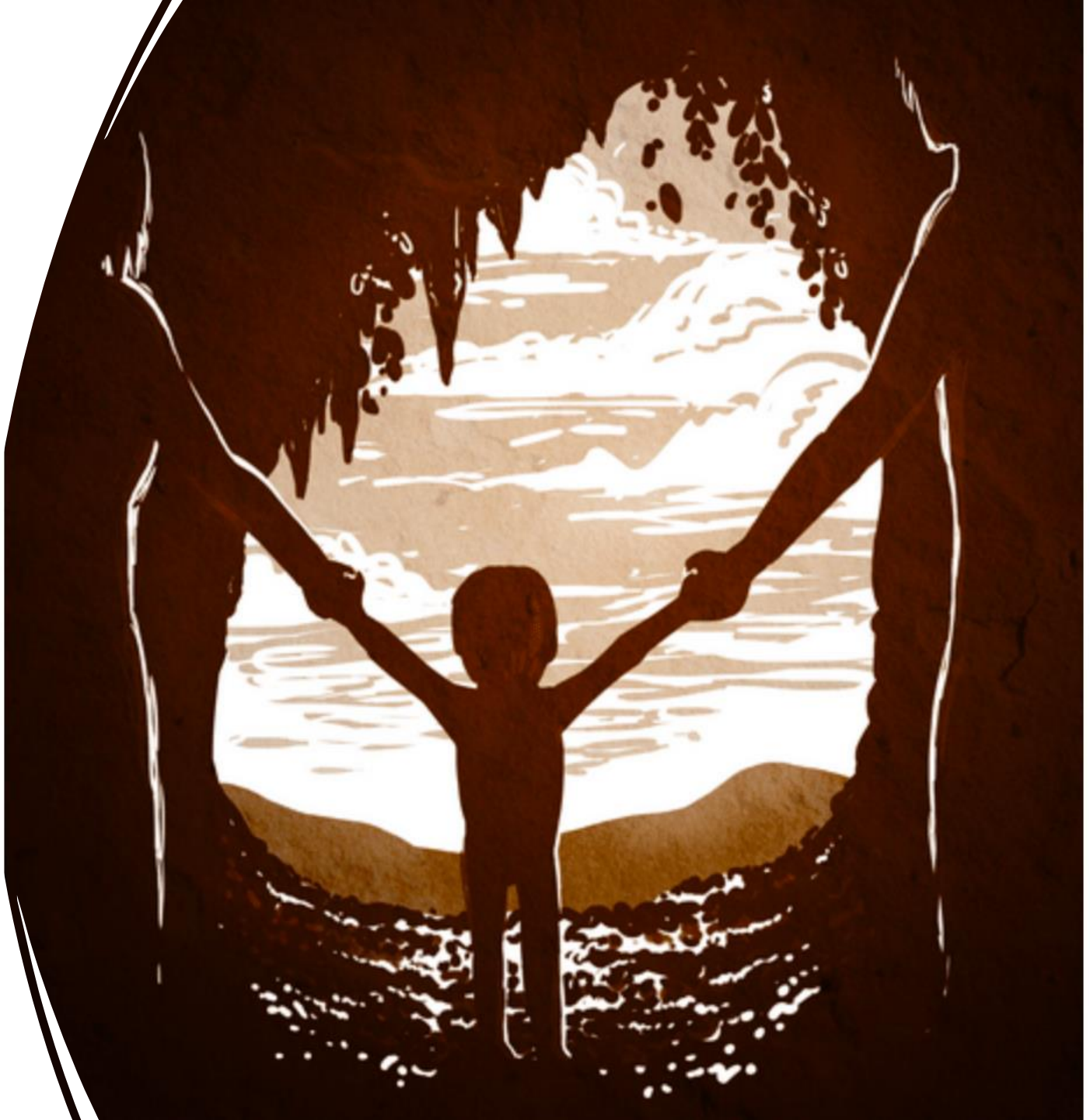
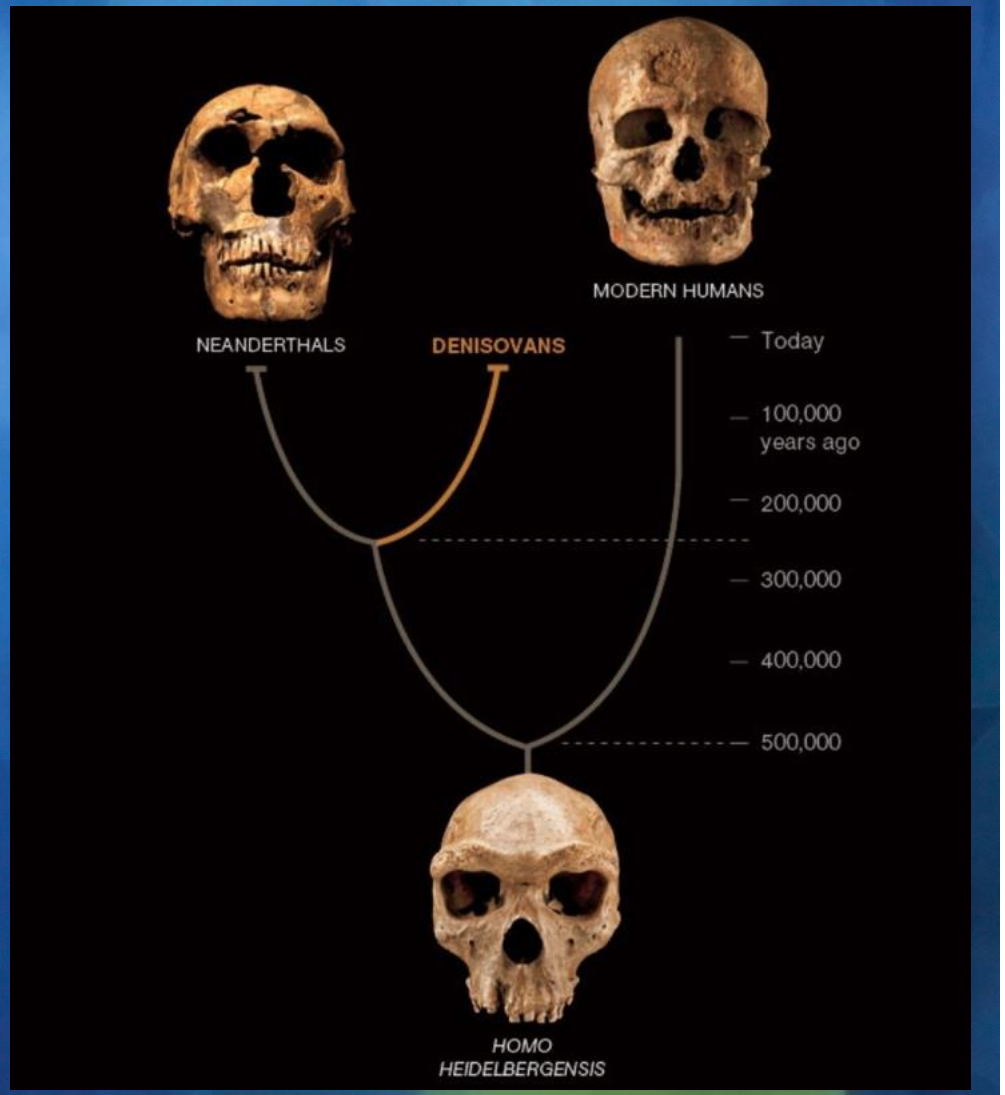
BioAnthropology of Childhood

Dr Arwa Kharobi

Child Born 90,000 Years ago had Neanderthal Mother and Denisovan Father



According to a 2010 study, Neanderthals and Denisovans were closely related. DNA comparisons suggest that our ancestors diverged from theirs some 500,000 years ago.



Evidence of interbreeding between different hominin species, including Neanderthals & Denisovans based on genetic research

Homo sapiens share a small % of their genetic material with Neanderthals & Denisovans

PNAS

Nuclear and mitochondrial DNA sequences from two Denisovan individuals

Susanna Sawyer[a,1], Gabriel Renaud[a,1], Bence Viola[b,c,d], Jean-Jacques Hublin[c], Marie-Theres Gansauge[a], Michael V. Shunkov[d,e], Anatoly P. Derevianko[d,f], Kay Prüfer[a], Janet Kelso[a], and Svante Pääbo[a,2]

[a]Department of Evolutionary Genetics, Max Planck Institute for Evolutionary Anthropology, D-04103 Leipzig, Germany; [b]Department of Anthropology, University of Toronto, Toronto, ON M5S 2S2, Canada; [c]Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology, D-04103 Leipzig, Germany; [d]Institute of Archaeology and Ethnography, Russian Academy of Sciences, Novosibirsk, RU-630090, Russia; [e]Novosibirsk National Research State University, Novosibirsk, RU-630090, Russia; and [f]Altai State University, Barnaul, RU-656049, Russia

Contributed by Svante Pääbo, October 13, 2015 (sent for review April 16, 2015; reviewed by Hendrik N. Poinar, Fred H. Smith, and Chris B. Stringer)

A molar tooth found at the archaeological site of Denisova cave provided crucial genetic evidence for the existence of the Denisovans—a hominid species discovered in only 2010. The tooth belonged to a woman who lived more than 50,000 years ago.

PHOTOGRAPH BY ROBERT CLARK, NATIONAL GEOGRAPHIC

The bone fragment ‘Denisova 11’ from several angles (photo taken by Tom Higham)

→interbreeding occurred between these hominin groups at different times & in various geographic regions

→ complex web of genetic relationships

Famous fossilized children in history

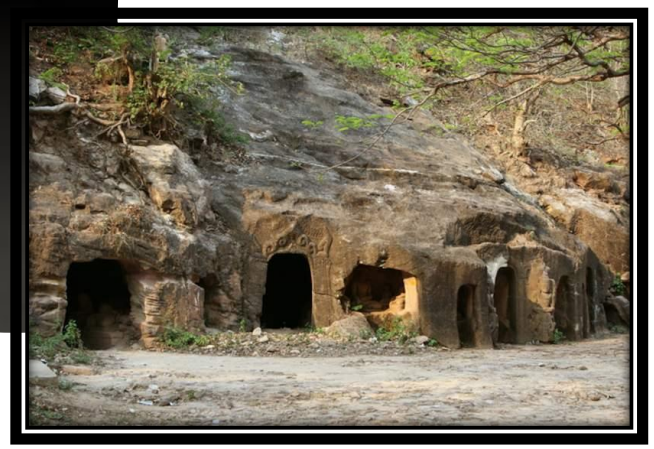
relatively rare

preservation of child remains is often more challenging

due to their smaller size & delicate bones

1. The Taung Child (Australopithecus africanus)

- Discovered in 1924 by Raymond Dart
- Taung, South Africa,
- Fossilized skull of a young Australopithecus africanus
- One of the first pieces of evidence that showed hominins walked on two legs, and it helped change our understanding of human evolution.



The skull of the Australopithecus afarensis child

2. Dikika Child (Australopithecus afarensis)

- Also known as "Selam,"
- A nearly complete fossilized skeleton of a young individual
- Discovered in Ethiopia in 2000
- Dates back to about 3.3 million years ago
- Has provided important insights into the anatomy and development of early hominins.

3. Homo naledi (Rising Star Cave, South Africa)

- ❑ Fossils of infants & children
- ❑ Contributing to our understanding of this newly discovered species of early humans.

A researcher holds a reconstruction of a *Homo naledi* child's skull based on fossil pieces and teeth (lighter-colored areas) found in a remote passage inside a South African cave system.

4. Shanidar 1 (Neanderthal Child)

- Shanidar Cave in Iraq
- Provided insights into Neanderthal burial practices & potential evidence of compassion & care for the deceased.

5. "La Ferrassie 1" (Neanderthal Child)

- Ferrassie cave, France
- The remains include those of an infant and a child
- Contributed to our understanding of Neanderthal lifeways & family structures

concept of fetuses in archeology

Rare

Fetuses in bioarchaeology

In practice, many apply the description of '**fetus**' to babies from bioarchaeological samples identified as ***younger than 37 weeks gestational age***

AMERICAN JOURNAL OF BIOLOGICAL ANTHROPOLOGY
The Official Journal of the American Association of Biological Anthropologists

Research Article

Brief and precarious lives: Infant mortality in contrasting sites from medieval and post-medieval England (AD 850–1859)

Mary E. Lewis, Rebecca Gowland

First published: 13 June 2007 | https://doi.org/10.1002/ajpa.20643 | Citations: 56

AMERICAN JOURNAL OF BIOLOGICAL ANTHROPOLOGY
The Official Journal of the American Association of Biological Anthropologists

Article

Long bone lengths and gestational age distributions of post-contact period Arikara Indian perinatal infant skeletons

Douglas W. Owsley, Richard L. Jantz

First published: November 1985 | https://doi.org/10.1002/ajpa.1330680303 | Citations: 29

Home › Journal of Archaeological Method and Theory › Article

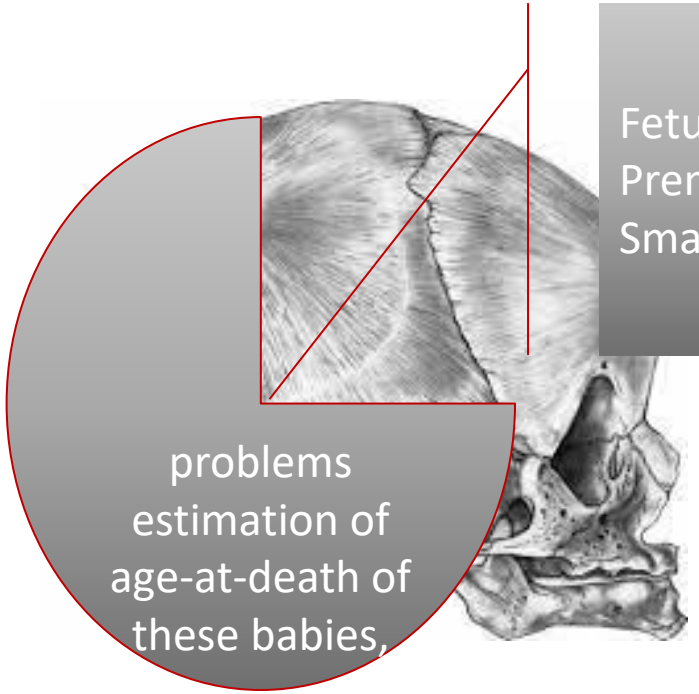
Published: 24 April 2008

The Bioarchaeological Investigation of Childhood and Social Age: Problems and Prospects

Siân E. Halcrow & Nancy Tayles

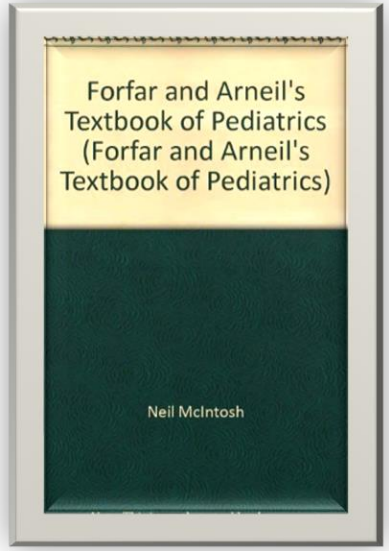
Journal of Archaeological Method and Theory **15**, 190–215 (2008) | Cite this article

3518 Accesses | **95** Citations | **1** Altmetric | Metrics



problems estimation of age-at-death of these babies,

Fetuses?
Premature births?
Small-for-gestational age full-term births?



- Medical definition: A fetus is an unborn baby
- In archaeology: in-utero skeletons are the most certain fetal finds
- Skeletal remains in-utero may be neonatal mortality cases
- Caution is needed in research to accurately identify fetal remains

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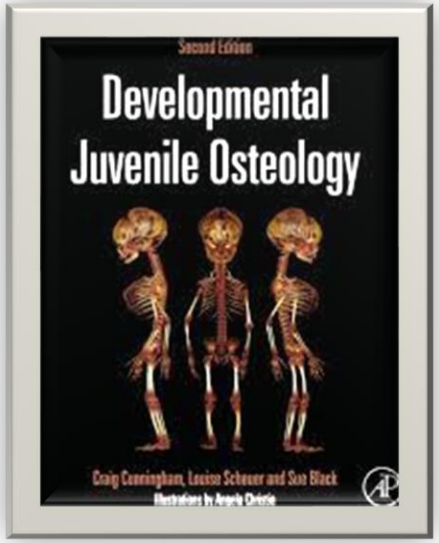
The Bioarchaeological Investigation of Children and Childhood

Siân E. Halcrow and Nancy Tayles



AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY 158:155–164 (2015)

Brief Communication: The Use of Non-Adult Vertebral Dimensions as Indicators of Growth Disruption and Non-Specific Health Stress in Skeletal Populations

Sophie L. Newman* and Rebecca L. Gowland

Department of Archaeology, Durham University, Durham DH1 3LE, UK

KEY WORDS Vertebrae; axial growth; post-medieval; puberty; stature

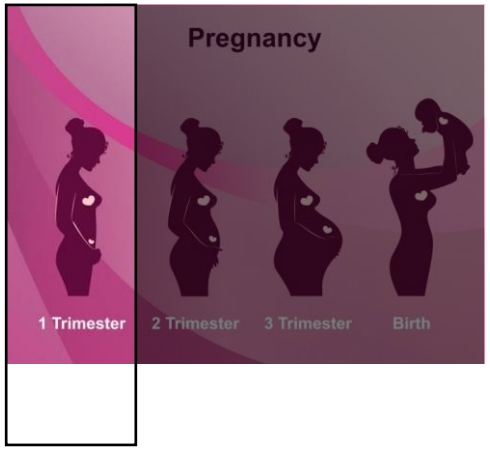
Bioarchaeological research consider fetuses

- Fetal bioarchaeological research is often overlooked
- Preterm infants are excluded from studies due to a lack of fetal bone size data (Johnston 1961)
- Focus on infanticide evidence has diverted attention from fetal contributions
- Fetuses can help understand maternal health, disease, and social organization in bioarchaeology (Bonsall 2013; Faerman et al. 1998; Gilmore and Halcrow 2014; Mays and Eyers 2011; Mays 1993; Mays and Faerman 2001; Smith and Kahila 1992).

About 3 in 10 pregnancies end in spontaneous abortion, often due to genetic issues (Fisher 1951)

Most first-trimester fetuses are not found in bioarchaeology due to limited bone development

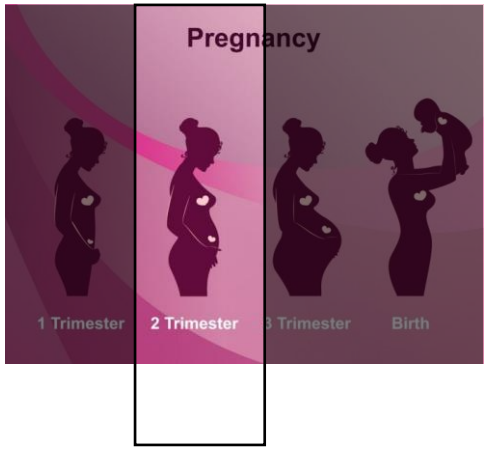
Bone formation before the second trimester is poorly mineralized and hard to identify in archaeological contexts



1st trimester fetus (archaeological context)

- The only first trimester fetus reported from an archaeological context
- The smallest burial ever recorded
- From the Libben sample, Ohio
- A Late Woodlands site occupied 8th-11th century AD
- The long bones measure less than 2 cms

Fetal skeletal material from the prehistoric Libben site
White *et al*. 2011: 329



2nd trimester fetus (archaeological context)

Owsley & Jantz 1985:

3 fetuses ≤ 28 weeks gestation

Arikara sites, South Dakota

Wheeler 2012

well-preserved fetus of 20 weeks gestational age

Kellis 2 site, Dakhleh Oasis, Egypt

Hillson 2009:

findings of fetuses 24 gestational weeks

large Classical period infant cemetery, Kylindra, Astypalaia, Greece

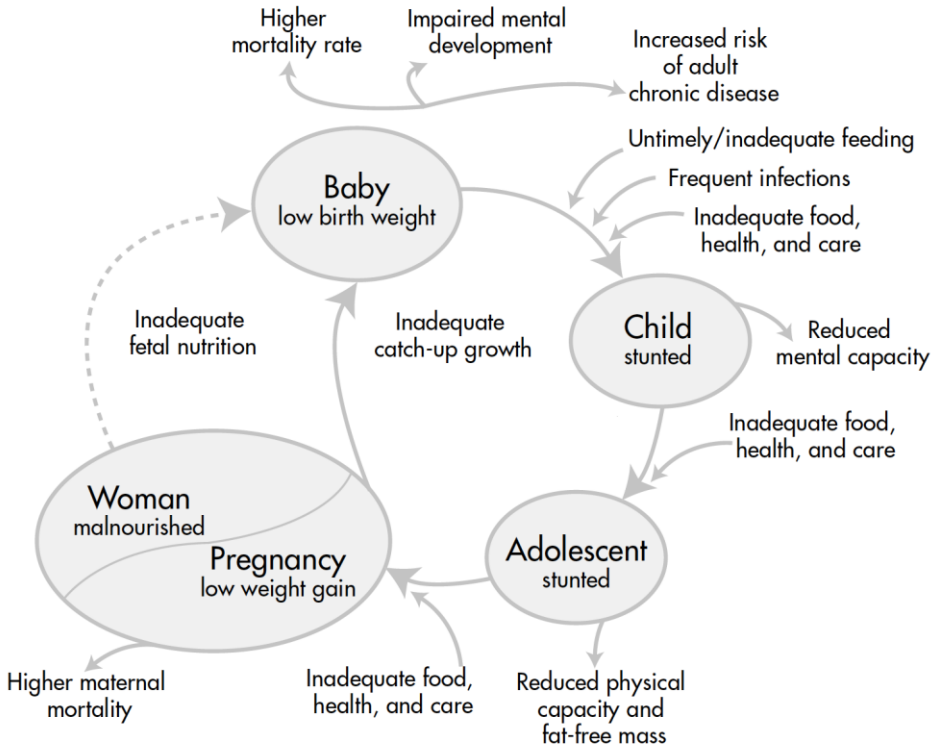
Differentiating burial types <-> health status

The potential to contribute to research on:

- maternal health

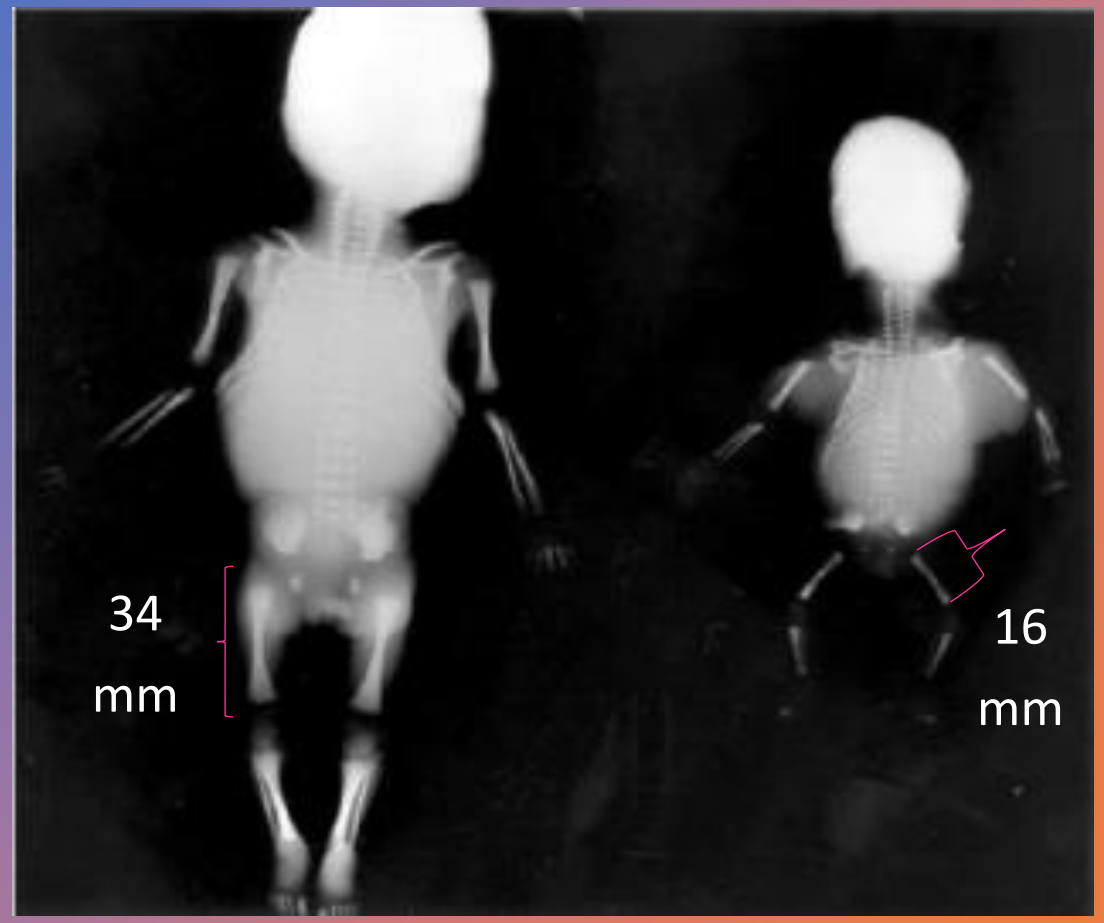
- cause of death for both

'a premature birth is more likely to indicate poor health and/or nutritional status of a woman, compared with a baby who died around full-term from obstructed labor'.



Differences in Size Due to Growth Restrictions

Two fetuses at 24 weeks gestational age



Olsen et al. 2002b: 671

Population-specific factors (nutritional status & access to healthcare), play a significant role in fetal growth

substantial variations in the size of individual fetuses of the same gestational age, often attributed to growth restrictions resulting from factors like:

1. maternal malnutrition
2. placental abruption during prenatal development

It is more precise to assess the age distribution of a population rather than trying to determine the exact gestational age of individual remains

Infant jar burials from the Iron Age site of Noen U-Loke, NE Thailand.

(Photograph courtesy of C.F.W. Higham)

(burial 100) **full-term infant**, approximately 40 gestational weeks

(burial 89) **pre-term infant**, or 'fetus', approximately 30 gestational weeks

Fetuses burial types

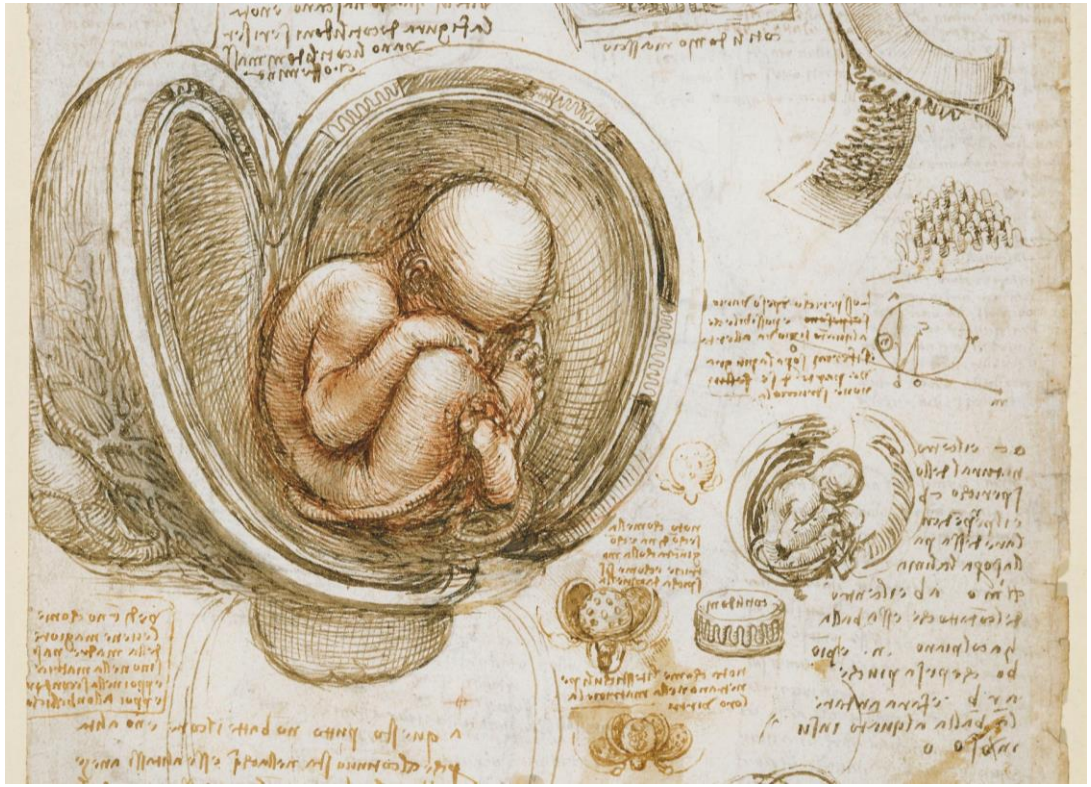
1. In-utero fetuses
2. Post-birth ‘fetuses’
3. Multiple fetal pregnancies & births
4. Post-mortem birth (‘coffin-birth’)

1. In-utero fetuses

If the skeletal remains of a baby are found crouched in a fetal position within the pelvic cavity of an adult female, the mother likely died while the fetus was in-utero, before or during labor

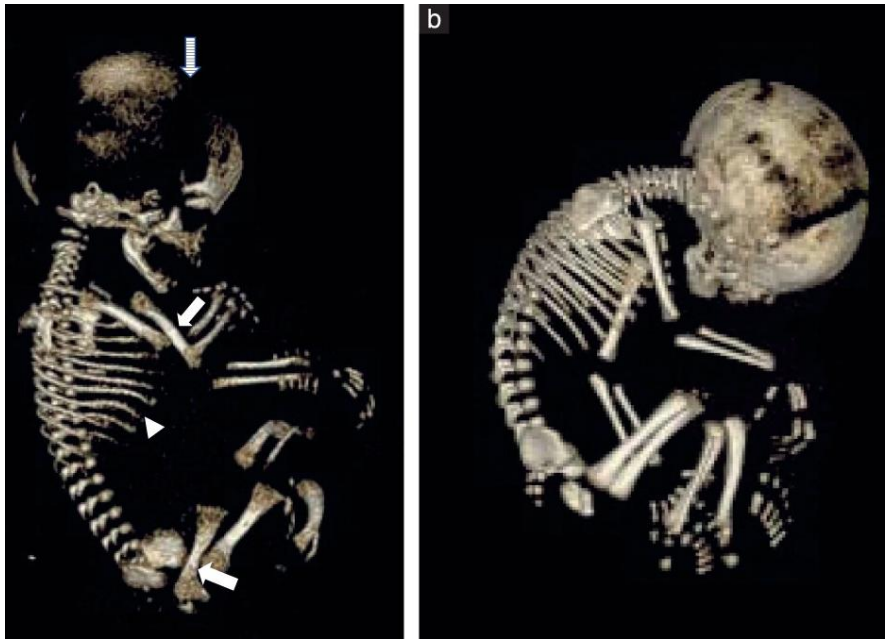
→Cause of death: pregnancy or labor complications

(Lewis 2007: 34)



1. In-utero fetuses

- Very little evidence in bioarchaeological context
- Approximately 20 cases of pregnant or laboring females being argued to represent complications from childbirth
- Not due to absence of evidence, but rather from the small bones being missed or misidentified during excavation, or reported only in the grey literature
- Numerous accounts of fetuses being misidentified as animal bones during excavation (e.g. Ingvarsson-Sundström 2003) or being found co-mingled with adult burials post-excavation

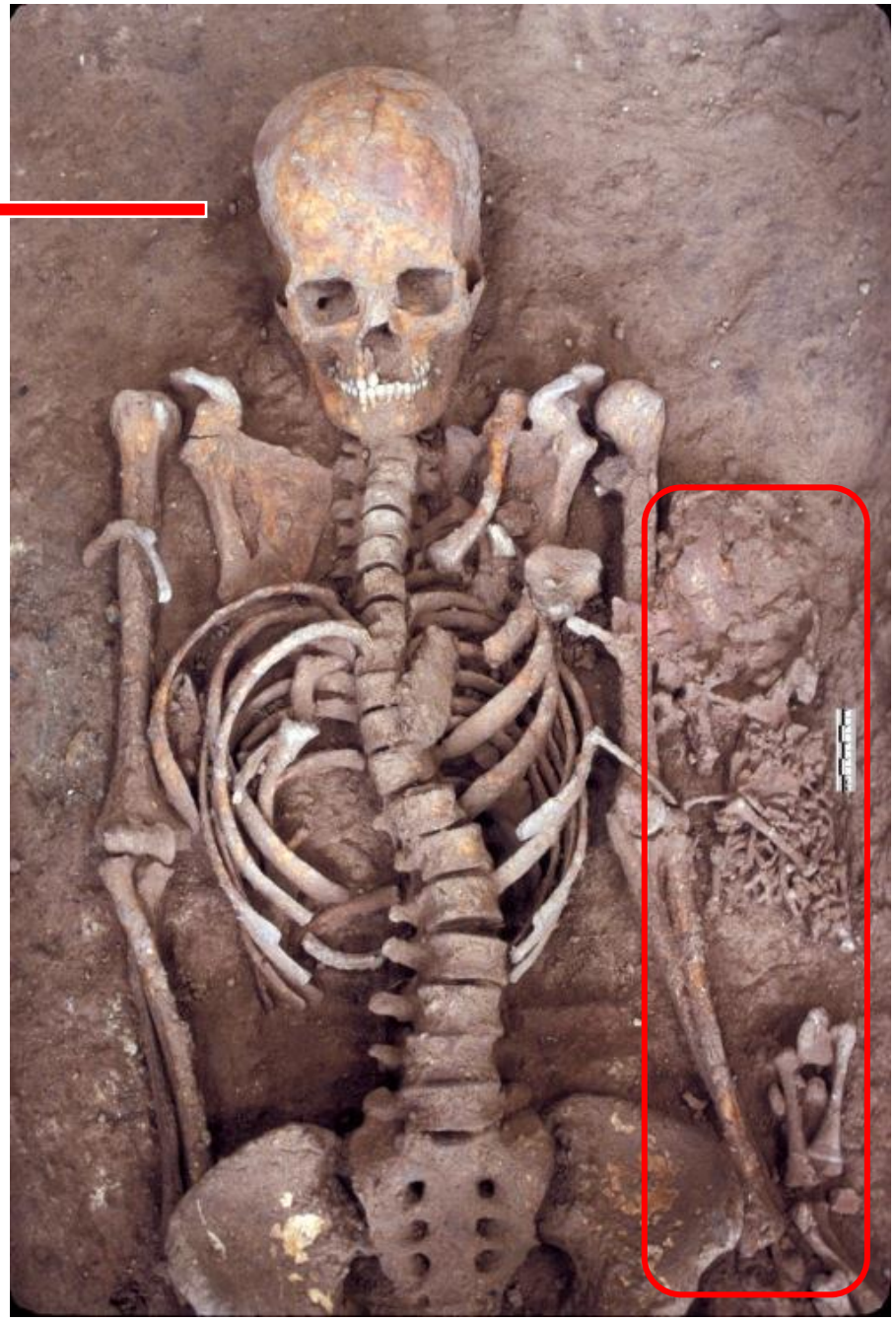


2. Post-birth ‘fetuses’

If a perinate is found buried alongside an adult, with the same head orientation, then the infant has been buried post-birth, whether naturally or by caesarian section (Lewis 2007: 34)

very common in some contexts: newborns placed on the chest of adult women (*presumably their mother*)

(Standen et al. 2014)



Full-term neonate buried alongside an adult female from Khok Phanom Di (photograph courtesy of C.F.W. Higham).

Ancient DNA analyses may be used to assess the relationship of the adult & fetal burials where the fetus has been placed on the purported mother, or the archaeological context is unclear

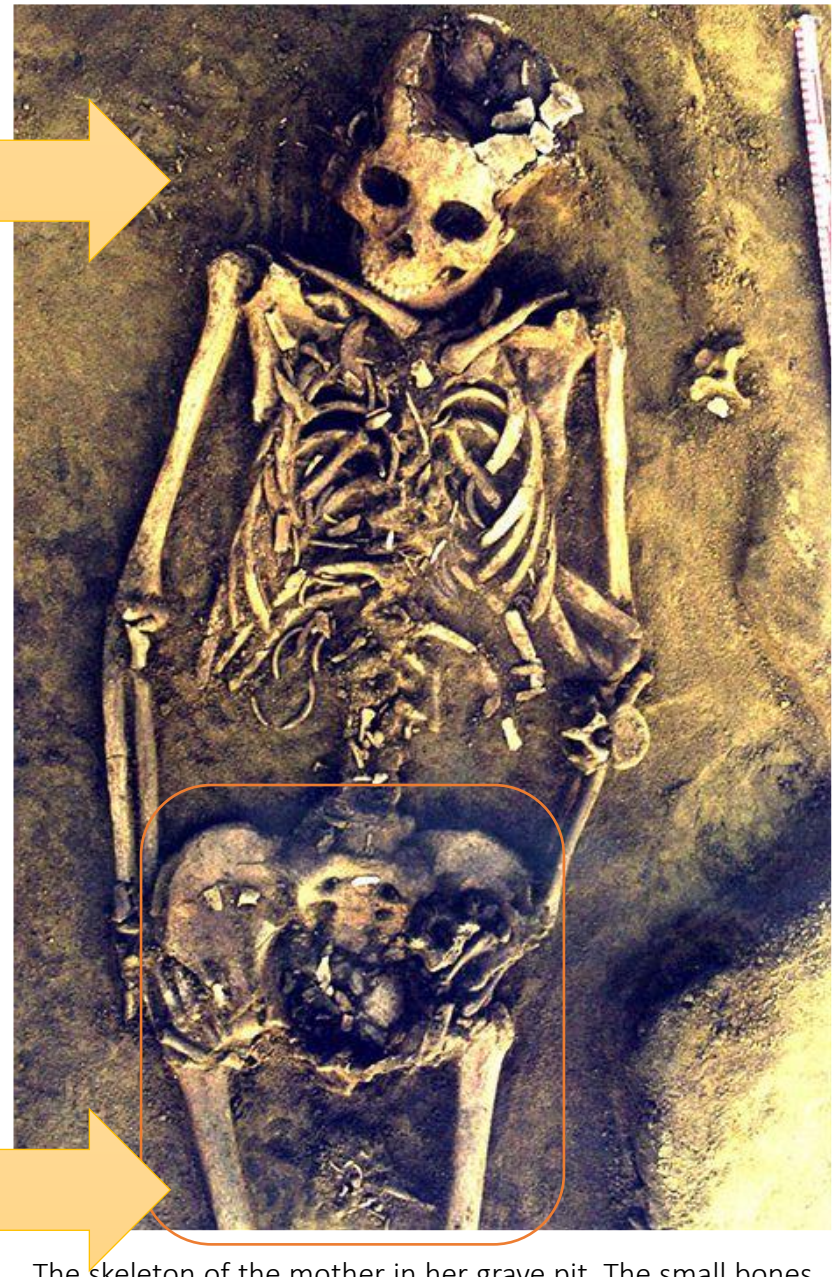
Important to distinguish these relationships, as in some contexts, e.g. in the Anglican burial tradition, babies were interred with non-maternal women in instances of coinciding death

(Roberts and Cox 2003: 253).

Detailed relief of a mother breastfeeding from the sarcophagus of Marcus Cornelius Statius, 150 AD; with Gallo-Roman infant burial with grave goods in what is now Clermont-Ferran photographed by Denis Gliksman

3. Multiple ‘fetuses’

Early Neolithic cemetery in Siberia
Remains of **twin** fetuses between pelvis & upper legs.



The skeleton of the mother in her grave pit. The small bones in her pelvic-abdominal area and between her thighs are the remains of the infants. (Angela Lieverse)

Ancient DNA analyses also for cases of twins

<u>In the bioarchaeological literature</u>: cases of twin fetuses in-utero & others in a post-birth context

++ a recent increase in the interest in multiple fetuses

+ investigation social identity & mortuary treatment

first baby was breech
→Obstructed labour
→infection, bleeding or exhaustion of the mother
→ death

3. Multiple ‘fetuses’

- Human twins are rare, with approximately one occurrence for every 100 births (Ball and Hill 1996)
- Appear in the literature more commonly than expected, compared with single fetuse burials
- Probably because they are seen as more significant

3. Multiple ‘fetuses’

Upper Paleolithic site of Krems-Wachtberg, Austria

Identified as twins at full-term age at death

- identical dental age (as estimated from their dentition)
- identical skeletal age (same femora size)

Funerary practices: bodies lay under a mammoth scapula & a part of a tusk and associated with 30 ivory beads → high social status

Einwögerer et al. 2006

Two infants recovered as block in 2005 (ind1 on the left, ind2 on the right). Photograph: Natural History Museum Vienna; modified.

3. Multiple ‘fetuses’

Mid 4th century site of Olèrdola in Barcelona, Spain

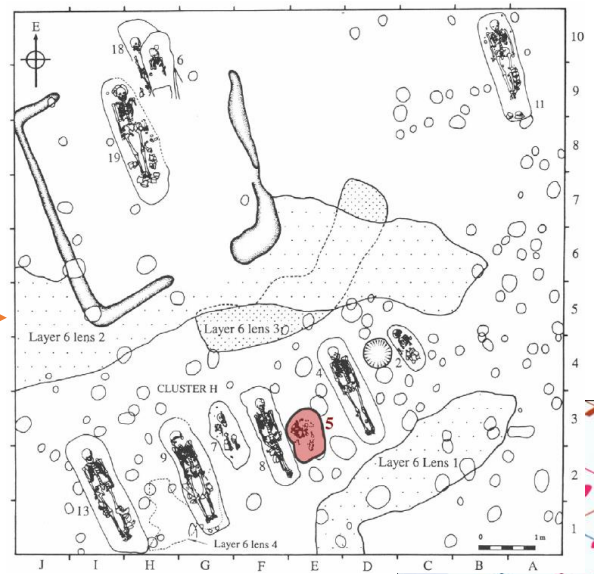
2 newborns at the same stratigraphic level with their lower limbs entwined → buried simultaneously.

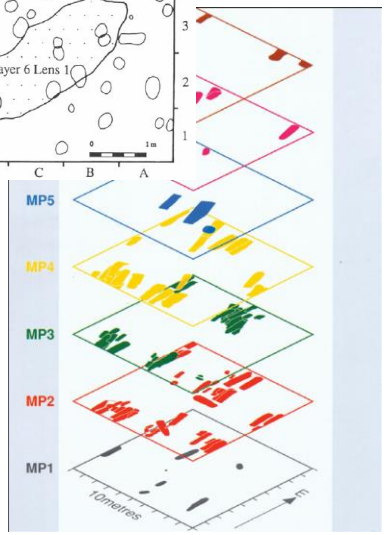
Crespo et al. 2011

4,000-3,000 year old BP Southeast Thailand site

Extremely rare finding of possibly 4 twin burials offering a methodological approach for the identification of archaeological twin burials & a social theoretical framework to interpret these in the past

Halcrow et al. 2012

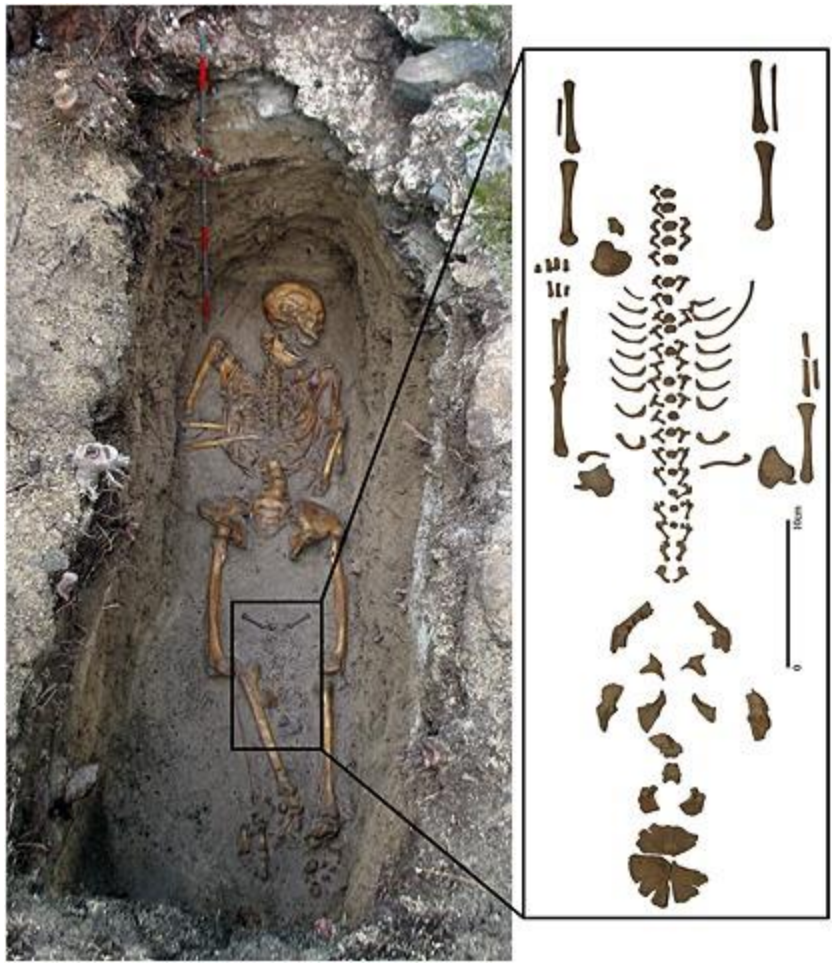




4. Post-mortem birth (‘coffin-birth’)

It refers to the occurrence of fetuses that were in-utero when the mother died and were expelled after burial (O’Donovan and Geber 2010).

Occurs when gases build up inside of the body of a deceased pregnant woman and force the fetus out of the birth canal



Potential coffin birth (from Appleby et al. 2014)

4. Coffin-birth

Documented in rare forensic cases from the build up of gas within the abdominal cavity resulting in the emission of the fetus

Lasso et al. 2009; Schultz et al. 2005

This gruesome phenomenon only rarely observed in the archaeological record

Pasini et al./World Neurosurgery/Elsevier

7^{th}-8^{th} century, medieval Italian Imola
A pregnant woman
Remains of her fetus 38^{th} week of gestation

4. Coffin-birth

- Lewis (2007: 34-37, 91) and O'Donovan et al. (2009) argue that if fetal remains are complete and in a position inferior to and in-line with the pelvis outlet, with the head oriented in the opposite direction to the mother, then there is the possibility of coffin birth.

- If they lie within the pelvic outlet, this means that there was partial extrusion during decomposition (Hawkes and Wells 1972). However, partial extrusion could also be the result of an obstructed labor of a baby in the breech position, but this would likely result in extrusion of the lower limbs.

- Sayer and Dickenson (2015) argue that postmortem fetal extrusion is unlikely under some burial conditions and with that decomposition of the baby in-utero would mean that it isn't likely to be birthed from an undilated cervical canal. This, however, assumes that there was no dilation at the time of death of the mother.

Social identity

- Investigating how pregnant women were treated in mortuaries can reveal social identity linked to childbirth & fetuses.

- A 34-36 week old fetus found cremated with an 850 B.C. "Rich Athenian Lady" suggested her grave wealth might be due to her death during pregnancy or childbirth, not just her social status.

Liston and Papadopoulos, 2004

Social identity

- Research in the archaeology of grief is exploring community reactions to infant & fetal death.
- Some scholars have suggested that infants & fetuses were marginalized in archaeological records, implying little concern beyond immediate family.
- Literature on intense grief after miscarriage & infant death challenges the idea of their loss being insignificant.

Bioarchaeology of Children

- A subfield of bioarchaeology that focuses on the study of the remains of children in archaeological contexts.
- It involves the analysis of skeletal and dental remains, as well as other archaeological evidence, to understand the lives and experiences of children in the past.
- This field of study can provide valuable insights into various aspects of children's lives, including health, growth and development, diet, social status, cultural practices, and burial customs.

Bioarchaeology of Children

- Growth & Development
- Health & Diseases
- Diet & Nutrition
- Social status & Burial Practices
- Demography
- Ethical considerations

Growth & Development

Researchers examine skeletal remains to study aspects of growth and development in children, including

1. estimating age at death,
2. assessing changes in stature,
3. identifying markers of stress & disease during childhood.

Growth & Development: **Age estimation**

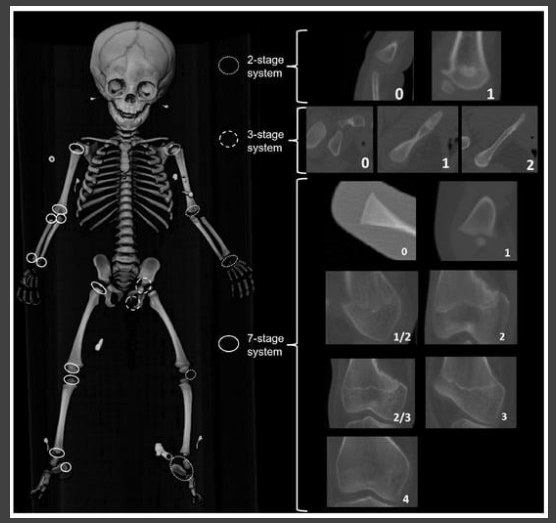
1. Dental Development: Examining dental eruption and development, such as the emergence of primary and permanent teeth, can provide important age information.

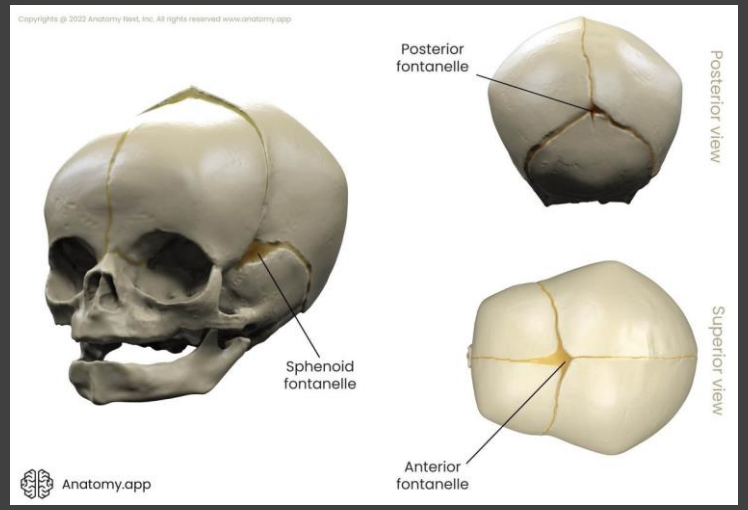
2. Epiphyseal Fusion: Analyzing the fusion of epiphyses (growth plates) in long bones can indicate age since these fuse as an individual grows.

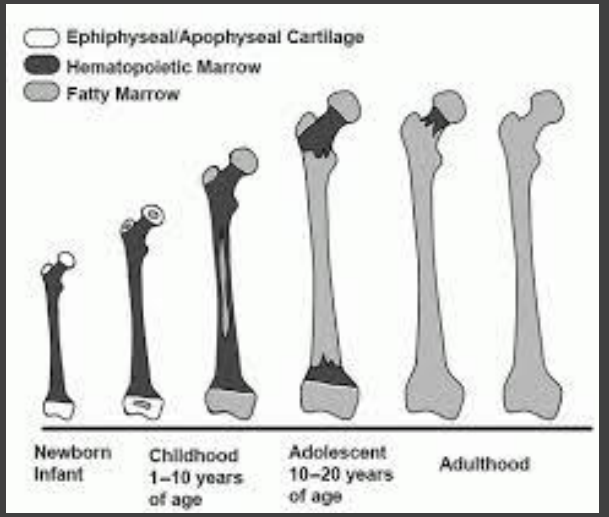
3. Bone Length and Size: Assessing the length and size of various skeletal elements, including long bones like the femur and tibia, can offer insights into age.

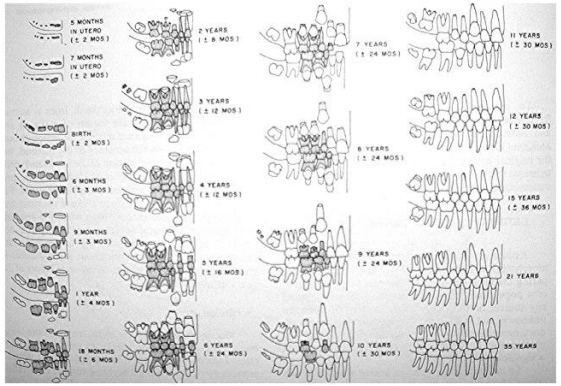
4. Cranial Sutures: Examining the closure of cranial sutures can be used to estimate age in subadults.

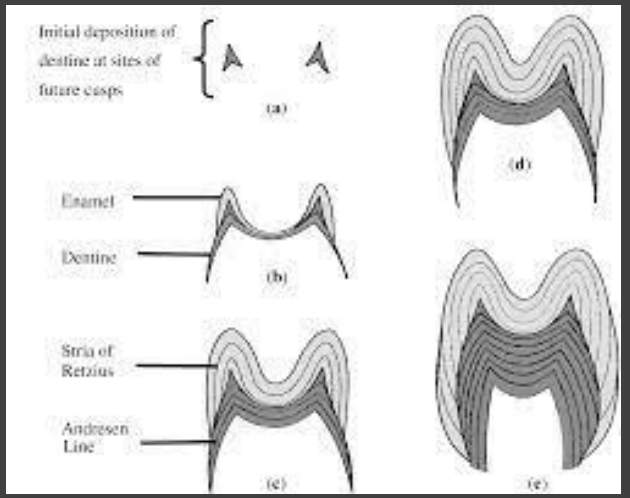
5. Dental Microstructure: Studying dental microstructure, like enamel histology and incremental lines, can be useful for age estimation.


2-stage system
3-stage system
7-stage system
0
1
0
1
2
0
1
1/2
2
2/3
3
4


Posterior fontanelle
Sphenoid fontanelle
Anterior fontanelle
Posterior view
Superior view
Anatomy.app


Ephiphyseal/Apophyseal Cartilage
Hematopoietic Marrow
Fatty Marrow
Newborn Infant
Childhood 1–10 years of age
Adolescent 10–20 years of age
Adulthood




Initial deposition of dentine at sites of future cusps
(a)
(d)
Enamel
Dentine
(b)
Stria of Retzius
Andresen Line
(c)
(e)

Growth & Development: **Age estimation**

6. Skeletal Maturation: Evaluating the degree of skeletal maturation, often using standardized methods and atlases, can help estimate age.

7. Radiographic Techniques: X-rays and radiographs are frequently employed to examine skeletal development and fusion in subadults.

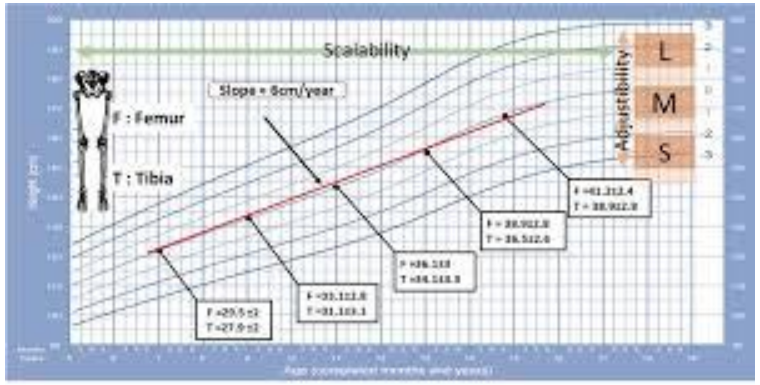
8. Ossification Centers: Monitoring the appearance and fusion of ossification centers in various bones can contribute to age estimation.

9. Growth and Development Charts: Comparing skeletal measurements and development to established growth charts and standards can aid in age determination.

10. Multimodal Approaches: Many bioanthropologists use a combination of these methods and consider multiple skeletal elements to improve accuracy in age estimation for subadults.


a
b
c


HDL
HPB
RDL
UDL
HMSB
RMSB
UMSB
HDB
RDB
FDL
TDL
TPB
FMSB
TMSB
FDB
TDB
FADL


Scalability
Slope = 6cm/year
F : Femur
T : Tibia
Adjustability
L
M
S

Growth & Development: **Age estimation**

Long Bones (Physiological Age):

1. It provides insights into the individual's physical development and maturation.
2. Physiological age focuses on the maturity of body structures, not specific chronological time.
3. Does not yield precise chronological age but rather assesses physical growth and development stages

Teeth (Chronological Age):

1. It offers estimates in terms of days, months, and years, providing a specific timeline.
2. Allows for a more precise determination of the individual's age in relation to a calendar.
3. Enables the study of growth rates and delays in growth in a cultural context with a clear chronological reference.

Growth & Development: **Age estimation**

Article | Open access | Published: 16 September 2022

Validity of age estimation methods and reproducibility of bone/dental maturity indices for chronological age estimation: a systematic review and meta-analysis of validation studies

V. Marconi, M. Iommi, C. Monachesi, A. Faragalli, E. Skrami ✉, R. Gesuita, L. Ferrante & F. Carle

Scientific Reports **12**, Article number: 15607 (2022) | Cite this article

1. A meta-analysis assessed the validity and reproducibility of age estimation methods in forensics and orthodontics.
2. 23 studies meeting specific criteria were included from 433 identified in the literature search.
3. Validity estimates showed small errors in age estimation for both males and females.
4. Different age estimation methods had varying levels of precision.
5. Intra- and inter-observer reproducibility was consistently high across the studies

Growth & Development: **Age estimation**

Dental and skeletal childhood stress markers used to predict adult mortality

- linear enamel hypoplasia (LEH)
- cribra orbitalia
- porotic hyperostosis

Brain Sci. 2020 Mar; 10(3): 169.
Published online 2020 Mar 14. doi: 10.3390/brainsci10030169

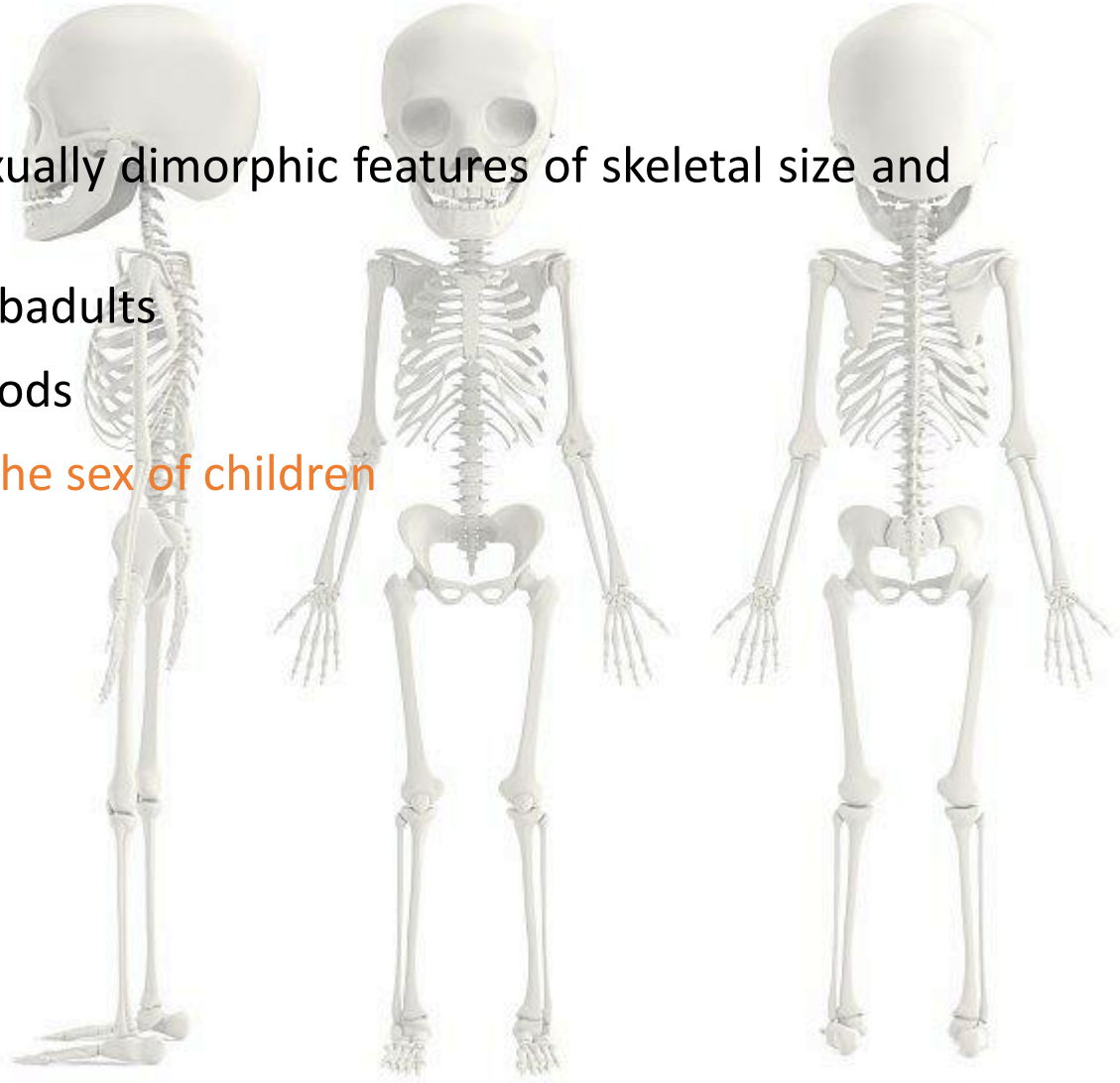
Early Life Stress and Pediatric Posttraumatic Stress Disorder

Panagiota Pervanidou,[1,*] Gerasimos Makris,[1] George Chrousos,[1] and Agorastos Agorastos[2]

Studies indicate that individuals with more or earlier LEHs from childhood stress tend to have a shorter lifespan.

Growth & Development: **Sex determination**

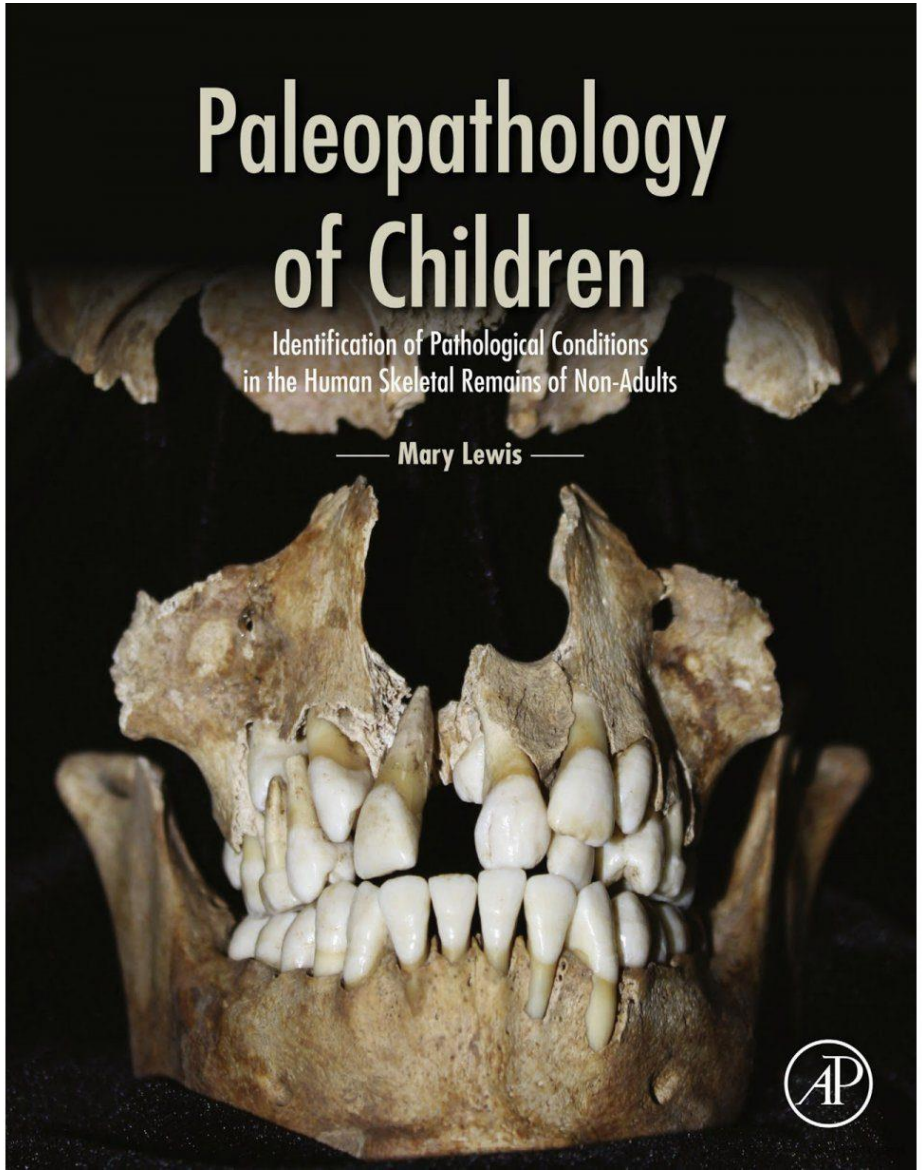
- ❑ Sex is determined through an examination of the sexually dimorphic features of skeletal size and shape
- ❑ Absence of sexual dimorphism on the skeletons of subadults
- ❑ No sex determination via micro or macroscopic methods
- ❑ DNA and peptide analysis can be used to determine the sex of children



Health & Diseases

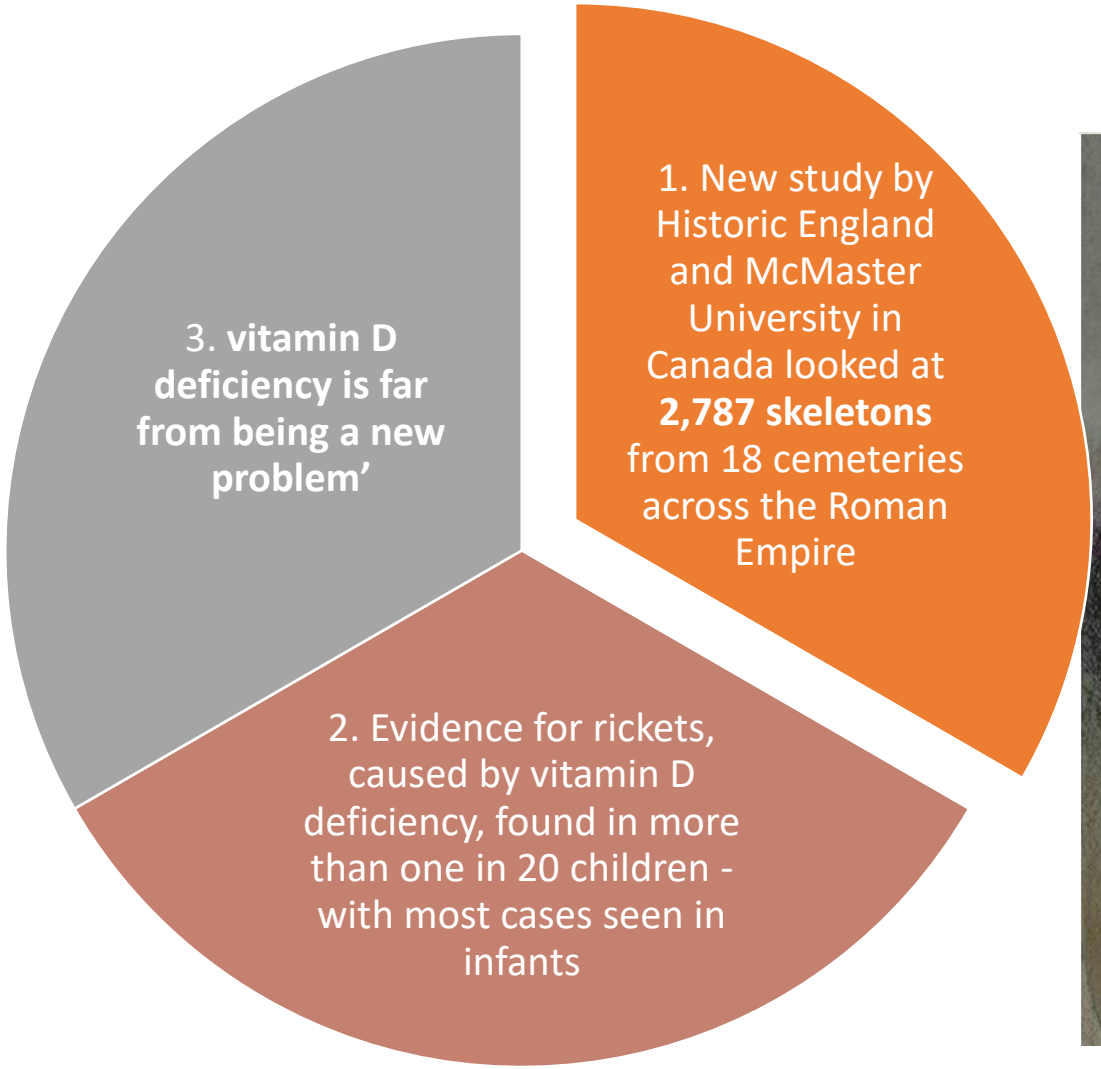
Analyze skeletal and dental evidence to understand the health and disease experiences of children in the past. This can include identifying evidence of:

1. nutritional deficiencies,
2. infectious diseases,
3. trauma,
4. other health-related issues.



Health & Diseases : **Case study**

Roman Skeletons Show Vitamin D Deficiency in Children Was a Widespread Problem 2,000 Years Ago.



Health & Diseases: **Case study**

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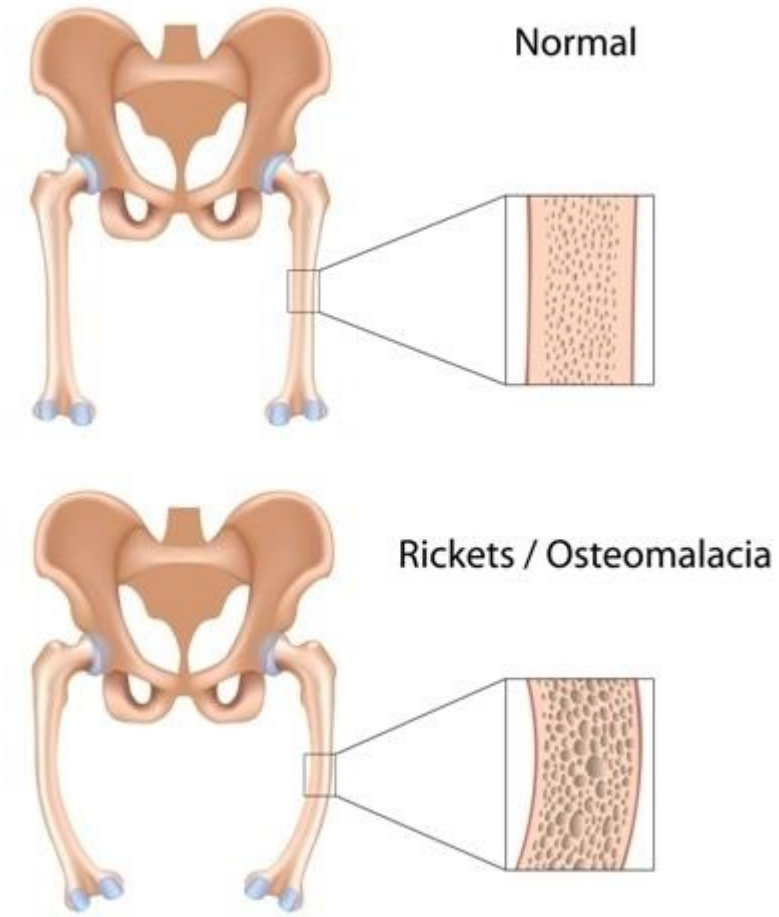
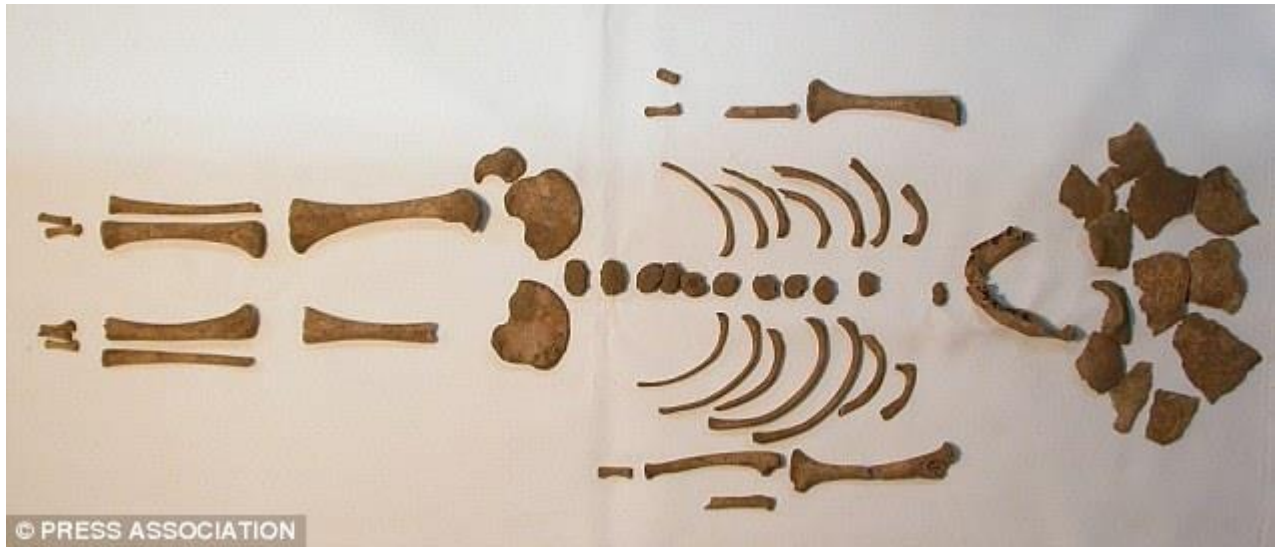




An infant skeleton from a Roman empire cemetery. Photograph: Historic England

Diet & Nutrition

The study of stable isotopes in the bones & teeth of children can provide information about their dietary patterns & sources of nutrition.

This can reveal insights into:

1. weaning practices,
2. breastfeeding duration,
3. food availability.

Diet & Nutrition: **Case study**

Materials & Methods

- (δ15N), dietary reconstruction
- 5 Bronze Age sites Lebanon & Syria (ca. 2,800–1,200 BCE).
- Bayesian computational modeling was applied to cross-sectional stable isotope data of collagen samples (n = 176) from previous studies.
- The study aimed to assess the alignment between bioarchaeological evidence and textual evidence of breastfeeding and weaning practices in the region.
- Also compared estimated weaning times to global findings using the WARN (weaning age reconstruction with nitrogen isotope analysis) Bayesian model.

AMERICAN JOURNAL OF BIOLOGICAL ANTHROPOLOGY
The Official Journal of the American Association of Biological Anthropologists

RESEARCH ARTICLE | Open Access

Reconstructing breastfeeding and weaning practices in the Bronze Age Near East using stable nitrogen isotopes

Chris Stantis, Holger Schutkowski, Arkadiusz Sołtysiak

First published: 02 December 2019 | https://doi.org/10.1002/ajpa.23980 | Citations: 19

Funding information: Narodowe Centrum Nauki, Grant/Award Number: 2012/06/M/HS3/00272

A Middle Bronze Age infant from the Lebanese site of Sidon buried in a large jar. Claude Doumet-Serhal, CC BY-NC-ND

Diet & Nutrition: **Case study**

Results

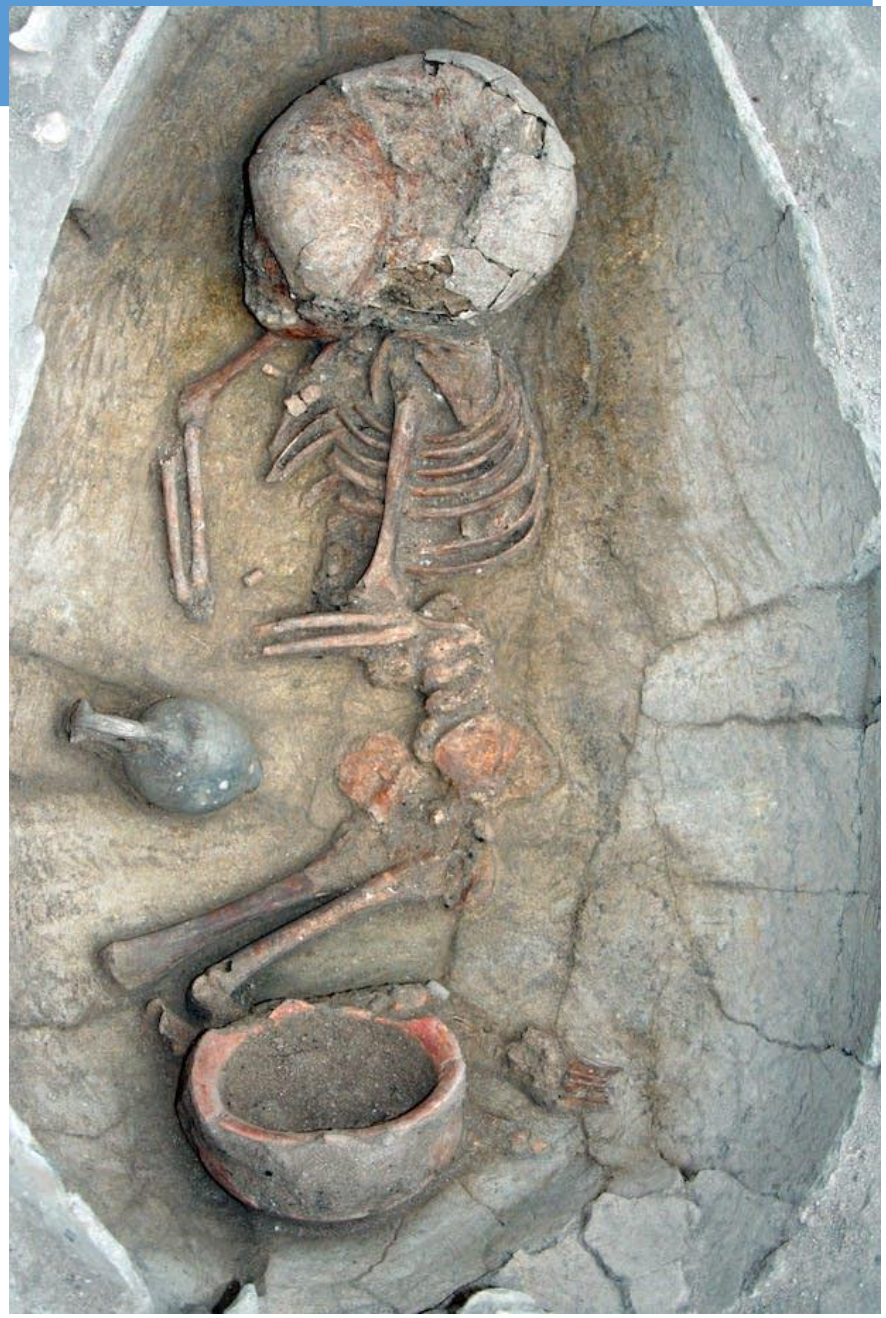
- Weaning was typically introduced at around 0.5 ± 0.2 years of age, with complete weaning occurring at approximately 2.6 ± 0.3 years of age when using the WARN computational model.
- These weaning patterns align with the timeframes indicated by historical texts, demonstrating a strong correspondence between archaeological and textual evidence.
- Notably, the estimated weaning age on the Mediterranean coast was found to be later than in inland sites, suggesting regional variations in weaning practices.

Relic from Mesopotamia (2000-1500 BCE) at The Sulaimaniya Museum, Iraq, shows a woman breastfeeding her child. Osama Shukir Muhammed Amin, CC BY

Social status & Burial Practices

The way children are buried provides insights into their social status across different cultures and time periods, considering factors like:

1. burial treatment,
2. grave locations
3. grave items,
4. associated cultural rituals.
5. any distinctive practices linked to child burials.

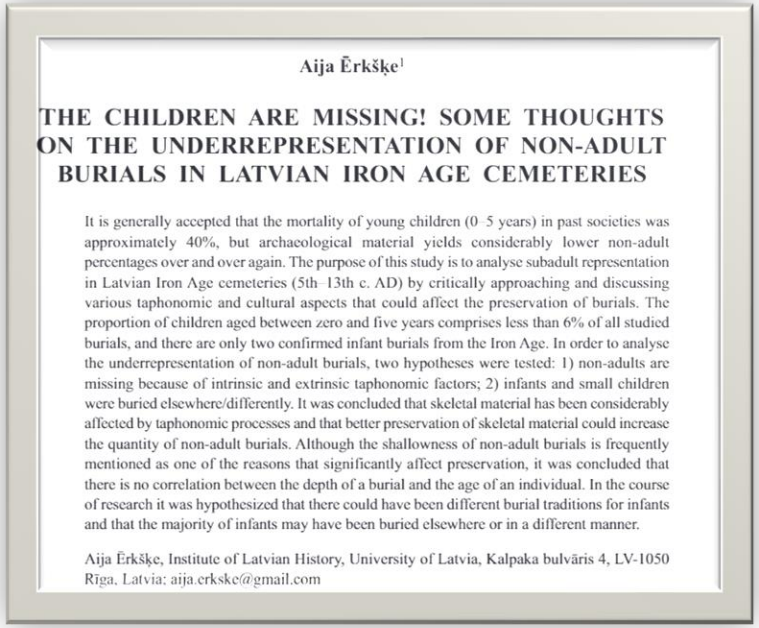


A Middle Bronze Age child from the Lebanese site of Sidon buried in a large jar. Smaller ceramics were placed with the dead as funerary objects. Claude Doumet-Serhal,

Social status & Burial Practices

It is commonly held that, in general, infants and young children are underrepresented in communal cemeteries in prehistory

- Intrinsic and extrinsic taphonomic factors: differential preservation
- Cultural, religious, and/or ritual factors: buried elsewhere/differently



Aija Ērkšķe[1]

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.

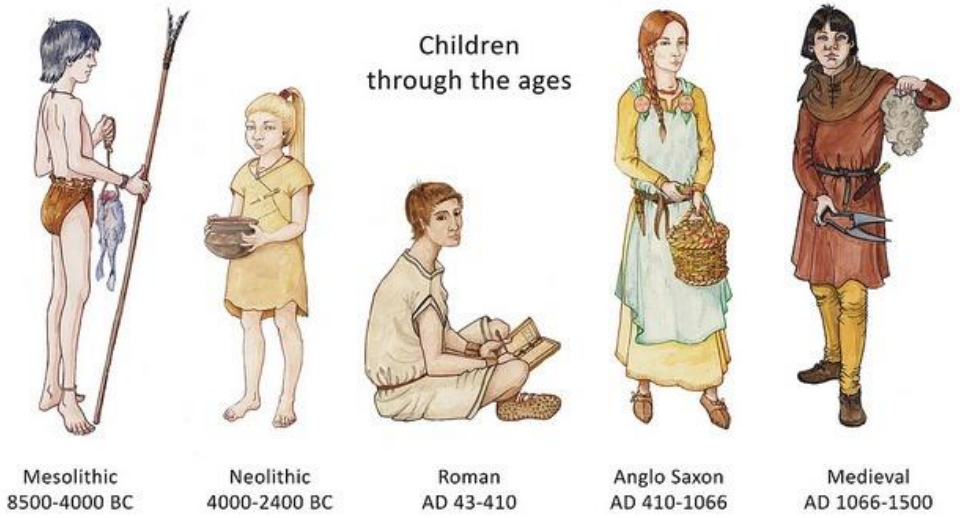
Aija Ērkšķe, Institute of Latvian History, University of Latvia, Kalpaka bulvāris 4, LV-1050 Rīga, Latvia: aija.erkske@gmail.com

Scott 1999

An example of a fetal burial (~38 weeks) from the post-medieval Polish site, Drawsko

Where were the children?

1. infants are not considered ancestors or even fully human and, hence, they are excluded from family burial crypts;
2. differential treatment of male and female infants;
3. infants who were buried in pots were contaminated or deviant in some way—they died of disease, were suspected of being witches, demons, or changelings
4. mothers of these infants were of different statuses within the household;
5. expensive or difficult ceremonies were attached to burying the dead;
6. a lack of parental investment in infants exists because so many die young



Social status & Burial Practices: **Burial within a wall**

The youngest children were most often inferred in kitchen and household vessels, which were usually placed under the floors of homes or courtyards.

A very old type of burial and occurs practically all over the Levant and Mesopotamia.

A pot burial tucked into the corner of two walls within a room in a Lower Town house. The triangular lugs are common to burial pots and cooking ware vessels

Social status & Burial Practices: **Jar burials**

1. One large and lidded, sealed jar (domestic type or specially made)

2. Two jars joined at the mouth; <u>question</u> whether such individuals will have died together if they are buried in such a way

Power, R., & Tristant, Y. 2016.

Over 120 Child Remains Found in Jars in Inner Mongolia

One of the 128 child urn burials discovered in Liangcheng County. (Institute of Cultural Relics and Archaeology of Inner Mongolia Autonomous Region/Xinhua News)

Social status & Burial Practices: **Child sacrifice**

- Child sacrifice *is a form of human sacrifice aimed at influencing the supernatural world, often involving children*.

- The reasons for child sacrifice are not always clear, but artistic and textual representations shed light on the ritual's meanings / from averting natural disasters to ensuring the posterity of a particular ruler

- Widely described in antiquity and likely occurred in prehistory

- Different geographic case studies, each area offers unique insights into the complex and evolving nature of child sacrifice :

Mesopotamia, Anatolia, North Africa and Punic Sites, south America….

Social status & Burial Practices: **Child sacrifice**

Ancient Peruvian Rituals

82 Peruvian skeletons found with signs of throats slit, chests opened.

During the sacrifices, sharp bronze knives were used to hack the children to death.

- One skeleton had more than 25 cut marks on it.
- A few had their hands & legs bound with rope.

The skull of a child sacrificed at around 9 years of age.
PHOTOGRAPH COURTESY HAAGEN KLAUS

Social status & Burial Practices: **Child sacrifice**

Ancient Tomb Found in Mexico Reveals Mass Child Sacrifice

The skeletons of two dozen children killed in an ancient mass sacrifice

All were between 5 to 15 years of age

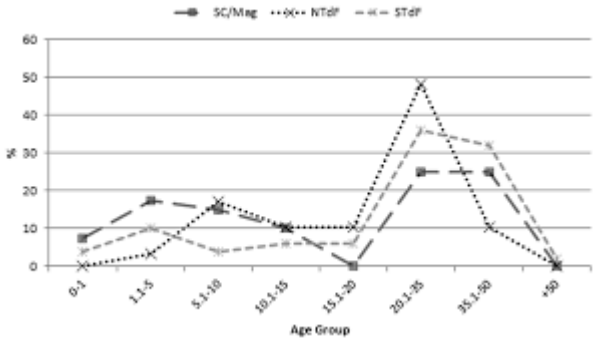
Likely killed as an offering to the Toltec rain god Tlaloc, Gamboa said (Rutual Mesoamerica)

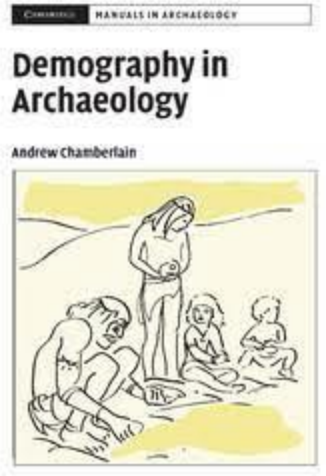
Remains of children found at the site. John Verano/Tulane University

Demography

Bioarchaeologists may use child remains to contribute to the reconstruction of past populations by studying:

1. birth rates
2. mortality rates
3. population structure





Prehistoric children as young as eight worked as brickmakers and miners

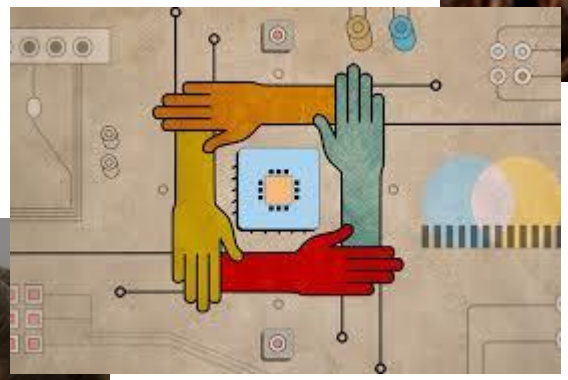
Bones and artefacts suggest that kids laboured at skilled tasks thousands of years ago.

Some Bronze Age children toiled away in salt mines in what is now Austria.Credit: NHM Vienna/Hans Reschreiter

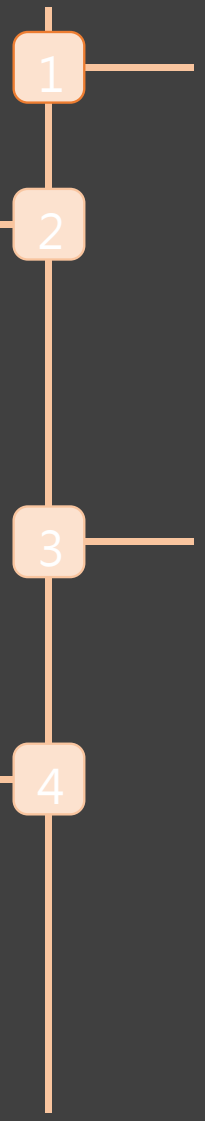
Ethical considerations

Ethical considerations are an important aspect of the bioarchaeology of children regarding:

1. the treatment of their skeletons
2. the respect for their remains.



The bioarchaeology of children



Understanding Childhood Health

Discover how the study of children's remains contributes to our understanding of childhood health, including patterns of stress, malnutrition, and diseases in the past.

Insights into Demographic Changes

Explore how bioarchaeological investigations of children's remains offer insights into demographic changes, such as population growth, migration, and cultural transitions.

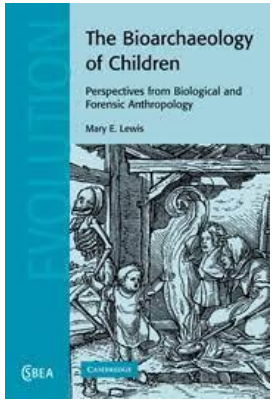
Reconstructing Social Dynamics

Uncover how the examination of children's skeletal remains can shed light on social dynamics, such as kinship patterns, caregiving practices, and social inequalities.

Future Research Directions

Consider the prospects for future research in the field of bioarchaeology of children, including interdisciplinary collaborations and emerging methodologies.

Conclusions



1. Contributes to our understanding of how children's lives & experiences varied across different cultures & time periods
2. Helps in reconstructing the social & economic contexts in which children lived & died,
3. Offers a more comprehensive view of past societies