

Childcare in the past: the contribution of palaeopathology

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Childcare in the Past: the contribution of palaeopathology

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Introduction

Our understanding of attitudes towards children in the past has undergone a renaissance since the 1960s. Ariès (1960), Stone (1977), De Mause (1974), and Thrupp (1948) all expounded the idea of neglected and abused little adults with Schorsch (1979:14) arguing that:

"...medieval communities dealt with their children as they dealt with their animals...both shared the floor, the worms, the dirt, and every manner of disease...in one way perhaps children were different from the animals ...they were treated as if they were expendable."

More recent studies of miracles (Laes, 2011a), Coroner's records (Towner and Towner, 2000), legislation and newspaper accounts (Behlmer, 1979) attest to parental grief and moral outrage at child neglect. We now consider that medieval society at least, felt they had a responsibility for the welfare of their young and parents 'cared' emotionally for their children. Barron (2007:52) cites two cases where concern for child welfare resulted in court verdicts: in AD 1398 there was a ruling that young children could not be sent down to 'scour caps' on the Thames in the winter, because it was scandalous that they should be forced to work in 'tempests, frosts and snows'. In addition, an apprenticed boy who stuffed a goose with feathers and parsley to use as a pillow was considered too young to be punished by his Master, who was promptly sent to Newgate for eight days for beating the child (Barron, 2007:52). Boswell (1984: 15) provides a more optimistic view of child abandonment in the classical world suggesting that that: "...most...were rescued and brought up as either adopted members of another household or as labourers of some sort..." Certainly, before the Reformation we have records of almshouses taking in orphans and children of the leprous rather than leaving them to fend for themselves (Richards, 1977: 69). From the archaeological perspective, artefacts within child graves are difficult to interpret as they are often made of normal household objects that could be accidentally incorporated into the grave fill, but they may also represent the deliberate placing of toys or amulets (Sillar, 1994). A green-glazed peg tile within a 3-year olds' grave at Chichester, Sussex was considered to be the child's 'favourite plaything' providing immediate emotional connotations (Magilton et al., 2008; Gilchrist, 2012: 149). At Guildhall Yard, London a child was buried with a bearded peg-doll made of antler. This has been put forward as the first ever example of a doll (Egan, 1997), but may also be interpreted as an amulet promoting male fertility (Gilchrist 2012: 149). The issue of child care from documentary sources and burial data is compelling, albeit difficult to interpret, but what can be gleaned from the osteological evidence, and can palaeopathology provide direct evidence for child care, indifference or neglect in past societies?

Tilley and colleagues (2011) have suggested that in past societies, sick individuals would receive more care if they were in the prime of life, suggesting sick children would have been considered less valuable. Volk and Atkinson (2008) state parental detachment is greatest when a child is frail and likely to die, and that caring for the strongest children is a form of evolutionary adaptation. Children initiate 'care' through crying, which suggests a robust child, and they have shown quieter babies die more frequently in famine periods than noisier ones. So, should we expect sick and weak children in the past to be neglected? One way in which palaeopathologists can attempt to explore this issue is through skeletal evidence for congenital conditions in non-adults. To 'prove' care the child would

need to have survived beyond infancy with a serious condition and have an illness *visible* for a sustained period of time. Although ultimately, all of these children are 'non-survivors', the severity or physical visibility of any impairments and the child's eventual age at death may help elucidate the level of care provided. Previous attempts to explore this issue have been attempted. Crawford (1999: 96) cites a child from West Hendred, Oxford with 35 cm grave but teeth of a 2-3 year old concluding that: "...*what is beyond doubt...is the care that must have been lavished on the infant to keep it alive past birth.*" Although she later recants: "...*nor can the surviving skeletons [of Anglo-Saxon children] yield much insight into how sick children were cared for, if they were cared for at all...*" (Crawford, 1999: 43).

Attitudes towards the disabled child

Unlike studies that explore compassion in the past for physically impaired adults, young children are by definition dependant on others for their food and well-being, with little ability to take care of themselves. The birth of a disabled child may have had an impact on the social standing of the parent that conceived them. The Anglo-Saxon Bald's Leech Book is full of warnings to mothers about their behaviour causing conditions such as hair lip (Vrebois, 1986), and Hippocrates discusses a woman who confessed to having conceived her deformed child on a Sunday night (Laes, 2011b). Kuuliala (2011) argues that the medieval belief in sick children representing demons or 'changelings' provided parents with a convenient excuse to abandon or neglect a disabled child. The debate over whether past societies practiced infanticide of the disabled is longstanding. Ancient Greek and Roman scholars are often cited as showing intolerance for disability in the newborn, with Soranus (Temkin, 1991) indicating midwives were responsible for deciding whether a child was worth raising. But these references are controversial, with the drowning of deformed babies in Sparta attributed to Plutarch (46-120 BC) who was, at the time, condemning an ancient practice (Laes, 2011b). It is clear that the ancients recognised different levels of physical impairment, some that were acceptable (e.g. club foot, polydactyly), and other more serious malformations ('phantasmata'), where the child did not appear human and in fact, would probably not have survived for more than a few hours after birth (e.g. anaecephaly) (Laes, 2011b). It appears Galen and Hippocrates considered all newborns to be abnormal and 'non-human'. A baby's inability to talk, blue eyes indicating poor eyesight, oversized heads and propensity for sleep made them transitional beings; imperfect, ugly, soft and weak (Dasen, 2008). This extreme attitude does not necessarily reflect the view of the parents, especially given that evolutionary psychologists have demonstrated that a child's 'cuteness' initiates a protective response in the adult (Volk and Atkinson, 2008). We also do not know about the attitudes of people living in other parts of the world? Did the indigenous population of England adopt such practices with the invasion of Rome, did they already share these attitudes, or did they oppose or ignore them? Unfortunately, the bioarchaeological evidence for the practice of infanticide, for whatever motive, is far from clear-cut (Bonsall, 2013; Gowland, 1998; Gowland and Chamberlain, 2002; Mays, 1993; 2000; 2003). If children with physical deformities were dispatched they would likely be excluded from normal burial areas; placed in water or abandoned in the landscape. If they were cared for but died of natural causes, we may not recognise them in the burial record, as tiny remains make many skeletal abnormalities difficult to identify and our inability to see soft tissue defects means that much of this crucial evidence is lost.

How people reacted to impairment in the past may have been very different from today. A community may have tolerated or ignored physical disabilities, or neglected the child without any

attempt to seek help or treatment (Roberts, 2000). Children with impairments may also have been exploited in the past. Laes (2013) highlights the case of a disabled child sold by his mother to a group of professional beggars, only to be abandoned at 10 years old when they were no longer cute enough to evoke the public's pity. There are also records of Siamese twins surviving infancy and earning a living as a public spectacle (Laes et al., 2013). There is a difference between *impairment*, where there is compromised physical or biological function, and *disability* which is a state of social and physical exclusion (Roberts, 2000). Hippocrates refers to an impaired but not 'disabled' child with a congenitally dislocated hip crawling around on their sound leg using their hands to pull themselves around (Laes, 2011b). How people reacted to a disabled child relates to issues of stigma, self-sufficiency and support from their parents and siblings. The impact of an impairment such as being deaf-mute will differ depending on whether the child will eventually be expected to work or, if of high status, need to be educated (Laes, 2013).

Caring for the disabled child?

Skeletal analysis can provide information on children born with both physical and mental impairments, but many congenital lesions recorded by palaeopathologists would have been asymptomatic: spina bifida occulta is benign and Klippel-Feil syndrome usually only results in a shortened, less flexible neck. Problems with speech and walking take time to become evident, and premature cranial suture closure is often asymptomatic if it occurs after 6 years. We are currently unable to recognise blindness from skeletal remains, and muteness is implied in cases of blocked or fused auditory bones that suggest deafness, but we can identify congenital syndromes that would have been accompanied by mental retardation. Despite this, caution is needed not to over interpret the degree of disability from the remains. For example, much has been made of the Sunghir 3 double burial of the Upper Palaeolithic, one of the most elaborate graves ever discovered from that period. A 9-11 year old child demonstrated malformations of the limbs that suggested they had a rare congenital condition and may have needed special care in the group (Formicola and Buzhilova, 2004). More recent analysis of the bone density and muscular development indicates that the child was a fully functional member of the community (Cowgill et al., 2012). There are numerous cases where children with obvious deformities were afforded special burial treatment. The mummified child with osteogenesis imperfecta described by Gray (1969) was buried in a decorated coffin in the shape of Orisis, and Panzer et al.'s (2008) child with Goldenhar syndrome was an isolated skull, clearly deformed, collected for secondary burial in an ossuary during clearance of a German cemetery. Another Goldenhar case from Iron Age Siberia saw the child and a male with obvious congenital defects purposely buried together. In life, children with Goldenhar syndrome may have displayed severe facial asymmetry and would have been deaf-mute and mentally retarded (Murphy, 2000). It is possible that the community from Germany had no association with the child and merely selected an interesting skull for their collection. A severely disabled child with spina bifida cystic and subsequent paralysis described by Dickel and Doran (1989) was not afforded any special treatment, whereas a less severely affected child with spina bifida recovered by Castro de la Mata (1980) was found in a refuse mound, within a specially dug pit, and covered with debris. While this may have the appearance of a derogatory grave, a necklace of seashells, cloth wrapping and offering between the child's feet suggest the view of the child may not have been a negative one. The 5-year-old deaf mute child from Poundbury Camp, Dorset was among several individuals buried prone at the site, none of the rest had evidence for pathology to suggest this was the usual mode of burial for physically distinctive individuals. The child's cist burial with slabs across the top of the grave show

extra investment in their burial and it's interesting to speculate whether this child was high status and hence would have struggled with their education. A contrasting picture is provided by Cook et al. (2014) who describe a 12-15 year old from Pete Klunk Mound in Tennessee, with premature suture closure, severe asymmetry of the left side of the skull, loss of the left eye, healed and healing cranial injuries and a nasal fracture that suggested ongoing physical abuse. The adolescent was buried with an old man and Cook and colleagues (2014) speculate that they lived as a slave and were no longer useful after their master's death, or that they were vulnerable on the death of their caregiver, and when he died they were killed by the community. The two possible cases of Down syndrome in the UK were both recovered from early medieval hospital sites. Brothwell (1960) suggests that the child survived because of the tolerance to mental defectives that came in with Christianity. More recently identified cases of Downs from a variety of cemetery types suggest no particular burial treatment, and a general attitude of acceptance (Rivollat et al., 2014; Walker, 2012b). Although Charlier (2008) argues their case of a 12-13 year old 'girl' from Bronze Age Rome was buried in an isolated marshy area, and was killed by a blow to the head. It may be that the difference in this child were only became important when she needed to be married, or her death may have had nothing at all to do with her condition.

The congenital evidence

Data from 260 cases of congenital conditions from all periods across the world were collated from the published and unpublished literature to explore issues of care in the past. Of all the recorded conditions, 113 or 43.4% would have been asymptomatic (e.g. spina bifida occulta, lumbarisation, cleft neural arches, fused ribs and vertebrae). Two types of physically distinctive congenital disorders were analysed in more detail; cranial deformation as the result of premature cranial suture closure or infection, and congenital syndromes. Premature cranial suture closure, if occurs before the age of 6 years can result in severe malformation of the skull that would have been obvious to the community (Bolk, 1915). Other conditions such as hydrocephalus ('water-on-the-brain') and microcephaly (abnormally small skull) will cause an unusual head appearance, with the former often appearing quickly leading to death from an infection such as meningitis, and the latter resulting in constriction of the brain and mental retardation. Of the 55 cases of premature suture closure, 22 individuals died before the age of 6 years when the deformities become obvious, and 8 of these died before the age of 3 years, perhaps suggesting an underlying fatal condition. Of the rest, 12 were reported to have had cranial deformities severe enough to have been noticeable in life, but only two survived passed the age of 12 years. These older individuals included the Pete Klunk female with head injuries and a 12-15 year old from England with scaphocephaly, or a 'boat-shaped' skull. Congenital syndromes need to be treated with some caution, as many of the features such as mental retardation or deaf-muteness would not be noticeable until around 3 years of age when the child should have begun to walk and talk. Therefore, a child's survival may suggest they had the time to form the necessary parental attachment before anything was noticed, or dispatching an older child was not acceptable to the community. In other cases, the condition may have been fatal a few weeks after hours or days after birth (e.g. anencephaly or cranial herniation). A total of 49 individuals would have been 'physically distinctive' to the community in which they were born (e.g. polydactyly, short neck, cleft palate, deafness, club foot, and restricted movement). Of these 18% (n=9) died before they were 3 years old and included two cases of dwarfism, a child with cerebral palsy and one with possible Down syndrome. Of the rest there were five cases (aged between 1 and 13 years) where the child was considered to be deaf and mute due to deformities of the external

auditory meatus, and of the five cases where paralysis affected multiple limbs, only one died before 2 years of age. A large number (n=23) of individuals survived into adolescence with a variety of physical impairments including club foot, Down syndrome, long term paralysis, hip dislocations, cleft palate and cranial malformations. Interpreting these data is challenging. Limb paralysis is difficult to identify unless it has existed for several years, making early cases of cerebral palsy impossible to identify if the child died in infancy, by whatever means. The damage may also not have occurred at birth and may have developed later in life when the child had become a valued and contributing member of the society. Perhaps individuals were no longer cared for when they reached adolescence because they were no longer protected by their 'child' status? Or their limb paralysis may have been unrelated to their death. Adult cases of multiple limb paralysis are known in the archaeological literature (Hawkey, 1998; Oxenham et al., 2009; Walker, 2012a: 22) making the former theory less plausible.

The presence of adults with cleft palate in the past is often cited as indicating care for the child in the past. In severe case suckling needed for breastfeeding would have been impossible and spoon-feeding necessary. Anderson (1994: 471) interpreted the survival of a mature adult male with unilateral cleft lip and palate as demonstrating that: "*the medieval child was successfully reared and cared for during his formative years*" but such interpretations are controversial. Medical studies have shown children with a mild cleft palate can suckle successfully, whereas those with a combined cleft lip and palate need support to feed (Clarren et al., 1987). Of the nine cases of cleft palate (and lip) identified in children across the world only one is extensive, the rest of the defects are confined to the anterior portion of the palate. The youngest children are aged 3 years and the oldest is estimated to be 15 years old, there are no cases of bilateral cleft palate reported in the non-adult material. So while these children may have been given extra care during feeding, there is no reason to assume that they could not have fed normally. Cases of bilateral cleft palate, where an alternative feeding method was not employed and the child died, may be lost in the tiny palates of neonates. However, as infants with cleft palate are known to have a higher risk of infection and death (Christensen et al., 2004) so we cannot know if the paucity of individuals surviving into adulthood is due to lack of care, or natural susceptibility. One case of bilateral cleft palate in a 20-30 year-old male from Late Woodland Indiana does, however, illustrate special measures were taken to aid his survival (Philips and Sivilich, 2006). At some point during facial growth the nose appears to have been plugged allowing for greater suction, leaving an extremely unusual small, round nasal aperture.

That cleft lips were often operated on in the past, usually by suturing the skin over the gap, is evidenced in the Anglo-Saxon Leech Book, and was carried out to both allow the child to develop their speech normally and to cover the defect (Vrebos, 1986). Such intervention would not be visible on the skeletal remains, but we do have evidence for other forms of treatment for children. In Ancon, Peru (AD 1000) a 4-year-old deaf child underwent a series of trepanations, some healed (Kato et al., 2007), and at 16-year-old with a head injury and Klippel-Feil syndrome underwent surgical intervention at early medieval Gnadendorf, Austria (Pany and Teschler-Nicola, 2007). A trepanation was also performed on a 6-year old from Fidenae, Rome with possible hydrocephalus, and a 'wooden case' around fractured arm of a 5-year old child from Herculaneum (Ottini et al., 2001) has been identified. There are also many examples of post-medieval cranial autopsies with the rise of paediatrics. At Hulton Abbey, Staffordshire, a teenager with an infected and withered arm was buried with a 'pilgrim's staff'. It is tempting to interpret this as indicating the child had travelled

to the site seeking a cure from the monks. Although the meaning of these sticks is open to question and may signal an individual's metaphorical journey into the afterlife (Gilchrist and Sloane, 2005).

Misplaced care and maltreatment

In some cases, historical and archaeological evidence indicates that by wanting to do the best for a child, parents may have been causing more harm. At later medieval Wharram Percy, Ortner and Mays (1998) were faced with several cases of childhood rickets in an otherwise unaffected community. They suggest that rickets was caused by parents keeping chronically ill children inside and away from sunlight exacerbating whatever condition had weakened them in the first place. The discovery of mammiform vessels in archaeological contexts suggest attempts to feed child when mother could not produce milk or may have died (e.g. Drinkhall and Foreman, 1998), but many of these societies also practiced the denial of colostrum. Colostrum is the most nutritious form of breastmilk expressed during the first few days after birth. This fluid is full of beneficial antibodies but is thicker and darker than normal breastmilk leading to the belief that it was actually tainted and harmful. Instead, some mothers denied the child breastmilk for up to four days, purging them on sugar water and wine to make them vomit and 'clear' their lungs (Fildes, 1986). Our idea of parental grief is also subject to interpretation. The burial of newborns below the floors of houses and other domestic spaces in the Roman and medieval periods may be interpreted as demonstrating a strong emotional bond between mother and child, as many appear to have been laid out with care and with various objects (Gilchrist 2012: 223). But their presence can also be interpreted as being symbolic of female 'domestic space' (Scott, 1990), or dehumanising the baby as an 'object' of magical healing where the soil of a dead infant was seen as a protective for a sibling (Gilchrist, 2012: 223). Babies may have been buried close by, not through love, but the practical need to have access to 'medicine' but expressing concern for the long-term survival of a pre-existing child.

The practice of swaddling has been interpreted as both providing intense moments of care between the mother and child (Hanawalt, 2002), and as a mechanism for neglect (De Mause, 1994). Knight (1986) argues we may miss cases of child abuse in the past as lesions may have been confined to the head in the very young as the result of swaddling, rather than being distributed on the ribs and long bones as in modern forensic cases. While we need to keep in check our modern interpretation of physical punishment as 'abuse' when exploring this issue there are three probable cases in of intentional trauma in the archaeological record: at later medieval St Oswald's Priory, Gloucester, a 1.5 year old child suffered both rickets and a fracture the midshaft of the humerus (Lewis, 2013), rib fractures were suggested in a sick child from Lisieux, Normandy (Blondiaux et al., 2002), and perhaps the most compelling; multiple perimortem trauma has been identified on a 2-3 year old child from Kellis 2 in the Dakhleh Oasis (Wheeler et al., 2013). Poundbury Camp, Dorset provides a cautionary tale. The late Roman civitas had high levels infant mortality, malnutrition, and rib fractures (Lewis, 2010), that may have indicated systematic starvation and beating of the children at the site. An ankle ('bucket-handle') fracture in a 18-month old child added some weight to this argument, but the presence of genetic anaemia and lesions that mimic rib fractures was later identified (Lewis, 2011). The 'starved' infants were probably born with the most severe form of the condition, and it would have been impossible to do anything for them. This study raises questions about the impact of child disease on a population, the helplessness of the mothers, and perhaps the power of pathology to undermine the ruling elite to provide care for their children. Mays (2014) confronts the evidence for violence, sacrifice and child homicide in the archaeological record, citing cases of a 8-9 year old child

from Kayhausen peat bog, Germany who had been tied up and stabbed in the neck, and the Inca practice of selecting the children of nobles for sacrificial rites, killing them with a blow to the head or asphyxiation, and the presence of children including perinates in mass war graves. It is clear that children were not immune to fatal violence. In Knossos, Minoan Greece the 'Room of the Children's Bones' contained several children with perimortem injuries suggesting a violent death before their bodies were piled-up in the basement (Wall et al., 1986). In a brief survey of child trauma reported from across the World, 30 of 1391 (2.1%) cases of sharp force trauma or penetrating wounds were identified, with 21 cases under the age of 12 years before they might have been expected to start participating in warfare. One, a 4-year-old child from Siberia, suffered a blow to the head from an axe (Murphy, 2008), while the youngest individual with perimortem cranial trauma was an infant from Modder River in South Africa (Pfeiffer and Van der Merwe, 2004). Archaeological evidence for infant sacrifice is often controversial (see Smith et al., 2013 and Xella, 2013 #6476), and there is evidence that communities may have rationalised the practice by selecting children who were already sick for sacrifice (Crandall and Thompson, 2014).

Conclusions

Our conception of child care has evolved since the 1960s when Aries and his followers expounded the view that there was no such thing as 'childhood' in the past. Today we hold much more liberal views about the way parents and communities treated their children and experienced their loss. However, we need to guard against being too influenced by modern sensitivities. While there is evidence for care in child burials, survival of the physically and mentally impaired and attempts at treating the sick, archaeological and osteological evidence also demonstrates their exposure to violence. Congenital diseases in children provide an opportunity to explore ancient attitudes towards physical deformities in individuals who were completely reliant on the care of others for their survival. Trauma and infection may be acute and heal with the individual returning to normal function after a short period of time. Infections and metabolic diseases are transient and may not cause long term disability (Roberts, 2000). Chronic conditions may have meant people lived an alienated life after a period of normality, for example tuberculosis may have resulted in lethargy, weakness and debilitating spinal deformity Pott's disease. But with debilitating congenital conditions, the individual would always have stood out as different and it could be argued that having never known anything different, they were in a better position to adapt to their impairments.

A review of the palaeopathological literature provides examples of treatment and violence in almost equal measure, but it seems individuals with polydactyly, deafness and paralysis were accepted, at least until the 'adult' threshold. The extent to which children born with other physical impairments were 'dispatched' in the past is more difficult to uncover. A child killed with severe congenital malformations may be overlooked in tiny perinatal remains, if they made it into the formal burial area at all. The early death of children with cranial deformities may suggest their disposal, or that they died from an associated pathology. The gradual development of some conditions may have allowed the child to survive most of their childhood, only to be disposed of when they could not work or get married. However, if we take the evidence as proof positive that adults in past society cared for children, then we must also consider how such care could also do harm, with the denial of colostrum or confinement of an already sick child.

It is hoped this paper has served to illustrate the complexity of the data for exploring child care in the past. A full picture of the nature of child care in the past can only be achieved through careful observation of child burials, better identification of pathology, especially on perinates, and

consideration of adult survival. There are several prehistoric cases of young adults (17-25 yrs) with paralytic congenital diseases that would have required someone to care for them (Tilley and Oxenham, 2011; Hawkey, 1998). This paper has concentrated mainly on evidence for congenital disease and trauma to unpick the issues, but more research into the impairment and treatment of children with chronic diseases is warranted.

References

- Anderson T. (1994) Medieval example of cleft palate from St. Gregory's Priory, Canterbury. *Cleft-Palate-Craniofacial Journal* 31: 466-472.
- Aries P. (1960) *Centuries of Childhood*, London: Cape.
- Barron C. (2007) The child in medieval London, the legal evidence. In: Rosenthal J (ed) *Essays on Medieval Childhood: Responses to Recent Debates*. Donnington: Shaun Tyas, 40-53.
- Behlmer GK. (1979) Deadly motherhood: infanticide and medical opinion in mid-Victorian England. *Journal of the History of Medicine* 34: 403-427.
- Blondiaux G, Blondiaux J, Secousse F, et al. (2002) Rickets and child abuse: the case of a two year old girl from the 4th century in Lisieux (Normandy). *International Journal of Osteoarchaeology* 12: 209-215.
- Bolk L. (1915) On the premature obliteration of sutures in the human skull. *American Journal of Anatomy* 17(4):495-523.
- Bonsall L. (2013) Infanticide in Roman Britain: a critical review of the osteological evidence. *Childhood in the Past* 6: 73-88.
- Boswell J. (1984) Expositio and Oblatio: the abandonment of children and the ancient and medieval family. *The American History Review* 89: 10-33.
- Brothwell D. (1960) A possible case of mongolism in a Saxon Population. *Annals of Human Genetics* 24: 141-150.
- Brothwell D. (1967) Major congenital anomalies of the skeleton: evidence from earlier populations. In: Brothwell D and Sandison A (eds) *Diseases in Antiquity: A Survey of Diseases, Injuries and Surgery of Early Populations*. Springfield: Charles C. Thomas, 423-443.
- Castro de la Mata R and Bonavia D. (1980) Lumbosacral malformations and spina bifida in a Peruvian preceramic child. *Current Anthropology* 21: 515-516.
- Charlier P. (2008) The value of palaeoepitaphology and forensic pathology for the understanding of atypical burials: two Mediterranean examples from the field. In: Murphy E (ed) *Deviant Burial in the Archaeological Record*. Oxford: Oxbow Books, 57-70.
- Christensen K, Juel K, Herskind AM, et al. (2004) Long term follow up study of survival associated with cleft lip and palate at birth. *British Medical Journal* 328: 1405.
- Clarren S, Anderson B and Wolf L. (1987) Feeding infants with cleft lip, cleft palate, or cleft lip and palate. *Cleft Palate Journal* 24: 244-249.
- Connell B, Gray Jones A, Redfern R, et al. (2012) *A Bioarchaeological Study of Medieval Burials on the site of St Mary Spital*, London: Museum of London Archaeology.
- Cook D, Thompson A and Rollins A. (2014) Death and the special child: three examples from the ancient midwest. In: Thompson J, Alfonso-Durruty M and Crandall J (eds) *Tracing Childhood. Bioarchaeological Investigations of early lives in Antiquity*. Gainesville: University of Florida Press, 17-35.
- Cowgill L, Mednikova M, Buzhilova A, and Trinkaus E. (2012) The Sunghir 3 Upper Paleolithic Juvenile: Pathology versus Persistence in the Paleolithic. *International Journal of Osteoarchaeology*. Available on-line: DOI: 10.1002/oa.2273
- Crandall J and Thompson J. (2014) Exploring the identity of sacrificed infants and children at la Cueva de Los Muertos Chiquitos, Durango, Mexico (AD 571-1168). In: Thompson J, Alfonso-Durruty M and Crandall J (eds) *Tracing Childhood. Bioarchaeological Investigations of early lives in Antiquity*. Gainesville: University of Florida Press, 36-57.

- Crawford S. (1999) *Childhood in Anglo-Saxon England*, Gloucestershire: Sutton Publishing.
- Dasen V. (2008) 'All children are dwarfs' Medical discourse and iconography of children's bodies. *Oxford Journal of Archaeology* 27: 49-62.
- De Mause L. (1974) *The History of Childhood*, New York: The Psychohistory Press.
- De Mause L. (1994) The history of child abuse. *Sexual Addiction & Compulsivity: The Journal of Treatment and Prevention* 1: 77-91.
- Dickel D and Doran G. (1989) Severe neural tube defect syndrome from the early archaic of Florida. *American Journal of Physical Anthropology* 80: 325-334.
- Drinkhall G and Foreman M. (1998) *The Anglo-Saxon Cemetery at Castledyke South, Barton-on-Humber*, Sheffield: Humberside Archaeological Partnership.
- Egan G. (1997) Children's pastimes in past time: medieval toys found in the British Isles'. *Material Culture in Medieval Europe: Papers of the Medieval Europe Brugge 1997 Conference*. 413-420.
- Fildes VA. (1986) *Breasts, Bottles and Babies: A History of Infant Feeding.*, Edinburgh: Edinburgh University Press.
- Formicola V and Buzhilova A. (2004) Double child burial from Sunghir (Russia): pathology and inferences for Upper Palaeolithic funerary practices. *American Journal of Physical Anthropology* 124: 189-198.
- Gilchrist R and Sloane B. (2005) *Requiem: The Monastic Cemeteries in Britain*, London: Museum of London.
- Gowland R. (1998) The use of prior probabilities in ageing perinatal skeletal remains: implications for the evidence of infanticide in Roman Britain. *Department of Archaeology and Prehistory*. Sheffield: University of Sheffield.
- Gowland R and Chamberlain A. (2002) A Bayesian approach to ageing perinatal skeletal material from archaeological sites: implications for the evidence for infanticide in Roman-Britain. *Journal of Archaeological Science* 29: 677-685.
- Gray P. (1969) A case of osteogenesis imperfecta, associated with dentinogenesis imperfecta, dating from antiquity. *Clinical Radiology* 20: 106-108.
- Hanawalt B. (2002) Medievalists and the study of childhood. *Speculum* 77: 440-460.
- Hawkey D. (1998) Disability, compassion and the skeletal record: using musculo-skeletal stress markers (MSM) to construct an osteobiography from Early New Mexico. *International Journal of Osteoarchaeology* 8: 326-340.
- Hegyí A, Marcsik A and Kocsis G. (2003) Developmental disorders of nasal bones in human osteoarchaeological samples. *Journal of Paleopathology* 15: 91-96.
- Hegyí A, Marcsik A and Kocsis G. (2004) Frequency of developmental anomalies on the skull and the axial skeleton from the archaeological periods (Hungary). *Journal of Paleopathology* 16: 15-25.
- Kato K, Shinoda K, Kitagawa Y, et al. (2007) A possible case of prophylactic supra-inion trepanation in a child cranium with an auditory deformity (pre-Columbian Ancon site, Peru). *Anthropological Science* 115: 227-232.
- Knight B. (1986) The history of child abuse. *Forensic Science International* 30: 135-141.
- Kuuliala J. (2011) Sons of Demons? Children's impairment and the belief in changelings in medieval Europe (c. 1150-1400). In: Mustakallio K and Laes C (eds) *The Dark Side of Childhood in Late Antiquity and the Middle Ages*. Oxford: Oxbow Books, 79-94.
- Laes C. (2011a) Disabled children in Gregory of Tours. In: Mustakallio K and Laes C (eds) *The Dark Side of Childhood in Late Antiquity and the Middle Ages*. Oxford: Oxbow Books, 39-62.
- Laes C. (2011b) How does one do the history of disability in antiquity? One thousand years of case studies. *Journal of History of Medicine* 23: 915-946.
- Laes C, Goodey C and Rose M. (2013) Approaching disabilities a capite ad calcem: hidden themes in Roman antiquity. In: Laes C, Goodey C and Rose M (eds) *Disability in Roman Antiquity*. Leiden: Brill, 1-16.

- Lewis M. (2010) Life and Death in a Civitas Capital: metabolic disease and trauma in the children from late Roman Dorchester. Dorset. *American Journal of Physical Anthropology* 142: 405-416.
- Lewis M. (2011) Thalassaemia: its diagnosis and interpretation in past skeletal populations. *International Journal of Osteoarchaeology* 21: 685-693.
- Lewis M. (2013) Children of the Golden Minster: St Oswald's Priory and the impact of industrialisation on child health. *Journal of Anthropology* on-line.
- Mack M, Goodman A, Blakey M, et al. (2009) Odontological indicators of disease, diet and nutritional inadequacy. In: Blakey M and Rankin-Hill L (eds) *Skeletal Biology of the New York African Burial Group. Part 1*. New York: Howard University Press, 157-168.
- Magilton J, Lee F, and Boylston A, eds. (2008) '*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 Research Report, 158.
- Mays S. (1993) Infanticide in Roman Britain. *Antiquity* 67: 883-888.
- Mays S. (2000) The archaeology and history of infanticide, and its occurrence in earlier populations. In: Sofaer Derevenski J (ed) *Children and Material Culture*. London: Routledge, 180-190.
- Mays S. (2003) Comment on 'A Bayesian approach to aging perinatal skeletal material from archaeological sites: implications for the evidence for infanticide in Roman Britain' by RL Gowland and AT Chamberlain. *Journal of Archaeological Science* 30: 1695-1700.
- Mays S. (2014) The bioarchaeology of the homicide of infants and children. In: Thompson J, Alfonso-Durruty M and Crandall J (eds) *Tracing Childhood. Bioarchaeological Investigations of early lives in Antiquity*. Gainesville: University of Florida Press, 99-122.
- Murphy E. (2000) Developmental defects and disability: the evidence from the Iron Age semi-nomadic peoples of Aymyrylg, south Siberia. In: Hubert J (ed) *Madness, Disability and Social Exclusion: the archaeology and anthropology of 'difference'*. London: Routledge, 60-80.
- Murphy E. (2008) A biocultural study of children from Iron Age South Siberia. *Babies Reborn: Infant Burials in Pre- and Protohistory*. Oxford: Archaeopress, 175-187.
- Ortner D. (2003) *Identification of Pathological Conditions in Human Skeletal Remains*, New York: Academic Press.
- Ortner DJ and Mays S. (1998) Dry-bone manifestations of rickets in infancy and early childhood. *International Journal of Osteoarchaeology* 8: 45-55.
- Ottini L, Di Tota G, Mariani-Costantini R, et al. (2001) Evidence of a forearm fracture in a young victim of the AD79 Vesuvius eruption. *Journal of Palaeopathology* 13: 23-26.
- Oxenham M, Tilley L, Matusumura H, et al. (2009) Paralysis and severe disability requiring intensive care in Neolithic Asia. *Anthropological Science* 117: 107-112.
- Pany D and Teschler-Nicola M. (2007) Klippel-Feil syndrome in an early Hungarian period juvenile skeleton from Austria. *International Journal of Osteoarchaeology* 17: 403-415.
- Panzer S, Cohen MN, Esch U, et al. (2008) Radiological evidence of Goldenhar syndrome in a paleopathological case from a South German ossuary. *HOMO-Journal of Comparative Human Biology* 59: 453-461.
- Pfeiffer S and Van der Merwe N. (2004) Cranial injuries in Stone Age children from the Modder River Mouth, Western Capr province, South Africa. *South African Archaeological Bulletin* 59: 59-65.
- Phillips S and Sivilich M. (2006) Cleft palate: a case of disability and survival in prehistoric North America. *International Journal of Osteoarchaeology* 16: 528-535.
- Richards P. (1977) *The Medieval Leper and His Northern Heirs*, New Jersey: D.S. Brewer, Rowman & Littlefield.
- Rivollat M, Castex D, Hauret L, et al. (2014) Ancient Down syndrome: an osteological case from Saint-Jean-des-Vignes, from the 5-6th century AD. *International Journal of Palaeopathology* 7: 8-14.

- Roberts C. (2000) Did they take sugar? The use of skeletal evidence in the study of disability in past populations. In: Hurbert J (ed) *Madness, disability and social exclusion*. London: Routledge, 46-59.
- Scott E. (1990) A critical review of the interpretation of infant burials in Roman Britain, with particular reference to villas. *Journal of Theoretical Archaeology* 1: 30-46.
- Sillar B. (1994) Playing with God: cultural perceptions of children, play and miniatures in the Andes. *Archaeological Review from Cambridge* 13: 47-63.
- Smith P, Stager L, HGreene J, et al. (2013) Age estimations attest to infant sacrifice at the Carthage Tophet. *Antiquity* 87: 1191-1207.
- Stone L. (1977) *The Family, Sex and Marriage in England 1500-1800*, London: Weidenfeld and Nicolson.
- Temkin O. (1991) *Soranus' Gynecology*, Baltimore: The John Hopkins University Press.
- Thrupp S. (1948) *The Merchant Class of Medieval London*. Chicago.
- Tilley L and Oxenham M. (2011) Survival against the odds: modeling the social implications of care provision to seriously disabled individuals. *International Journal of Paleopathology* 1: 35-42.
- Towner E and Towner J. (2000) Developing the history of unintentional injury: the use of coroners' records in early modern England. *Injury Prevention* 6: 102-105.
- Volk T and Atkinson J. (2008) Is child death the crucible of human evolution? *Journal of Social, Evolutionary, and Cultural Psychology*: 247-260.
- Vrebos J. (1986) Cleft lip surgery in Anglo-Saxon Britain: The Leech Book (circa AD 920). *Plastic and Reconstructive Surgery* 77: 850-853.
- Walker D. (2012a) *Disease in London, 1st-19th centuries*, London: Museum of London Archaeology.
- Walker D. (2012b) St Mary Spital in Context. In: Connell B, Gray Jones A, Redfern R, et al. (eds) *A Bioarchaeological Study of Medieval Burials on the Site of St Mary Spital*. London: Museum of London Archaeology, 149-194.
- Wall S, Musgrave J and Warren P. (1986) Human Bones from a late Minoan IB house at Knossos. *The Annual of the British School at Athens* 81: 333-388.
- Wheeler S, Williams L, Beauchesne P, et al. (2013) Shattered lives and broken childhoods: evidence of physical child abuse in ancient Egypt. *International Journal of Paleopathology* 3: 71-82.

Table 1: cases of child cleft palate in the archaeological record

Period	Site	Age (years)	Description
Later medieval	Csengele Bogárhát, Hungary	5-10	Cleft lip and palate, nasal aplasia (Hegyi et al., 2003)
Later medieval	Csengele Bogárhát, Hungary	3	Cleft lip and palate (Hegyi et al., 2004)
Later medieval	Szatymaz-Vasútállo, Hungary	3	Cleft mandible and palate (Hegyi et al., 2004)
Later medieval	St Mary Spital, London, UK	15	Unilateral cleft palate and lip (Connell et al., 2012)
Early medieval	St Oswald's Priory, Gloucester, UK	10	Cleft lip and palate (Lewis, 2013)
Early medieval	Llangdough, Wales, UK	3-7	Mild cleft palate (Loe pers. comm.)
Early medieval	Burwell, Cambridgeshire, UK	6	Central cleft palate (Brothwell, 1967)
Post-medieval	New York Burial Ground, USA	4-6	Cleft palate (Mack et al., 2009)
Unknown	Nasca region, Peru	8-10	Large cleft lip and palate (Ortner, 2003)