

Aija Ērkšķe<sup>1</sup>

## THE CHILDREN ARE MISSING! SOME THOUGHTS ON THE UNDERREPRESENTATION OF NON-ADULT BURIALS IN LATVIAN IRON AGE CEMETERIES

It is generally accepted that the mortality of young children (0–5 years) in past societies was approximately 40%, but archaeological material yields considerably lower non-adult percentages over and over again. The purpose of this study is to analyse subadult representation in Latvian Iron Age cemeteries (5th–13th c. AD) by critically approaching and discussing various taphonomic and cultural aspects that could affect the preservation of burials. The proportion of children aged between zero and five years comprises less than 6% of all studied burials, and there are only two confirmed infant burials from the Iron Age. In order to analyse the underrepresentation of non-adult burials, two hypotheses were tested: 1) non-adults are missing because of intrinsic and extrinsic taphonomic factors; 2) infants and small children were buried elsewhere/differently. It was concluded that skeletal material has been considerably affected by taphonomic processes and that better preservation of skeletal material could increase the quantity of non-adult burials. Although the shallowness of non-adult burials is frequently mentioned as one of the reasons that significantly affect preservation, it was concluded that there is no correlation between the depth of a burial and the age of an individual. In the course of research it was hypothesized that there could have been different burial traditions for infants and that the majority of infants may have been buried elsewhere or in a different manner.

Aija Ērkšķe, Institute of Latvian History, University of Latvia, Kalpaka bulvāris 4, LV-1050 Rīga, Latvia; [aija.erkske@gmail.com](mailto:aija.erkske@gmail.com)

### Introduction

Children are a part of every society and always have been. They live, play and learn among adults; they influence and change the lives of others; and they are an active component of any society's everyday life. There are numerous contemporary studies that try to reconstruct children's lives through different kinds of evidence,

---

<sup>1</sup> Née Vilka.

such as burials, skeletal remains, material culture, written sources, images, etc.<sup>2</sup> A great number of studies that seek an insight into the child of the past are dedicated to the analysis of burials and skeletal material. It is a paradox that in order to understand the lives of children in past populations, we need to study those individuals who did not survive and did not grow up. The way they were prepared for the afterlife can reflect the way they were treated during life.

It is generally accepted that non-adult mortality was much higher in past populations than it is today (Caldwell 1996; Guy et al. 1997; Lewis 2002; Chamberlain 2006; Lewis & Gowland 2007). Demographic data from the end of the 20th century shows that life expectancy was low for children in developing countries: deaths of infants and children under five years of age accounted for approximately 40% of the total burden of mortality (Dyson 1984). Schofield and Wrigley (1979) also report that in pre-industrialized countries mortality rates of children under 10 years of age was 34%. Goodman and Armelagos (1989, 227) suggest that there is little reason to believe that the survival of children was better in prehistoric societies. Grauer (1991) argues that an archaeological sample with less than 30% of non-adults must be affected by preservation or recovery bias.

Non-adult mortality may be divided into two peaks: during the first year of life and after weaning. Babies are born with a very immature immune system and must rely on the immunity obtained *in utero* and via breast feeding. For this reason, they are frequently unable to recover from stressors (mainly infections, parasites and gastrointestinal disorders) that would more easily be tackled by a more mature immune system (Alesan et al. 1999). Post-neonatal mortality may be seen as a consequence of the child's external environment or extrinsic factors, like infectious diseases, poor nutrition, poisonings, accidents, etc. These and other aspects are reasons why mortality is particularly high in the first year of life (Chandra 1975; Preston 1980; Mosley 1984; Lewis & Gowland 2007). The second peak in mortality can be linked to weaning: studies show that weaning occurred at the age of one to four years, depending on the period in history and geographic location (Dittmann & Grupe 2000; Haydock et al. 2013; Miller et al. 2017; Rebay-Salisbury 2017). During this process, children become dependent on their own natural defences, and if nutrition is inadequate their immune system becomes vulnerable. Immunity is also impaired by the environment: if the weaning period falls during the summer, bacteria and other microorganisms reproduce faster and can negatively affect sanitary conditions (Allmäe 2006, 10). For example, in the 19th century in Belleville, Ontario, 39% of infant deaths occurred during the summer months (Saunders et al. 1995). Problems with weaning and dependence on a single food source are probably among the reasons why the highest child mortality in the Bronze Age cemetery of Ķivutkalns in Latvia is between the ages of one and four years (26.6%), while only 8.5% are infants younger than one year of age (Zariņa, G. 2009, 45).

---

<sup>2</sup> For example, Eileen M. Murphy gives an excellent summary of the different kinds of evidence used and the main themes addressed in the research papers published in the international journal *Childhood in the Past* (Murphy 2017).

Although some authors argue that the low number of infant skeletal remains actually represents true mortality rates (Brothwell 1986–1987; Panhuysen 1999), most studies conclude that there is a shortage of child, especially infant, burials in cemeteries of the past. However, there are always some exceptions to the rule; for example, in the Pre-Roman Iron Age cemetery of Poanse in Estonia 45.7% of the mortuary population were children (Allmäe 2006). High infant representation was observed in the Plinkaigalis cemetery (5th–6th c. AD) in Lithuania: 24.2% of the sample were individuals up to one year of age (Česnys 1993). Although Anglo-Saxon cemeteries in general show very low infant representation (Stoodley (1999) developed a dataset of 46 Anglo-Saxon cemeteries, and only 2.6% were aged less than one year), the cemetery at Great Chesterford, Essex, provided a different pattern: 45% of Great Chesterford inhabitants died before their fifth birthday, and it is argued that all community members were buried in the community cemetery (Cave & Oxenham 2017). Some Southeast Asian prehistoric samples also provide very high subadult representation, e.g. non-adults (<18 years) represent 59% of the total skeletal sample from the Neolithic Man Bac site in Vietnam, 47.4% of the total number representing children under the age of 5 years (Oxenham et al. 2011; McFadden & Oxenham 2018). The Neolithic Khok Phanom Di site in Thailand presents similar numbers: children under five years comprise 48.1% of the total sample, and all subadults (in this sample <15 years) represent 55.8% of the total number of burials (Oxenham et al. 2018).

Rösing and Jankauskas (1997) have argued that, since children aged from zero to four years are underrepresented, the proportion of child deaths at this age should be increased to 45% in order to assess the demographic situation in the population. Of course, the question remains whether artificially increasing the child mortality rate, assuming that it was 40–45% in all past populations, is the best approach; after all, mortality (and fertility) is affected by numerous factors, including the environment, physical stress, conflicts, lifestyle, etc., as pointed out by Allmäe (2006, 8 ff.).

The representation of subadult burials in Latvian Iron Age cemeteries is not a well-researched theme. Although the quantity of non-adult burials has been mentioned and briefly discussed in previous studies (Gerhards 2002; Zariņa, G. 2009; Vilka 2014; 2015), no detailed analysis has been done on this topic. There is a consensus among the authors that non-adults are underrepresented in the cemeteries, and several reasons which could affect the preservation and identification of burials have been offered. Gerhards (2002), in a paper dealing with various Iron Age anthropological research problems, mentions five theoretical reasons for the underrepresentation of non-adults and concludes that the main precondition for children to be buried within a communal cemetery during the Iron Age was their social role. Unfortunately, the analysis concerning the quantity of subadult burials is rather theoretical and general, more detailed attention being paid to the adult burials. The aim of the present study is to analyse subadult representation in Latvian Iron Age cemeteries by critically approaching and discussing various aspects that could influence it. In order to make the analysis more

systematic, two hypothesis about the underrepresentation of non-adults will be tested on the research material. This research will try to answer the question: why are the children missing from the Iron Age mortuary landscape?

### Material and methods

Although there are several large Iron Age cemeteries in the territory of Latvia, most of them lack sufficient anthropological material, partly because of poor preservation and partly because of excavation and post-excavation strategies. Most cemeteries were excavated during the Soviet period, when primarily craniological material was collected, stored and used for ethnicity studies. A few cemeteries were excavated at the beginning of the 20th century, and skeletal material from these is lost or is stored in repositories outside Latvia. For example, the Odukalns cemetery was excavated in 1890–1891, 1925 and 1938; 369 burials were discovered, but the anthropological material from the first excavations together with the grave goods was taken away for storage in repositories in Russia (Radiņš & Ciglis 2001). Likewise, 315 burials were recovered in the Kristapiņi cemetery (Kuniga 2000), but skeletal material from only 12 individuals is stored in the Repository of Bioarchaeological Material at the Institute of Latvian History (collection No. 77). Material from a number of other cemeteries has had a similar fate, e.g. 198 burials were discovered in the Vampenieši cemetery (Šnore 1966; 1969; 1971; 1972; 1973; 1974), but only 11 individuals were selected for storage (collection No. 26), while 175 burials were excavated in the Kivti cemetery (Šnore 1987), but only 14 individuals were deposited in the repository (collection No. 1).

Considering the above, the three largest (in terms of available material) Iron Age cemeteries were selected for this study (Table 1).

The Lejasbitēni cemetery in Aizkraukle was completely excavated by Hugo Riekstiņš in 1931 and Vladislavs Urtāns in 1961–1964. Although the early phase of the cemetery (3rd–5th century AD) can be associated with Early Iron Age barrow burials (which have practically been destroyed), the archaeological and anthropological material used in this analysis dates from the 5th–11th century AD. The dead were mostly inhumed in flat graves, although there were six cremation burials as well. Burials were distributed across the whole area of the cemetery, and from the 7th century onwards orientation of the dead was for the most part diametrically opposed: males with their heads to the east, females to the west. Burials were furnished with gendered ornaments, tools and weaponry (Riekstiņš 1931; Urtāns 1961; 1962b; 1963a; 1964. See Fig. 1, Table 1).

The Laukskola cemetery in Salaspils was likewise completely excavated by Voldemārs Ģinters in 1937 and Anna Zariņa in 1967–1975. The cemetery was used between the 10th and the early 13th century. 27% of the burials were cremations, and the rest were flat inhumation burials, which were oriented to NE. The dead were accompanied by various gendered ornaments, tools and weaponry (Ģinters 1937; Zariņa, A. 1967; 1968; 1969; 1970; 1971; 1972; 1973; 1974; 1975; 2006. See Table 1).

**Table 1.** Analysed Iron Age cemeteries

Site	Lejasbitēni	Laukskola	Čunkāni-Dreņģeri
Excavations	Riekstiņš 1931 Urtāns 1961–1964	Ģinters 1937 Zariņa 1967–1975	Vāle 1924 Ģinters 1928 Stepiņš 1936 Šturms 1937 Stubavs 1957 Bebre 1982–1984 Atgāzis 1984–1994 Lūsēns 2009–2010
Period	(3rd) 5th–11th c.	10th–13th c.	8th–11th c.
Tribe (maj.)	Latgallians	Livs	Semigallians
Burials n (incl. cremations)	459 (6)	610 (165)	743
Subadult (>18) burials n; %	96; 20.9	182; 29.8	112; 15
Excavated entirely	Yes	Yes	No.

**Fig. 1.** Location of the sites.

The Čunkāni-Dreņģeri cemetery has been investigated by several archaeologists: Eduards Vāle (*Ernst Wahle*) in 1924, Voldemārs Ģinters in 1928, Pēteris Stepiņš in 1936, Eduards Šturms in 1937, Ādolfs Stubavs in 1957, Viktorija Bebre in 1982–1984, Māris Atgāzis in 1984–1994 and Mārtiņš Lūsēns in 2009 and 2010. 743 burials were located on two terraces of the River Mēmele (II and III). Unfortunately, the anthropological and archaeological data from the Mēmele III terrace was poorly preserved, and therefore it was difficult to identify burials. Anthropological material was stored only from burials excavated on terrace II. The cemetery was used during the 8th–11th century AD, and burials were distributed in slightly curved rows, provided with gendered ornaments, tools and weaponry. Gendered orientation of the dead was not strictly followed (Vāle 1924; Šturms 1937; Stubavs 1957; Bebre 1982; 1983; Atgāzis & Bebre 1984; Atgāzis 1985; 1986; 1987; 1988; 1989; 1990; 1991; 1994a; Lūsēns 2009; 2010. See Table 1).

In total, 1812 burials and skeletal material from 948 individuals was analysed in this study. Archaeological reports are stored at the Archaeology Department of the National History Museum of Latvia, at the Repository of Archaeological Material of the Institute of Latvian History and at the Monument Documentation Centre of the National Heritage Board. Anthropological material was deposited at the Repository of Bioarchaeological Material of the Institute of Latvian History, collection Nos 24, 42, and 11.

The age of the individuals was determined using standard methodology (Miles 1963; Lovejoy et al. 1985; Buikstra & Uberlaker 1994). To determine the age of children, developmental stages of teeth (Massler et al. 1941; Ubelaker 1989; Liversidge & Molleson 1999) and the length of long bones (Scheuer & Black 2000) were used. Skeletal analysis was done by the author; anthropological analysis for Laukskola cemetery by G. Zariņa (Zariņa, G. 2006) was used for additional information.

Before further discussion, it is important to note that there is no universal understanding about the exact age range of non-adults. There are at least three conceptions about age: 1) physiological or biological age – a person's biological development, growth and ageing; 2) chronological or calendar age – the time since birth; 3) social age – culturally constructed norms of behaviour and the status of individuals within an age category (Halcrow & Tayles 2008, 192). From the biological perspective, a subadult is a person up to the age of 17–18 years (Lewis 2006; Mays 2007), while the social age of a child could differ greatly in different societies. For example, 10-year-old children were considered legal adults in 7th-century AD Anglo-Saxon society, while this age had moved up to 12 years in the 10th century AD (Crawford 1993, 17); in 18th-century AD Iceland, children aged around six or seven years were assigned important roles in the household (Lillehammer 1989, 93). Based on the previous studies of Iron Age<sup>3</sup> cemeteries in Latvia, significant changes in the mortuary ritual can be observed for children aged nine to 12 years, which could indicate that around this age their social status and

<sup>3</sup> The term *Iron Age* is used in Latvian archaeology, and in this paper describes the period from the 1st to the 12th century AD.

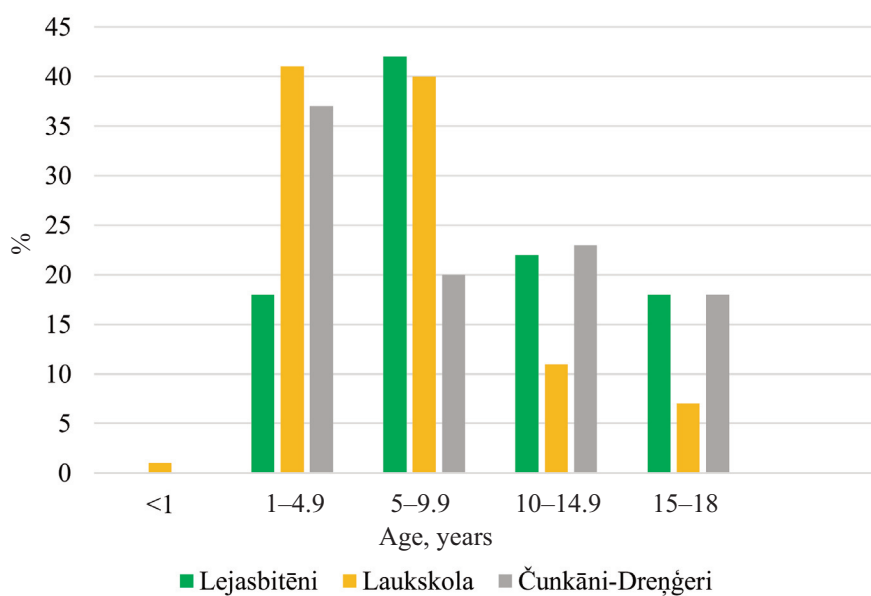
role in society changed as well (Vilka 2012; 2013). However, in order not to exclude any subadults, this paper follows the biological perspective and considers all individuals aged up to 17–18 years as non-adults, and the terms ‘child’, ‘non-adult’ and ‘subadult’ are used as a synonyms to describe them. The term ‘infant’ is used to describe young babies up to one year of age. It must be emphasized that the individuals included in this study and the subdivided age groups (see “Results and discussion” section – age representation in cemeteries and depth analysis of burials) are not considered as conforming to the conception of children in Iron Age societies and are used for analytical and descriptive purposes only.

### **Results and discussion**

Subadult burials (0–18 years) represent 20.9% of the total number of burials at Lejasbitēni (Riekstiņš 1931; Urtāns 1961; 1962b; 1963a; 1964; Table 1), 29.8% at Laukskola (Ģinters 1937; Zariņa, A. 1967; 1968; 1969; 1970; 1971; 1972; 1973; 1974; 1975; 2006; Table 1) and 15% at Čunkāni-Dreņģeri (Vāle 1924; Šturms 1937; Stubavs 1957; Bebre 1982; 1983; Atgāzis & Bebre 1984; Atgāzis 1985; 1986; 1987; 1988; 1989; 1990; 1991; 1994a; Lūsēns 2009; 2010; Table 1).

Other Iron Age cemeteries have provided similar results: in the Kivti cemetery, the proportion of children was 25% (Šnore 1987), in the Nukšas cemetery 18% (Šnore & Zejds 1957), in the Kristapiņi cemetery 16% (Kuniga 2000) and in the Kalnieši II cemetery 9% (Urtāns 1962a). However, in some cemeteries of the Livs the proportion of child burials is higher: at Vampenieši I it was 41% (Šnore 1969; 1971; 1972; 1974), and in the Koknese cemetery 40.7% (Žeiere 1990). Unfortunately, these percentages are based on archaeological material and on-site burial identification, but it was impossible to verify them with anthropological data, and therefore the results were not included in this paper. Previous research shows that burial identification that is based only on archaeological data can be misleading compared to anthropological data. For example, a short grave or small ornaments (rings, bracelets) do not always mean that this was a child burial; graves can be poorly preserved, while small rings could be just offerings, rather than actual jewellery items (Vilka 2015).

The general non-adult mortality curve follows the model given by Weiss (1973) for ancient populations, and similar trends can be observed in archaeological populations as well: the highest mortality rate is for infants, staying quite high until the age of 5 years, then progressively declining to reach a minimum in late childhood, in the 10–15 year group (Weiss 1973; Eshed et al. 2004; Nagaoka et al. 2012). Assuming stationary populations and inclusion of all individuals in the communal cemetery, the studied material showed a different pattern (Fig. 2). As expected, the highest non-adult mortality rate in both the Laukskola and the Čunkāni-Dreņģeri cemeteries is in the age range of one to five years: 41% and 37%, respectively, of all identified non-adults. A gradually decreasing mortality curve from the age of 10 could be observed at Laukskola, but the other two cemeteries show different results. The age-at-death curve for Čunkāni-Dreņģeri drops



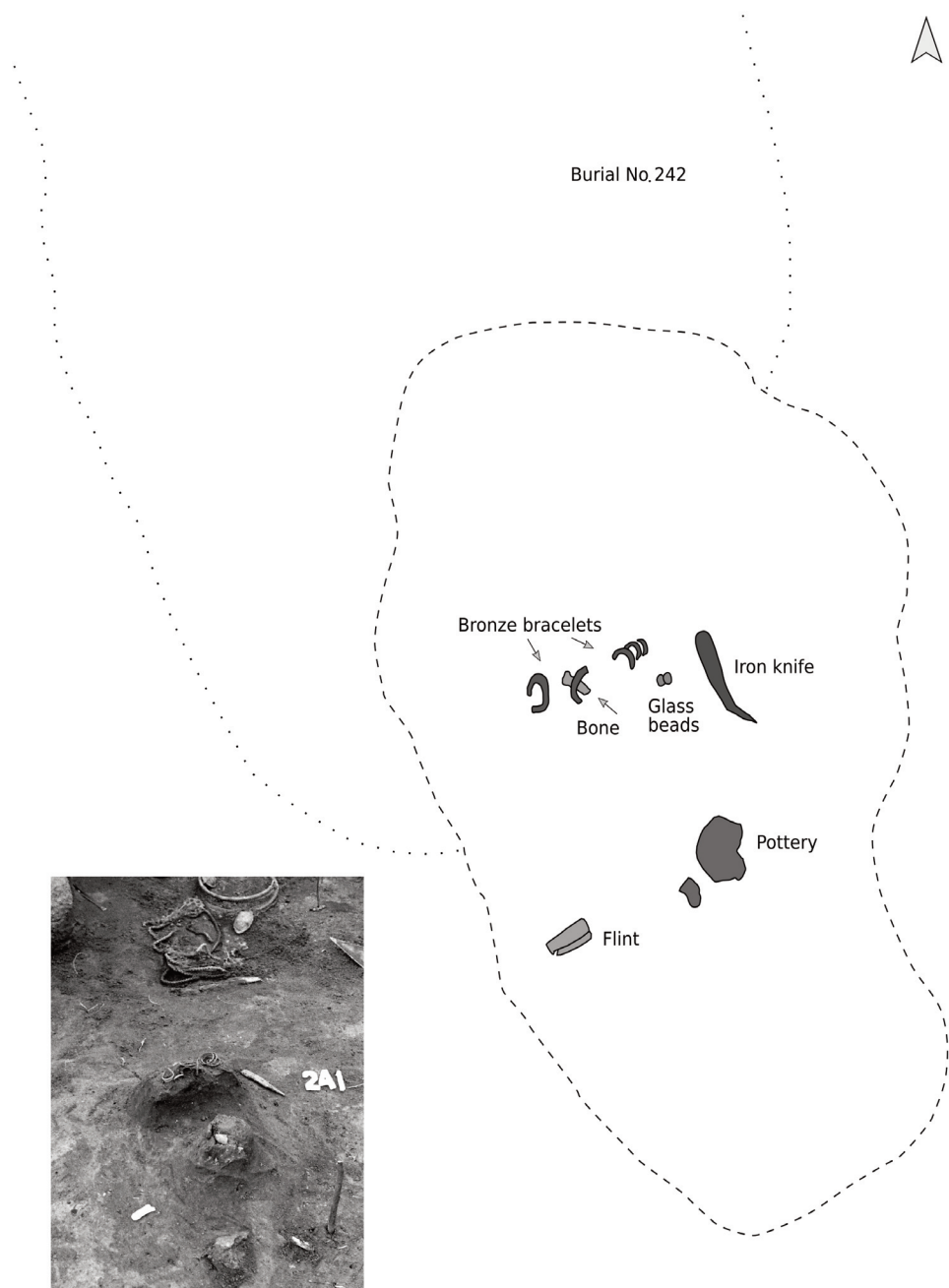
**Fig. 2.** Non-adult age groups in the analysed cemeteries.

noticeably after the age of 5 years and stays even, slightly increasing at the age of 10–14.9 years. A different age distribution could be observed in the Lejasbitēni sample, where the highest non-adult representation is seen in the group 5–9.9 years old, with subadults under five years of age represented in similar number to individuals aged 10–14.9 and 15–18 years.

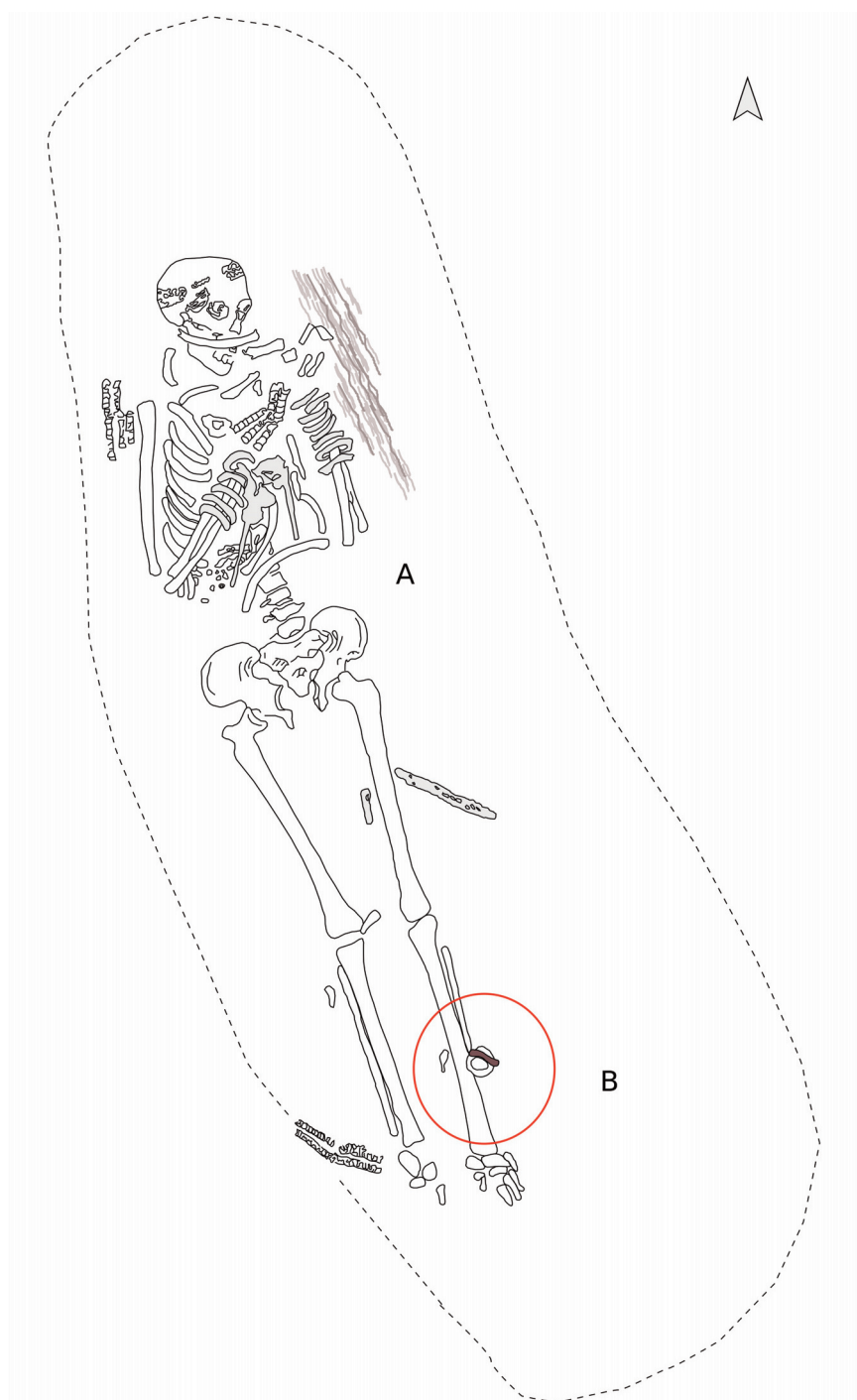
It is noteworthy that there are practically no infants represented in the studied material. The only infant burial was identified at Laukskola (burial No. 241): the infant had been buried above female burial No. 242. There is one more known infant from the Iron Age, at Gaidēļi-Viduči (burial No. 47), where a new-born baby had been placed by the legs of a 20-year-old female (Zemītis 2005, 214). Other possible cases of infant burials are based only on archaeological information without anthropological material, and therefore are not reliable sources of information (Vilka 2015).

It is also noteworthy that in both cases described above the infants had been buried together with, or close to, a female: at Laukskola, the baby had been buried 25–30 cm above the female burial, near her pelvic region (Zariņa, A. 2006; Fig. 3), and the location was similar in the case from Gaidēļi-Viduči, as mentioned above (Zemītis 2005; Fig. 4). A possible infant burial (No. 18) at Bāļas-Šķērstaīņi was also found together with a female (probably even in the same coffin) and the cremated remains of an individual of unknown sex (Atgāzis 1979). Unfortunately, it was impossible to confirm this case with skeletal data. At both Laukskola and Bāļas-Šķērstaīņi the infants had been given two spiral bracelets, and the infant from Laukskola also had an iron





**Fig. 3.** Infant burial (No. 214) in the Laukskola cemetery. Reproduced after Zariņa, A. 1969; drawing: Laukskolas\_kpl\_128\_2\_272; photo: Salaspils\_laukskola\_128\_71\_2009 by A. Ērkšķe.



**Fig. 4.** Infant (B; area, where infant's bones were found, is marked with a red circle) buried together with an adult female (A) in the Gaideļi–Viduči cemetery (burial No. 47 B). Reproduced after Zemītis 2005, Fig. 4 by A. Ērkške.

knife, a flint and some fragments of pottery (Zariņa, A. 2006), while the Bāļas-Šķērstaiņi baby had a brooch, a belt and clothing ornamentation (Atgāzis 1979). On the other hand, the infant from Gaidelī-Viduči had no grave goods (Zemītis 2005).

As mentioned above, archaeological populations might have similar demographic profiles to modern pre-industrialized societies, where infant mortality is very high, and it remains high in children between the ages of one and five years, decreasing steadily afterwards (Weiss 1973). If we look at pre-industrial demographic models, it is evident that 40–45% of the deceased are children aged zero to five years (Weiss 1973; Goodman & Armelagos 1989). The number of children under the age of five in the cemeteries used in this study is very low – less than 6% of all individuals buried within cemeteries (see Table 2), and it is clear that there is a problem with the proportion of non-adults, especially infants, in the studied cemeteries. Since there are various factors which can influence the preservation of archaeological human

**Table 2.** Description of anthropological material from the analysed burials

Site	Lejasbitēni	Laukskola	Čunkāni-Dreņģeri
% of skeletal mat. (total)	60.1	52.1	47.6
% of subadults, total (anthr. & archeo. data)	20.9	29.8	15
% of subadults < 5 years (from all ind.)	2.1	5.7	4.3
% of skeletal material from subadult burials	61.8	48.9	74.1
% of skeletal material from adult burials	63.7	56.1	75
% of unidentified burials	5.1	3.2	37
Soil type	Sand, sandy clay	Sand, sandy clay	Gravel, sandy clay
Preservation of skeletal remains	Mostly poor	Varied, but overall poor (27% were cremations)	Range from very poor to good; very disturbed and robbed
Preserved (stored) adult bones	Cranium, long bones	Cranium, long bones	Cranium, long bones
Preserved (stored) non- adult bones	Parts of cranium, maxilla, mandible, tooth	Maxilla, mandible, tooth	Parts of cranium, maxilla, mandible, tooth, long bones

remains, and aspects that can affect their identification, the discussion below will concentrate on the question of which of these could also be the reason for the underrepresentation of subadults.

Factors which affect the preservation of burials and bodies can be divided into three main groups: intrinsic, extrinsic and cultural (Fig. 5). Intrinsic factors include various biological aspects and processes that affect the human body. Extrinsic factors include soil type, pH as well as various kinds of disturbance (human, floral and faunal) that affect and modify the earth and soil. Cultural factors include the attitudes of the societies towards death, burial rites and customs.

To continue the discussion about the possible reasons behind the low number of non-adults in the Iron Age cemeteries, two hypotheses will be tested.

*Hypothesis 1: non-adults are missing because of intrinsic and extrinsic taphonomic factors.* One of the most important aspects affecting the preservation and therefore also the recognition and identification of burials and the dead concerns the physicochemical properties of human bones. This paper will not go deeper into the theory about bone mineralization, density and other chemical aspects, as there are various studies which cover the subject in a more professional way (e.g. Guy et al. 1997; Gordon & Buikstra 1981; White & Hannus 1983; Child 1995; Bello & Andrews 2006), but there is a general consensus that non-adult remains survive less well than those of adults (Guy et al. 1997; Buckberry 2000; Djuric et al. 2011). Although taphonomic processes are affected by both intrinsic and extrinsic factors, one of the most prominent is the age of the individual. Children's bones are both smaller and less dense, and have a high organic and low inorganic content, which, in theory, makes

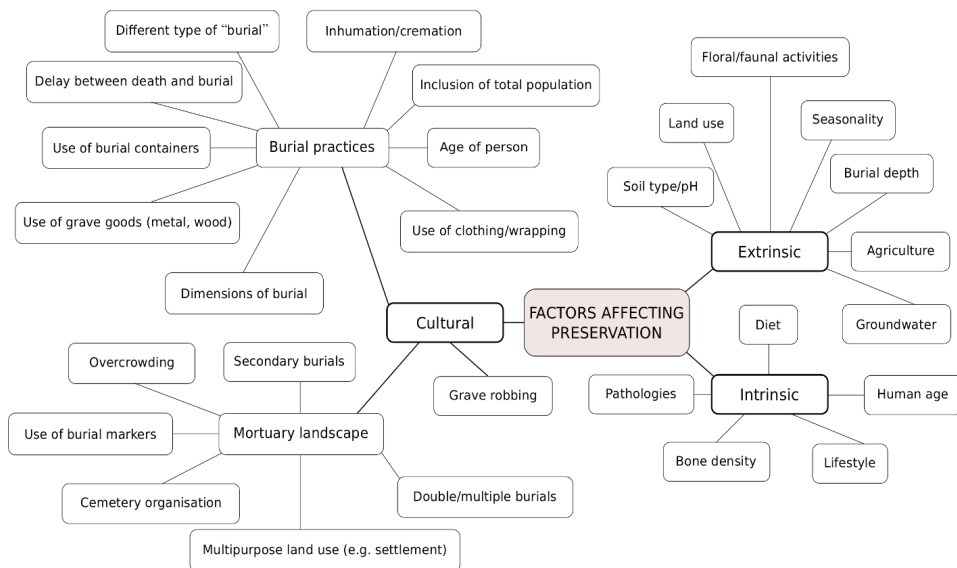


Fig. 5. Factors which affect the preservation and identification of burials.

them more susceptible to decay (Guy et al. 1997). Guy et al. (1997) argue that the bone mineral complex and density are precisely the reasons behind infant underrepresentation in archaeological cemeteries, more than other social or cultural reasons. Trotter (1971) notes the high bone mineral content of fetuses, which increases with age but decreases after birth, thus making the foetal remains more resistant to taphonomic processes than remains of older children. Other authors (Acsádi & Nemeskéri 1970; Saunders et al. 1995; Manifold 2012) argue that, despite the many factors involved in decay, non-adult bones have the potential to be well preserved and that instead other aspects (such as burial practices and excavation techniques) affect the number of subadult burials in cemeteries.

Skeletal material from the cemeteries used in this study was relatively poor (Table 2), similar to the other Iron Age cemeteries in Latvia: as mentioned above, because of the prevailing scientific trends in anthropology during the Soviet period, anthropological material was not always collected and stored properly. Skeletal material was obtained in similar proportions from Čunkāni-Dreņģeri (47.6%) and Laukskola (52.1%), with slightly more from Lejasbitēni – 60.1%. On average, non-adult skeletal material was preserved from half of the possible non-adult burials: 61.8% of the subadult burials in Lejasbitēni, 48.9% at Laukskola and slightly more, 74.1%, at Čunkāni-Dreņģeri yielded some anthropological material. As shown in Table 2, the situation is similar for adult skeletal material, with human remains recovered from 63.7% of burials at Lejasbitēni, 56.1% at Laukskola and 75% at Čunkāni-Dreņģeri. Adult skeletal material collections mostly consist of crania (or parts of them) and long bones, while non-adult material mostly comprises the maxilla and mandible or just some teeth, as well as some cranial fragments. Long bones were collected and stored only from Čunkāni-Dreņģeri (Table 2). Overall, as expected, adult remains appear to survive much better than those of subadults. However, the proportion of skeletal material which could be used for assessment of age was similar for adult and non-adult burials. In this study taphonomic processes, which affected non-adult bones more severely, had little impact on the identification of subadult compared to adult burials.

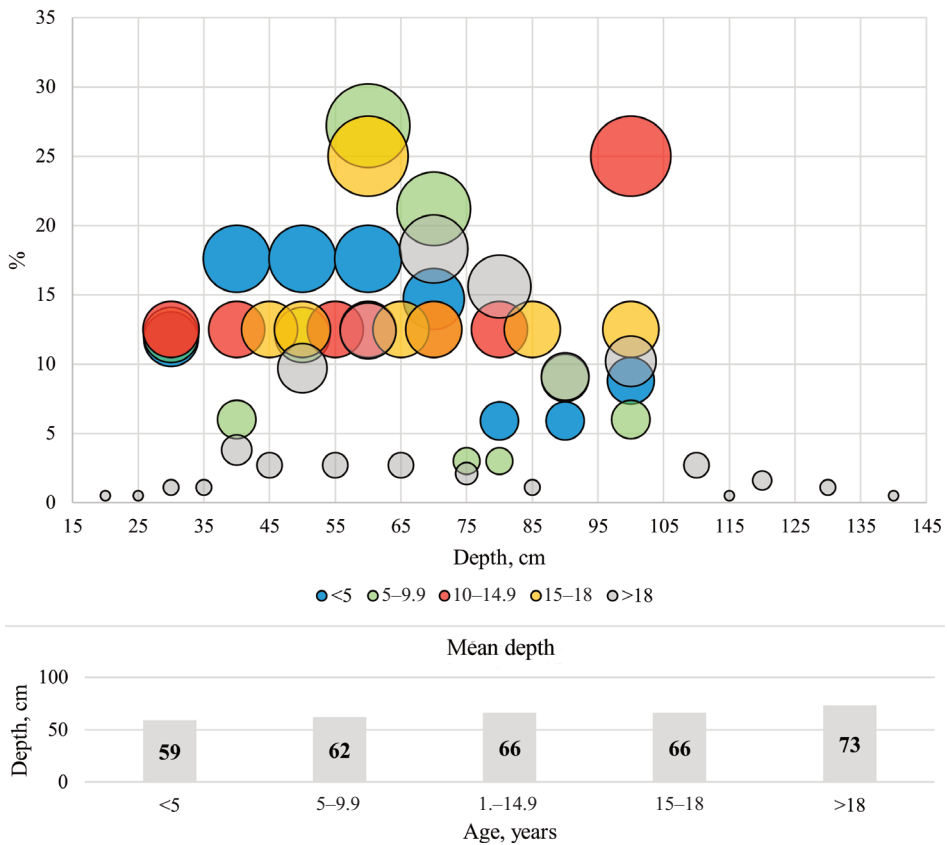
Unfavourable extrinsic factors, such as soil type and pH, are often mentioned as a cause of poor bone preservation, but it is still unclear exactly how the soil influences skeletal material (especially non-adult bones). The literature includes different views on the best environment for skeletal material, and the preservation of bones varies considerably not only between different soil types, but also from one burial to another (Manifold 2012, 56). Apart from the soil type, extrinsic factors such as groundwater, floral and faunal activities, and agriculture can also greatly affect bone preservation (Manifold 2012, 56. See Fig. 5). A good example of how soil can affect bone preservation can be seen at Čunkāni-Dreņģeri, where burials were located on two terraces of the River Mēmele. 27.4% of the burials were located on the Mēmele III terrace, where graves were mostly clearly visible within reddish sandy clay, filled with a darker mixture of soil and clay. However, some of the burials were filled with the same reddish sandy clay, and therefore graves could not be distinguished (Bebre 1982; 1983; Atgāzis & Bebre 1984). Other burials were

located on the Mēmele II terrace, where graves had been dug into gravel; in some cases they were filled with darker soil, which was quite clearly visible, but in others they were filled with the same gravel and were thus indistinguishable from the surrounding ground (Atgāzis & Bebre 1984; Atgāzis 1985–1991; 1994a; 1994b). The sandy clay on terrace III greatly affected the decay of the bones: most of the skeletal remains were considerably decomposed or had decayed completely, and therefore no material was collected and stored. Anthropological material from the burials on terrace II was in better condition; however, due to the fact that the burials had been badly robbed, the majority were disturbed, and a large proportion of the human remains and grave goods were missing. For this reason, approximately 37% of the total number of burials at Čunkāni-Dreņģeri were not identified.

Burials at Lejasbitēni and Laukskola had been dug into sand and filled with darker sandy soil; therefore, graves were not always clearly visible. The sandy substrate and intensive agricultural activity could probably also have affected the preservation of the skeletal material. Overall, preservation of the skeletal material in both cemeteries was poor, and 5.1% of the burials at Lejasbitēni and 3.5% at Laukskola were unidentified.

Another reason which could affect the representation of non-adults in archaeological cemeteries is the shallow depth of these burials, resulting in poor bone preservation, plough damage and animal scavenger activities. Morton and Lord (2006) studied the taphonomy and scattering of modern child-size bones, and found that the remains were removed from shallow graves within the first week of burial. Unexpectedly, shallow burials displayed more prominent scavenger activity and scattering than remains left uncovered on the surface (Morton & Lord, 2006). Evidence from various archaeological sites shows that non-adults were often buried in shallower graves than adults, and some authors argue that this could affect their preservation (Lucy 1994; Ingvarsson-Sundström 2003; Murail et al. 2004; Bello et al. 2006; Manifold 2012). A similar trend could be observed at Laukskola, where the mean depth for non-adult burials was 63 cm, while the mean depth for adults was 73 cm (Fig. 6). Although, as shown in the Fig. 6, the mean depth of burial becomes progressively deeper, there are individual cases in both adult and non-adult groups where individuals were buried very deep or shallow. If we analyse the correlation between relative burial depth and the age of the individual (Fig. 6), it can be seen that non-adults younger than 5 years were mostly buried 40–60 cm deep at Laukskola, although there are burials that were 30 cm and 100 cm deep. A similar pattern could be observed also in older non-adult and adult groups: 60–70 cm deep burials were the most common.

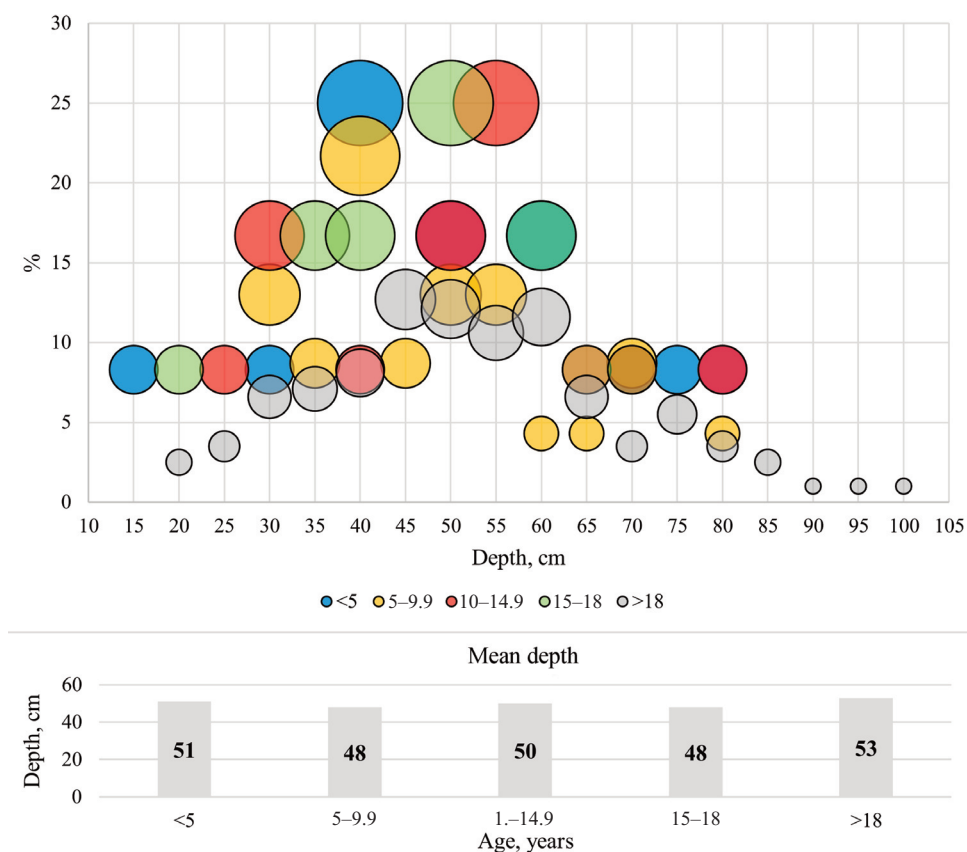
The practice was different at Lejasbitēni and Čunkāni-Dreņģeri, where both adults and non-adults were buried in the same depth range of 20–70 cm. The mean grave depth for non-adults at Lejasbitēni was 49 cm, while at Čunkāni-Dreņģeri it was 52 cm; adults were buried at an mean depth of 53 cm and 56 cm, respectively (Figs 7 and 8). It is interesting that there is no correlation between age and mean depth; for example, the Lejasbitēni cemetery material shows that 15–18 year old non-adults were buried at the same mean depth as 5–9.9 year old children – 48 cm



**Fig. 6.** Grave depth at Laukskola. The first graph depicts correlation between burial depth and the age of the individual: x axis represents depth (cm), y axis – how many (%) were buried in this depth. Each colour represents different age group. The second graph depicts the mean burial depth in each age group.

– while children younger than 5 years were buried at a mean depth of 51 cm (Fig. 7). The majority of both non-adults and adults were in the depth range of 40–60 cm at Lejasbitēni and 55–70 cm at Čunkāni-Dreņģeri.

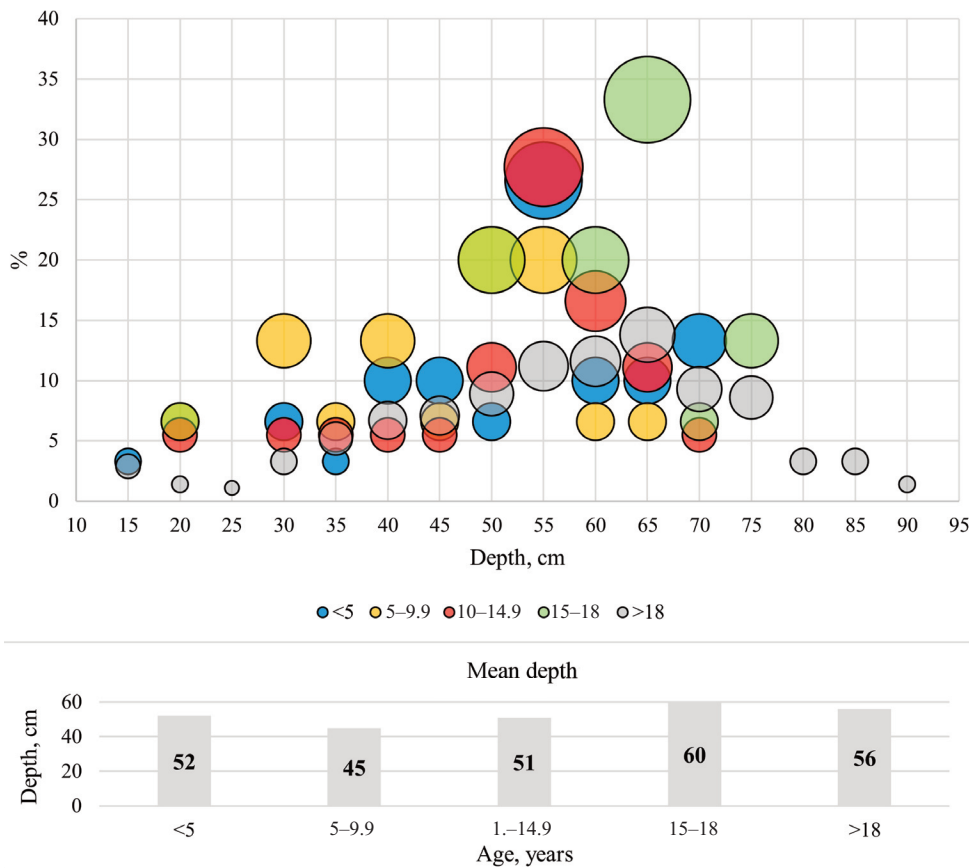
Although it is argued that shallow burial could indicate a lower social status of children, because they were not being prepared for the afterlife as carefully as adults (Lucy 1994, 26), in the author’s opinion it is more likely that this is just a simple practicality – it is more difficult to dig a short grave to a considerable depth than a long one, and so this could be related to the mechanics of digging burials. Previous studies show that non-adults in the Iron Age cemeteries in Latvia were prepared for the afterlife in the same manner and with the same respect as adults (Vilka 2013; 2014), and shallow graves were thus due to the previously mentioned practical restrictions or some other geographical or seasonal aspects (for example, it would be harder to dig a deep grave during the winter). An excellent example of the practicalities of grave digging is provided by the burial of a five–six years old wealthy girl from



**Fig. 7.** Grave depth at Lejasbitēni. The first graph depicts correlation between burial depth and the age of the individual: x axis represents depth (cm), y axis – how many (%) were buried in this depth. Each colour represents different age group. The second graph depicts the mean burial depth in each age group.

another Iron Age site, the Railway Station cemetery in Cēsis (11th–13th c., burial No. 3). The burial was discovered in 2015, during archaeological supervision work; at first it appeared as a dark grey, obscure feature, which narrowed downwards, and 40 cm deeper formed a burial measuring 30 × 130 cm. This suggests that a bigger pit was probably made at first, then narrowed and formed into a child burial, allowing it to be deeper than if a simple grave had been dug (Ērkške et al. 2018). Burial No. 227 at Laukskola is probably a similar example: here, at first a rectangular feature measuring 60 × 120 cm was discovered, and 100 cm deeper it formed a 50 × 80 cm burial of a one–two years old child (Zariņa, A. 1969). Both of these burials contained a variety of grave goods: neck rings, bracelets and clothing ornaments. Although it might seem that wealthier burials are deeper and more time would be required to make them, analysis showed that the quantity and quality of grave goods, including unfurnished burials, had no influence on the depth of the children's graves.





**Fig. 8.** Grave depth at Ćunkāni-Dreņģeri. The first graph depicts correlation between burial depth and the age of the individual: x axis represents depth (cm), y axis – how many (%) were buried in this depth. Each colour represents different age group. The second graph depicts the mean burial depth in each age group.

Returning to Hypothesis 1: are children missing because their skeletal remains have simply decayed? Could it mean that the burials identified as non-adult burials based on archaeological data but which were missing skeletal material, and those that were not identified at all, are our missing children? Let us just speculate on the basis of the figures: it has been suggested that mortality of non-adults aged zero to five years should be approximately 40–45% (Weiss 1973; Goodman & Armelagos 1989), but the cemeteries studied in this paper show a significantly lower percentage, less than 6%. At Lejasbitēni, with the lowest percentage of small children (2.1%) skeletal material was missing from 38.2% of archaeologically identified subadult burials, and 5.1% of burials were not identified at all (Table 2), leaving us with a total 43.4% of burials that could theoretically be missing children. The situation is even better at the Ćunkāni-Dreņģeri cemetery, where 25.9% of identified subadult burials are missing skeletal material and 37% are unidentified burials (Table 2), leaving a lot of ground

to look for possible children. Although it is unlikely that all of these boneless burials were small children, it is very plausible that a proportion of them could have been.

Is it possible that infants and small children disappear completely, without leaving a trace, because of the shallow depth of the graves? As mentioned before, there is no strict correlation between non-adult age and burial depth. There are, for example, children aged one–two years at Laukskola who were buried in graves 70 cm deep (burial No. 4) or even 100 cm deep (burial No. 227), as well as graves only 30 cm deep (burial No. 44) (Zariņa, A. 1967; 1969). The only known infant from the studied cemeteries – burial No. 341 at Laukskola – was likewise buried 30 cm deep (Zariņa, A. 2006). Of course, there is a possibility that some shallow burials have been destroyed and are therefore missing; as mentioned above, it is difficult to make a small grave deep. But we cannot say that all non-adults were buried in shallow graves. This is true only for the Laukskola cemetery, while at Lejasbitēni and Čunkāni-Dreņģeri subadults were buried in the same depth range as adults. Likewise, there is no justification for the statement that small children were buried in shallower graves than older ones.

With regard to small children and especially the underrepresentation of infants, excavation (and preservation) techniques must be considered as well. In order to study the difference between adult and non-adult preservation, Saunders, Herring and Boyce (1995) led a careful excavation in a cemetery in Ontario, Canada. The cemetery was in use between 1821 and 1874, and all burials were recorded in parish records. When burial records were compared to the identified skeletons, they corresponded quite well, and only 4% of the subadults from the records could not be identified in the skeletal material (Saunders et al. 1995). Thus, in favourable conditions a non-adult skeleton has the potential to survive as well as an adult one. It must be stressed that it is very important to have an experienced archaeologist using correct and precise excavation methods and an osteologist who can identify the remains on site, especially in cases when skeletal material is very poorly preserved and cannot be stored. As noted by Buckberry (2005), even after conscientious excavation the tiny bones of perinates are common finds in unstratified material. In order to recover foetal remains, it was recommended to sieve soil with a mesh size no larger than 1.0 mm, since a larger mesh size would lose up to 62.3% of the bone material (Pokines & De La Paz 2016).

As noted above, burials could sometimes be quite shallow (e.g., 3.3% of non-adults under 5 years at Čunkāni-Dreņģeri and 8.3% at Lejasbitēni had been buried no deeper than 20 cm (Figs 7 and 8)); therefore, adequate excavation technique must be used. Unfortunately, most excavations nowadays are rescue or supervision works, and frequently mechanical excavators are used in the first stages, which could potentially destroy shallow non-adult burials (and adult burials, since as shown in Figs 7 and 8, some of these could also be buried quite shallow).

As mentioned above, skeletal collections from the studied cemeteries were incomplete: both Lejasbitēni and Laukskola, and partially Čunkāni-Dreņģeri cemeteries were excavated during the Soviet period, when anthropological interest concentrated mainly around ethnicity, and cranial material was seen as the most important, while

small, fragmentary non-adult bones were often *lost* somewhere between the excavation and the repository. Unfortunately, osteologists usually were not working on site during these excavations, and therefore a large amount of information is lost about those non-adults that were not collected for storage in repositories.

*Hypothesis 2: infants and small children were buried elsewhere/differently.* Although the taphonomic aspects mentioned above are logical and practical reasons that could and did affect the number of non-adults within the cemeteries, it is still odd that among all 812 burials studied for this research, and other known Iron Age burials, there are only two confirmed and several probable infant burials. This becomes even more odd in the light of research on other prehistoric and historical periods. At the Stone Age Zvejnieki cemetery, 2.8% of individuals were infants (Zagorskis 1987); at the Bronze Age Ķivutkalns cemetery there were even more infants – 9.5% (Denisova et al. 1985). Similar proportions can be found in the medieval and early modern periods, for example, at the St Gertrude (Sv. Ģertrūdes) church cemetery (14th–17th c.) 24.9% of individuals were children aged between zero and nine years and 1.2% were unborn or stillborn babies (Gerhards 2008; Lūsēns 2008); in the Pāvulkalns cemetery (14th–17th c.) 14.5% of individuals were aged zero to four years (Zariņa, G. 2009, 92); in the St Simon's (Sv. Sīmaņa) church cemetery (14th–18th c.) 16.9% of individuals were non-adults aged zero to four years, and among them 3.6% were infants (Zariņa, G. 2009, 99); at the Lejaskrogs cemetery (14th–17th c.) 4% of individuals were infants (Zariņa, G. 2009, 110). Although these numbers are still too low to represent the actual infant mortality, they are much higher than in the Iron Age.

A shortage of non-adult burials has been reported in other regions and historical periods as well, for example, the early Anglo-Saxon cemetery in Sewerby, North Yorkshire yielded only 5% of children under the age of five, similar to the West Heslerton cemetery, with 6%; this is in contrast to an early Roman cemetery in Hampshire, where there were 35% of children under five years of age, while in the later Anglo-Saxon cemetery at Norwich the percentage of children was 45% (Lucy 1994; Daniell 1997, 124). Lucy (1994) argues that poor preservation of non-adult skeletons cannot account for the lack of burials, and thus children in the early Anglo-Saxon period were buried elsewhere.

Various ethnographic and archaeological data shows that infants in past societies were indeed sometimes buried in a different way to adults (Scott 1999; Turek 2000; Baxter 2005; Lewis 2006, 31 ff.). In his work on Neolithic cemeteries in Europe, Häusler (1966) compiled a wide ethnographic review of child burial customs in pre-industrial societies, which showed that children (younger than two years) were not buried in community cemeteries but were disposed of differently, for example, placed in the cavity of a tree, in bushes, rivers, etc. Examples of non-adult remains located outside cemeteries can be found throughout the world and from various periods of the past. Infant remains have been found within domestic spaces and under the floors of settlements from the Neolithic to the Roman period (Scott 1999, 113 ff.). Children in Middle Helladic Asine and Lerna in Greece were primarily buried within settlements, and sometimes under floors or in the courtyards of

inhabited houses (Ingvarsson-Sundström 2003). It was generally accepted in the Roman world that an infant under 40 days of age was not *fully human* and could be excluded from the law that forbade burials outside the cemetery, and could thus be buried within a town or settlement (Scott 1999, 2).

It is argued that infant burials within settlements could be linked with memories, the idea of rebirth or the claim of a particular family group to a particular place (Scott 1999, 128 ff.). It is clear that the many examples of infant burials outside communal cemeteries (especially in prehistoric Europe) suggest that there was a different attitude towards the youngest members of the society in the past (were they perceived as members of society at all?).

Specific attitudes towards infant burial can also be observed in more recent cemeteries, in the phenomenon of children's cemeteries (i.e., a part of the cemetery allocated for infant burials). According to Christian tradition, one of the main conditions for the dead to be buried within the communal cemetery was baptism. The unbaptized child was considered guilty of original sin, and burial in consecrated ground for such an individual would be out of the question (Page 2011; Dennehey 2016). One of the most famous kinds of cemeteries for unbaptized and stillborn babies are the *cillini*, which were used during the post-medieval period and until the 19th century (Finlay 2000; Murphy 2011). There was a belief in Ireland that if a child were to die before baptism, it could also be disposed of in privies, dunghills and various other public places (Dennehey 2016). Page (2011) has analysed early medieval archaeological material from Wales and argues that old cemeteries that had been abandoned and were not used by the rest of community were used for infant (most probably unbaptized) burials.

There are also reports about areas in medieval cemeteries which were reserved for children; for example, at St Andrews Fishergate in York, 76% of children under the age of five were found in the western part of the cemetery (Stroud & Kemp 1993). Excavations in other graveyards in England and Scotland have revealed that infants were frequently buried along the eastern side of the church, probably because of the idea that "holy" water dripping from the eaves would baptize them (Crawford 1993). After studying French medieval cemeteries, Perez (2015) also noted that there are specific areas associated with infant and small children's burials, for example, in the Seyssel-Albigny church cemetery the southern part of the choir was used only for children aged two months to two years, while perinates and children under one year were buried three metres south of the apse, and adults were buried much further. It is interesting that in the study of French material only children up to seven years of age were grouped in specific areas (Perez 2015).

Non-adult burials (and burials in general) in Iron Age Latvia are found only in cemeteries, and there is no evidence of burial practices from settlement sites. However, infant skeletal material is very fragile and could easily be overlooked, especially when the remains are buried in a simple, unfurnished grave and in a place where they are not expected. Ingvarsson-Sundström (2003) reports that in earlier excavations pit graves, which were the most frequent type of burial for non-adults in the Lower Town of Asine, Greece, were overlooked in favour of more obvious

burials, and foetal remains were found in animal bone material collections. We may recall that the two known infants from the Latvian Iron Age were buried together with or close to an adult female. A similar pattern, where infants were found together with adults, was also observed by Kurila (2007) when analysing East Lithuanian Iron Age cemeteries – he argued that the critically low number of infants (only 1.9%) could mean that perinates and infants were buried only in the instances of simultaneous death with the mother. Is it possible that there were infants buried together with adults which were missed due to the small size of the bones, poor preservation and excavation strategies? The author of this paper believes that this is quite likely.

Non-adult burials in the studied cemeteries were distributed across the territory of the cemetery, without there being any specific areas intended for children. Burials at Čunkāni-Dreņģeri were arranged in rows next to each other. Although it is hard to tell exactly how the cemetery was organized, and whether new burials were placed next to previous ones or some other rules were followed, it was determined that burials in a particular row belong to the same period (Atgāzis 1994b). Burials at Lejasbitēni and Laukskola were located throughout the cemetery, without any specific pattern, except for the earliest burials at Lejasbitēni, which were distributed around three Early Iron Age barrows (Zariņa, A. 1961–1964; Urtāns 2006). Clusters of several non-adult burials were present in all three cemeteries, but it is more likely that they were associated with their family/kin burial place or a brief period of high non-adult mortality (Vilka 2013).

To summarize Hypothesis 2, it is peculiar that there are so few infant burials specifically in Iron Age cemeteries in Latvia. Examples of infant burials from other prehistoric and historical periods in the territory of Latvia make one think that there could be specific reasons why there are practically no infants in Iron Age cemeteries. It is possible that they were buried in the communal cemetery only in specific cases, such as simultaneous death with the mother or in a specific manner – placed together with an adult and missed due to taphonomic reasons. At the present there is no evidence that could suggest that infants were buried outside the cemetery; however, examples of this kind of tradition around the globe indicate that this hypothesis cannot be dismissed out of hand.

## Conclusions

It is almost universally accepted that there is a shortage of young child burials in the archaeological material. Iron Age cemeteries in Latvia are no exception – children aged zero to five years in the cemeteries considered in this study make up less than 6% of the total population, which is very low compared to the expected, higher non-adult mortality. The situation is even more critical with infant remains: there are only two confirmed infant burials from Iron Age Latvia. So, it seems logical to ask what happened to them?

It is difficult to provide a clear answer to this question, since the greater part of the research material is missing. There are various intrinsic and extrinsic taphonomic

aspects which affect the preservation of burials. It is more likely that non-adult burials are underrepresented in Iron Age cemeteries due to several, complex reasons, rather than just one. It is clear that better skeletal preservation could increase the number of non-adult remains, since only half of the archaeologically identified subadult burials could be confirmed anthropologically, leaving a large number of burials that could possibly be small children. The most serious issues with identification of burials relate to the Čunkāni-Dreņģeri cemetery, where at least 37% of all burials were unidentified, both archaeologically and anthropologically, so it is very likely that a proportion of the missing children were among them.

Burial depth analysis showed that, although the mean depth for non-adult burials at Laukskola is shallower than that of adults, subadults and adults in the other two cemeteries were buried in the same depth range. Overall, no clear correlation between the individual's age and burial depth was found, and both adults and non-adults could be buried in shallow or deep graves. Therefore, it is unlikely that the shallowness of burial could be reason why the children are missing.

The extremely low number of infant burials in Iron Age Latvia is a most intriguing question. Although it is likely that some of the infant remains have decayed due to taphonomic reasons, it is very plausible that infants were buried together with an adult and were overlooked due to poor preservation and excavation technique.

### Acknowledgements

This research is funded by the Latvian Council of Science, project No. Izp-2018/1-0395.

The author is very grateful to G. Gerhards and E. Pētersone-Gordina for their contributions to this paper. The publication costs of this article were covered by the Estonian Academy of Sciences, the Institute of History and Archaeology at the University of Tartu, and the Institute of History, Archaeology and Art History of Tallinn University.

### References

- Acsádi, G. & Nemeskéri, J. 1970. History of Human Life Span and Mortality. Akadémiai Kiadó, Budapest.
- Alesan, A., Malgosa, A. & Simo, C. 1999. Looking into the demography of an Iron Age population in the western Mediterranean. I. Mortality. – American Journal of Physical Anthropology, 110: 3, 285–301.
- Allmäe, R. 2006. Grave 2 of Maidla – the burial site of a single family. – EJA, 10: 1, 3–23.
- Atgāzis, M. 1979. Pārskats par 1969.–1970. gada izrakumiem Mežotnes Centra kapulaukā. Rīga. (Archaeological report in ILHUL.)
- Atgāzis, M. 1985. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1985. gadā. Rīga. (Archaeological report in ILHUL.)
- Atgāzis, M. 1986. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1986. gadā. Rīga. (Archaeological report in ILHUL.)
- Atgāzis, M. 1987. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1987. gadā. Rīga. (Archaeological report in ILHUL.)

- Atgāzis, M.** 1988. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1988. gadā. Rīga. (Archaeological report in ILHUL.)
- Atgāzis, M.** 1989. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1989. gadā. Rīga. (Archaeological report in ILHUL.)
- Atgāzis, M.** 1990. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1990. gadā. Rīga. (Archaeological report in ILHUL.)
- Atgāzis, M.** 1991. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1991. gadā. Rīga. (Archaeological report in ILHUL.)
- Atgāzis, M.** 1994a. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1994. gadā. Rīga. (Archaeological report in ILHUL.)
- Atgāzis, M.** 1994b. Dreņģeru-Čunkānu kapulauks un zemgaļu senvēstures pētniecības jautājumi. – Zinātniskās atskaites sesijas materiāli par 1992. un 1993. gada arheologu un etnogrāfu pētījumu rezultātiem, 23–30.
- Atgāzis, M. & Bebre, V.** 1984. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1984. gadā. Rīga. (Archaeological report in ILHUL.)
- Baxter, J. E.** 2005. *The Archaeology of Childhood. Children, Gender and Material Culture.* AltaMira Press, Walnut Creek, Lanham, New York et al.
- Bebre, V.** 1982. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1982. gadā. Rīga. (Archaeological report in ILHUL.)
- Bebre, V.** 1983. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1983. gadā. Rīga. (Archaeological report in ILHUL.)
- Bello, S. & Andrews, P.** 2006. The intrinsic pattern of preservation of human skeletons and its influence on the interpretation of funerary behaviours. – *The Social Archaeology of Funerary Remains.* Eds C. Knüsel & R. Gowland. Oxbow Books, Oxford, 1–13.
- Bello, S. M., Thomann, A., Signoli, M., Dutour, O. & Andrews, P.** 2006. Age and sex bias in the reconstruction of past population structures. – *American Journal of Physical Anthropology*, 129, 24–38.
- Brothwell, D.** 1986–1987. The problem of the interpretation of child mortality in earlier populations. – *Antropologia Portuguesa*, 4–5, 135–143.
- Buckberry, J.** 2000. Missing, presumed buried? Bone diagenesis and the underrepresentation of Anglo-Saxon children. – *Assemblage: University of Sheffield Graduate Student Journal of Archaeology*, 5. Available from: <http://www.assemblage.group.shef.ac.uk/5/buckberr.html> (accessed 27 January 2020).
- Buckberry, J.** 2005. Where Have All the Children Gone? The Preservation of Infant and Children's Remains in the Archaeological Record. Paper Presented at the Archaeology of Infancy and Childhood Conference, 6–8 May 2005. University of Kent.
- Buikstra, J. E. & Uberlaker, D. H.** 1994. Standards for Data Collection from Human Skeletal Remains. (Arkansas Archaeological Survey Research Series, 44.) Fayetteville, Arkansas.
- Caldwell, P.** 1996. Child survival: Physical vulnerability and resilience in adversity in the European past and the contemporary Third World. – *Social Science & Medicine*, 43: 5, 609–619.
- Cave, C. & Oxenham, M.** 2017. Out of the cradle and into the grave: The children of Anglo-Saxon Great Chesterford, Essex, England. – *Children, Death and Burial: Archaeological Discourses*, 5, 179–195.
- Česnys, G.** 1993. Plinkaigalio gyventojų paleodemografija, antropologija ir populiacinė genetika. – *Lietuvos Archaeologija*, 10, 182–196.
- Chamberlain, A.** 2006. *Demography in Archaeology.* Cambridge University Press, Cambridge.
- Chandra, R. K.** 1975. Fetal malnutrition and postnatal immunocompetence. – *American Journal of Diseases of Childhood*, 129, 450–454.
- Child, A. M.** 1995. Microbial taphonomy of archaeological bone. – *Studies in Conservation*, 40, 19–30.
- Crawford, S.** 1993. Children, death and the afterlife in Anglo-Saxon England. – *Anglo-Saxon Studies in Archaeology and History*, 6, 83–91.

- Daniell, C.** 1997. *Death and Burial in Medieval England 1066–1550*. Routledge, London.
- Denisova, R., Graudonis, Ya. & Gravere, R.** 1985. = Денисова Р. Я., Граудонис Я. Я. & Гравере Р. У. 1985. Кивуткалнский могильник эпохи бронзы. Зинатне, Рига.
- Dennehey, A.** 2016. 'What Damned You?' Changelings, Mylingar and other dead child traditions. – *Archaeology Ireland*, Autumn, 21–25.
- Dittmann, K. & Grupe, G.** 2000. Biochemical and paleopathological investigation and infant mortality in the early Middle Ages. – *Anthropologischer Anzeiger*, 58: 4, 345–355.
- Djuric, M., Djukic, K., Milovanovic, P., Janovic, A. & Milenkovic, P.** 2011. Representing children in excavated cemeteries: the intrinsic preservation factors. – *Antiquity*, 85, 250–262.
- Dyson, T.** 1984. Infant and child mortality in developing countries. – *Critical Reviews and Tropic Medicine*, 2, 329–334.
- Ērkšķe, A., Plankājs, E. & Stivriņš, N.** 2018. Jaunākie pētījumi Cēsu dzelzceļa stacijas kapulaukā. – *Arheoloģija un Etnogrāfija*, 30, 131–147.
- Eshed, V., Gopher, A., Gage, T. B. & Hershkovitz, I.** 2004. Has the transition to agriculture reshaped the demographic structure of prehistoric populations? New evidence from the Levant. – *American Journal of Physical Anthropology*, 124, 315–329.
- Finlay, N.** 2000. Outside of life: Traditions of infant burial in Ireland from Cillin to Cist. – *World Archaeology*, 31: 3, 407–422.
- Gerhards, G.** 2002. Dažas dzelzs laikmeta pētniecības problēmas antropoloģiskā skatījumā. – *Latvijas Vēstures muzeja raksti*, 8: Arheoloģija, numismātika, antropoloģija, paleobotānika. N.I.M.S., Rīga, 41–53.
- Gerhards, G.** 2008. 2006. un 2007. gada arheoloģiskajos izrakumos iegūtais antropoloģiskais materiāls paleopatoloģiskā skatījumā. – *Arheologu pētījumi Latvijā 2006. un 2007. gadā*, 195.
- Ģinters, V.** 1937. Pārskats par arheoloģiskajiem izrakumiem Laukskolas kapulaukā 1937. gadā. Rīga. (Archaeological report in NHML.)
- Goodman, A. H. & Armelagos, G. T.** 1989. Infant and childhood morbidity and mortality risks in archaeological populations. – *World Archaeology*, 21: 2, 225–243.
- Gordon, C. C. & Buikstra, J. E.** 1981. Soil pH, bone preservation and sampling bias at mortuary sites. – *American Antiquity*, 46, 566–571.
- Grauer, A.** 1991. Patterns of life and death: the palaeodemography of medieval York. – *Health in Past Societies*. Eds H. Bush & M. Zvebil. (BAR International Series, 567.) Archaeopress, Oxford, 67–80.
- Guy, H., Masset, C. & Baud, C. A.** 1997. Infant taphonomy. – *International Journal of Osteology*, 7, 221–229.
- Halcrow, S. E. & Tayles, N.** 2008. The bioarchaeological investigation of childhood and social age: Problems and prospects. – *Journal of Archaeological Method and Theory*, 15: 2, 190–215.
- Häusler, A.** 1966. Zum Verhältnis von Männern, Frauen und Kindern in Gräbern der Steinzeit. – *Arbeits und Forschungsberichte zur Sächsischen Bodendenkmalpflege*, 14/15, 25–73.
- Haydock, H., Clarke, L., Craig-Atkins, E., Howcroft, R. & Buckberry, J.** 2013. Weaning at Anglo-Saxon raunds: Implications for changing breastfeeding practice in Britain over two Millennia. – *American Journal of Physical Anthropology*, 151, 604–612.
- Ingvarsson-Sundström, A.** 2003. *Children Lost and Found. A bioarchaeological study of Middle Helladic children in Asine with a comparison to Lerna [dissertation]*. Department of Archaeology and Ancient History, Uppsala University.
- Kuniga, I.** 2000. Kristapiņu kapulauks: 8. gs. beigas – 12. gs. RaKa, Rīga.
- Kurila, L.** 2007. Vaiko statusas Rytų Lietuvoje geležies amžiuje. – *Archaeologia Lituana*, 8, 97–116.
- Lewis, M. E.** 2002. Impact of industrialization: Comparative study of child health in four sites from Medieval and Post-medieval England (AD 850–1859). – *American Journal of Physical Anthropology*, 119: 3, 211–223.
- Lewis, M. E.** 2006. *The Bioarchaeology of Children. Perspectives from Biological and Forensic Anthropology*. Cambridge University Press, Cambridge.



- Lewis, M. E. & Gowland, R.** 2007. Brief and precarious lives: Infant mortality in contrasting sites from Medieval and Post-medieval England (AD 850–1859). – *American Journal of Physical Anthropology*, 134: 1, 117–129.
- Lillehammer, G.** 1989. A child is born. The child's world in an archaeological perspective. – *Norwegian Archaeological Review*, 22, 89–105.
- Liversidge, H. M. & Molleson, T. I.** 1999. Developing permanent tooth length as an estimate of age. – *Journal of Forensic Sciences*, 44, 917–920.
- Lovejoy, C. O., Meindl, R. S., Pryzbeck, T. R. & Mensforth, R. P.** 1985. Chronological metamorphosis of the auricular surface in the Ilium: A new method for the determination of adult skeletal age at death. – *American Journal of Physical Anthropology*, 68, 15–28.
- Lucy, S.** 1994. Children in Early Medieval cemeteries. – *Archaeological Review from Cambridge*, 13: 2, 21–34.
- Lūsēns, M.** 2008. Arheoloģiskie pētījumi Sv. Ģertrūdes baznīcas kapsētā Rīgā. – *Arheologu pētījumi Latvijā 2006. un 2007. gadā*, 145.
- Lūsēns, M.** 2009. Bauskas novada Codes pagasta Čunkānu–Dreņģeru senkapi. Arheoloģiskā izpēte 2009. gada augusts – septembris. Rīga. (Archaeological report in NCHAM.)
- Lūsēns, M.** 2010. Bauskas novada Codes pagasta Čunkānu–Dreņģeru senkapi. Arheoloģiskā izpēte 2010. gada jūnijs. Rīga. (Archaeological report in NCHAM.)
- Manifold, B. M.** 2012. Intrinsic and extrinsic factors involved in the preservation of non-adult skeletal remains in archaeology and forensic science. – *Bulletin of the International Association for Paleodontology*, 6: 2, 51–69.
- Massler, M., Schour, I. & Poncher, H. G.** 1941. Developmental pattern of the child as reflected in the clarification pattern of the teeth. – *American Journal of Diseases of Children*, 62, 33–67.
- Mays, S.** 2007. *The Archeology of Human Bones*. Routledge, London, New York.
- McFadden, C. & Oxenham, M. F.** 2018. The D0-14/D ratio: A new paleodemographic index and equation for estimating total fertility rates. – *American Journal of Physical Anthropology*, 165: 3, 471–479.
- Miles, A. E.** 1963. The dentition in the assessment of individual age in skeletal material. – *Dental Anthropology*. Ed. D. R. Brothwell. Pergamon Press, Oxford, 191–209.
- Miller, V. A., Hanks, B. K., Judd, M., Epimakhov, A. & Razhev, D.** 2017. Weaning practices among pastoralists: New evidence of infant feeding patterns from Bronze Age Eurasia. – *American Journal of Physical Anthropology*, 162: 3, 409–422.
- Morton, R. J. & Lord, W. D.** 2006. Taphonomy of child-sized remains: A study of scattering and scavenging in Virginia, USA. – *Journal of Forensic Science*, 51: 3, 475–479.
- Mosley, H. W.** 1984. Child survival: research and policy. – *Population and Development Review*, 10, 3–23.
- Murail, P., Maureille, B., Peresinotto, D. & Geus, F.** 2004. An infant cemetery of the classic Kerma period (1750–1500 BC, island of Sai, Sudan). – *Antiquity*, 78: 300, 267–277.
- Murphy, E.** 2011. Parenting, childloss and the cillini of post-Medieval Ireland. – (Re)Thinking the Little Ancestor: New Perspectives on the Archaeology of Infancy and Childhood. Eds M. Lally & A. Moore. (BAR International Series, 2271.) Archaeopress, Oxford, 63–74.
- Murphy, E.** 2017. Ten years of *Childhood in the Past*. – *Childhood in the Past*, 10: 1, 1–9.
- Nagaoka, T., Abe, M. & Shimatani, K.** 2012. Estimation of mortality profiles from non-adult human skeletons in Edo-period Japan. – *Anthropological Science*, 120: 2, 115–128.
- Oxenham, M. F., Matsumura, H. & Nguyen, K. D.** 2011. Man Bac: the excavation of a Neolithic site in northern Vietnam. The biology. (Terra Australis, 33.) ANU E Press, Canberra.
- Oxenham, M. F., Trinh, H. H., Willis, A., Jones, R. K., Domett, K., Castillo, C., Wood, R., Bellwood, P., Tromp, M., Kells, A., Piper, P., Pham, S. T., Matsumura, H. & Buckley, H.** 2018. Between foraging and farming: Strategic responses to the Holocene Thermal Maximum in Southeast Asia. – *Antiquity*, 92: 364, 940–957.
- Page, M. R.** 2011. Ble mae'r babanod?: Infant burial in early medieval Wales. – (Re)Thinking the Little Ancestor: New Perspectives on the Archaeology of Infancy and Childhood. Eds M. Lally & A. Moore. (BAR International Series, 2271.) Archaeopress, Oxford, 100–109.

- Panhuysen, R.** 1999. Child mortality in Early Medieval Maastricht: Missing children? – *Journal of Paleopathology*, 11: 2, 142.
- Perez, E.** 2015. Ages of children and burial rites. Evolution of child graves organization in French Medieval cemeteries. – *Proceedings of the 19th International Conference on Cultural Heritage and New Technologies 2014 (CHNT 19, 2014)*, Vienna. Available at [https://www.chnt.at/wp-content/uploads/eBook\\_CHNT19\\_Perez.pdf](https://www.chnt.at/wp-content/uploads/eBook_CHNT19_Perez.pdf)
- Pokines, J. T. & De La Paz, J. S.** 2016. Recovery rates of human fetal skeletal remains using varying mesh sizes. – *Journal of Forensic Science*, 61: S1, S184–S189.
- Preston, S. H.** 1980. *Biological and Social Aspects of Mortality and Length of Life*. Ordina, Liege.
- Radiņš, A. & Ciglis, J.** 2001. Vēlā dzelzs laikmeta Ludzas Odukalna kapulauks. Katalogs. Latvijas Vēstures Muzejs, Rīga.
- Rebay-Salisbury, K.** 2017. Breast is best and are there alternatives? Feeding babies and young children in prehistoric Europe. – *Mitteilungen der Anthropologischen Gesellschaft in Wien*, 147, 13–29.
- Riekstiņš, A.** 1931. Pārskats par arheoloģiskajiem izrakumiem Lejasbitēnu kapulaukā, 1931. gadā. Rīga. (Archaeological report in NHML.)
- Rösing, F. W. & Jankauskas, R.** 1997. Infant deficit in pre-modern burial sites. – *The 8th Tartu International Anthropological Conference*. Tartu, 50–51.
- Saunders, S. R., Herring, A. D. & Boyce, G.** 1995. Can skeletal samples accurately represent the living populations they come from? The St. Thomas' cemetery site, Belleville, Ontario. – *Bodies of Evidence. Reconstructing History through Skeletal Analysis*. Ed. A. L. Grauer. Wiley, Liss, 69–91.
- Scheuer, L. & Black, S.** 2000. *Developmental Juvenile Osteology*. Elsevier Academic Press, Amsterdam, Boston, Heidelberg et al.
- Schofield, R. & Wrigley, E.** 1979. Infant and child mortality in England in the Late Tudor and early Stuart period. – *Health, Medicine and Mortality in the Sixteen Century*. Ed. C. Webster. Cambridge University Press, Cambridge.
- Scott, E.** 1999. *The Archaeology of Infancy and Infant Death*. (BAR International Series, 819.) Archaeopress, Oxford.
- Šnore, Ē. & Zejds, T.** 1957. = Шноре Э. Д. & Зейдс Т. Я. Нукшинский могильник. Издательство Академии наук Латвийской ССР, Рига.
- Šnore, E.** 1966. Pārskats par arheoloģiskajiem izrakumiem Vampeniešu I kapulaukā 1966. gadā. Rīga. (Archaeological report in ILHUL.)
- Šnore, E.** 1969. Pārskats par arheoloģiskajiem izrakumiem Vampeniešu I kapulaukā 1966., 1967. un 1969. gadā. Rīga. (Archaeological report in ILHUL.)
- Šnore, E.** 1971. Pārskats par arheoloģiskajiem izrakumiem Vampeniešu I kapulaukā 1971. gadā. Rīga. (Archaeological report in ILHUL.)
- Šnore, E.** 1972. Pārskats par arheoloģiskajiem izrakumiem Vampeniešu I kapulaukā 1972. gadā. Rīga. (Archaeological report in ILHUL.)
- Šnore, E.** 1973. Pārskats par arheoloģiskajiem izrakumiem Vampeniešu I kapulaukā 1973. gadā. Rīga. (Archaeological report in ILHUL.)
- Šnore, E.** 1974. Pārskats par arheoloģiskajiem izrakumiem Vampeniešu I kapulaukā 1974. gadā. Rīga. (Archaeological report in ILHUL.)
- Šnore, E.** 1987. Kivtu kapulauks. Zinātne, Rīga.
- Stoodley, N.** 1999. *The Spindle and the Spear: A Critical Enquiry into the Construction and Meaning of Gender in the Early Anglo-Saxon Burial Rite*. (BAR British Series, 288.) British Archaeological Reports, Oxford.
- Stroud, G. & Kemp, R.** 1993. *Cemetery of St Andrew Fishergate*. Council for British Archaeology, London.
- Stubavs, A.** 1957. Arheoloģiskie izrakumi Dreņģeru-Čunkānu kapulaukā 1957. gadā. Rīga. (Archaeological report in ILHUL.)
- Šturms, E.** 1937. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1937. gadā. Rīga. (Archaeological report in ILHUL.)

- Trotter, M.** 1971. The density of bones in the young skeleton. – *Growth*, 35, 411–420.
- Turek, J.** 2000. Being a Beaker child. The position of children in Late Eneolithic society. – *Sborník prací na památku J. Rulfa*. Eds M. Lutovský & P. Vařeka. Archeologický Ústav Akademie Věd České Republiky, Praha, 424–438.
- Ubelaker, D. H.** 1989. *Human Skeletal Remains: Excavation, Analysis, Interpretation*. 2nd ed. Taraxacum, Washington, D.C.
- Urtāns, V.** 1961. Pārskats par arheoloģiskajiem izrakumiem Aizkraukles Lejasbitēnu kapulaukā 1961. gadā. Rīga. (Archaeological report in NHML.)
- Urtāns, V.** 1962a. Kalniešu II kapulauks. – *Latvijas PSR Vēstures muzeja raksti. Arheoloģija. Latvijas PSR Kultūras ministrijas Poligrāfiskās rūpniecības pārvaldes 6. tipogrāfijas nodaļa*, Rīga, 37–82.
- Urtāns, V.** 1962b. Pārskats par arheoloģiskajiem izrakumiem Aizkraukles Lejasbitēnu kapulaukā 1962. gadā. Rīga. (Archaeological report in NHML.)
- Urtāns, V.** 1962c. Ko jaunu deva izrakumi Aizkraukles Lejasbitēnos? – Referātu tēzes zinātniskai sesijai par 1961. gada arheoloģiskām un etnogrāfiskām ekspedīcijām, 15–16.
- Urtāns, V.** 1963a. Pārskats par arheoloģiskajiem izrakumiem Aizkraukles Lejasbitēnu kapulaukā 1963. gadā. Rīga. (Archaeological report in NHML.)
- Urtāns, V.** 1963b. Dažas atziņas par Lejasbitēnu kapulauku. – Referātu tēzes zinātniskai sesijai par 1962. gada arheoloģiskām un etnogrāfiskām ekspedīcijām, 21–24.
- Urtāns, V.** 1964. Pārskats par arheoloģiskajiem izrakumiem Aizkraukles Lejasbitēnu kapulaukā 1964. gadā. Rīga. (Archaeological report in NHML.)
- Vāle, E.** 1924. Pārskats par arheoloģiskajiem izrakumiem Dreņģeru-Čunkānu kapulaukā 1924. gadā. Rīga. (Archaeological report in NHML.)
- Vilka, A.** 2012. “Bērnu arheoloģija” un Latvijas arheoloģiskā materiāla izmantošana: vidējā un vēlā dzelzs laikmeta kapulauku piemēri. – *Latvijas Vēstures Institūta Žurnāls*, 2: 83, 5–35.
- Vilka, A.** 2013. Some aspects of child burials in the Middle and Late Iron Age (5th–12th c.) in the territory of Latvia. – *Child and Childhood in the Light of the Archaeology*. Ed. P. Romanovicz. Wydawnictwo Chronicon, Wrocław, 113–135.
- Vilka, A.** 2014. Not just unimportant little things: Children in Latvia’s Middle and Late Iron Age mortuary landscape. – *Lietuvos Archaeologija*, 40, 139–162.
- Vilka, A.** 2015. (Re)examining the children: Case studies from the Middle and Late Iron Age burials in Latvia. – *Today I Am Not the One I Was Yesterday: Archaeology, Identity, and Change*. Eds A. Haak, V. Lang & M. Lavento. (Interarchaeologia, 4.) Tartu, Helsinki, Riga, Vilnius, 239–252.
- Weiss, K. M.** 1973. Demographic models in anthropology. – *American Antiquity*, 38: 2, 27.
- White, E. M. & Hannus, L. A.** 1983. Chemical weathering of bone in archeological soils. – *American Antiquity*, 48, 316–322.
- Zagorskis, F.** 1987. Zvejnieku akmens laikmeta kapulauks. *Zinātne*, Rīga.
- Zariņa, A.** 1967. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1967. gadā. Rīga. (Archaeological report in ILHUL.)
- Zariņa, A.** 1968. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1968. gadā. Rīga. (Archaeological report in ILHUL.)
- Zariņa, A.** 1969. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1969. gadā. Rīga. (Archaeological report in ILHUL.)
- Zariņa, A.** 1970. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1970. gadā. Rīga. (Archaeological report in ILHUL.)
- Zariņa, A.** 1971. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1971. gadā. Rīga. (Archaeological report in ILHUL.)
- Zariņa, A.** 1972. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1972. gadā. Rīga. (Archaeological report in ILHUL.)
- Zariņa, A.** 1973. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1973. gadā. Rīga. (Archaeological report in ILHUL.)

- Zariņa, A.** 1974. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1974. gadā. Rīga. (Archaeological report in ILHUL.)
- Zariņa, A.** 1975. Pārskats par arheoloģiskajiem izrakumiem Salaspils Laukskolas kapulaukā 1975. gadā. Rīga. (Archaeological report in ILHUL.)
- Zariņa, A.** 2006. Salaspils Laukskolas kapulauks. Latvijas Vēstures Institūta apgāds, Rīga.
- Zariņa, G.** 2006. Salaspils Laukskolas 10.–13. gs. iedzīvotāju paleodemogrāfija. – **Zariņa, A.** Salaspils Laukskolas kapulauks. Latvijas Vēstures Institūta apgāds, Rīga, 435–444.
- Zariņa, G.** 2009. Latvijas iedzīvotāju paleodemogrāfija. 7. g.t. pr. Kr. – 1800. g. Latvijas Vēstures Institūta apgāds, Rīga.
- Žeiere, I.** 1990. Izrakumi Kokneses senkapos. – Zinātniskās atskaites sesijas materiāli par arheologu 1988. un 1989. gada pētījumiem. Rīga, 188–191.
- Zemītis, G.** 2005. Vēlā dzelzs laikmeta ekonomisko un sociālo pārmaiņu atspoguļojums Gaideļu-Viduču kapulauka arheoloģiskajā materiālā. – Arheoloģija un Etnogrāfija, XXII, 212–219.

## Aija Ērkšķe

### LAPSED ON PUUDU! MŌTTEID LASTE JA NOORTE MATUSTE VĀHESUSE ŪLE LĀTI RAUAAJA KALMISTUTEL

#### *Resūmee*

On ūldteada, et laste suremus oli minevikus oluliselt suurem kui tĀnapĀeval. Demograafilised andmed nĀitavad, et imikute ja alla 5-aastaste laste suremus arengumaades moodustab umbes 40% kogu suremusest. Goodman ja Armelagos (1989, 227) vĀidavad, et on vĀhe pŃhjust uskuda, et ellujĀamine eelajaloolistes ūhiskondades oli suurem. Arheoloogilised andmed on siiski tihti rŃhutanud laste matuste vĀhesust (Crawford 1993; Lucy 1994; Buckberry 2000).

KĀesoleva uurimuse eesmĀrk on analūsida laste esindatust LĀti rauaaja kalmistutel (5.–13. sajand). Selleks on kriitiliselt vaadeldud mitmesuguseid tafonomilisi ja kultuurilisi aspekte, mis vŃisid kalmete sĀilimist mŃjutada. Selleks valiti vĀlja kolm suuremat rauaaja kalmistut, kus leidub piisavalt arheoloogilisi ja antropoloogilisi materjale: LejasbitĀni kalmistu Aizkraukles (3., 5.–11. sajand), Laukskola kalmistu Salaspilsis (10.–13. sajand) ja ĀunkĀni-Dreņģeri kalmistu Bauskas (8.–11. sajand) (tabel 1; jn 1 ja 2). Kokku analūsiti 1812 hauda ja 948 isiku luustikku. Lapsed on siin mĀaratletud kui bioloogilised mittetĀiskasvanud 17.–18. eluaastani. Siinkohal tuleks rŃhutada, et uurimuses vaadeldud indiviide ei peeta vanusegrupiks, mis vastab rauaaja ūhiskonna arusaamisele lastest.

15–29,8% matustest mĀaratleti kui mittetĀiskasvanud (0–18 aastat) (tabel 2). Luustikumaterjal oli sĀilininud ainult pooltel ja see vŃimaldas vĀita, et 0–5-aastaste laste osakaal moodustas alla 6% kŃigist vaadeldud matustest, tuvastati ainult kaks rauaaja imikumatus (tabel 2). Laukskola kalmistult leiti ūks imikumatus (matus nr 241): imik oli maetud naise peale (nr 242, jn 3). On teada veel ūks rauaaja imikumatus Gaideļi-ViduĀi kalmistul (matus nr 47), kus vastsūndinu oli asetatud 20-aastase naise jalgade juurde (jn 4). Arvatakse, et vĀikelaste suremus oli vĀga suur vahemikus 1–5 aastat, langedes seejĀrel pidevalt. Et oleks vŃimalik analūsida mit-

tetäiskasvanute vähesust, pakuti välja kaks hüpoteesi: 1) mittetäiskasvanuid ei ole sisemiste ja väliste tafonoomiliste faktorite tõttu, 2) imikud ja väikelapsed maeti mujale/erinevalt.

Üks olulisemaid tegureid matuste ja surnute säilitamisel ning identifitseerimisel on inimluude füsiokeemilised omadused. Laste luud on väiksemad ja mitte eriti tihedad, neil on suur orgaaniline ning väike inorgaaniline sisu, mis põhjustab teoreetiliselt nende kiirema lagunemise. Oodatult olid täiskasvanute jäänused säilinud paremini kui laste ja noorte omad. Siiski oli luude materjali protsent, mida sai vanuse määramisel kasutada, sarnane nii täiskasvanute kui ka mittetäiskasvanute matuste puhul. Ehkki tafonoomilised protsessid mõjutasid noorte luud tugevamini, ei seganud need täiskasvanute omadega võrreldes (tabel 2) noorte matuste identifitseerimist.

Teine põhjus, mis võis laste arvu kalmistul mõjutada, on haudade väike sügavus, sest luud säilivad siis halvemini: kahjustusi võis tekkida küündmisel, samuti metsloomade tegevuse tagajärjel. Analüüs näitas, et mittetäiskasvanute haudade keskmine sügavus Laukskolas on väiksem kui täiskasvanute puhul, teisel kahel kalmistul olid kõik surnud ühel sügavusel maetud. Seega ei olnud võimalik tuvastada üldist seost indiviidi ea ja haa sügavuse vahel (jn 6–8). Ei ole tõenäoline, et haudade sügavus oleks peamine põhjus, miks laste haudu on nii vähe.

Ei ole selget vastust küsimusele, kus puuduvad imikud on, kuna pole uurimismaterjali. Põhjusi on arvatavasti mitmeid. Parem luude säilivus muidugi suurendaks laste ja noorte arvu, kuna ainult poolt arheoloogiliselt tuvastatud mittetäiskasvanute matustest sai antropoloogiliselt kinnitada; seega võib suur hulk matuseid kuuluda väikestele lastele. Suurim arv nii arheoloogiliselt kui ka antropoloogiliselt tuvastamata matuseid esines Čunkāni-Dreņģeri kalmistul: vähemalt 37%. Seega on tõenäoline, et teatud arv puuduvaid lapsi oli nende hulgas.

Kõige keerulisem küsimus on siiski imikumatuuste erakordselt väike arv. On imeplik, et eriti rauaaja kalmistutel Lätis on imikumatuuseid nii vähe. Niisuguste matuste näited teistest eelajaloolistest ja ajaloolistest perioodidest Lätis annavad alust arvata, et peaksid olema erilised põhjused, miks ei ole rauaaja kalmistutel leitud peaaegu ühtki imikumatuust. Võib-olla maeti imikud üldisele kalmistule ainult erandkorras, näiteks surm koos emaga, või maeti erilisel viisil: asetati hauda koos täiskasvanuga ja neid ei leitud tafonoomilistel põhjustel. Praegu ei ole alust arvata, et imikud maeti väljapoole kalmistut. Samas on näiteid niisugusest traditsioonist kogu maailmas, seega ei saa seda hüpoteesi kergelt kõrvale heita.