

RESEARCH ARTICLE

# Reconsidering maternal mortality in medieval England: aristocratic Englishwomen, c. 1236–1503

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## Abstract

The characterisation of medieval childbirth as profoundly dangerous is both long-standing and poorly supported by quantitative data. This article, based on a database tracking the reproductive lives of 102 late medieval aristocratic Englishwomen, allows not only for an evaluation of this trope but also an analysis of risk factors, including maternal youth and short birth intervals. Supplemented with evidence from medieval medical tracts and osteoarchaeological data related to pubertal development and nutrition, this study demonstrates that reproduction was hardly the main driver of mortality among elite women.

## 1. Introduction

It has become something of a truism that many medieval women must have died in childbed; the internet is replete with articles like ‘The Historical Horror of Childbirth,’ and grim statements that ‘many [medieval] women suffered greatly and many more died’.<sup>1</sup> These popular characterisations of the medieval reproductive experience find some support in the historical record. On 5 May 1316, for example, Princess Elizabeth of Rhuddlan, pregnant with her ninth child, went into labour near Quendon, co. Essex where she delivered a daughter, Isabel, and ‘the said noble lady Countess Elizabeth died in childbirth and was buried near Walden’.<sup>2</sup> The work of professional historians also offers support for the portrayal of medieval childbirth as incredibly dangerous. Ole Benedictow, for example, characterises the life of medieval women as marked by supermortality due in large part to reproductive stress.<sup>3</sup> Writers who seek to buttress this assertion can also point to the charms or talismans that medieval women sought to alleviate their anxieties about giving birth.<sup>4</sup> Still others reference bioarchaeological evidence from a variety of medieval English skeletal assemblages in which female mortality is interpreted as peaking between the ages of 25 and 35, ages that might suggest maternal mortality.<sup>5</sup> Yet the age at death among a sample of 128 female skeletons excavated at three late medieval English nunneries also peaked during their reproductive years, with 68 per cent of the women dying between 26 and 45; unless these were particularly naughty nuns, the pressures of reproduction cannot have been the cause of death.<sup>6</sup>

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Maternal mortality not only affects the size and age pyramid of the population but also family structures, the labour market and gender roles. In modern studies of the effects of maternal mortality, scientists have noted that children whose mothers have died are more likely to die than children whose fathers have died, and children in both groups are at higher risk of death than children with both parents.<sup>7</sup> Today, the risk is particularly high for infants, who rely on their mothers for sustenance; in a community-based study of maternal deaths in India, researchers found that the risk of infant death during delivery increased five times after the death of the mother, and the overall risk of mortality for infants in their first year was 28 times that of an infant whose mother was still alive.<sup>8</sup> A similar survey of Tanzanian households found a correlation between stunted development and maternal death, even more so than the households that experienced paternal death.<sup>9</sup> In a study of the relationship between family health and death in New Delhi, researchers concluded that the loss of a mother was ultimately more detrimental to overall household health than the loss of any other adult and had the most negative economic effects on the family, even though the fathers were the primary breadwinners.<sup>10</sup> Modern consequences that are particularly resonant for our understanding of the medieval past include the higher likelihood of family dissolution and reconstitution, as well as an increased rate of economic participation of children and a breakdown in the female-dependent networks of support for the very young and very old.

Determining maternal mortality in any medieval population carries with it a myriad of problems, particularly when it comes to evidence. Many primary sources come to us via male mediators, and the accurate recounting of the experience of birth, which occurred in a female-dominated space, was of subsidiary concern. Birth scenes in the chivalric literature are generally heavily stylised, and accuracy takes a back seat to artistry. It is highly unlikely, for example, that dying royal women gave elaborate speeches to their newborn children, as Queen Isabella does in the *Prose Tristan*, lamenting, 'in sorrow I bore thee, sad was the hour I brought thee forth, and sad is the welcome thy wretched mother bids thee,' before she bestows an appropriately sorrowful name on her son and expires.<sup>11</sup> Canonisation inquests and miracle collections have many of the same problems; the ultimate goal is to assert the efficacy of a given holy man or woman, and as such only those cases with positive outcomes were recorded for posterity. In fact, problems related to pregnancy and childbirth constitute only 2 per cent of miracles in English collections from the twelfth and thirteenth centuries, despite the ubiquity of the reproductive experience.<sup>12</sup>

The material culture of childbirth, both secular and religious, offers insight into the lived experiences and concerns of actual women by illuminating how medieval women managed their anxiety regarding the birth process but tells us little about how many pregnancies medieval women experienced and if or when they died giving birth. The coral and jet beads that women willed to other women indicate that they feared haemorrhage and believed in the blood-staunching power of these stones, for example, but not how often they were used.<sup>13</sup> Wellcome MS 632, a parchment roll with protective prayers and pictorial representations of the instruments of Christ's passion, is perhaps the only extant medieval English birth-girdle which was actually used; rolls like MS 632 were placed over the belly of the

parturient woman; the prayers offer protection from death in childbirth, and also from shipwreck or judicial punishment. The manuscript shows signs of wear and spots that could be blood, but who it belonged to, and against which threat to life, remain tantalising mysteries.<sup>14</sup>

Bioarchaeological evidence is equally if not more problematic for quantifying maternal mortality. Despite the supposed frequency of such deaths in pre-modern societies, since 1970 archaeologists have published reports detailing only about 20 skeletons of women who were definitively pregnant or in labour at death, that is, buried with foetal remains in situ under the pubic symphysis.<sup>15</sup> Both anatomical and social factors account for the rarity of these finds. Foetal remains, while robust, are quite small and prone to misidentification or being missed by inexperienced archaeologists, and while burials of neonates and reproductive-age women in the same grave may suggest a case of maternal mortality, it is only suggestive, not conclusive evidence.<sup>16</sup> Western cultural taboos about the burial of pregnant or recently delivered women with foetal remains resulted in their burial in marginal spaces, decreasing the likelihood of survival and excavation. In the western world, this practice began with the Lex Caesarea of the Roman Empire and continued through the end of the Middle Ages.<sup>17</sup>

The paucity of concrete source material means that most demographers of medieval Europe have not taken up maternal mortality, despite the importance of the topic.<sup>18</sup> Wrigley and Schofield's *The Population History of England 1541–1871* and Andrew Hinde's *English Population: A History since the Domesday Survey*, for example, discuss infant mortality, nuptiality and age at marriage, but not maternal mortality. This is also true of T.H. Hollingsworth's *Historical Demography*. Peter Laslett's discussion of child marriage in Elizabethan England, in *The World We Have Lost, Further Explored*, asserts that mothers below age 16 were virtually unknown but makes no mention of the dangers of pregnancy in adolescents. French scholars have been slightly more attentive, though most studies focus on the early modern period and analyse relatively small populations. Bertrand-Yves Marfart's 1994 article is a rare exception, though his evidence is largely bioarchaeological and based on only four skeletal assemblages, totalling 156 women, three of whom were buried with foetal remains. One of the few studies that deal explicitly with quantifying obstetric death in the medieval world is the analysis of David Herlihy and Christine Klapisch-Zuber. Through an analysis of several Florentine *Libri dei morti*, c. 1424–1430 that recorded cause of death for 2,312 women, the authors observed that only 32 women, less than 2 per cent, were recorded as dying in childbirth (*sopra parto* or *sconciasì*).<sup>19</sup> This is a far lower figure than we find in popular perception, though the methodology employed by Klapisch-Zuber and Herlihy does not match what modern demographers employ to calculate the maternal mortality rate. What are we to believe, therefore, about the birthing experience of the Middle Ages? Was childbirth 'terribly dangerous,' as Lawrence Stone wrote in the two sentences devoted to childbirth in his seven-hundred-page work on the English family?<sup>20</sup> Did 'everyone ... know someone who died in childbirth?'<sup>21</sup>

In the following article, I hope to accomplish two tasks: first, to identify the risk factors which most often contributed to deaths in childbed and, second, to quantify the rate of maternal mortality among late medieval elite Englishwomen. To do so, I

employ a quantitative methodology based upon a FileMaker Pro database, 'Births and Deaths of Englishwomen' (BADE). The database records the pregnancies of the most well-documented members of medieval English society from the marriage of Eleanor of Provence to King Henry III in 1236 to the death of Elizabeth of York in 1503, offering more than a century of data on either side of the demographic disruption of the Black Death.<sup>22</sup> By doing so, the database allows for an analysis of the incidence of both maternal death and risk factors identified by modern studies of maternal mortality, namely maternal youth (defined here as maternal age below 15 years at delivery), high parity (for this study, the fifth birth event and beyond), stillbirths and advanced maternal age (maternal age over 35 at delivery).<sup>23</sup> In populating the database, I began with the queens, then their daughters and daughters-in-law, branching out to include female members of noble families related to the royal family by marriage. The selection of aristocratic women for the study was based on two interrelated trends. First, primary sources about the elites are much more plentiful than for the peasantry. Second, because the propagation of the lineage through marriage and the successful delivery of heirs was of immense concern, the pregnancies of elite women were much more likely to receive comment, either by the immediate family or, for the royal family in particular, by contemporaries. Monastic histories and the chronicles of Matthew Paris, for example, provide primary documentation for the births, pregnancies and deaths of many queens and princesses, organised by year. Secondary scholarship and biographies provide further material for the royal family and select elite women, as well. Finally, in order to account for mistakes in primary sources or transcription and to minimise bias and reduce cherry-picking, I systematically mined the Oxford Dictionary of National Biography, filtering entries by date (c. 1236–1503) in order to capture information on any women previously missed.<sup>24</sup> For comparison's sake, I also tracked the pregnancies of women in the most well-documented gentry families: the Celys, Pastons, Plumpton and Stonors. In sum, the database tracks 457 pregnancies shared between 102 women.<sup>25</sup>

Though small, the sample size is in many ways constrained by the topic itself. In order to perform this exercise in a responsible and defensible way, scholars need to have several pieces of information. For calculating maternal mortality, the total number of pregnancies must be compared to the number of maternal deaths. To most effectively analyse the reproductive lives of a past population, however, requires more information, including the date of birth of each mother and her children, the total number of pregnancies experienced, the interval between pregnancies, and incidence of both stillbirths and multiple births. The scarcity of this information is, by and large, why quantitative analysis remains lacking for women who lived in societies without consistent and detailed demographic data. For many members of the gentry, for example, maternal date of birth is unknown, allowing only for comparison of the total number of recorded pregnancies. I also recorded the social status of the mother – queen, princess, noblewoman or member of the gentry – allowing for comparison across social strata. The database also keeps track of how long the child survived, if the child married and if married, had issue. It is important to note, too, that the BADE database excludes women who, for a multiplicity of reasons, never reproduced successfully. Some women took the veil

(in this study, 8 of the 194 female children who lived to their teens), or never married despite living to adulthood. Nor was marriage a guarantee of successful reproduction. When Anne of Bohemia died after 12 years of marriage to Richard II, a variety of chroniclers including Adam Usk and Jean Froissart remarked that their union had produced no children. Furthermore, no evidence exists for Anne ever conceiving, and contemporary apothecary bills preserved in E 101/402/18 include medicaments that may have been used to regulate her menses in the hopes of becoming pregnant. Ultimately, however, it is impossible to know if the problem lay with her or her husband, who died without issue in 1399.<sup>26</sup> In the database, 14 of the 160 female children who lived to adulthood, or roughly one in ten (9 per cent), married but never gave birth.<sup>27</sup> The BADE database, therefore, covers a small but comparatively well-documented section of late medieval English society. The women analysed were elite members of late medieval English society, women with considerable economic and political clout whose births, pregnancies and deaths received contemporary comment, and for whom the ability to reproduce successfully was of widespread concern and therefore received comment.

Because the population included in the database is confined to the upper echelons of English society, I incorporated a variety of supplementary material on non-elite women, including secondary scholarship on maternal mortality in early modern England. Julia Allison, for example, used parish registers to estimate maternal mortality in six East Anglian parishes between 1539 and 1619, while Alannah Tomkins performed a similar task for north Shropshire in the late eighteenth century through a statistical analysis of midwife books. These sources, which unfortunately do not exist for medievalists, can serve as benchmark comparisons. The medieval evidence written in bone also offers glimpses into the experience of non-elite women. Mary Lewis and her colleagues have performed valuable studies on duration of puberty, age at menarche and age at menopause using a variety of English medieval skeletal assemblages, and these data were also incorporated into the analysis of age at first pregnancy and interval between pregnancies.<sup>28</sup> For the purposes of this study, I employed the definition of maternal death put forth by the World Health Organization, 'the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy or its management, but not from accidental or incidental causes'.<sup>29</sup> In modern terms, for example, a woman who died of a heart attack due to increased blood pressure from pregnancy would be counted as a maternal death, while a pregnant woman who died in an automobile accident would not. Other pregnancy-related causes of death include an increased susceptibility to infection, as pregnancy represses the mother's immune system to minimise the chance of foetal rejection, increasing the risk of contracting tuberculosis, influenza and small-pox.<sup>30</sup> Blanche of Lancaster died of infection while pregnant with her second child in 1409; we cannot know if the illness may have been exacerbated by her pregnancy, but it is possible that her lowered immune response contributed to her death.<sup>31</sup> Women who died within six weeks of delivering a child were flagged as possible cases of maternal mortality; after consulting primary and secondary source material, these cases were marked as either 'definite', 'questionable', or excluded as cases of maternal mortality.<sup>32</sup>

### 1.1 Age at first pregnancy

Age at first pregnancy is a major determinant of the risk of obstetric death. The World Health Organization notes that the risk is highest for adolescent girls under the age of 15.<sup>33</sup> In an almost 20-year study of 854,377 Latin American women, researchers found that pregnant girls under age 15 were at a much higher risk for puerperal endometritis, preterm delivery, and deliveries requiring episiotomies (a procedure which did not develop until the eighteenth century), as well as small-for-gestational-age infants and low birth weight.<sup>34</sup> Judith Lewis sampled the raw data produced by T.H. Hollingsworth in the creation of *The Demography of the British Peerage* to analyse maternal mortality among the English aristocracy between 1558 and 1959 and concluded that age at first pregnancy was one of the most influential factors for obstetric death.<sup>35</sup> Ole Benedictow, in his study of the demography of medieval Scandinavia, asserts that early marriages, and with them early consummation and pregnancies, would have resulted in an increased risk of maternal mortality among young women, a conclusion he supports through a survey of bioarchaeological evidence including the cemetery at Loddekoping, and life table analysis. As pointed out above, however, determining maternal mortality in skeletal remains is a difficult endeavour without the presence of foetal remains in situ.<sup>36</sup> Furthermore, young women could and did die from a variety of ailments, and most of them were unrelated to their reproductive status.

There were certainly medieval girls who became mothers at an age we would consider shocking today. In 1455, Edmund Tudor, the 25-year-old half-brother of King Henry VI, married his 12-year-old ward, the heiress Margaret Beaufort. When Edmund died of plague a year later, he left behind a 13-year-old and heavily pregnant widow. According to Margaret's confessor, John Fisher, her delivery of the future Henry VII was a dangerous affair; Fisher noted that Margaret was neither 'a woman of great stature' nor 'yet fourteen' when she gave birth.<sup>37</sup> Margaret married again the following year, to Henry Stafford. Though their 14-year marriage seems to have been 'genuinely affectionate', they had no children; the same was true of her third marriage to Thomas Stanley, which lasted until the latter's death in 1504.<sup>38</sup> Margaret may have been physically damaged by the early consummation of her marriage or the resulting pregnancy, to such a degree that she never conceived again.<sup>39</sup> Margaret's experience, however, was not the norm for the women surveyed.

Table 1 displays the age at first pregnancy for all mothers for whom date of birth and date of pregnancy could be determined. Only six birth events occurred to mothers who were likely below the age of 15.<sup>40</sup> Among the women studied, the average age at first pregnancy was 20 years. This is lower than the mean of 22 years found by Judith Lewis in her study of maternal mortality among aristocratic women between 1558 and 1959, which she considered 'remarkably steady over four centuries', but still later than might be expected considering how early the royals and aristocracy married off their daughters.<sup>41</sup> To what can we attribute this lag between age at marriage and age at first pregnancy? While most girls in the modern western world begin puberty around age 10, considerable evidence exists that medieval girls entered into this process later. *The Knowing of Woman's Kind in Childing*, a late medieval gynaecological treatise, notes that girls below the age of 15 do not

**Table 1.** Age at first pregnancy of royal, noble, and gentry women in England, c. 1236–1503

Age cohorts	Number of women	Per cent of total
<15	6	7
15–20	45	53
21–25	25	30
26–30	6	7
31–35	2	2
Totals	84	100

Notes: Percentages have been rounded to produce integral numbers. The dataset includes all royal and noble women, as well as three gentry women for whom age at first pregnancy could be determined. Eighteen gentry and noble women (18 per cent) for whom the date of birth could not be determined are excluded.

Source: BADE Database.

menstruate, 'for they are joyfull and so yong her mete defyeth as the resseyue it. And so the blood and other humoures pass a-way'.<sup>42</sup> Bioarchaeological evidence supports this assertion: an analysis of a skeletal assemblage of 314 late medieval English girls who died between 14 and 25 years of age found not only that puberty began later but also that it lasted longer.<sup>43</sup> Shapland, Lewis and Watts observed ossification of the iliac crest, a developmental event associated with the onset of menstruation, occurring at an average age of 15, with complete fusion of the crest, marking the end of pubertal development, rarely occurring before age 20.<sup>44</sup> The women included in the database, as elites with diets higher in animal protein and iron, probably achieved full fertility earlier than the young women analysed by Shapland et al., but still well after modern British girls who, on average, begin menstruating at age 13.<sup>45</sup>

Medieval parents also seem to have experienced anxiety when marrying off their daughters at a tender age, and some made provisions to delay consummation. Margaret Beaufort's difficult delivery was attributed to both her short stature and her young age, and she objected to the early marriage of her granddaughter to James IV of Scotland because she feared that the bridegroom would not wait until the bride was of age to consummate the marriage.<sup>46</sup> Her biographers, Michael Jones and Malcolm Underwood, posit that her reluctance was due in part to her own experience.<sup>47</sup> The gentry seems to have shared similar anxieties; when the 13-year old Elizabeth Clifford married William Plumpton in 1453, the marriage contract included a clause that the marriage would not be consummated for another three years.<sup>48</sup> Their contract was not remarkable in that regard: many included clauses stipulating that, should either bride or groom die before 16, the dowry should be returned. Barbara Harris takes these clauses as indicative of a delay between age at marriage and age at consummation.<sup>49</sup>

Given these biological and cultural factors, the delay between age at marriage and age at first pregnancy seems entirely reasonable. Even when they married early, as many medieval elites did, some would delay consummation and others, who did not, were simply not physiologically able to conceive. Very early pregnancies were the exception rather than the rule and not, as Benedictow asserts, a main

driver of adolescent female mortality.<sup>50</sup> Confined to the upper classes, these early marriages and consummations were the result of calculated political and economic decisions rather than a widespread practice crossing social classes.<sup>51</sup>

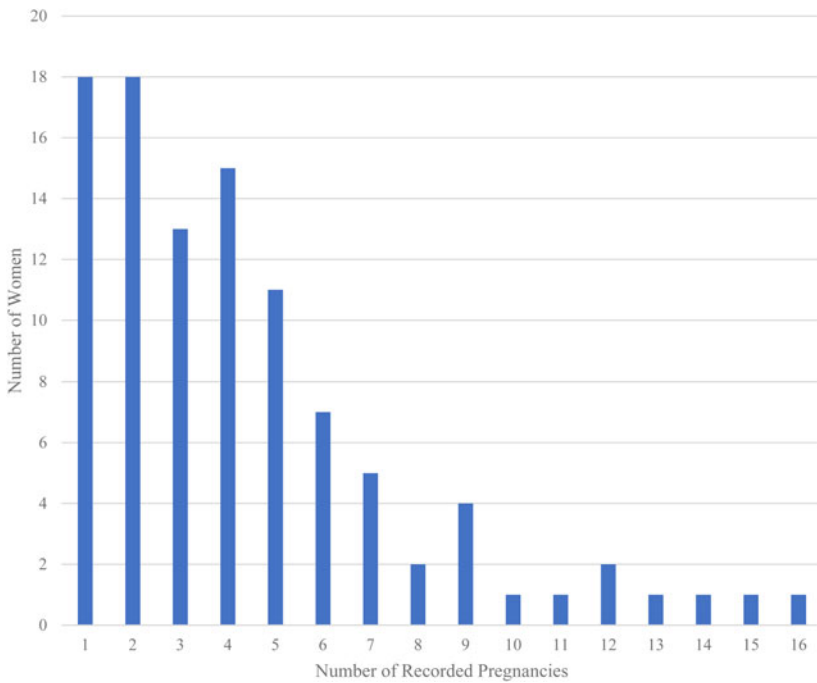
## 1.2 High parity

Women who have experienced a high number of previous pregnancies are at risk not only for conditions beginning during pregnancy, such as preeclampsia, but also issues during delivery, such as cardiac or respiratory arrest.<sup>52</sup> As Allison notes in an article surveying maternal mortality in early modern East Anglia, 'grand multiparous women', defined as women who gave birth to five or more infants, were also older, compounding their risk of dying in childbirth.<sup>53</sup> The BADE database allows us to evaluate the experience of late medieval Englishwomen as marked by many pregnancies. Some women spent most of their adult lives pregnant. By the time of her husband, Thomas Grey's, death in 1501, Cecily Bonville had given birth to seven sons and eight daughters – 15 pregnancies in 27 years.<sup>54</sup> Is it wise, however, to take Cecily as representative of elite Englishwomen writ large?

The women included in the database averaged 4.4 pregnancies; this is double the number of Englishwomen today, who average two, but consistent with the global average per woman c. 1970–1975 (4.5 births).<sup>55</sup> Barbara Harris performed a similar task for elite women between 1450 and 1550, using correspondence, wills, cases in the Chancery and Star Chamber, marriage contracts and more. Her own, much larger assemblage, also averaged 4.4 children per woman.<sup>56</sup> The proportions of aristocratic women with five or more children in my sample were 36 per cent (see [Figure 1](#)), while Harris' sample was 40 per cent. Twenty-five per cent of the women analysed in BADE had six or more children, compared to Harris's 29 per cent.<sup>57</sup>

It is possible that this low number of recorded pregnancies may be indicative of the low health status of medieval people more generally. While the relatively short stature of medieval people has been remarked upon in a variety of English skeletal assemblages, the study of a known individual is relatively rare. One exception, however, is the bioarchaeological analysis performed on the remains of Anne Mowbray, Duchess of York, who died shortly before her ninth birthday in 1481. In 1965, excavators rediscovered and analysed the remains of the child duchess, including bones, hair and nails.<sup>58</sup> Anne was as tall as a modern six year old, and her hair had atrophied roots, indicating ill-health.<sup>59</sup> Neutron activation analysis of her hair also found high levels of arsenic and antimony, possibly administered as medicine.<sup>60</sup> The consumption of these *materia medica* is known to have deleterious effects on reproduction, causing male and female infertility and provoking spontaneous abortion in pregnant women.<sup>61</sup> As a wealthy heiress and then a member of the royal household, it is unlikely that Anne ever wanted for food, and yet her stature still lagged well behind that of a modern child of equivalent age, illustrating the comparatively low level of nutrition in the medieval English diet, even among the upper echelons of society.<sup>62</sup> Poor nutrition can retard fertility, with negative effects including delayed, anovulatory, or the complete cessation of menses for women, and decreased sperm number, decreased sperm mobility and a stop in





**Figure 1.** Total number of pregnancies of royal, noble and gentry women in England, c. 1236–1503. *Notes:* Percentages have been rounded to produce integral numbers. The dataset includes all royal and noble women, as well as three gentry women for whom age at first pregnancy could be determined. Eighteen gentry and noble women 18 per cent for whom the date of birth could not be determined are excluded. *Source:* BADE Database.

sperm production for males. Among well-nourished modern communities which do not practice contraception, such as the Hutterites, researchers have documented families with 11 to 12 live births; among poorer historical communities, however, couples who lived to completed fertility, that is, the onset of menopause, averaged only six to seven live births.<sup>63</sup>

### 1.3 Interval

A short interval between pregnancies means that the mother is not able to build up sufficient stores of nutrients between births, a condition which is dangerous for both mother and infant. Scholars call the decrease in maternal health due to high numbers of pregnancies and short intervals ‘maternal depletion syndrome’ (MDS), with symptoms including anaemia, goiter, oedema and osteomalacia (a softening of the bones due to vitamin D or calcium deficiency).<sup>64</sup> In her survey of maternal mortality among early modern English aristocratic women, Lewis found that age at first pregnancy and birth intervals had the highest impact on risk of death; she notes ‘for most women, it was the long years of short birth intervals that killed’.<sup>65</sup> Perhaps no English queen illustrates this better than Philippa of Hainault. She spent much of her twenties with child, giving birth at ages 23, 24, 26,

27 and 28, and half of her pregnancies occurred within two years of the previous delivery.<sup>66</sup> Philippa gave birth to her seventh child, Edmund of Langley, for example, only 13 months after she birthed her sixth, John of Gaunt.<sup>67</sup>

Of the 382 birth events with definitive dates in the BADE database, 74, about 19 per cent, were within two years of the previous pregnancy.<sup>68</sup> Short intervals occurred in all social groups including the gentry – Margery Punt, the wife of George Cely, gave birth to five children in five years, for example. In fact, 21 women shared all the pregnancies which occurred less than two years since the previous birth event, meaning that one in five of the women analysed experienced a birth interval of less than 24 months at least once during her reproductive life.

Birth intervals were often shorter for the elite than the majority of the population, as elite mothers farmed their babies out to wet-nurses rather than nursing them themselves, allowing for the resumption of ovulation, menstruation and conception.<sup>69</sup> The demographer R.G. Potter, looking at the interval between first and second pregnancies in modern populations, found an average birth interval of 18 months for non-lactating mothers versus 27 months for lactating mothers.<sup>70</sup> A study of nitrogen isotopes in the skeletal assemblage of Wharram Percy found that the medieval women buried there breastfed for about 18 months, placing them squarely in the lactating mothers category.<sup>71</sup> Whether or not the employment of wet-nurses was a conscious choice made by the elites in part to maximise the number of heirs, it had the effect of increasing the fertile period of women, the number of pregnancies experienced, and their risk of obstetric death.<sup>72</sup> While the danger of short intervals remains true, the frequency with which these women experienced short birth intervals is less than might be expected, as 80 per cent of all recorded pregnancies occurred more than two years after the previous birth, allowing for the considerable restoration of maternal nutrient stores, particularly among elites with better access to nutrient-dense food.

#### 1.4 Stillbirths

Stillbirths are, even today, much more dangerous than live births for the mother. If the stillborn foetus begins to decompose in utero, prior to the advent of drugs like Pitocin and other pharmaceuticals that induce uterine contractions, infection, sepsis and death could quickly follow. If the child died during labour, even in the birth canal, this could also increase the risk, as tools which allowed for the extraction of a foetus were not available until the early modern period.<sup>73</sup> Tomkins found in her analysis of Shropshire midwife books that the risk of maternal death was four to five times higher when delivering a stillbirth, and R.S. Schofield's estimates are roughly similar.<sup>74</sup> Allison's study of parish registers found that the MMR for mothers giving birth to stillborn children was 125 per 1,000 births, and therefore, the highest predictor of maternal death.<sup>75</sup>

Medieval people understood how dangerous this situation could be, and both religious and medical thought reflected this knowledge. The *Trotula* notes that 'there are some women who are so afflicted in the function of birth that hardly ever or never do they deliver themselves... sometimes because the foetus is dead and cannot aid Nature in its movement'.<sup>76</sup> It further recommends rue, mugwort, wormwood and pepper in wine to prompt the expulsion of the dead child.<sup>77</sup>

A Middle English translation of the *Macer Floridus*, itself derived in part from the *Regimen Sanitatis Salernitanum*, also declares that imbibing rue 'putteth out the child'.<sup>78</sup> *The Knowing of Woman's Kind in Childing* directs that the parturient woman drink hyssop in hot water 'yif the child be ded in the modris wombe', indicating a clear understanding on the part of medical practitioners that allowing a dead foetus to remain was dangerous to the life of the mother.<sup>79</sup> This text was not only about women, but intended for their use: the author notes that he has translated the work from French and Latin into English because that is the language literate women can read, and he hopes that the literate women might pass their knowledge on to their illiterate counterparts.<sup>80</sup> If we use miracle stories to illuminate popular understandings, we find that knowledge of the dangers of stillbirth to maternal health was not restricted to the upper tiers of medieval society. William of Canterbury records in his twelfth-century collection of miracles relating to Thomas Becket that the pregnant wife of Ansfrid, a Sussex knight, knew that her life was in danger after the time for the birth came and went and the foetus did not move. Indeed, 'the living one thought she was being made rotten by the dead one, [and] she began to lose her senses'.<sup>81</sup> Only a vow to St. Thomas saved her life; she delivered the dead child and, together with her husband, made the promised pilgrimage to Canterbury.

Determining the stillbirth rate among past populations is a difficult task. Stillborn infants in medieval Europe were often buried outside or on the margins of the churchyard and produced less documentation than infants who were born alive and survived to baptism.<sup>82</sup> Even parish registers, one of the most detailed demographic sources for early modern England, likely under-recorded children born dead, while midwife books noting deliveries and their outcomes vary in completeness regarding stillbirths.<sup>83</sup> Some midwives counted them in their ledgers and journals, and others did not.<sup>84</sup> In the BADE database, births resulting in unnamed children were considered as possible stillbirths and cross-referenced with material relating to the mother to evaluate the likelihood of a stillbirth. For example, in January 1278, at age 37, Eleanor of Castile gave birth to her twelfth child, probably a daughter, at Westminster.<sup>85</sup> The child was either stillborn or died very soon after birth, as no name was recorded, or preparations made for baptism. This methodology resulted in seven possible stillbirths, or a ratio of one stillbirth for every 65 live births. This result echoes the 48 aristocratic women analysed by Lewis in her article, 'Maternal Health in the English Aristocracy, Myths and Realities, 1790–1840'; these women experienced 381 conceptions, resulting in 345 live births, 31 miscarriages and 5 stillbirths, a ratio of one stillbirth per 69 live births.<sup>86</sup> Both rates are favourable when compared to that observed in two early modern English midwife books, where the ratio of stillbirths to live births was one stillbirth per 25–33 live births.<sup>87</sup> The women of the upper classes, it seems, experienced fewer stillbirths than their less wealthy counterparts.

### 1.5 Age at last pregnancy

Over age 35, the risk of pregnancy complications including diabetes and high blood pressure rises dramatically; the risk of prematurity or low birth weight increases concomitantly. A large-scale study of American women, for example, found that

the risk of severe complications was 20 per cent higher for women aged 35 to 39 than for women aged 25 to 29, and this risk more than quintupled for mothers over age 50.<sup>88</sup> The authors concluded that the age of the cerebrovascular and respiratory systems contributed to this increased risk, as the heart, lungs and brain of the mother were unable to cope effectively with the stresses of pregnancy, including a rise in blood volume and blood pressure.

The average age at last pregnancy in the sample was 28 (see [Table 2](#) for the age distribution at last pregnancy). Though queens experienced a slightly longer fertile period, with an average age at last pregnancy of 31, this may simply reflect the high level of documentation related to the royal family. The relative youth of the women at their last pregnancy may be due in part to an under-recording of pregnancies resulting in miscarriages or stillbirths, particularly those ending before the mother could feel foetal movement, called 'the quickening'. This event also signified that the foetus was endowed with a soul; it is possible, therefore, that pregnancies lost prior to this point received little to no contemporary comment.<sup>89</sup> The risk of miscarriage also increases with age, which would decrease the average age at last pregnancy. A large-scale study of over 420,000 pregnancies between 2009 and 2013 found that risk of miscarriage is lowest for women aged 25–29 (10 per cent), increasing after age 30 and eventually reaching 53 per cent for women over age 45.<sup>90</sup> Elizabeth Woodville's fertile period of 23 years was particularly long, though the longest observed was that of Eleanor of Castile, who gave birth for the first time at age 13, and for the last time at 43. Six of the 80 women, or one in 13, were fertile even after age 40, including four queens, one noblewoman and a member of the gentry. In contrast to Benedictow's assertion that 'women's reproductive role ceased' after age 40, some women conceived and gave birth even after this point.<sup>91</sup> Most of the pregnancies occurred between the ages of 20 and 29, however, when the mothers were fully grown but before the risk factors associated with age developed.<sup>92</sup>

## 2. Discussion

Between 1840 and 1936, when maternal mortality began to drop precipitously, the maternal mortality rate was 5 maternal deaths per 1,000 live births.<sup>93</sup> The introduction of antibiotics, sulphide drugs and increased prenatal care further contributed to this decline and, between 1990 and 2015, maternal mortality dropped by 44 per cent worldwide.<sup>94</sup> This steep decline makes it difficult to compare the MMR of past societies to modern countries today. We do, however, have some material for comparison, particularly the early modern parish registers, some of which include maternal deaths related to stillbirths, which are left out of the WHO data, and secondary scholarship on the aristocracy and midwife books.

Out of the 457 birth events recorded in the database, 44.6 per cent were births which had one or more risk factors.<sup>95</sup> The most frequent risk factor experienced by elite women in late medieval England was high parity (see [Table 3](#)); this is unsurprising given the desire to produce multiple heirs, including males to continue the family line and females to link to other powerful families. The number is slightly skewed by the extremely high number of pregnancies experienced by Eleanor of Castile, Joan Beaufort, Cecily Bonville, Philippa of Hainault and Elizabeth

**Table 2.** Maternal age at last pregnancy for royal, noble and gentry women, c. 1236–1503

Maternal age	Number of women	Per cent of pregnancies
<15	1	1.3
16–20	10	12.5
21–25	25	31.3
26–30	13	16.3
31–35	15	18.8
36–40	10	12.5
>41	6	7.5
Totals	80	100.2

Notes: Percentages have been rounded to the first decimal. The dataset excludes 22 women for whom age at last pregnancy could not be determined.

Source: BADE Database. See note to Table 1.

Woodville; though they comprise only one per cent of the mothers, their pregnancies constitute 28 per cent of the high parity births. Short intervals between births were also common, occurring in more than one in ten pregnancies, which was in large part a result of wet nursing and reflective of the high social status of the mothers. Advanced maternal age was relatively common as well, with 10 per cent of the pregnancies for which maternal age could be determined occurring to mothers over age 35.

In the database, six women died while giving birth or soon after.<sup>96</sup> Four of the six women shared the risk factor of high parity (experiencing their sixth, eighth and ninth pregnancies), and the other two women died giving birth for the first time. Elizabeth of York's final pregnancy involved two risk factors; she was pregnant with her eighth child at 37 years of age. In total, 6 per cent of the women analysed in the database died during or because of childbirth. Ninety-four per cent, however, did not. This pairs remarkably well with Lewis's cohort of 65 aristocratic women born between 1575 and 1599, of whom 4, 6.1 per cent, died in childbirth; in her total sample of 1,251 women who lived between 1558 and 1899, 61 women (4.8 per cent) were classified as cases of maternal mortality.<sup>97</sup>

To determine the maternal mortality rate, the number of maternal deaths must be compared to the number of birth events. If the likely stillbirths are excluded, as they are in modern calculations, the MMR of late medieval England was 13 deaths per 1,000 live births, roughly similar to Lewis's 10.34 deaths per 1,000 births among the aristocracy between 1558 and 1700.<sup>98</sup> Put another way, excluding stillbirths, the elite woman ran about a one per cent chance of death with every birth. As the average number of pregnancies experienced was roughly 4 (457 birth events among 102 women), we would expect to see, and indeed do, that around 5 per cent of elite women died in childbirth. It is important to note, too, that the pregnancies analysed are only those which entered the documentary record in some way: it is quite likely that medieval women experienced miscarriages or birthed sons and daughters who were never remarked upon. These birth events would increase the overall total used in calculating the maternal mortality rate, perhaps

**Table 3.** Risk factors experienced by elite Englishwomen, c. 1236–1503

Risk factors	Number of pregnancies	Per cent of pregnancies
High parity	148	32.0
Short interval	74	16.0
Maternal age <sup>a</sup>	37	10.0
Maternal youth	6	1.7
Stillbirth	8	1.7
Multiple births	2	0.4

Notes: A pregnancy with more than one risk factor is included in all applicable categories, such as 'maternal age' as well as 'multiples'. Percentages have been rounded to the first decimal.

Source: BADE Database.

<sup>a</sup>For maternal age and maternal youth, the number of pregnancies analysed was confined to those with a known maternal age, totalling 358 birth events.

dropping it even lower. This problem is allayed only somewhat by focusing on royalty and the upper echelons of the aristocracy, for whom the propagation of the bloodline was of primary importance and who created comparatively ample documentation.

With regard to change over time, great care must be taken when drawing conclusions, as the sample analysed in BADE represents only a small, elite, but well-documented section of medieval English society. Even absent a larger sample size, however, what is striking is the level of continuity in the reproductive experience of elite Englishwomen between the end of the medieval period and through the early modern; among the women analysed in BADE and Lewis's two samples spanning 1558–1899 CE, the percentage of women who died in childbirth remained stable at around 5 per cent. This relative continuity points to the absolutely integral role of social class in characterising the childbearing experiences of pre-modern women. Early modern medical writers believed that elite women were at a higher risk of dying in childbirth, and certainly, they experienced a higher number of pregnancies than poorer women, due to the practice of wet nursing and the desire to maximise potential heirs.<sup>99</sup> The upper classes, however, were also more likely to consume diets rich in iron and B12 and experience a higher level of sanitation during the birthing process.<sup>100</sup> Early modern parish registers confirm the centrality of social standing in studying MMR. Julia Allison's analysis of parish registers for six parishes in East Anglia observed an MMR across social classes of 7.5 maternal deaths per 1,000 birth events (including stillbirths), but MMR shifted depending on the economic standing of the parish's population.<sup>101</sup> The comparatively wealthy coastal parish of Wells experienced the lowest MMR, 4 deaths per 1,000 birth events, while Newport, which was undergoing an economic downturn, had the highest, 14.9 maternal deaths per 1,000 births.<sup>102</sup> Modern studies of maternal mortality confirm the important role of economic and social status in risk of death; 99 per cent of all maternal deaths in the world today occur in developing nations.<sup>103</sup> Social class ultimately played a larger role in the risk of obstetric calamity than the number of pregnancies experienced. Poorer women, who began with lower nutritional reservoirs, experienced more danger in the childbed than their elite, earlier-married, frequently pregnant counterparts.<sup>104</sup>

While a statistical analysis of this population remains impossible due to a lack of systematic documentation, other methods offer a means of ingress into nutrition and health among lower-status medieval women; these factors, in turn, increased their risk of maternal mortality. Stable-isotope analysis offers one way forward, allowing for analysis of how social status determined diet. Upper-class individuals in medieval urban centres had access to foodstuffs rich in both iron and B12, such as beef, pork and marine proteins, while the middling class relied more on grains.<sup>105</sup> Prior to the fall in food prices which followed the Black Death of the mid-fourteenth century, many of the poor were forced to subsist on pottage, bread and other iron- and B12-poor foods, increasing their risk of anaemia and haemorrhage.<sup>106</sup> Skeletal indicators of poor health, including porous bone lesions such as porotic hyperostosis and cribra orbitalia, which manifest as pitting in the bone's surface, are observed more frequently in the remains of low status, urban individuals, who lived in a location with a higher parasite load and poorer hygiene than their counterparts in the countryside.<sup>107</sup>

### 3. Conclusions

The ability to propagate one's lineage was of supreme importance to medieval people. Doing so was not only the fulfilment of the charge to 'be fruitful and multiply' but also served to cement political, economic and social ties. As such, the reproductive lives of late medieval aristocrats received considerable commentary; queens, princesses and countesses could be noted for their lack of children, as Anne of Bohemia was, or for their large broods, like Philippa of Hainault, and there was little confusion over which state was preferable. Conversely, there was also widespread awareness of how dangerous giving birth could be, and in the intervening centuries, the characterisation of the Middle Ages as a time of remarkably high maternal mortality has become commonplace. An evaluation of this portrayal through quantitative analysis shows, however, that the reproductive experiences of elite Englishwomen were not as foreign or as dangerous as originally assumed. On average, these women experienced their first pregnancy at about age 20 and their last at 28, and three or four pregnancies in the interim. Each birth carried a risk of about one per cent, and therefore, approximately 1 out of every 20 women would die in childbirth.

While the rate of maternal mortality observed in the BADE database would be unacceptable today, we have only recently been able to consider it so. The British Registrar General began to record maternal deaths in 1837, but it was not until 1870, when recording cause of death became mandatory, that these records became reliable. It was not until 1930 and the advent of antibiotics that the rate of maternal mortality began to drop, falling to below 1 death per 1,000 births in only 40 years.<sup>108</sup> In 2015, the MMR of the United Kingdom was only 9 maternal deaths per 100,000 live births.<sup>109</sup> Medieval women did die in childbirth, but the process of labour and delivery was hardly the main driver of female mortality during their reproductive years. Most women would experience pregnancy, and most would deliver successfully. In the end, though childbirth may have defined the lives of many medieval elite Englishwomen, it infrequently ended them.

## Notes

1 The search 'how many medieval women died in childbirth' brings up a variety of blogs, articles and essays that characterise the reproductive experience as incredibly dangerous, though hard evidence to support these claims proves elusive. Sara Bryson's article in *Tudor Society* asserts that one in three women died during their fertile years (Sara Bryson, 'Childbirth in Medieval and Tudor Times', *The Tudor Society*, <https://www.tudorsociety.com/childbirth-in-medieval-and-tudor-times-by-sarah-bryson/> [accessed 28 March 2018]). Another blog that appears as a top result, *Medieval Woman*, asserts that 'many women suffered greatly and many more died in childbirth ... [there was] little to relieve the stresses of childbirth other than poultices and prayer'; (Rosalie Gilbert, 'Medieval births and birthing', *Rosalie's Medieval Woman*, <https://rosaliegilbert.com/births.html> [accessed 28 March 2018]). Bryson cites four videos and one book, *In bed with the Tudors*, while the *Medieval Woman* entry lacks footnotes entirely.

2 Walden Abbey's monastic history, 'Fundationis Historia', transcribed in Dugdale (*Monasticon Anglicanum: A history of abbies and other monasteries, hospitals, frieries, and cathedral and collegiate churches*, 2nd edn (London, 1823), Vol. IV, 139) records the children of Humphrey with 'Elizabethae illustris regis Angliae Edwardi' as follows: 'Margareta primogenita sua, apud Tinehmue sibi fuit nata; apud Knaresburgh, Humfridus filius suus primogenitus; apud Plesset, Johannes; apud Longmaban in Scotia, Humfridus; apud Caldecot, duo gemili nobiles, Edwardus et Willelmus; apud [illegible], Eneas; et apud quenden, quaedam filia de qua praedicta nobilis domina Elizabetha comitissa in puerperio mortua apud Walden sepulta est'. The exact date of her death is also noted in her psalter, British Library Add MS 24686 f.7r.

3 Ole Jørgen Benedictow, *The Black Death, 1346-1353: the complete history* (Rochester, NY, 2004), 256, 267. Benedictow asserts that lowered female immune reactivity due to reproductive stress led to female supermortality during the Black Death. He further posits that the gendered division of labour led to increased exposure to illnesses for women. See Ole Jørgen Benedictow, *The medieval demographic system of the Nordic countries* (Oslo, 1993), 67.

4 For examples of charms and prayers employed by medieval women in childbed, see T. Hunt, trans., 'A charm to be spoken during the birth of a baby, England, eleventh century', in Patricia Skinner and Elizabeth van Houts eds., *Medieval writings on secular women* (New York, 2011), 13–4; Mary Morse, 'Alongside St. Margaret: the childbirth cults of saints Quiricus and Julitta in late medieval manuscripts', in Emma Cayley and Susan Powell eds., *Manuscripts and printed books in Europe 1350–1550: packaging, presentation and consumption* (Liverpool, 2013), 187–206; Marianne Elsackers, 'In pain you shall bear children (Gen. 3:16): medieval prayers for a safe delivery', in Anne-Marie Korte ed., *Women and miracle stories: a multi-disciplinary exploration* (Leiden, 2001), 179–207; Mary Morse, "'Thys moche more ys oure lady mary longe": Takamiya MS 56 and the English birth girdle tradition', in Simon Horobin and Linne R. Mooney eds., *Middle English texts in transition: a festschrift dedicated to Toshiyuki Takamiya on his 70th Birthday* (York, 2014), 199–219.

5 The skeletal assemblage at the Anglo-Saxon cemetery of Raunds Furnell, for example, indicated that by the age of 35, only 29 per cent of women would still be alive compared to 54 per cent of men. See Andy Boddington et al., *Raunds Furnells: The Anglo-Saxon church and churchyard*, English Heritage Report 7 (Swindon, 1996), 30. Sayer and Dickinson's survey of Anglo-Saxon burials posits that up to 50 per cent of young female fatalities in the Anglo-Saxon kingdoms may have been cases of maternal mortality. See Sayer and Dickinson, 'Reconsidering obstetric death and female fertility in Anglo-Saxon England', *World Archaeology* 45, 2 (2013), 286. This trend continued into the later medieval period: mortality among women interred in several cemeteries in the medieval cemetery of York also peaked between the ages of 25 and 35. Anne L. Grauer, 'Where were the women?', in D. Ann Herring and Alan C. Swedlund eds., *Human biologists in the archives: demography, health, nutrition and genetics in historical populations* (Cambridge, 2003), 277. In the recent literature, however, bioarchaeologists have proposed that this peak in female mortality between the ages of 25 and 35 is due to the linear progressions used to assess age-at-death and may not be reflective of historical reality. An alternative method using Bayesian statistics may alter the clustering of deaths between 25 and 35, though at present a reassessment of the medieval data is lacking. For an overview of the debate on determining age-at-death and the use of Bayesian prediction, see Tracy L. Rogers, 'Skeletal age estimation', in Soren Blau and Douglas H. Ubelaker eds., *Handbook of forensic anthropology and archaeology* (Walnut Creek, 2009), 209–11.



6 The data were downloaded from Roberta Gilchrist and Barney Sloane's 'Medieval monastic cemeteries of Britain (1050–1600): a digital resource and database of excavated samples [XCLM76, XMAB85; XSME65]', (York, 2005), doi: 10.5284/1000273 [accessed 25 March 2019]. The three nunneries analysed are the Benedictine nunnery of St. Clement, York, the Benedictine nunnery of St. Mary Nunnaminster, Winchester, and the Benedictine nunnery of St. Mary at Elstow, Bedfordshire. They were selected for their sample size, and because they were neither hospitals nor Black Death cemeteries. Excavations resulted in a total of 162 female skeletons. Excluding the 3 for which no age at death could be determined, and the 31 categorized as 'general adults' results in a sample of 128 female skeletons for whom age at death could be determined. Of these, 88 (68 per cent) were between the ages of 26 and 45 at death. I would like to thank Sandy Bardsley for alerting me to this resource.

Marilyn Oliva determined that the average age of nuns in the diocese of Norwich was 43 in the fourteenth century and 32 at the Dissolution; Oliva used 15 as the average age of entry and 16 as age of profession. See Marilyn Oliva, *The convent and the community in late medieval England: female monasteries in the diocese of Norwich, 1350–1540* (Rochester, 1998), 46. In a more recent study of the necrology of the nuns of St. Agnes in Gorinchem, Holland, Jaco Zuijderduijn found that life expectancy decreased over the course of the fifteenth century, from 67.5 years in the first 25 years of the convent's existence to 41.6 in from 1505 to 1529. When compared to life expectancy in three male houses in England (Durham, Canterbury and Westminster), the sisters of St. Agnes fared much better, at least until the end of the fifteenth century, when life expectancy at Durham and Westminster surpassed that of Gorinchem. Prior to this, however, the crude average death rate of Gorinchem was much lower than that reported for either professional religious or secular members of English society. Zuijderduijn concludes that mortality in England was relatively high when compared to that experienced in Holland, perhaps because England was generally a less salubrious society. See Jaco Zuijderduijn, 'Living la vita apostolica. Life expectancy and mortality of nuns in late-medieval Holland', *CGEH Working Series* 44 (2013), 1–23.

7 National Research Council (US) Committee on Population, *The consequences of maternal mortality: report of a workshop* (Washington, DC, 2000), 7.

8 B. R. Ganatra, K. J. Coyaji and V. N. Rao, 'Too far, too little, too late: a community-based case-control study of maternal mortality in rural west Maharashtra, India', *Bulletin of the World Health Organization* 76, 6 (1998), 565.

9 National Research Council (US), *The consequences of maternal mortality*, 8.

10 *Ibid.*, 11.

11 For a general survey of birth scenes in this genre of literature, see Fiona Harris-Stoertz, 'Pregnancy and childbirth in chivalric literature', *Mediaevalia* 29, 1 (2008), 27–36.

12 Ronald Finucane, *Miracle and pilgrims: popular beliefs in medieval England* (London, 1977), 144. Peter Biller ('Childbirth in the middle ages', *History Today* (1986), 43) found a slightly higher number, 3.3 per cent, in a survey of canonisation inquests across Europe between 1301 and 1417. For a slightly longer discussion of childbirth in medieval miracles, see Ronald Finucane, *The rescue of innocents: endangered children in medieval miracles* (New York, 1997).

13 Katherine French, 'The material culture of childbirth in late medieval London and its suburbs', *Journal of Women's History* 28, 2 (2016), 126–48.

14 Lea Olsan, 'Wellcome MS. 632: heavenly protection during childbirth in late medieval England', *Wellcome Historical Library Blog*, <http://blog.wellcomelibrary.org/2015/10/wellcome-ms-632-heavenly-protection-during-childbirth-in-late-medieval-england/> [accessed 28 March 2018].

15 Angela R. Lieverse et al., 'Death by twins: a remarkable case of dystocic childbirth in early neolithic Siberia', *Antiquity* 89, 343 (2015), 23–4. Of these burials, three were from late medieval Scandinavia, one from an Anglo-Saxon burial in Hampshire, and most recently, excavated in a necropolis in Serbia. See pp. 23–4 for references to the reports including these cases.

16 Children's bodies skeletonize faster and are more prone to disarticulation by scavengers, and their crania are easily damaged during excavation. The burial practices employed may also complicate recovery of infant remains; for example, at Watchfield cemetery, Oxfordshire and Chantambre, France, the graves of children were much shallower, increasing the risk of damage and dispersal. See Mary E. Lewis, *The bioarchaeology of children: perspectives from biological and forensic anthropology* (Cambridge, 2007), 22–30.

17 Lieverse et al., 'Death by twins', 23–4.

18 T. H. Hollingsworth, *Historical demography* (Ithaca, 1969); Peter Laslett, *The world we have lost, further explored* (London, 1965), 81; Bertand-Yves Mafart, 'Approche de la Mortalité Maternelle au Moyen Âge en

Provence', *Dossiers de Documentation Archéologique* 17 (1994), 207–19. See also Alfred Perrenoud, 'Surmortalité féminine et condition de la femme (XVII<sup>e</sup>-XIX<sup>e</sup> siècle). Une vérification empirique', *Annales de Démographie historique* (1981), 89–104; Hector Gutierrez and Jacques Houdaille, 'La mortalité maternelle en France au XVIII<sup>e</sup>', *Population* 6 (1983), 975–94; Alain Bideau, 'Accouchement 'naturel' et accouchement 'à haut risque,' deux aspects de mortalité maternelle et infantile (Châtellenie de Thoisy-en-Thombes, 1660–1814', *Annales de Démographie historique* (1981), 49–66.

19 David Herlihy and Christiane Klapisch-Zuber, *Tuscans and their families: a study of the Florentine Catasto of 1427* (New Haven, 1985), 276–7. These *Libri dei Morti* are preserved after 1384, though only a few, including those for the years 1424, 1425 and 1430 include substantial numbers of individuals with a recorded cause of death. The authors calculate a Maternal Mortality Rate (MMR) of 14.4 per 1,000. They ultimately conclude that roughly one in five Florentine women would die due to risks associated with childbearing.

20 Lawrence Stone, *The family, sex and marriage in England, 1500–1800* (New York, 1977), 79; as pointed out by Judith Lewis, "'Tis a misfortune to be a great ladie": maternal mortality in the British aristocracy, 1558–1959', *Journal of British Studies* 37, 1 (1998), 27.

21 Alison Sim, *The Tudor Housewife* (Mt. Pleasant, SC, 2005), 21–2.

22 1236 was chosen as an appropriate starting date because the queen before Eleanor of Provence, Isabella of Angoulême, married Hugh X de Lusignan after the death of her first husband, King John, moving her beyond the geographic focus of this study, which is primarily interested in England. 1503 acts as an effective terminal date because it marks the beginning of a period of change in the reproductive experiences of English royalty, and of their utility for this analysis; Anne Boleyn and Catherine Howard were executed prior to completing their reproductive lives, and Anne of Cleves' marriage was declared unconsummated after six months. The experiences of Henry's children are also limited for the purposes of this survey, as only Mary wed.

23 World Health Organization, 'Maternal mortality', <http://www.who.int/healthinfo/statistics/indmaternal-mortality/en/> [accessed 1 March 2018]. Multiple births, that is, twins and triplets, is also associated with higher of maternal death, but in this study, only two cases of multiple birth were observed.

24 With the most recent edition published in 2004, the Oxford Dictionary of National Biography (DNB) includes approximately 55,000 concise edited biographies of figures deemed influential in English history, written by 10,000 specialists worldwide. The DNB is 'the standard biographical record of first recourse, an invaluable tool for researchers'. The 2004 edition also required sources and references, which constitute 7.5 million words across 60 volumes, 12 per cent of the total text. See Giles Foden, review of *The Oxford dictionary of national biography*, edited by Colin Matthew, Brian Harrison et al., *The Guardian*, <https://www.theguardian.com/books/2004/sep/25/featuresreviews.guardianreview> [24 September 2004]. See also Piers Brendon, review of *The Oxford dictionary of national biography*, edited by Colin Matthew, Brian Harrison et al., *Independent*, <https://www.independent.co.uk/arts-entertainment/books/reviews/the-oxford-dictionary-of-national-biography-5351836.html> [24 September 2004].

25 It is likely that pregnancies which resulted in miscarriages, stillbirths or short-lived children never entered into the documentary record and were therefore missed during the process of data entry. Sex ratios, however, offer a rough method for evaluating the completeness of the evidentiary assemblage. Worldwide, the sex ratio at birth is about 107 males born per 100 females; the ratio balances over time, as the immune system of females is generally harder and more effective than those of their male counterparts. Of the BADE pregnancies, 446 (97 per cent) resulted in children of determinate sex, leading to a male:female ratio of 223:220, or 101:100. It seems, therefore, that some pregnancies resulting in male infants are missing from the evidence base, though if we take the number of pregnancies resulting in female children as accurate, the 223 male-resulting pregnancies represent 95% of the total number expected. This lacuna might be due to a lack of documentation, or because pregnancies which would have resulted in male children ended too early for observers to note the child's sex. The latter explanation, miscarriage, is discussed more fully below.

For overviews on sex ratios in medieval England, see Sandy Bardsley, 'Missing women: sex ratios in England, 1000–1500', *Journal of British Studies* 53 (2014), 273–309; Maryanne Kowaleski, 'Medieval people in town and country: new perspectives from demography and bioarchaeology', *Speculum* 89, 3 (2014), 573–600; Grauer, 'Where were the women?', 266–88.

26 See Kristin Geaman, 'Anne of Bohemia and her struggle to conceive', *Social History of Medicine* 26 (2016), 224–44.

- 27 This proportion of childless couples seems to have remained relatively constant through the early modern period. Thirteen per cent of Barbara Harris's assemblage of over 2,500 women living between 1450 and 1550 married but never produced offspring, while T.H. Hollingsworth found that 14 per cent of married peers' daughters born between 1550 and 1574 experienced infertile marriages; Harris, *English aristocratic women, 1450–1550: marriage and family, property and careers* (Oxford, 2002), 276 n.1; T. H. Hollingsworth, 'Demography of the British peerage', *Supplement to Population Studies* 18 (1964), Table 36.
- 28 Fiona Shapland, Mary Lewis and Rebecca Watts, 'The lives and deaths of young medieval women: the osteological evidence', *Medieval Archaeology* 59, 1 (2015), 272–89; M. E. Lewis, F. Shapland and R. Watts, 'The influence of chronic conditions and the environment on pubertal development: an example from medieval England', *International Journal of Paleopathology* 12 (2016), 1–10; Sayer and Dickinson, 'Reconsidering obstetric death', 285–97; Roberta Gilchrist, *Medieval life: archaeology and the life course* (Rochester, NY, 2012), 46, 59.
- 29 World Health Organization, 'Maternal mortality', <http://www.who.int/healthinfo/statistics/indmaternal-mortality/en/> [accessed 1 March 2018].
- 30 Lewis, 'Tis a Misfortune', 43.
- 31 Her death is noted in Jean Froissart, *Le Joli buisson de jonece*, A. Fourrier ed. (Geneva: Droz, 1975), 55.
- 32 Of the 102 women included in the database, six (5.8 per cent) were considered cases of definite maternal mortality, while four (3.9 per cent) – Alice de Lusignan, Philippa, Queen of Sweden, Blanche of Lancaster and Beatrice Plantagenet, Countess of Brittany – were considered questionable, with insufficient evidence available to be considered definite cases of maternal mortality.
- 33 World Health Organization, 'Maternal mortality', <http://www.who.int/mediacentre/factsheets/fs348/en/> [updated November 2016].
- 34 Agustín Conde-Agudelo, José M. Belizán and Christina Lammers, 'Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: cross-sectional study', *American Journal of Obstetrics and Gynecology* 192, 2 (2005), 342. A similar study, focused on mothers at seven Bangkok metropolitan hospitals, including over 2,600 individuals, found an increased risk of adverse maternal outcomes for teenage mothers (defined by the authors as less than 20); Suparp Thaitae and Ratsiri Thato, 'Obstetric and perinatal outcomes of teenage pregnancies in Thailand', *Journal of Pediatric and Adolescent Gynecology* 24, 6 (2011), 342–6. It should be noted, however, that while a European study found an increased risk of death for the infants of young mothers, they did not observe an increased risk of maternal death; Claire M. de Vienne, Christian Crevuil and Michel Dreyfus, 'Does young maternal age increase the risk of adverse obstetric, foetal and neonatal outcomes: a cohort study', *European Journal of Obstetric & Gynecology and Reproductive Biology* 147, 2 (2009), 151–6. For the history of the episiotomy, see A. Walfisch and M. Hallak, 'Episiotomy: a review of the literature', *Harefuah* 141, 9 (2002), 833–838.
- 35 Judith Lewis, "'Tis a Misfortune", 47. Lewis sampled every fourth reel of Hollingsworth's raw data from his work 'Demography of the British Peerage', preserved on 40 reels of microfilm at the Eisenhower Library at Johns Hopkins. The family reconstitution forms on these reels include information on about 26,000 individuals, of whom 5,339 were childbearing women. Lewis's sample of 1,251 women born between 1554 and 1908 comprises 23 per cent of all aristocratic childbearing women analysed by Hollingsworth. The sample skews heavily towards the 18th and 19th centuries, however; of the 1,251 women, only 73 (5.8 per cent) were born prior to 1600.
- 36 Ole Jørgen Benedictow, 'Demographic conditions', in Hell Knut, E.I. Kouri and Jens E. Olesen eds., *The Cambridge History of Scandinavia, volume one: Prehistory to 1520* (Cambridge, 2003), 243. Sayer and Dickinson do not mention any burials under the age of roughly 15 in their survey of Anglo-Saxon burials of women and infants; Sayer and Dickinson, 'Reconsidering obstetric death', 291.
- 37 Quoted in Michael K. Jones and Malcolm G. Underwood, *The king's mother: Lady Margaret Beaufort, Countess of Richmond and Derby* (Cambridge, 1992), 40.
- 38 Michael K. Jones, and Malcolm G. Underwood (2004). 'Beaufort, Margaret [known as Lady Margaret Beaufort], countess of Richmond and Derby (1443–1509), royal matriarch', *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com/view/10.1093/ref:odnb/9780198614128.001.0001/odnb-9780198614128-e-1863> [accessed 25 March 2019].
- 39 Jones and Underwood (*The king's mother*, 40) note that her marriage contract with Stanley makes no provision for any issue following their marriage, even though Margaret was only 29 years old at the time.

- 40 These women were Eleanor Moleyns, Cecily Bonville, Joan and Margaret Beaufort, and Eleanor of Castile.
- 41 Lewis, 'Tis a Misfortune', 47.
- 42 Alexandra Barratt ed., *The knowing of woman's kind in childing: a middle English version of material derived from the Trotula and other sources* (Turnhout, 2001), 49.
- 43 F. Shapland, M. Lewis and R. Watts, 'The lives and deaths of young medieval women: the osteological evidence', *Medieval Archaeology* 59, 1 (2015), 278, 286.
- 44 *Ibid.*, 278.
- 45 *Ibid.*, 283. The authors note that modern high caste girls in India experience menarche, on average, over one year before girls of a lower caste. British girls today are 13 on average at onset of menses.
- 46 G. A. Bergenroth ed., *Calendar of state papers, Spanish* (London, 1862), Vol. 1, 176.
- 47 Jones and Underwood, *The king's mother*, 40.
- 48 K. R. D. Dockray, 'Why did fifteenth-century English gentry marry? The Pastons, Plumpton and Stonors reconsidered', in Michael Jones ed., *Gentry and lesser nobility in late medieval Europe* (New York, 1980), 65. Elizabeth was the daughter of Thomas Clifford, eighth Baron Clifford.
- 49 Harris, *English aristocratic women*, 45.
- 50 Benedictow, 'Demography', 244.
- 51 The four exceptions are Margaret Beaufort, who gave birth to Henry VII at 13, Eleanor of Castile, who delivered a stillborn daughter at 13, Cicely Bonville to a son, Edward Grey, at age 14, and Blanche of Lancaster, who delivered a daughter, Philippa, at around age 15.
- 52 J. Marshall and M. Raynor eds., *Myles textbook for midwives*, 16th edn (Edinburgh, 2014), 251–3.
- 53 *Ibid.*, 20.
- 54 A. E. Bye, *History of the bye family and some allied families* (Easton, PA, 1956), 275. Bye gives Cecily a date of birth of 30 June 1460. This would place her over the age of canonical majority at the time of her marriage.
- 55 Office for National Statistics, 'Statistical bulletin: births in England and Wales: 2016', <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/birthsummarytablesenglandandwales/2016> [uploaded 19 July 2017]; United Nations, *World fertility patterns 2015 data booklet*, 3, available at <http://www.un.org/en/development/desa/population/publications/pdf/fertility/world-fertility-patterns-2015.pdf>.
- 56 Harris, *English aristocratic women*, 99. Harris's intention was to create a collective biography of aristocratic Englishwomen during this 100-year period. She was able to gather information on about 1,200 aristocratic couples and their children. Because her goal did not include recording maternal age at delivery or date of birth; however, her sample size is much larger than my own, which is limited by the relative rarity of accurate recording of birth dates for both mother and child. There is some overlap in the two evidentiary assemblages, though Harris's work excludes royal women and members of the gentry who did not marry into a knightly family.
- 57 *Ibid.*
- 58 *Ibid.*, 235–8.
- 59 *Ibid.*, 242–3. At Wharram Percy, a 14-year-old child was on average the height of a modern English 10-year-old. See S. Mays, C. Harding and C. Heighway eds., *The Churchyard*, volume xi of *Wharram: a study of settlement on the Yorkshire wolds* (York, 2007), 99.
- 60 *Ibid.*, 243–4.
- 61 Fred Hutch Cancer Research Center, 'Reproductive and developmental toxicants', <https://extranet.fred-hutch.org/en/u/ehs/hamm/chap3/section12/subsection14.html> [accessed 11 November 2019].
- 62 Mays et al., *The Churchyard*, volume xi of *Wharram: a study of settlement on the Yorkshire wolds*, 98.
- 63 Rose E. Frisch, 'Nutrition, fatness, and fertility: the effect of food intake on reproductive ability', in W. Henry Mosley ed., *Nutrition and human reproduction* (New York, 1978), 92.
- 64 Anna Winkvist, Kathleen M. Rasmussen, and Jean-Pierre Habicht, 'A new definition of maternal depletion syndrome', *American Journal of Public Health* 82, 5 (1992), 691–4.
- 65 Lewis, "'Tis a Misfortune', 45, 49.
- 66 The existence of 12 children is definite and there is slim evidence for a 13 child, possibly named Thomas of Windsor, who died in infancy of plague. In my opinion, it is unlikely that this child existed; British Library Bodleian MS Rawlinson 214 f. 130r includes a song mourning the death of Edward III

and lists his children with Philippa, including Blanche, who died shortly after birth in 1342, but makes no mention of Thomas.

**67** Anthony Tuck (2008). 'Edmund [Edmund of Langley], first duke of York (1341–1402), prince'. *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com/view/10.1093/ref:odnb/9780198614128.001.0001/odnb-9780198614128-e-16023> [accessed 25 March 2019].

S. Walker (2008). 'John [John of Gaunt], duke of Aquitaine and duke of Lancaster, styled king of Castile and León (1340–1399), prince and steward of England'. *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com/view/10.1093/ref:odnb/9780198614128.001.0001/odnb-9780198614128-e-14843> [accessed 25 March 2019].

**68** For royalty in particular, the exact date of birth (day, month and year) was recorded in primary source material. These cases were in the minority, however, and for many entries in BADE only year and month (105 cases) or only year (352) were recorded. Of the 75 birth events lacking sufficient information for dating, over half were births to gentry women. For this reason, the interval analysis includes only dateable birth events and intervals are reflected in years.

**69** Manuals of the time, including Bartholomaeus Anglicus's *De proprietatibus rerum* (c. 1230) and *The Byrth of Mankynd* (c. 1540) advocated for mothers to feed their own children, but also provided considerable detail on how to select a wet nurse, testifying to the continued popularity of the practice. See Valerie Fildes, *Wet nursing: a history from antiquity to the present* (Oxford, 1988), 33–42. Jennifer Ward (*Women in England in the Middle Ages* (New York, 2006), 52–3) discusses the role of wet-nurses among the English elite, noting that the practice was common after the Anglo-Saxon period. Records of payments for their services and letters from distant parents inquiring after their children testify to the continued practice through the end of the middle ages.

**70** R. G. Potter, 'Birth intervals: structure and change', *Population Studies* 17 (1963), 155.

**71** Simon Mays, 'The effects of infant feeding practices on infant and maternal health in a medieval community', *Childhood in the Past* 3 (2010), 63–78. See also S. Mays, M. P. Richards and B. T. Fuller, 'Bone stable isotope evidence for infant feeding in mediaeval England', *Antiquity* 76, 32 (2002), 654–6.

**72** Tomkins, 'Demography', 209.

**73** Allison, 'Maternal mortality', 26–7.

**74** Tomkins, 'Demography', 224. R. S. Schofield, 'Did the mothers really die? Three centuries of maternal mortality in "The world we have lost"', in L. Bonfield, R. M. Smith and K. Wrightson eds., *The world we have gained: histories of population and social structure* (Oxford, 1986), 241.

**75** Allison, 'Maternal mortality', 23. For comparison's sake, the MMR of Sierra Leone, the highest in the modern world, is 1,360 per 100,000 live births. The MMR observed by Allison for women giving birth to stillbirths is approximately ten times this. See also Chris Galley, 'The stillbirth rate in early modern England', *Local Population Studies* 8 (2008), 75–83.

**76** Monica H. Green ed. and trans., *The Trotula: a medieval compendium of women's medicine* (Philadelphia, 2001), 99.

**77** *Ibid.*, 101.

**78** Gosta Frisk ed. and trans., *A middle English translation of Macer Floridus de Viribus Herbarum* (Lundequistka, 1949), 73.

**79** Barratt, *The knowing of woman's kind*, 65.

**80** *Ibid.*, 2.

**81** James Craigie Robertson and J. Brigstocke Sheppard eds., *Materials for the history of Thomas Becket, Archbishop of Canterbury*, Vol. 2 (London, 1883), 196.

**82** For discussions of the burial of unbaptized or stillborn babies in medieval Europe, see Barbara Hausmair, 'Topographies of the afterlife: reconsidering infant Burials in medieval mortuary spaces', *Journal of Social Archaeology* 17, 2 (2017), 210–36; Chris Galley, 'The stillbirth rate in early modern England', *Local Population Studies* 81 (2008), 75–83; Roger Schofield, 'Perinatal mortality in Hawkshead, Lancashire, 1581–1710', *Local Population Studies* 4 (1970), 11–6.

**83** Tomkins, 'Demography', 200.

**84** *Ibid.*, 203–7. Tomkins' survey of Shropshire midwife books includes several records which recorded stillbirths as well as live births. The man-midwife Thomas Higgins, for example, delivered 1,196 infants during 1781–1803, including 1,140 live births, 47 stillbirths and 9 miscarriages. Two of the other midwives studied, John Greene and Frances Johnson, recorded maternal burials, baptisms and miscarriages, but not stillbirths.

- 85 J. C. Parsons, 'The year of Eleanor of Castile's birth and her children by Edward I', *Mediaeval Studies* 46, (1984), 256–7, 263. Parsons notes that Eleanor usually spent 40 days confined after the birth of a son, but only 30 after giving birth to a daughter. This contrasts with her mother-in-law, Eleanor of Provence, whose lying ins lasted 40 days regardless of the sex of the child.
- 86 Lewis, 'Maternal health', 101. For this study, Lewis identified 48 aristocratic Englishwomen, c. 1790–1894, whose childbearing experiences could be effectively reconstructed through surviving correspondence and journals.
- 87 Tomkins, 'Demography', 219–20. Tomkins also notes that the English rate is high compared to that observable in similar Swedish evidence, which was 28 stillbirths per 1,000 live births.
- 88 Sarka Lisonkova et al., 'Maternal age and severe maternal morbidity: a population-based retrospective Cohort study', *PLoS Medicine* 14, 5 (2017).
- 89 John Haldane and Patrick Lee, 'Aquinas on human ensoulment, abortion and the value of life', *Philosophy* 78, (2003), 257. See also Sara M. Butler, 'More than mothers; juries of matrons and pleas of the belly in medieval England', *Law and History Review* (2019), 353–90. As Butler notes on p. 383, Azo of Porticus wrote that the ensoulment of the foetus began at 40 days for males and 80 for females. According to the Mayo Clinic, 10–20 per cent of known pregnancies end in miscarriage. See 'Miscarriage', *Mayo Clinic*, <https://www.mayoclinic.org/diseases-conditions/pregnancy-loss-miscarriage/symptoms-causes/syc-20354298> [updated 16 July 2019].
- 90 Maria C. Magnus et al., 'Role of maternal age and pregnancy history in risk of miscarriage: prospective register based study', *British Medical Journal* 364 (2019), doi: 10.1136/bmj.l869.
- 91 Benedictow, 'Demographic', 243.
- 92 Robert Buchanan, 'Effects of childbearing on maternal health', *Population Reports* 8 (1975), J139. Among the 48 women analysed by Lewis ('Maternal health', 99), the average age at first pregnancy was 20, the same as in the BADE sample. Lewis's early modern aristocratic women, however, continued bearing children long after most of the medieval cohort had ceased; in her sample, the mean age at last pregnancy of 39.3 years. Harris (*English aristocratic women*) does not include any information on average age at first or last pregnancy.
- 93 Lewis, 'Tis a Misfortune', 33.
- 94 World Health Organization, 'Maternal mortality fact sheet', <http://www.who.int/mediacentre/factsheets/fs348/en/> [updated November 2016].
- 95 253 birth events (55.4 per cent) had no risk factors; 51 (11.2 per cent) had two risk factors, and 9 (2 per cent) had three risk factors.
- 96 They were Mary de Bohun, Elizabeth of York, Elizabeth of Rhuddlan, Eleanor Holland, Anne Mortimer and Margaret of Scotland.
- 97 Lewis, 'Tis a Misfortune', 33. Table 2, 'Maternal mortality by 50-year birth cohorts', shows a peak between 1750 and 1799, with a total of 8 per cent of the 225 women dying in childbirth. In 1850–1899, a dramatic drop occurs, with only 2 out of 222 women dying due to childbirth.
- 98 *Ibid.*, 34. Unfortunately Table 3 of Lewis's article recording maternal deaths per 1,000 live births is not broken down any further than 'Before 1700', '1700–1799' and '1800–1899'.
- 99 Dr. Thomas Denman, for example, wrote that 'the lower orders of women have more easy and favourable births than those who live in affluence'; Thomas Denman, *An introduction to the practice of midwifery* (Brattleborough, 1807), 188. Dr. William Buchan similarly observed that 'inhabitants of every country are prolific in proportion to their poverty'; William Buchan, *Domestic medicine: or, a treatise on the prevention and cure of diseases by regimen and simple medicine* (Philadelphia, 1772), 340.
- 100 For a general overview of medieval diets and the role of social class in those diets, see Alixe Bovey, 'The medieval diet', *British Library*, <https://www.bl.uk/the-middle-ages/articles/the-medieval-diet> [published 30 April 2015]. See also Vern Bullough and Cameron Campbell, 'Female longevity and diet in the Middle Ages', *Speculum* 55 (1980), 317–25. Their conclusions have since been challenged: Kathy Pearson's 'Nutrition and the early-medieval diet', *Speculum* 72 (1997), 1–32, provides a useful overview.
- 101 Allison, 'Maternal mortality', 17.
- 102 *Ibid.*, 18.
- 103 World Health Organization, 'Maternal mortality fact sheet', <http://www.who.int/mediacentre/factsheets/fs348/en/> [updated November 2016].
- 104 This is not a new conclusion. Even Dr. Buchan, writing in the 1760's, noted that though poor women seemed to have an easier time getting pregnant, they suffered more: 'poor women, whose circumstances

oblige them to quit their bed too soon, often contract diseases from cold, of which they never recover'; Buchan, *Domestic medicine*, 339.

**105** Amy Sullivan, 'Prevalence and etiology of acquired anemia in medieval York, England', *American Journal of Physical Anthropology* **128**, 2 (2005), 259. See also Gundula Müldner and Michael P. Richards, 'Fast or feast: reconstructing diet in later medieval England by stable isotope analysis', *Journal of Archaeological Science* **31**, 1 (2005), 39–48; G. Müldner and M. P. Richards, 'Diet in medieval England: the evidence from stable isotopes', in C. M. Woolgar, D. Serjeantson and T. Waldron eds., *Food in medieval England: diet and nutrition* (Oxford, 2006), 229–38.

**106** *Ibid.*, 256.

**107** Don Walker, *Disease in London, 1st–19th centuries: an illustrated guide to diagnoses*, Monograph 56 of the MOLA Monograph Series (London, 2012), 261. Mays, *The archaeology of human bones*, 2nd edn (New York, 2010), 214.

**108** Geoffrey Chamberlain, 'British maternal mortality in the 19th and early 20th centuries', *Journal of the Royal Society of Medicine* (2006), 559–63.

**109** WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division, 'Maternal mortality ratio (modeled estimate, per 100,000 live births)', (Geneva, 2015). Available at <https://data.worldbank.org/indicator/sh.sta.mmrt>.

### French Abstract

#### **La mortalité maternelle en Angleterre médiévale revisitée: le cas des aristocrates anglaises, circa 1236–1503**

On a toujours dit qu'il était profondément dangereux d'accoucher à l'époque médiévale, une opinion mal étayée par des données chiffrées. Cet article, qui s'appuie sur l'analyse longitudinale de l'histoire reproductive de cent deux aristocrates anglaises de la fin du Moyen Age, permet d'évaluer cette idée reçue. De plus, il autorise une analyse des facteurs de risque comme l'âge précoce de la mère à la maternité et la présence d'intervalles intergénésiques courts. Complétée par des exemples tirés de traités médicaux datant de cette période et des observations ostéo-archéologiques relatives au développement pubertaire et à la nutrition, cette étude démontre qu'enfanter n'était guère le principal facteur de mortalité chez les femmes de l'élite.

### German Abstract

#### **Müttersterblichkeit im mittelalterlichen England neu überdacht: Aristokratische Engländerinnen, ca.1236-1503**

Die Einschätzung, dass Entbindungen im Mittelalter hochgradig gefährlich waren, hält sich ebenso hartnäckig wie sie durch quantitative Daten kaum gestützt wird. Dieser Aufsatz, der auf einer Datenbank fußt, in der die Reproduktionsgeschichten von 102 adligen englischen Frauen im Spätmittelalter nachverfolgt werden, erlaubt nicht nur eine Überprüfung dieser Vorstellung, sondern auch eine Analyse der Risikofaktoren einschließlich jugendlicher Mutterschaft und kurzen Geburtenintervallen. Ergänzt durch Belege aus mittelalterlichen Medizintraktaten und osteoarchäologische Daten zur Pubertätsentwicklung und zur Ernährung zeigt diese Studie, dass für Frauen der Elite die Reproduktion kaum der hauptsächliche Mortalitätsfaktor war.