (eds) *Introduction to Infant Development*. Oxford: Oxford University Press. 229-243.

TARLOW, S. (1999) *Bereavement and Commemoration: An Archaeology of Mortality*. Oxford: Blackwell Publishing.

THIRSK, J. (2006) *Food in Early Modern England: Phases, Fads, Fashions 1500-1760*. London: Hambledon Continum.

THOMAS, C., B. SLOANE & C. PHILLPOTTS (1997) *Excavations at the Priory and Hospital of St Mary Spital, London*. London: Museum of London.

THOMAS, K. (1971) *Religion and the Decline of Magic*. Harmondsworth: Penguin.

THURTLE, V. (2005) Physical Growth and Development, in J. Taylor & M. Woods (eds) *Early Childhood Studies: An Holistic Introduction*. London: Edward Arnold. Second Edition. 37-56.

TIEMERSMA, E. W., M. J. VAN DER WERF, M. W. BORGDORFF, B. G. WILLIAMS, & N. J. AGELKERKE (2011) Natural history of tuberculosis: duration and fatality of untreated pulmonary tuberculosis in HIV negative patients: a systematic review. *PloS one*. 6(4): e17601.

TILLEY, L. (2015) *Theory and Practice in the Bioarchaeology of Care.* Springer International Publishing.

TILLEY, L. (2017) Showing That They Cared: An Introduction to Thinking, Theory and Practice in the Bioarchaeology of Care, in L. Tilley & A. A. Schrenk (eds) *New Developments in the Bioarchaeology of Care. Further Case Studies and Expanded Theory*. Springer International Publishing. 11-43.

TILLEY, L. & A. A. SCHRENK (2017) Introduction: New Developments in the Bioarchaeology of Care, in L. Tilley & A. A. Schrenk (eds) *New Developments in the Bioarchaeology of Care. Further Case Studies and Expanded Theory*. Springer International Publishing. 1-10.

TILLEY, L. & T. CAMERON (2014) Introducing the Index of Care: A web-based application supporting archaeological research into health-related care. *International Journal of Paleopathology*. 6: 5–9.

TITTLER, R. (2004) Portraiture, Politics and Society, in R. Tittler & N. Jones (eds) *A Companion to Tudor Britain*. Malden: Blackwell Publishing. 459-480.

TODD, T. W. (1920) Age changes in the pubic bone. I. The male white pubis. *American Journal of Phyiscal Anthropology*. 3: 285-334.

TODD, T. W. (1921) Age change in the pubic bone. II. The pubis bone of the male Negro-white hybrid; III: The pubis of the white female; IV: The pubis of the female white-Negro hybrid. *American Journal of Physical Anthropology*. 4: 1-70.

TUCKER, K. (2004) Human Bone, M. Johnson (ed) *Report on an Archaeological Investigation at Beverley Minster, East Yorkshire*. York: York Archaeological Trust. 68-94. Unpublished Report.

TURK, F. A. (1969) On Some Human Remains from Crantock, Newquay. *Cornish Archaeology*. 8: 98-99.

TURNER, B. L. & V. A. ANDRUSHKO (2011) Partnerships, Pitfalls and Ethical Concerns in International Bioarchaeology, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology*. Chichester: Wiley-Blackwell. 44-67.

UBELAKER, D. H. (1978) *Human Skeletal Remains: excavation, analysis, interpretation*. Chicago: Aldine Publishing.

UBELAKER, D.H. (1987) Estimating age at death from immature human skeletons: an overview. *Journal of Forensic Science.* 32(5): 1254-1263.

UBELAKER, D.H. (1989) The estimation age at death from immature human bone, in M. Y. İşcan (ed) *Age Markers in the Human Skeleton*. Springfield: Charles C. Thomas Publisher.

UBELAKER, D.H., 1999. *Human Skeletal Remains: Excavation, Analysis, Interpretation*. Washington: Taraxacum.

VAN DE VIJVER, K. (2019) Non-adult Fracture Patterns in Late and Post-medieval Flanders, a Comparison of a Churchyard and a Church Assemblage. *Childhood in the Past*. 12(2): 1-21.

VAN SLEUWEN, B. E., A. C. ENGELBERTS, M. M. BOERE-BOONEKAMP, W. KUIS, T. W. J. SCHULPEN & M. P. L'HOIR (2007) Swaddling: A Systematic Review. *Pediatrics*. 1097-1106.

VERLINDEN, P. & M. E. LEWIS (2015) Childhood Trauma: Methods for the Identification of Physeal Fractures in Nonadult Skeletal Remains. *American Journal of Physical Anth*ropology. 157: 411–420.

VIAZZO, P. P. (2001) Mortality, Fertility, and Family, in D. Kertzer & M. Barbagli (eds) *The History of the European Family: Volume One: Family life in early modern times 1500-1789*. Connecticut: Yale University Press. 157-190.

VILLA, C., B. FROHLICH & N. LYNNERUP (2019) A The Role of Imaging in Paleopathology, in J. E. Buikstra (ed) *Ortner's Identification of Pathological Conditions In Human Skeletal Remains.* London: Elsevier. 169-182.

VINCENT, S. & S. MAYS (2009) *Huntingdon Castle Mound, Cambridgeshire. Osteological Analysis of the Huntingdon Castle Population. Environmental Studies Report*. English Heritage. Ancient Monuments Laboratory. Unpublished Report.

VUOLANTO, V. (2011) Infant Abandonment and the Christianization of Medieval Europe, in K. Mustakallio & C. Lees (eds) *The Dark Side of Childhood in Late Antiquity and the Middle Ages*. Oxford: Oxbow Books. 3-20.

WAKELY, J. (1996) Limits to Interpretation of Skeletal Trauma-Two Case Studies from Medieval Abingdon, England. *International Journal of Osteoarchaeology*. 6: 76-83.

WALDRON, T. (1986) *The Human Bones From Brighton Hill South*. English Heritatge Ancient Monuments Laboratory Report 117/87.

WALDRON, T. (1991) Rates for the job. Measures of disease frequency in palaeopathology. *International Journal of Osteoarchaeology.* 1(1): 17-25.

WALDRON, T. (1994) *Counting the Dead: The Epidemiology of Skeletal Populations*. Chichester: John Wiley & Sons.

WALDRON, T. (1996) The Pathology of the Burials, in R. J. Zeepvat (ed) Excavations at the site of St Mary's Priory and St John's Church, Hertford. *Herefordshire Archaeology*. 12: 67-73.

WALDRON, T. (2007a) *St Peter's, Barton-Upon-Humber, Lincolnshire: A Parish Church and its Community. Volume 2: The Human Remains.* Oxford: Oxbow Books.

WALDRON, T. (2007b) *Palaeoepidemiology: The Measure of Disease in the Human Past.* California: Left Coast Press Inc.

WALDRON, T. (2009) *Palaeopathology*. Cambridge: Cambridge University Press.

WALKER, D. (2011) Human bone, site A, in R. Bull, S. Davis, H. Lewis & C. Phillpotts (eds) *Holywell Priory and the development of Shoreditch to c 1600. Archaeology from the London Overground East London line*. London: Museum of London Archaeology. 172-176.

WALKER, D. (2012) *Disease in London, 1st-19th centuries: An illustrated guide.* London: Museum of London Archaeology.

WALKER, D. (2016) The human bone, in S. Pfizenmaier (ed) *Charterhouse Square: Black Death Cemetery and Carthusian Monaster, Meat Market and Suburb.* London: Museum of London Archaeology. 117-137.

WALKER, D., N. POWERS, B. CONNELL & R. REDFERN (2015) Evidence of Skeletal Treponematosis from the Medieval Burial Ground of St. Mary Spital, London, and Implications for the Origins of the Disease in Europe. *American Journal of Physical Anthropology.* 156: 90-101.

WALKER, P. L. (2007) Bioarchaeological Ethics: A Historical Perspective on the Value of Human Remains, in M. A. Katzenberg & S. R. Saunders (eds) *Biological Anthropology of the Human Skeleton*. New Jersey: John Wiley & Sons Inc. New Jersey: John Wiley & Sons Inc. Second Edition. 3-40.

WALLIS, F. (2010) *Medieval Medicine: A Reader*. Totonto: University of Toronto Press.

WALLIS, P. (2011) Exotic Drugs and English Medicine: England's Drug Trade, c. 1550–c. 1800. *Social History of Medicine*. 25(1): 20–46.

WALSHAM, A. (1994) 'out of the mouths of babes and sucklings': Prophecy, Puritanism, and Childhood in Elizabethan Suffolk, in D. Wood (ed) *The Church and Chilhood. Studies in Church History.* Oxford: Blackwell Publishers. 31: 285-299.

WARD, J. P. (2004) Metropolitan London, in R. Tittler & N. Jones (eds) *A Companion to Tudor Britain*. Malden: Blackwell Publishing. 347-362.

WARD, S. (1990) *Excavations at Chester. The lesser medieval religious houses: sites investigated 1964-1983* Chester: Chester City Council. 6.

WATSON, B. & W. WHITE (2016) Anne Mowbray, Duchess of York: A 15th-Century Child Burial From the Abbey of St Clare, in the London Borough of Tower Hamlets. *Transactions of the London and Middlesex Archaeological Society*. 67: 227-260.

WEAR, A. (2000) *Knowledge and Practice in English Medicine, 1550-1680*. Cambridge: Cambridge University Press.

WEBB, H. (2008) *St Nicholas Church, Chadlington. Oxford Archaeology Watching Brief Report*. 3811. Unpublished Report.

WEBB, H. & L. LOE (2009) Summary Report on the Human Skeletons, in H. Webb and N. Norton (eds) The Medieval and Post-Medieval Graveyard of St Peter-le-Bailey at Bonn Square, Oxford. *Oxoniensia*. 74: 161-171.

WEISS-KREJCI, E. (2011) The Formation of Mortuary Deposits: Implications for Understanding Mortuary Behavior of Past Populations, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology*. Chichester: Wiley-Blackwell. 68-106.

WELLS, C. (1957) The Medieval Burials, in R. Robertson-Mackay (eds) Recent Excavations at the Cluniac Priory of St. Mary, Thetford, Norfolk. *Medieval Archaeology*. 1(1): 99-102.

WELLS, C. (1964) *Bones, bodies and disease*. London: Thames and Hudson.

WELLS, C. (1975) A Report on the Bones from Back Gladstone Street, in E. V. W. Proudfoot (ed) *Some Medieval and Earlier Burials from Back Gladstone Street, Hartlepool*. English Heritage. Ancient Monuments Laboratory. 2704. Unpublished Report. 10-25.

WELLS, C. (1982) The Human Bones - Summary, in J. P. Roberts (ed) St Benedict's Church (Site 157N) Excavations in Norwish 1971-1978, Part I. *East Anglian Archaeology*. 15: 25-27.

WESSEX ARCHAEOLOGY (2000) *Salisbury Cathedral, Wiltshire, Archaeological Evaluation and Assessment of Results*. Salisbury: Wessex Archaeology. Unpublished Report.

WESSEX ARCHAEOLOGY (2005) *Glendon Hall, Kettering, Northamptonshire. Assessment of the Results from the Archaeological Evaluation*. Maidstone: Wessex Archaeology. 59460.1. Unpublished Report.

WEST, B. (1980) *The Human Bones from the Medieval Greyfrirars site, Chester.* Calvin Wells Laboratory. Unpublished Report.

WEST, B. (1990) Human Bones, in S. Ward (ed) Burials From the Dominican Friary, in S. W. Ward (ed) Excavations at Chester, the Lesser Medieval Religious Houses: Sites Investigated 1964-1983. *Grosvenor Museum Archaeological Excavation and Survey Reports*. 6: 127-136.

WESTON, D. A. (2008) Investigating the Specificity of Periosteal Reactions in Pathology Museum Specimens. *American Journal of Physical Anthropology.* 137: 48-59.

WESTON, D. A. (2012) 'Nonspecific Infection in Paleopathology: Interpreting Periosteal Reactions', in A. L. Grauer (ed*) A Companion to Paleopathology.* Chichester: Wiley-Blackwell. 492-512.

WHITE, W. (In Press) *The Parish Church of St Botolph, Billingsgate*. Museum of London Archaeology Service Monograph.

WHITE, W. (2004) Human bone, in B. Barber, S. Chew, T. Dyson & B. White (eds) *The Cistercian abbey of St Mary Stratford Langthorne, Essex.* London: Museum of London Archaeology Service. 18: 158-179.

WHITE, W. (2008) 'Databases', in R. Pinhasi and S. Mays (eds) Advances in Human Palaeopathology. Chichester: John Wiley & Sons. 177-188.

WHITE, W. (2008) The human skeletal remains from the burial ground of St Benet Sherehog, in A. Miles, W. White & D. Tankard (eds) *Burial at the Site of the Parish Church of St Benet Sherehog Before and After the Great Fire. Excavations at 1 Poultry, City of London*. Museum of London Archaeology Service Monograph. 39. 70-103.

WHITTLE, J. (2017) People and Land, in K. Wrightson (ed) *A Social History of England 1500-1750.* Cambridge: Cambridge University Press. 152-173.

WIGGINS, R., A. BOLYSTON & C. ROBERTS (1993) *Report on the Human Skeletal Remains from Blackfriars, Gloucester.* 19/91. Bradford: Calvin Wells Laboratory. Unpublished Report.

WILEMAN, J. (2005) *Hide and Seek: The Archaeology of Childhood*. Stroud: Tempus.

WILKIE, L. (2000) Not Merely Child's Play: Creating a Historical Archaeology of Children and Childhood, in J. Sofaer Derevenski (ed) *Children and Material Culture*. London: Routledge: 100-113.

WILLIAMS, A. N. (2003) ''Labor improbus omnia vincit''; Ambroise Pare´ and sixteenth century child care. *Archives of Disease in Childhood*. 88: 985–989.

WILLIAMS, A. N. & R. M. SHARMA (2014) Children in Hospitals Before There Were Children's Hospitals. *Pediatrics*. 134(3): 425-427.

WILLIAMS, A. R. (1945) Seven. *Folklore*. 56(2): 257-259.

WILLIAMS, H. (2003) Remembering and forgetting the medieval dead: exploring death, memory and material culture in monastic archaeology, in H. Williams (ed) *Archaeologies of Remembrance: Death and Memory in Past Societies.* New York: Kluwer/Plenum. 227-254.

WILLIAMS, R. L. (2011) The visual arts, in S. Doran & N. Jones (eds) *The Elizabethan World*. London: Routledge. 567-586.

WILSON, J. (1990a) The Noble Imp: The Upper-Class Child in English Renaissance Art and Literature. *Antiquaries Journal*. 70: 360-379.

WILSON, J. (1990b) Holy Innocents: some aspects of the iconography of children on English Renaissance tombs. *Church Monuments*. 5: 57-63.

WITMORE, M. (2007) *Pretty Creatures: Children and Fiction in the English Renaissance*. Ithaca: Cornell University Press.

WOOD, W. J., G. R. MILNER, H. C. HARPENDING & K. M. WEISS (1992) The Osteological Paradox: Problems of Inferring Prehistoric Health from Skeletal Samples. *Current Anthropology*. 33 (4): 343-370.

WOODHEAD, M. (2015) Childhood studies: past, present and future, in M. J. Kehily (ed) *An Introduction to Childhood Studies*. Maidenhead: Open University Press. Third Edition. 19-33.

WOOLF, V. (1928) *A Room of One's Own*. London: Penguin Classics.

WOOLGAR, C. M. (2006) *The Sense in Late Medieval England*. New Haven: Yale University Press.

WOOLGAR, C. M. (2016) *The Culture of Food in Medieval England, 1200-1500*. New Haven: Yale University Press.

WORLD HEALTH ORGANIZATION (2013) *Ending Preventable Child Deaths from Pneumonia and Diarrhoea by 2025 The integrated Global Action Plan for Pneumonia and Diarrhoea (GAPPD).* France: WHO Library Cataloguing-in-Publication Data.

WORLD HEALTH ORGANIZATION (2018) *World health statistics 2018: monitoring health for the SDGs, sustainable development goals.* Luxembourg: World Health Organization.

WRIGHTSON, K. (2003) *English Society 1580-1680*. Abingdon: Routledge. Second Edition.

WRIGHTSON, K. (2017) Introduction: Framing Early Modern England, in K. Wrightson (ed) *A Social History of England 1500-1750*. Cambridge: Cambridge University Press. 1-16.

WRIGLEY, E. A. & R. S. SCHOFIELD (1981) *The Population History of England, 1541-1871: A Reconstruction.* London: Edward Arnold.

WYMAN, A. L. (1984) The Surgeoness: The Female Practitioner of Surgery 1400-1800. *Medical History*. 28: 22-41.

YOUNG, F. (2016) *A Medieval Book of Magical Stones: The Peterborough Lapidary.* Cambridge: Text in Early Modern Magic.

YOUNGS, D. (2006) *The Lifecycle in Western Europe, c. 1300- 1500*. Manchester: Manchester University Press.

ZAROFF, R. (2016) Measurement of Time by the Ancient Slavs. *Studia mythologica Slavica*. 19: 9-39.

ZUCKERMAN, M. K. & G. J. ARMELAGOS (2011) The Origins of Biocultural Dimensions in Bioarchaeology, in S. C. Agarwal & B. A. Glencross (eds) *Social Bioarchaeology*. Chichester: Wiley-Blackwell. 15-43.

12

appendix

12.01 | summary of sites and skeletons

	MEDIEVAL 1000-1800	TUDOR 1400-1700
non-adult?	99	25
pre-0-years-old	41	7
0-2-years-old	504	79
3-7-years-old	543	70
8-11-years-old	468	93
12-16-years-old	561	153
17-25-years-old	1,230 [female: 380] [male: 713]	326 [female: 110] [male: 182]
26-45-years-old	3,599	839
46+years-old	1,399	188
adult?	1,577	157
total	**10,021**	**1,937**

	MEDIEVAL 1000-1800		TUDOR 1400-1700	
	Sites	**Skeletons**	**Sites**	**Skeletons**
North	27	3,187	5	436
Midlands	50	2,207	11	173
London	14	1,598	9	1,083
South	55	3,029	16	245
Total	**146**	**10,012**	**41**	**1,937**

	MEDIEVAL 1000-1800		TUDOR 1400-1700	
	Sites	**Skeletons**	**Sites**	**Skeletons**
Monastic	**76**	**5,117**	**21**	**1,242**
Augustinian	18	1,821	8	974
Benedictine	15	956	3	54
Carmelite	3	52	n/a	n/a
Carthusian	1	42	1	25
Cistercian	8	389	1	98
Cluniac	5	324	1	2
Crutched	1	17	n/a	n/a
Dominican	11	944	4	39
Fontevraultine	1	24	n/a	n/a
Franciscan	10	461	2	44
Gilbertine	2	75	n/a	n/a
Hospitiller	1	12	1	6
Secular	**68**	**4,769**	**18**	**560**
Parish Church	37	3,481	8	415
Secular Hospital	14	791	1	5
Castle	5	57	4	17
Cathedral	4	41	2	9
Cemetery Only	7	396	3	114
Domestic House	1	3	n/a	n/a
Catastrophic	**2**	**135**	**2**	**135**
Mary Rose	1	92	1	92
Towton	1	43	1	43

12.02 | list of sites

TYPE	ORDER	DEDICATION	LOCATION	COORDINATE	REFERENCE
Church	Parish	All Saints	Barton Bendish	52.620741 0.52871	STROUD, G. (1984)
Friary	Augustinian	Unknown	Hull	53.74303 -0.3368	HOLST, M. ET AL (2001)
Friary	Augustinian	St Catherine	Leicester	52.636874 - 1.139746	STIRLAND, A. (1981)
Friary	Dominican	Unknown	Carlisle	54.893163 - 2.935238	HENDERSON, J. D. (1990)
Friary	Dominican	Unknown	Chelmsford	51.731255 0.472412	BAYLEY, J. (1975)
Friary	Dominican	St Nicholas	Chester	53.187676 - 2.894812	WEST, B. (1990)
Friary	Dominican	Unknown	Guildford	51.236924 - 0.576138	HENDERSON, J. (1984)
Friary	Dominican	St Mary	Ipswich	52.054593 1.158221	MAYS, S. (1991)
Priory	Dominican	Unknown	Ludgate	51.513755, - 0.102344	BEKVALAC ET AL. (2007a)
Friary	Dominican	Unknown	Oxford	51.75621 -1.260402	HARMAN, M. (1985)
Cemetery	Unknown	Unknown	Thetford	52.419609 0.713167	STROUD, G. (1993)
Church	Parish	Unknown	Hatch	51.233402, - 1.125500	WALDRON, T. (1986)
Hospital	Cruthched	St Cross	Colchester	51.895007 0.893369	BOGHI, F. (2007)
Cemetery	Unknown	Unknown	York	53.951292 - 1.077068	HOLST, M. (2005)
Friary	Franciscan	Unknown	Hartlepool	54.710483 - 1.238215	BIRKETT, D. A. (1986)
Friary	Franciscan	Unknown	Lewes	50.872134 0.014956	BROWN, S. (1996)
Friary	Franciscan	Unknown	Northampton	52.239395 - 0.896609	GRIFFITHS, R. (1978)
Friary	Franciscan	Unknown	Norwich	52.628704 1.300163	ANDERSON, T. (2010)
Abbey	Cistercian	St Mary	Hulton	53.028314,- 2.144415	BROWNE, S. (2005)
Priory	Augustinian	Unknown	Kirkham	54.082992 - 0.878305	HOLST, M. (2006)
Cemetery	Secular	Unknown	Broad Street	51.517877, - 0.084101	MALT, R. AND B. WHITE (1987)
Church	Parish	Unknown	Rivenhall	51.828944 0.64858	O'CONNOR, T. P. (1984)
Church	Parish	St Andrew	Corbridge	54.973874 - 2.020197	HOLST, M. (2006)
Priory	Benedictine	St Andrew	Rochester	51.392556 0.488892	ANDERSON, T. (1990)
Priory	Gilbertine	St Andrew	York	53.923313 -1.0952	STROUD, G. (1993)
Priory	Carthusian	St Anne	Coventry	52.384925 - 1.465902	COLE, J. (1995)
Hospital	Augustinian	St Bartholomew	Bristol	51.472665 - 2.584877	STROUD, S. (1998)
Church	Parish	St Benet	Sherehog	51.513278 - 0.090764	WHITE, W. (2008)
Hospital	Unknown	St Giles	Brompton Bridge	54.391811 - 1.658678	CHUNDUN, Z. & ROBERTS, C. (1995)
Priory	Augustinian	St Gregory	Canterbury	51.282007 1.088848	ANDERSON, T. & ANDREWS, J. (2001)
Priory	Augustinian	St Gregory	Canterbury	51.282007 1.088848	MÀRQUEZ-GRANT, N. AND L. LOE (2015)
Priory	Benedictine	St Guthlac	Hereford	52.056203 - 2.707357	SHOESMITH, R. (1984)
Church	Parish	St Helen	York	53.960142 - 1.084213	DAWES. J. D. (1980)
Hospital	Unknown	St James & St Mary Magdalen	Chichester	50.83891 -0.763121	LEE, F. & MAGILTON, J. (2008)
Priory	Benedictine	St James	Bristol	51.45907 -2.593203	LOE, L. (2006)
Priory	Hospitaller	St John	Clerkenwell	51.520396 - 0.101538	COHEENEY, J. (2004)
Priory	Augustinian	St Leonard	Torksey	53.224672 0.337143	HOLST, M. (2005)

Hospital	Unknown	St Margaret	Huntingdon	52.300484 0.437651	DUHIG, C. (1993)
Church	Parish	St Margaret	Ormsby	52.300484 0.437651	ANDERSON, S. (2009)
Friary	Carmelite	St Mark	Lincoln	53.225383 - 0.542861	BOYLESTON, A. & ROBERTS, C. (1995)
Hospital	Secular	St Mary & St Thomas	Ilford	51.557907 0.069416	ROBERTS, C. (1985)
Abbey	Cistercian	St Mary	East Smithfield	51.509373 - 0.071904	BEKVALAC, J. AND T. KAUSMALLY (2011)
Hospital	Augustinian	St Mary	Spital	51.520418 - 0.078063	CONHEENEY, C. (1997)
Abbey	Cistercian	St Mary	Bordesley	52.458659 - 1.886215	EVERTON, R. F. (1976)
Nunnery	Benedictine	St Mary & St Helena	Elstow	52.115051, - 0.469440	BAKER, D. (1971)
Priory	Augustinian	St Mary	Merton	51.41401 0.182338	CONHEENEY, C. (2007)
Priory	Augustinian	St Mary	Norton	53.344505 - 2.680321	BROWN, F. & HOWARD-DAVIS, C. (2008)
Priory	Benedictine	St Mary	Sandwell	52.532131 - 1.989384	HODDER, M. (1991)
Priory	Benedictine	St Neots	Cambridge	52.230432 - 0.270302	DUHLG, C. (1994)
Church	Parish	St Nicholas	Chadlington	51.89694 -1.519182	WEBB, H. (2008)
Church	Parish	St Nicholas	Charlwood	51.155303 - 0.222709	PORTEUS, S. (2009)
Hospital	Cluniac	St Nicholas	Lewes	50.848259,- 0.000858	BROWNE, S. (2010)
Priory	Augustinian	St Oswald	Gloucester	51.869949 - 2.248024	ROGERS, J. (1999)
Priory	Augustinian	St Oswald	Gloucester	51.869949 - 2.248024	ROGERS, J. (1999)
Priory	Cluniac	St Pancras	Lewes	50.869777 0.001566	KENWARD, R. (1977)
Priory	Augustinian	St Peter & St Paul	Taunton	51.026047 - 2.969227	ROGERS, J. (1984)
Church	Parish	St Peter	Barton-upon-Humber	53.684377 - 0.436857	WALDRON, T. (2007)
Abbey	Cluniac	St Saviour	Bermondsey	51.497359 - 0.079615	CONNELL, B. AND W. WHITE (2011)
Hospital	Augustinian	St Thomas	Southwark	51.505219 - 0.087354	KNIGHT, H. (2002)
Friary	Carmelite	Unknown	Norwich	52.634539 1.300528	CAFFELL, A. & HOLST, M. (2006)
Church	Parish	St Martin	West Wharram	54.067615 - 0.689135	MAYS, S. (2007)
Priory	Cluniac	St Mary	Thetford	52.416479, 0.742591	WELLS, C. P. B. (1957)
Church	Parish	St Helen	Kettering	52.425514, - 0.758224	WESSEX ARCHAEOLOGY (2005)
Priory	Dominican	Unknown	Beverley	53.840005, - 0.422981	DAWES, J. D. (1987)
Hospital	Unknown	St James	Doncaster	53.521074, - 1.137987	BAYLEY, J. (1981)
Abbey	Cistercian	St Mary	East Witton	54.266384, - 1.742117	O'CONNOR, T. P. (1986)
Castle	Secular	Unknown	Huntingdon	52.327340, - 0.179532	VINCENT, S. AND S. MAYS (2009)
Church	Parish	St Mary Magdalene	Scarborough	54.286560, - 0.393671	HOLST, M. (2004)
Abbey	Benedictine	Unknown	Malmesbury	51.583834, - 2.098015	HENDERSON, D. (2005)
Church	Parish	All Saints	Faringdon	51.659561, - 1.584029	HARVEY, L. (2014)
Church	Parish	St Mary	Selborne	51.098511, - 0.942908	ANDERSON, S. (1991)
Church	Parish	St Crantock	Crantock	50.403173, - 5.110482	TURK, F. A. (1969)
Church	Parish	St Helen	Wheathampstead	51.812267, - 0.294636	POWERS, R. (1980)
Church	Parish	St Nicholas	Thanington	51.270324, 1.054744	BENNETT, P. AND T. ANDERSON (1991)
Hospital	Secular	St Mary	Ospringe	51.311527, 0.873459	BAYLEY, J. (1979)

Castle	Secular	Unknown	Norwich	52.628793, 1.296340	ANDERSON, S. (2009)
Hospital	Secular	St Mary Magdalene	Bidlington	50.879971, -0.326520	RATCLIFFE-DENSHAM, H. B. A. (1964)
Church	Parish	Unknown	Tamworth	52.642343, -1.6925627	COLE, J. G. L. (1969)
Church	Parish	St Nicholas	Angmering	50.829307, -0.484561	O'CONNOR, T. P. (1975)
Abbey	Benedictine	Unknown	Eynsham	51.778505, -1.373868	BOYLE, A. (2003)
Abbey	Benedictine	St Augustine	Canterbury	51.277856, 1.088458	BAYLEY, J. (1977)
Priory	Cluniac	St Milburga	Much Wenlock	52.597320, -2.555377	CAMERON, A. (1985)
Priory & Nunnery	Dominican	St Mary & St Margaret	Dartford	51.429982, 0.222119	OSBORNE, C. (1977)
House	Domestic	Unknown	Raunds	52.341359, -0.540208	MAYS, S. A. (1985)
Church	Parish	St Ebba	Beadnell	55.556657, -1.637161	HARRISON, C. (2013)
Church	Parish	St Peter	Wootton Wawen	52.267963, -1.776934	O'CONNOR, T. (1992)
Friary	Franciscan	Unknown	Chester	53.188367, -2.895384	WEST, B. A. (1980)
Abbey	Cistercian	Unknown	Fountains	54.109518, -1.582418	MAYS, S. A. (1995)
Abbey & Nunnery	Franciscan	Unknown	Denny	52.293172, 0.186521	POWERS, R. AND C. A. KEEPAX (1974)
Hospital	Secular	St Mary Magdalene	Bawtry	53.430109, -1.022986	MCINTRYE, L. AND D. M. HADLEY (2011)
Priory	Benedictine	St Mary	Coventry	52.408017, -1.507615	BROTHWELL, D. (1971)
Priory	Benedictine	St Michael	Coventry	52.408017, -1.507615	CLOUGH, S. (2016)
Abbey	Cistercian	Unknown	Oxford	51.75621 -1.260402	SLATER, G. AND L. LOE (2007)
Castle	Secular	Unknown	Halton	53.333350, -2.696057	BURRELL, C. L. AND E. R. DOVE (2015)
Cathedral	Secular	St Mary	Salisbury	51.064932, -1.797653	WESSEX ARCHAEOLOGY (2000)
Catastrophic	Ship	St Mary	Portsmouth	50.763736, -1.096507	STIRLAND, A. J. (2005)
Catastrophic	Massgrave	n/a	Towton	53.850794, -1.266689	HOLST ET AL. (2000)
Cathedral	Secular	St John & St Martin	Beverley	53.839250, -0.424501	TUCKER, K. (2004)
Church	Parish	St Giles	Colchester	51.886125, 0.901898	PINTER-BELLOWS S.
Friary	Franciscan	Unknown	Gloucester	51.869949 -2.248024	OYLER, C. R. (2001)
Friary	Franciscan	Unknown	Oxford	51.749851, -1.261385	HARMAN, M. AND E. EDWARDS (1989)
Church	Parish	St Mark	Lincoln	53.225318, -0.543052	DAWES, D. (1986)
Church	Parish	St Martin	Norwich	52.633672, 1.301110	OSBORNE, C. AND A. STIRLAND (2001)
Church	Parish	St Michael	Bowthorpe	52.640870, 1.213771	STIRLAND, A. (2001)
Friary	Augustinian	Unknown	Warrington	53.387071, -2.593284	BOYLSTON, A. AND D. WESTON (2002)
Priory	Benedictine	St Mary	Hereford	51.798632, -0.075267	WALDRON, T. (1996)
Church	Parish	St Andrew	Isle of Portland	50.530444, -2.443184	RAES A. (2005)
Priory & Nunnery	Augustinian	St John	Shoreditch	51.525066,-0.07995	WALKER, D. (2011)
Friary	Dominican	Unknown	Gloucester	51.864107, -2.248662	WIGGINS, R. ET AL (1993)
Church	Parish	St Mary	Porchester	50.836689, -1.113638	DEAN, B. (2007)
Friary	Augustinian	Unknown	Cambridge	52.202217, 0.117490	NEIL, B. (2017)
Church	Parish	Unknown	East Chevington	55.274835, -1.619246	BOYLSTON ET AL. (1998)
Hospital	Secular	St Mary Magdalene	Colchester	51.885919, 0.913200	PINTER-BELLOWS, S. (2004)

Church	Parish	St Edmund	Ipswich	52.054775 1.1560992	BIRKETT, D. A. (2002)
Church	Parish	St Benedict	Norwich	52.631188, 1.288285	WELLS, C. (1982)
Church	Parish	St Mary	Kirtlington	51.871783, -1.274711	GIBSON, M. (2008)
Cathedral	Secular	Unknown	Lichfield	52.685512, -1.830395	LOE, L. (2005)
Church	Parish	St Michael	Lincoln	53.220118, -0.543277	BOGHI, F. AND A. BOYLSTON (1997)
Priory & Nunnery	Benedictine	St Mary, St Nicholas & St Edmund	Littlemore	51.720949, -1.220310	CLOUGH, S. (2016)
Hospital	Secular	St Bartholomew	Newbury	51.396667, -1.326845	CLOUGH, S. (2006)
Church	Parish	St Mary	Ambrosden	51.870500, -1.125995	OXFORD ARCHAEOLOGY (2014)
Cathedral	Secular	St Andrew	Wells	51.210441, -2.643591	ROGERS, J. (2001)
Abbey	Augustinian	Virgin Mary	Cirencester	51.718722, -1.966131	HARMAN, M. (1998)
Cemetery	Secular	n/a	Faringdon	51.520756, -0.099446	WALKER, D. (2016)
Priory	Augustinian	St Frideswide's	Oxford	51.750238, -1.255689	HARMAN, M. (1985)
Cemetery	Unknown	Unknown	Hartlepool	54.698240, -1.182118	WELLS, C. (1975)
Church	Parish	Unknown	St Ives	52.332135, -0.082474	CLOUGH, S. AND L. LOE (2007)
Cemetery	Unknown	Unknown	Kings Lynn	52.754268, 0.397891	MAHONEY, D. (2005)
Cemetery	Unknown	n/a	Abingdon	51.669496, -1.283971	BOSTON, C. (2007)
Church	Parish	St Peter	Oxford	51.751722, -1.259986	WEBB, H. AND L. LOE (2009)
Abbey	Franciscan	St Clare	Preston	53.760329, -2.707739	GIBSON, M. AND L. LOE (2011)
Abbey	Fontevraulti ne	Unknown	Leighton Buzzard	51.903783, -0.659884	STIRLAND, A. (1987)
Priory	Augustinian	St Mary	Guisborough	54.536338, -1.047316	ANDERSON, S. (1994)
Friary	Carmelite	Unknown	Ipswich	52.056295, 1.154553	MAYS, S. (1994)
Hospital	Secular	St Leonard	Newark	53.087437, -0.795058	BISHOP, M. W. (1983)
Abbey	Cistercian	St Mary	Stratford	51.533340, -0.000043	WHITE, B. (2004)
Hospital	Secular	St Saviour	Bury St Edmunds	52.254233, 0.714079	ANDERSON, S. (1997)
Hospital	Secular	St Margaret	High Wycombe	51.632196, -0.762634	MANCHESTER, K. (1989)
Castle	Secular	St George	Oxford	51.752076, -1.262973	HACKING, P. (2006)
Hospital	Secular	St John	Cambridge	52.208495, 0.118220	DODWELL, N. (2015)
Priory	Benedictine	St Peter	Jarrow	54.980209, -1.472413	ANDERSON, S. M. AND D. A. BIRKETT (1988)
Abbey	Franciscan	St Clare	Aldgate	51.513145, -0.074363	WATSON, B. AND W. WHITE (2016)

12.03 | medieval | morbidity summary

	Skeletons	TotalNewBone	Osteitis	Osteomyelitis	BilateralPeriostosis	5+Periostosis	Tuberculosis	Treponemal	Leprosy	Fracture	ViolentForce(blunt/sharp)	OsteoDessicans	OsAcromiale	Scurvy	Rickets	PossibleRickets	CribraOrbitalia
nonadult-?	99	3	0	0	2	2	0	0	0	0	0	0	0	1	0	0	0
nonadult-pre-0	41	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
nonadult-0-2	504	49	2	1	12	7	0	1	0	3	0	0	0	3	2	5	41
nonadult-3-7	543	32	2	0	8	2	2	0	0	1	0	0	0	1	2	5	69
nonadult-8-11	467	32	4	1	9	2	4	1	0	4	0	4	1	5	0	6	56
nonadult-12-16	561	64	9	6	20	8	5	4	0	14	1	12	0	0	0	4	76
adult-17-25	1,230	235	32	9	115	29	10	8	33	97	23	14	7	1	1	11	143
adult-26-45	3,599	811	123	28	383	87	22	43	41	415	79	103	19	2	0	32	247
female-17-25	349	58	5	2	28	6	6	2	4	15	0	6	2	0	1	5	41
male-17-25	686	144	28	7	71	22	3	5	28	73	23	23	1	1	1	6	92

12.04 | medieval | morbidity | regional summary

		Skeletons	TotalNewBone	Osteitis	Osteomyelitis	BilateralPeriostosis	5+Periostosis	Tuberculosis	Treponemal	Leprosy	Fracture	ViolentForce	OsteoDessicans	OsAcromiale	Scurvy	Rickets	PossibleRickets	CribraOrbitalia
NORTH	nonadult-pre-0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	254	25	2	1	3	2	0	0	0	1	0	0	0	0	3	0	19
	nonadult-3-7	252	17	1	0	3	2	1	0	0	0	0	0	0	0	2	0	30
	nonadult-8-11	169	13	2	1	0	1	1	0	0	0	0	1	0	0	6	0	13
	nonadult-12-16	208	20	2	1	4	4	1	0	0	1	0	2	0	0	3	0	18
	adult-17-25	266	30	3	2	13	1	1	0	1	20	15	2	1	0	0	5	15
	adult-26-45	1,087	142	25	6	41	8	2	0	1	72	24	14	5	0	0	11	32
	female-17-25	112	8	0	0	0	6	0	0	1	3	0	1	1	0	0	3	4
	male-17-25	110	19	2	2	6	1	1	0	0	15	13	1	0	0	0	1	6
MIDLANDS	nonadult-pre-0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	65	7	0	0	3	1	0	0	0	0	0	0	0	0	0	0	4
	nonadult-3-7	72	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
	nonadult-8-11	85	5	0	0	2	0	2	0	0	1	0	3	1	0	0	0	11
	nonadult-12-16	115	11	2	2	1	0	0	0	0	5	0	2	0	0	0	0	18
	adult-17-25	270	48	3	2	27	3	2	2	1	18	2	8	2	0	0	1	45
	adult-26-45	733	190	23	7	99	16	4	4	3	77	9	33	9	0	0	3	54
	female-17-25	58	8	0	0	5	0	2	0	0	3	0	1	1	0	0	1	10
	male-17-25	186	35	2	1	0	0	0	1	1	15	2	6	1	0	0	0	34
LONDON	nonadult-pre-0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	nonadult-0-2	39	4	0	0	2	0	0	0	0	1	0	0	0	2	1	0	4
	nonadult-3-7	39	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	7
	nonadult-8-11	91	6	1	0	4	2	0	1	0	2	0	0	0	1	0	0	19
	nonadult-12-16	102	18	4	2	11	3	1	4	0	3	0	5	0	0	0	0	23
	adult-17-25	258	54	6	1	25	8	6	3	0	20	3	8	0	0	0	3	43
	adult-26-45	435	153	25	5	98	19	6	14	1	102	15	13	0	1	0	4	74
	female-17-25	97	24	3	1	12	5	4	2	0	7	0	3	0	0	0	1	16
	male-17-25	139	24	3	0	12	3	2	1	0	0	0	5	0	0	0	2	24
SOUTH	nonadult-pre-0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	146	6	0	0	1	1	0	1	0	1	0	0	0	1	3	0	14
	nonadult-3-7	180	10	1	0	4	0	1	0	0	1	0	0	0	23	3	0	23
	nonadult-8-11	122	8	0	0	3	0	1	0	0	1	0	0	0	1	0	0	13
	nonadult-12-16	136	15	2	2	4	1	3	0	0	5	1	3	0	0	0	0	17
	adult-17-25	436	103	21	4	51	17	1	3	31	39	3	13	4	1	0	4	40
	adult-26-45	585	137	24	8	59	23	3	2	28	72	14	26	2	1	0	4	30
	female-17-25	111	23	2	1	9	1	0	0	3	4	0	2	1	0	0	1	12
	male-17-25	273	67	19	3	38	16	1	3	27	31	3	11	0	1	0	3	26

12.05 | medieval | morbidity | urban summary

		Skeletons	TotalNewBone	Osteitis	Osteomyelitis	BilateralPeriostosis	5+Periostosis	Tuberculosis	Treponemal	Leprosy	Fracture	ViolentForce	OsteoDessicans	OsAcromiale	Scurvy	Rickets	PossibleRickets	CribraOrbitalia
UBRAN	nonadult-pre-0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	nonadult-0-2	210	30	2	1	9	5	0	0	0	2	0	0	0	2	4	0	17
	nonadult-3-7	225	18	0	0	5	2	0	0	0	0	0	0	0	1	2	0	26
	nonadult-8-11	270	21	3	1	8	2	2	1	0	3	0	3	1	4	6	0	38
	nonadult-12-16	269	31	6	3	15	5	2	4	0	9	0	8	0	0	2	0	45
	adult-17-25	670	126	10	3	65	12	8	6	1	48	6	15	5	0	0	8	91
	adult-26-45	1,810	522	76	14	282	53	14	41	6	270	33	46	8	2	0	24	172
	female-17-25	196	40	4	2	23	5	6	2	0	15	0	5	1	0	0	3	26
	male-17-25	401	68	6	1	39	7	2	4	1	28	5	9	1	0	0	5	60
URBANISH	nonadult-pre-0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	99	9	0	0	2	1	0	1	0	0	0	0	0	1	2	0	11
	nonadult-3-7	101	7	2	0	2	0	1	0	0	1	0	0	0	0	1	0	16
	nonadult-8-11	67	16	0	0	2	0	2	0	0	1	0	0	0	1	0	0	8
	nonadult-12-16	100	12	2	2	2	0	3	0	0	5	1	3	0	0	0	0	12
	adult-17-25	289	72	17	4	37	15	1	1	28	33	9	11	1	1	0	1	26
	adult-26-45	433	89	25	8	46	20	4	0	27	57	9	27	2	0	0	1	9
	female-17-25	80	16	1	0	6	1	0	0	3	2	0	1	1	0	0	0	7
	male-17-25	175	53	16	4	29	14	1	1	24	30	9	10	0	1	0	1	18
RURAL	nonadult-pre-0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	195	10	0	0	1	1	1	0	0	1	0	0	0	0	2	0	13
	nonadult-3-7	217	7	0	0	1	0	0	0	0	0	0	0	0	0	3	0	27
	nonadult-8-11	130	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	10
	nonadult-12-16	192	21	1	1	3	3	0	0	0	0	0	1	0	0	2	0	19
	adult-17-25	271	37	5	2	14	2	1	1	4	16	9	5	1	0	0	4	26
	adult-26-45	500	94	8	4	30	5	1	2	2	55	27	17	5	0	0	4	37
	female-17-25	102	7	0	0	3	0	0	0	1	0	0	1	1	0	0	3	9
	male-17-25	132	24	4	1	10	2	1	0	3	16	9	4	0	0	0	1	12

12.06 | medieval | morbidity | social status summary

		Skeletons	TotalNewBone	Osteitis	Osteomyelitis	BilateralPeriostosis	5+Periostosis	Tuberculosis	Treponemal	Leprosy	Fracture	ViolentForce	OsteoDessicans	OsAcromiale	Scurvy	Rickets	PossibleRickets	CribraOrbitalia
MONASTIC	nonadult-pre-0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	191	22	0	0	8	4	0	0	0	3	0	0	0	0	4	0	22
	nonadult-3-7	187	15	2	0	5	0	2	0	0	1	0	0	0	1	4	0	25
	nonadult-8-11	219	18	1	0	8	2	4	1	0	4	0	3	1	4	0	0	38
	nonadult-12-16	278	40	6	4	16	4	4	4	0	13	1	10	0	0	0	0	53
	adult-17-25	806	185	25	3	92	26	7	5	31	70	11	21	6	1	0	3	112
	adult-26-45	1,337	389	67	20	213	53	11	17	30	222	35	59	3	1	0	8	137
	female-17-25	210	49	4	1	22	6	5	2	4	12	0	6	2	0	0	2	32
	male-17-25	501	116	21	2	65	20	2	3	26	54	11	15	1	1	0	1	75
SECULAR	nonadult-pre-0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	nonadult-0-2	313	27	2	1	4	3	0	1	0	0	0	0	0	0	4	0	19
	nonadult-3-7	356	17	0	0	3	2	0	0	0	0	0	0	0	0	3	0	44
	nonadult-8-11	248	14	2	1	2	0	0	0	0	0	0	1	0	1	6	0	18
	nonadult-12-16	279	24	3	2	4	4	1	0	0	1	0	2	0	0	4	0	23
	adult-17-25	398	50	7	5	24	3	3	3	2	27	13	10	1	0	0	8	31
	adult-26-45	1,344	206	25	6	67	9	4	1	3	100	28	23	11	1	0	18	45
	female-17-25	168	14	1	1	10	0	1	0	0	5	0	1	1	0	0	4	10
	male-17-25	181	29	5	4	13	3	2	2	2	20	12	8	0	0	0	4	15

12.07 | medieval | funerary | summary

		Finds = # Observable	Finds = Yes	Finds=Clothing	Coffin = # Observable	Coffin = Yes	# Observable	External = Cemetery	Internal = Church	Internal = Chapel	Internal = ChapterHouse	Internal = Cloister	Miscallaneous	# Observable	WestEast	WestEast-Ish	NorthSouth	Double Burial	Triple Burial	Mass Grave
nonadult-pre-0	41	26	1	0	26	9	30	24	1	2	0	0	3	27	22	4	1	3	0	0
nonadult-0-2	504	320	8	1	365	73	417	365	45	6	0	1	0	366	357	9	0	12	0	0
nonadult-3-7	543	348	5	0	378	59	430	370	55	2	3	0	0	393	373	20	0	5	0	13
nonadult-8-11	468	299	10	5	310	42	392	334	33	5	9	1	0	347	331	15	1	1	0	17
nonadult-12-16	561	324	18	9	359	41	457	402	38	8	3	2	4	431	412	19	0	8	0	0
adult-17-25	1,230	684	51	23	728	99	867	701	76	31	7	11	41	828	756	71	1	6	2	5
adult-26-45	3,599	119	119	51	2,457	344	2019	1614	286	61	7	8	43	2,638	2518	77	3	32	4	3
female-17-25	349	201	14	5	197	32	244	217	10	11	1	1	2	268	202	12	0	2	0	16
male-17-25	686	403	36	18	446	60	491	374	49	21	6	6	35	464	428	43	1	1	3	16

		# Observable	Back = Supine	Back = Prone	Disarticulated	Side = Left	Side = Right	# Observable	Arms = AcrossChest	Arms = AcrossPelvis	Arms = Extended	Arms = Disarticulated	Arms = In Prayer	Arms =Behind Back	# Observable	Legs = Extended	Legs = Flexed	Legs = Crossed	Legs = Disarticulated
nonadult-pre-0	41	23	18	0	0	2	1	16	4	0	12	0	0	0	25	25	0	0	0
nonadult-0-2	504	388	385	0	3	0	0	45	0	4	39	2	0	0	382	379	0	1	2
nonadult-3-7	543	424	424	0	0	0	0	52	5	6	41	0	0	0	424	424	0	0	0
nonadult-8-11	468	351	350	0	1	0	0	39	0	11	27	1	0	0	352	351	0	0	1
nonadult-12-16	561	413	409	0	4	0	0	59	9	11	35	4	0	0	412	407	1	0	4
adult-17-25	1,230	870	836	3	30	0	1	204	19	67	82	28	3	3	864	835	2	0	27
adult-26-45	3,599	2,652	2613	6	32	0	1	531	44	151	301	31	4	0	2,641	2611	2	1	27
female-17-25	349	237	226	0	0	0	0	48	4	20	13	0	0	0	234	234	0	0	0
male-17-25	686	506	475	2	34	0	1	152	13	44	65	26	2	2	498	469	2	0	27

12.08 | medieval | care chapter | list of sites

ID	AGE	PATHOLOGY	LOCATION	DATE	TYPE	CONTEXT
110	17 to 25	Leprosy	Blackfriars, Guildford, Surrey	1275-1538	Friary/Priory	Urban - Fringe
1561	17 to 25	Leprosy	St Giles, Brompton Bridge, Yorkshire	1280-1440	Hospital	Rural
S158 (A)	20 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S187 (B)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S21 (A)	20 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S22 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S275 (B)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S291 (B)	17 to 20	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S31 (A)	18 to 21	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S338 (A)	18 to 20	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S341 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S347 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S350 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S359 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S370 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S372 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S47 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S64 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S9 (A)	17 to 25	Leprosy	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
2170	17 to 25	Leprosy	St Lawrence, New Romney, Kent	1350-1450	Hospital	Urban - Fringe
BG37	17 to 25	Leprosy	St Mary Magdalen's, Colchester, Essex	1150-1530	Hospital	Urban
2593	25	Leprosy	St Mary, Ipswich, Suffolk	1401-1538	Friary/Priory	Urban
2623	22 to 25	Leprosy	St Mary, Ipswich, Suffolk	1401-1538	Friary/Priory	Urban
343	17 to 25	Leprosy	St Nicholas, Lewes, Sussex	1150-1560	Hospital	Rural
G708	10	Leprosy	Wharram Percy, Yorkshire	1540-1850	Parish Church	Rural
1216	17 to 25	Treponemal	Austin Friars, Hull, Yorkshire	1320-1538	Friary/Priory	Urban
77	20 to 25	Treponemal	Blackfriars, Gloucster	1239-1539	Friary/Priory	Urban
184	1y to 18m	Treponemal	St Bartholomew, Newbury, Berkshire	1215-1540	Hospital	Urban - Fringe
412	25	Treponemal	St Margaret's, Norwich, Norfolk	1100-1468	Parish Church	Urban - Fringe
6910	18 to 25	Treponemal	St Mary, Spital Square, London	1400-1538	Hospital	Urban
6974	6 to 11	Treponemal	St Mary, Spital Square, London	1400-1538	Hospital	Urban
13715	12 to 17	Treponemal	St Mary, Spital Square, London	1400-1538	Hospital	Urban
20634	12 to 17	Treponemal	St Mary, Spital Square, London	1400-1538	Hospital	Urban
208	12 to 17	Treponemal	St Thomas, Southwark, London	1540-1714	Hospital	Urban
218	18 to 25	Treponemal	St Thomas, Southwark, London	1540-1714	Hospital	Urban
230	11 to 13	Tuberculosis	Augustinian Friary, Cambridge, Cambridgeshire	1275–1538	Friary/Priory	Urban
417	6 to 7	Tuberculosis	Blackfriars, Gloucster	1239-1539	Friary/Priory	Urban
5787	10 to 12	Tuberculosis	Oxford Castle, Oxfordshire	1500-1800	Castle	Urban
6184	5 to 8	Tuberculosis	St Andrew, Fishergate, York	1300-1500	Friary/Priory	Urban
6355	4 to 6	Tuberculosis	St Andrew, Fishergate, York	1300-1500	Friary/Priory	Urban
90	17 to 25	Tuberculosis	St Bartholomew, Newbury, Berkshire	1215-1540	Hospital	Urban - Fringe
796	11	Tuberculosis	St Gregory, Canterbury, Kent	1145-1537	Friary/Priory	Urban
1201	3 to 5	Tuberculosis	St Gregory, Canterbury, Kent	1145-1537	Friary/Priory	Urban
S278 (B)	10.5 to 14.5	Tuberculosis	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
S53 (A)	6.5 to 10.5	Tuberculosis	St James & St Mary Magdalen, Chichester, Sussex	1118-1621	Hospital	Urban - Fringe
1218	17 to 25	Tuberculosis	St John, Cambridge, Cambridgeshire	1220-1510	Hospital	Urban
3183	17 to 25	Tuberculosis	St John, Cambridge, Cambridgeshire	1220-1510	Hospital	Urban
148	18 to 25	Tuberculosis	St Martin, Wallingford, Oxfordshire	1000-1412	Parish Church	Urban - Fringe
188	13 to 17	Tuberculosis	St Martin, Wallingford, Oxfordshire	1000-1412	Parish Church	Urban - Fringe
21	6 to 12	Tuberculosis	St Martin, Wallingford, Oxfordshire	1000-1412	Parish Church	Urban - Fringe
186	6 to 12	Tuberculosis	St Martin, Wallingford, Oxfordshire	1000-1412	Parish Church	Urban - Fringe
1028	5 to 6	Tuberculosis	St Mary Magdalen, Bawtry, Yorkshire	1300-1500	Hospital	Urban - Fringe
1340	21 to 23	Tuberculosis	St Mary, Ipswich, Suffolk	1401-1538	Friary/Priory	Urban
2577	11	Tuberculosis	St Mary, Ipswich, Suffolk	1401-1538	Friary/Priory	Urban
8264	18 to 25	Tuberculosis	St Mary, Spital Square, London	1400-1538	Hospital	Urban
12188	18 to 25	Tuberculosis	St Mary, Spital Square, London	1400-1538	Hospital	Urban
13759	18 to 25	Tuberculosis	St Mary, Spital Square, London	1400-1538	Hospital	Urban
2077	3 to 5	Tuberculosis	St Peter & St Paul, Taunton, Somerset	1350-1538	Friary/Priory	Rural
171	18 to 25	Tuberculosis	St Thomas, Southwark, London	1540-1714	Hospital	Urban
179	18 to 25	Tuberculosis	St Thomas, Southwark, London	1540-1714	Hospital	Urban
G658	11	Tuberculosis	Wharram Percy, Yorkshire	1540-1850	Parish Church	Rural

12.09 | tudor | morbidity summary

	Skeletons	TotalNewBone	Osteitis	Osteomyelitis	BilateralPeriostosis	5+Periostosis	Tuberculosis	Treponemal	Leprosy	Fracture	ViolentForce(blunt/sharp)	OsteoDessicans	OsAcromiale	Scurvy	Rickets	PossibleRickets	CribraOrbitalia
nonadult-pre-0	7	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
nonadult-0-2	79	5	0	0	3	1	0	0	0	1	0	0	0	1	0	1	4
nonadult-3-7	70	3	0	0	1	0	0	0	0	0	0	0	0	0	2	0	8
nonadult-8-11	92	7	1	0	3	2	0	1	0	2	0	1	0	3	0	0	20
nonadult-12-16	153	25	5	3	12	3	1	4	0	3	0	6	0	0	0	1	27
adult-17-25	326	61	7	3	26	8	6	4	0	30	10	8	0	0	0	0	45
adult-26-45	839	248	40	4	145	37	8	37	2	170	20	20	3	2	0	7	121
female-17-25	110	23	3	1	12	5	4	2	0	7	0	2	0	0	0	1	16
male-17-25	182	30	4	2	13	3	2	2	0	21	6	6	0	0	0	3	27

12.10 | tudor | morbidity | regional summary

		Skeletons	TotalNewBone	Osteitis	Osteomyelitis	BilateralPeriostosis	5+Periostosis	Tuberculosis	Treponemal	Leprosy	Fracture	ViolentForce	OsteoDessicans	OsAcromiale	Scurvy	Rickets	PossibleRickets	CribraOrbitalia
NORTH	nonadult-pre-0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	34	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-3-7	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	nonadult-8-11	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	nonadult-12-16	37	6	1	1	0	0	0	0	0	0	0	0	0	0	1	0	4
	adult-17-25	34	6	1	1	1	0	0	0	0	8	8	1	0	0	0	0	3
	adult-26-45	227	22	1	1	2	0	0	0	0	18	16	4	2	0	0	1	10
	female-17-25	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	male-17-25	18	12	1	1	1	0	0	0	0	8	8	1	0	0	0	0	3
MIDLANDS	nonadult-pre-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-3-7	6	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	nonadult-8-11	7	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	nonadult-12-16	12	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
	adult-17-25	20	2	0	0	1	0	0	0	0	2	0	1	0	0	0	0	4
	adult-26-45	52	15	0	0	8	2	1	1	0	6	1	1	0	0	0	0	0
	female-17-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	male-17-25	20	2	0	0	1	0	0	0	0	2	0	1	0	0	0	0	4
LONDON	nonadult-pre-0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	38	4	0	0	2	1	0	0	0	1	0	0	0	1	1	0	4
	nonadult-3-7	33	2	0	0	1	0	0	0	0	0	0	0	0	1	1	0	6
	nonadult-8-11	68	5	1	0	3	2	0	1	0	2	0	0	0	3	0	0	19
	nonadult-12-16	88	18	4	2	11	3	1	4	0	3	0	5	0	0	0	0	22
	adult-17-25	217	49	5	1	23	8	6	3	0	18	2	6	0	0	0	3	38
	adult-26-45	258	109	22	3	78	19	3	13	0	86	11	10	0	1	0	2	62
	female-17-25	94	23	3	1	12	5	4	2	0	7	0	2	0	0	0	1	16
	male-17-25	106	20	2	0	10	3	2	1	0	11	2	4	0	0	0	0	20
SOUTH	nonadult-pre-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-3-7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-8-11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-12-16	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	adult-17-25	55	4	1	1	1	0	0	1	0	2	0	0	0	0	0	1	0
	adult-26-45	51	7	0	0	2	1	0	0	0	3	1	0	0	1	0	0	3
	female-17-25	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	male-17-25	28	2	1	1	1	0	0	0	0	1	0	0	0	0	0	1	0

12.11 | tudor | morbidity | urban summary

		Skeletons	TotalNewBone	Osteitis	Osteomyelitis	BilateralPeriostosis	5+Periostosis	Tuberculosis	Treponemal	Leprosy	Fracture	Violent Force (blunt/sharp)	OsteoDessicans	OsAcromiale	Scurvy	Rickets	PossibleRickets	CribraOrbitalia
UBRAN	nonadult-pre-0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	41	4	0	0	3	1	0	0	0	1	0	0	0	1	1	0	4
	nonadult-3-7	34	2	0	0	2	0	0	0	0	0	0	0	0	1	1	0	6
	nonadult-8-11	73	6	1	0	2	1	0	1	0	2	0	1	0	3	0	0	19
	nonadult-12-16	110	19	4	2	12	3	1	4	0	3	0	6	0	0	0	0	23
	adult-17-25	275	55	6	2	25	8	6	4	0	22	2	7	0	0	0	4	42
	adult-26-45	547	209	38	3	134	34	7	36	2	148	22	15	1	2	0	6	109
	female-17-25	95	23	3	1	12	5	4	2	0	0	0	0	0	0	0	1	16
	male-17-25	152	24	3	1	12	3	2	2	0	13	2	5	0	0	0	3	24
URBANISH	nonadult-pre-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-3-7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-8-11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-12-16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	adult-17-25	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	adult-26-45	28	5	0	0	0	0	1	0	0	3	0	1	0	0	0	0	0
	female-17-25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	male-17-25	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RURAL	nonadult-pre-0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	36	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-3-7	33	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
	nonadult-8-11	17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	nonadult-12-16	41	6	1	1	0	0	0	0	0	0	0	0	0	0	1	0	4
	adult-17-25	43	6	1	1	1	0	0	0	0	0	0	1	0	0	0	0	3
	adult-26-45	246	34	1	1	10	22	0	1	0	4	1	4	2	0	0	1	12
	female-17-25	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	male-17-25	23	6	1	1	1	0	0	0	0	0	0	1	0	0	0	0	3

12.12 | tudor | morbidity | social status summary

		Skeletons	TotalNewBone	Osteitis	Osteomyelitis	BilateralPeriostosis	5+Periostosis	Tuberculosis	Treponemal	Leprosy	Fracture	ViolentForce(blunt/sharp)	OsteoDessicans	OsAcromiale	Scurvy	Rickets	PossibleRickets	CribraOrbitalia
MONASTIC	nonadult-pre-0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	41	4	0	0	3	1	0	0	0	1	0	0	0	1	1	0	4
	nonadult-3-7	25	3	0	0	1	0	0	0	0	0	0	0	0	1	2	0	6
	nonadult-8-11	59	6	1	0	3	2	0	1	0	2	0	1	0	2	0	0	19
	nonadult-12-16	97	19	4	2	12	3	1	4	0	3	0	6	0	0	0	0	23
	adult-17-25	200	53	5	1	24	8	6	3	0	21	1	5	0	0	0	2	42
	adult-26-45	568	225	38	3	143	37	8	37	2	148	22	15	1	1	0	6	108
	female-17-25	71	23	3	1	12	5	4	2	0	7	0	2	0	0	0	1	16
	male-17-25	104	22	2	0	11	3	2	1	0	12	1	3	0	0	0	1	24
SECULAR	nonadult-pre-0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-0-2	38	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonadult-3-7	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	nonadult-8-11	33	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	nonadult-12-16	52	6	1	1	0	0	0	0	0	0	0	0	0	0	1	0	4
	adult-17-25	100	8	2	2	2	0	0	1	0	9	9	0	0	0	0	1	3
	adult-26-45	247	22	1	1	2	0	0	0	0	21	19	5	2	1	0	1	13
	female-17-25	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	male-17-25	52	8	2	2	2	0	0	1	0	9	9	0	0	1	0	1	3

12.13 | tudor | funerary | summary

		Finds = # Observable	Finds = Yes	Finds=Clothing	Coffin = # Observable	Coffin = Yes	# Observable	External = Cemetery	Internal = Church	Internal = Chapel	Internal = ChapterHouse	Internal = Cloister	Miscallaneous	# Observable	WestEast	WestEast-Ish	NorthSouth	Double Burial	Triple Burial	Mass Grave
nonadult-pre-0	7	4	0	0	4	0	5	5	0	0	0	0	0	4	2	2	0	1	0	0
nonadult-0-2	79	45	0	0	44	5	74	59	13	0	0	0	2	72	72	0	0	2	0	0
nonadult-3-7	70	33	1	0	33	3	58	51	6	1	0	0	0	40	39	1	0	0	0	13
nonadult-8-11	93	28	0	0	29	4	82	66	13	0	3	0	0	63	62	0	1	0	0	17
nonadult-12-16	153	68	3	0	70	8	122	106	9	1	1	0	5	113	113	0	0	1	0	12
adult-17-25	326	108	10	4	111	10	265	225	9	0	3	0	28	205	201	3	1	0	0	14
adult-26-45	839	382	14	5	383	41	503	368	85	23	0	0	27	667	656	10	1	0	0	19
female-17-25	110	14	0	0	12	6	85	84	1	0	0	0	0	70	70	0	0	0	0	26
male-17-25	182	76	9	2	79	3	157	120	6	0	3	0	28	109	105	3	1	0	0	12

		# Observable	Back = Supine	Back = Prone	Disarticulated	Side = Left	Side = Right	# Observable	Arms = AcrossChest	Arms = AcrossPelvis	Arms = Extended	Arms = Disarticulated	Arms = In Prayer	Arms =Behind Back	# Observable	Legs = Extended	Legs = Flexed	Legs = Crossed	Legs = Disarticulated
nonadult-pre-0	7	3	1	0	0	0	2	2	0	0	2	0	0	0	3	3	0	0	0
nonadult-0-2	79	48	46	0	2	0	0	2	0	0	0	2	0	0	47	45	0	0	2
nonadult-3-7	70	27	27	0	0	0	0	1	0	0	1	0	0	0	43	43	0	0	0
nonadult-8-11	93	55	24	0	1	0	0	34	3	0	0	1	0	0	55	24	0	0	1
nonadult-12-16	153	80	76	0	4	0	0	6	0	1	1	4	0	0	80	76	0	0	4
adult-17-25	326	157	129	1	26	0	0	43	3	5	8	26	1	0	157	131	0	0	26
adult-26-45	839	378	348	3	26	1	0	57	4	17	10	25	0	0	377	352	0	1	24
female-17-25	110	40	40	0	0	0	0	2	0	2	0	0	0	0	40	40	0	0	0
male-17-25	182	96	68	2	26	0	0	41	3	3	8	26	1	0	96	70	0	0	26

context 1400-1650