HOMO - Journal of Comparative Human Biology 66 (2015) 520–548

Contents lists available at ScienceDirect

HOMO - Journal of Comparative Human Biology

journal homepage: www.elsevier.com/locate/jchb

Skeletal preservation of children's remains in the archaeological record

B.M. Manifold*

Derby, Derbyshire, United Kingdom

ARTICLE INFO

Article history:
Received 6 January 2014
Accepted 7 April 2015

ABSTRACT

Taphonomy is an important consideration in the reconstruction of past environments and events. Taphonomic alterations and processes are commonly encountered on human skeletal remains in both archaeological and forensic contexts. It is these processes that can alter the appearance of bone after death and the properties of the bones influence their reaction to these processes thus leading to differential preservation within a skeletal sample, none more so than the remains of children. This study investigates the skeletal preservation of 790 child and adolescent skeletons from six contrasting early and late medieval cemeteries from Britain in an attempt to assess whether geographical location and geology had an effect on the overall preservation of the skeletons. Skeletons were examined from six cemeteries, namely; Auldhame in Scotland, Edix Hill and Great Chesterford from Cambridgeshire; St Oswald's Priory from Gloucester and Wharram Percy from Yorkshire, and finally, the site of Llandough in Wales. The state of preservation was assessed using the anatomical preservation index (AP1), qualitative bone index (QBI) and the bone representation index (BRI). Also the presence of natural and artificial taphonomic processes was recorded for each skeleton. The results show a specific pattern of preservation and representation for non-adult remains across all sites with some differences in the states of preservation from different geographical locations and geological influences. Children under two years of age were found to be less affected by taphonomic processes than their older counterparts.

* Corresponding author.
E-mail address: bmmanifold@hotmail.co.uk

http://dx.doi.org/10.1016/j.jchb.2015.04.003
0018-442X/

Introduction

Human skeletal remains offer the most direct insight into the health, well-being, and the lifestyles of past populations, as well as the study of violence and trauma encountered (Larsen, 2002), but also allow the reconstruction of demographic details and the study of age in relation to social identity. In this study children and the term non-adult are defined as individuals from birth to 17 years of age. In early literature and archaeological works, the presence and study of children was completely ignored as they were thought to have little impact on archaeological thinking and methods (Lillehammer, 2010; Renfrew and Bahn, 2005). However, there has been a considerable shift in how children are now viewed in both anthropological and archaeological studies concerning both their physical remains and the material culture and this is reflected in research approaches to the study of non-adult skeletal remains and increased publication over the past two decades within both social archaeology and bioarchaeological investigations (Crawford and Lewis, 2008). In the past the apparent low numbers of child skeletons recovered from excavations were contributed to the lack of attention given to such remains, however, the skeletons of children have always been recovered from excavations in varying numbers over the years, both in Britain and Ireland (Table 1). What has changed is the better understanding and identification of small, unfused bone elements present in the developing skeleton leading to a wider recognition during excavation and study, but also the publication of key texts (Baker et al., 2005; Lewis, 2007; Scheuer and Black, 2000, 2004) have shown the importance of child remains in interpreting the past with regard to anatomy and development, identification, health and disease, social life, physical abuse and trauma. In addition new and improved biomolecular methods and techniques (aDNA analyses, isotopic analyses) in archaeological science have contributed greatly to our understanding of children in past societies (Mays, 2013; Tierney and Bird, 2014). However, there are still limitations to the study of non-adult remains in both biological and forensic anthropology, as studies of mortality and morbidity are often hindered by the poor preservation of their skeletons, infrequent representation of skeletal elements or in some cases complete absence. The reasons, (most notably, taphonomic processes, differential burial rites and archaeological excavation techniques) as to why this may be the case have been widely discussed in the literature (Acsádi and Nemeskéri, 1970; Brothwell, 1981; Bello et al., 2006; Buckberry, 2000; Djurić et al., 2011; Guy et al., 1997; Henderson, 1987; Lewis, 2007; Manifold, 2010, 2012, 2013; Mays, 2010; Nawrocki, 1995, 2009; Saunders and Barrans, 1999; Saunders, 2008; Stodder, 2008).

Bone preservation studies

In any given skeletal sample, the total number of deaths in a population is unlikely to be represented archaeologically (Alesan et al., 1999). One reason for this is taphonomy, which can be divided into two forms: intrinsic (resistance of bone) and extrinsic (environmental influences), both of which exert influence on the long term survival of non-adult bone (Table 2). Taphonomy is a vital consideration in the reconstruction of past environments and events and refers to processes that act on organic matter after death (Pokines, 2013). Taphonomic processes can be macroscopic and microscopic in nature and are commonly recovered on human bone consisting of both natural and artificial processes (i.e., plough damage) in archaeological and forensic contexts, but these are also of importance in forensic investigations in the estimation of post-mortem interval and in the assessment of trauma and pseudotrauma (Pokines, 2013). It is these processes that can alter the appearance of human bone after death and the properties of the bone influences their reaction to these processes thus leading to bias caused by differential preservation in a skeletal assemblage. An important aspect of the biased representation of skeletal elements among sites is that certain age groups are unevenly represented, with the younger and older members of a population under-represented. This under-representation of the younger members of a population in a cemetery is widely known and reported on (Angel, 1969; Acsádi and Nemeskéri, 1970; Chamberlain, 2006; Weiss, 1973). Despite this situation there are a limited number of studies on non-adult remains, especially with regard to the physical preservation of bone (Bello et al., 2006; Buckberry, 2000; Djurić et al., 2011; Manifold, 2010, 2013). Previous studies such as Neolithic British populations, studied by Brothwell (1981:75) considered soil types and how the variation throughout Britain would or could cause ‘differential elimination of fragile