www.maajournal.com

Mediterranean Archaeology and Archaeometry
Vol. 23, No 1, (2023), pp. 235-250
Open Access. Online & Print.

DOI: 10.5281/zenodo.7604977

BIOARCHAEOLOGY IN THE EASTERN MEDITERANNEAN AND MIDDLE EAST: ARE WE AS RELEVANT AS WE SHOULD BE? ADDRESSING CLIMATE CHANGE, MIGRATION, INTERSECTIONALITY AND VIOLENCE

Mahmoud Mardini and Efthymia Nikita

Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute, 2121 Aglantzia, Nicosia, Cyprus

Received: 21/11/2022
Accepted: 23/02/2023
**Corresponding author: Mahmoud Mardini (m.mardini@cyi.ac.cy)*

ABSTRACT

The Eastern Mediterranean and Middle East (EMME) has been the setting of significant societal and cultural changes over millennia, and served as a connecting point for cultures across Asia, Europe, and Africa. Bioarchaeology, the contextual study of past human remains, explores the dynamic relationship between and within biological, natural, environmental, socio-political, historical, and physical forces; as such, it has found important applications in the EMME. This paper briefly outlines the history of bioarchaeological research in the region and highlights contemporary themes and trends. The latter follow the research trends in Europe and North America with a focus on palaeopathology, followed by dietary reconstructions, activity patterns, and mobility. Emphasis is placed on the extent to which bioarchaeology in the EMME has adopted the concept of intersectionality, which is especially pertinent in the region, but also the degree to which it has explored key issues with contemporary significance, such as migration, structural violence, and climate change. The above concepts and topics can indeed be identified in EMME bioarchaeological studies over the past few years; however, intersectionality and structural violence are almost exclusively addressed implicitly, while all four themes should receive more attention in the future so that they enhance the understanding of these processes in the EMME with greater spatial and temporal resolution.

KEYWORDS: Eastern Mediterranean, Human Skeletal Remains, Middle East, Research Trends, Intersectionality, Climate Change, Violence, Migration

1. INTRODUCTION

Bioarchaeology focuses on the study of human remains from archaeological contexts. Given the complex biocultural nature of humans, bioarchaeology explores the dynamic relationship between and within diverse biological, natural, environmental, socio-political, historical, and physical forces (Baker and Agarwal, 2017; Buikstra et al., 2022; Nikita and Chovalopoulou, 2023). The Eastern Mediterranean and Middle East (EMME), geographically situated at the crossroads of three continents (Fig. 1), has gone through and is still experiencing major ecological, socio-cultural, and political transformations, and it has served as a melting pot for diverse civilizations throughout human history (Perry, 2012a). As such, bioarchaeology in the EMME could find very important applications.

Many reviews have examined the evolution of bioarchaeological research in different EMME regions, discussing the research questions it has addressed, the challenges it has faced, and what the future may hold. For the Arabian Peninsula, Martin (2007) focused on bioarchaeology in the United Arab Emirates, whereas Frohlich et al. (1989) explored the progress of palaeopathology in Bahrain. These reviews emphasized the small number of studies of human behavior and biological adaptation in Eastern Arabia, a region considered marginal to the larger cultural centers of the Eastern Mediterranean. The state of bioarchaeological research in Cyprus has been addressed in a review by Harper and Fox (2008). This review examined key themes that have been studied in different periods, it discussed the problems associated with conducting bioarchaeological research in Cyprus (such as poor preservation, commingled skeletal assemblages, and historical bias) and emphasized the need to establish bioarchaeology programs at local universities and institutions, as most Cypriot bioarchaeologists are trained abroad before entering the job market in the island. A recent review by Ioannou and Lorentz (2022) provides an updated account of the developments in Cypriot bioarchaeology. The paper highlights the notable shift towards a more scientific approach in the late twentieth century, which has led to significant advancements in the field of bioarchaeology. Specifically, there has been a marked increase in problem-oriented studies that address bioarchaeological questions, and researchers have increasingly employed scientific techniques beyond the traditional morphological and metric approaches. Moreover, the proper excavation, recording, and recovery of human remains have improved significantly, and interdisciplinary approaches have become more prevalent, leading to an overall improvement in the state of bioarchaeological research in Cyprus in recent years. Bioarchaeological reviews on Egypt have addressed certain research themes, such as palaeopathology and biodistances (Keita, 1993; Metcalfe et al., 2014), though in a review of bioarchaeology in the Nile River and the Levant several research themes and their popularity across time have been explored, as well as methodological and theoretical advances (Rose, 2017). These reviews highlighted the role of technological advancements and scientific developments in incorporating Egyptian bioarchaeology within wider scientific and historical debates such as the evolution of humans, cultures, and diseases. They also discussed the promising developments in Egyptian bioarchaeology and how new analytical methods are challenging preconceived notions about certain topics, such as Egyptian biological transitions and genetic origins. In the Levant, an extensive review by Sheridan (2017) delved into the state of research in the region and how it may be integrated within a more holistic bioarchaeological model, whereas a more focused review for palaeopathology for the same region was written by Perry (2012b), highlighting the lack of integration among diverse but interconnected aspects of bioarchaeology and standard methods for collecting skeletal data, as well as parameters that limit comparative research, such as poorly presented data and sampling biases. More recently, Nikita and Triantaphyllou (2017) reviewed the bioarchaeological developments in Greece and how research trends adapted to the standards established in the United States and United Kingdom after a long tradition of research following a physical anthropological approach, while a short report by Sołtysiak (2006) discussed the progress in human skeletal studies for Iraq in the years 2001 and 2002. Finally, mention should be made to the edited volume by Porter and Boutin (2014) which, although not a review work, presents through the contributions of researchers with different backgrounds, the diverse ways in which various regions in the ancient Near East commemorated their dead, integrating mortuary with bioarchaeological analysis.

The above papers collectively show that despite practical, methodological and conceptual limitations, the contextualized analysis of human remains from the EMME region can yield important temporal and spatial information about health, activity, disease, diet, mobility, and other parameters of past life. In this paper, we explore trends of bioarchaeological research in the EMME during 2015-2021, and the extent to which the research themes mostly developed in the region have been employed to assess issues of contemporary relevance, such as migration, violence, climate change and intersectionality.

Figure 1. Map of the EMME region including names and borders of modern nation-states, compiled in QGIS using open-source shapefiles (https://www.naturalearthdata.com/downloads/10m-raster-data/ and https://www.naturalearthdata.com/downloads/10m-cultural-vectors/)

2. BRIEF HISTORY AND CURRENT TRENDS OF BIOARCHAEOLOGY IN THE EMME

2.1. *The early years*

Bioarchaeology in the EMME has a long tradition. Studies in the early twentieth century were largely individualistic, descriptive, and typological, frequently overlooking the synthesis of biological, archaeological, and historical narratives. These studies mostly focused on metric data to explore morphological variation, which was viewed as indicating racial differences (Henckel, 1930; Kansu, 1930; Woo, 1930). Still, even at that early stage, there were bioarchaeological studies focused on context-specific investigations from various regions and time periods, involving different parameters such as demography, diet, and pathology (Kansu and Tunakan, 1946; Krogman, 1940; Netolitzky, 1943). It is during the 1970s that bioarchaeology gradually developed into a distinct discipline characterized by the integration of biological, environmental, social, and cultural parameters that shape the human skeleton. A more synergistic and holistic approach was promoted to answer research questions based on quantifiable data, material culture, and modern archaeological/social history (Buikstra, 1977). In the EMME region these trends are exemplified in the work on ancient population dynamics and health by J. Lawrence Angel, focused mainly on Greece, Cyprus and Turkey, with marginal emphasis on Egypt (e.g. Angel, 1970, 1972, 1975, 1977, 1979, 1980). Similarly, bioarchaeological research in the Arabian Peninsula by Peter Cornwall in the 1940s and Karen Højgaard in the 1980s established a foundational understanding for the human assemblages excavated in this region (e.g., Cornwall, 1943, 1944, 1946; Højgaard, 1980, 1981, 1983, 1984, 1985, 1986).

2.2. *Current research trends*

Recent decades have witnessed a surge in the number of bioarchaeological research globally and in the EMME (Nikita et al., 2021). In this paper we focus on the most recent trends, that is, studies published from 2015 to 2021 at international journals in bioarchaeology, physical anthropology, archaeological science, anthropological archaeology and palaeopathology, as well as at regional journals with thematic linked to bioarchaeology, anthropology and archaeological sciences, but also in books as chapters or appendices,

and as graduate theses or professional reports (for details see Nikita et al. 2021).

The distribution of publications by theme (Figure 2) showed that palaeopathology has been the most systematically examined topic, followed by diet and then mobility and activity-related skeletal changes. These trends show an overall similar pattern to earlier periods (Nikita et al., 2021), supporting broadly a continuity in the interest for specific biocultural parameters over others. We must note that the other topics examined by Nikita et al. (2021) included ancient DNA, biodistance, demography, isotopes, metrics, nonmetrics, stature, and taphonomy. Among these, ancient DNA, biodistance, isotopes, metrics, and nonmetrics have not been included in the current paper because they do not represent research themes themselves but methods/approaches to examine diet, mobility, or other aspects of past life; thus, only papers that used these methods to address diet and mobility have been included in the current paper under one of these two themes. Demography, which is a very common theme in bioarchaeological research, is not discussed here because, as Nikita et al. (2021) highlight, they have included in this category all papers with any mention of sex or age-at-death data, while actual palaeodemographic studies were extremely rare. Finally, taphonomy is usually studied to examine the preservation of the remains, thus the extent to which they can furnish accurate interpretations for past populations; hence, it is mostly a preliminary step of other bioarchaeological analyses focused on one of the other themes (e.g. pathology, diet, mobility).

In the following sections, we offer a brief presentation of the basic principles of each theme of skeletal analysis with a few representative examples from the EMME that cover different methods, time periods and regions.

2.2.1. Palaeopathology

Palaeopathology is the study of past disease processes. It is based on the fact that the human skeleton, as a living tissue, tends to respond to pathological insults via new bone formation, bone resorption, abnormal bone size and/or abnormal bone shape (Ortner, 2003). In addition to the fact that most pathological conditions do not affect the skeleton, a major challenge in palaeopathology is the identification of diseases given that the skeleton responds to multiple pathological agents in a similar manner. Therefore, many different pathological conditions will manifest very similarly and differential diagnosis is difficult or even impossible in many cases (Buikstra et al., 2019). Another important complication is interpretational and is captured under the 'osteological paradox'. Because individuals with skeletal lesions were able to survive the stressful conditions that led to the formation of these lesions, the osteological paradox suggests that skeletal lesions could actually indicate greater resilience (e.g. less frailty) (Wood et al., 1992). Other important aspects of the osteological paradox are *hidden heterogeneity*, which refers to the unequal vulnerability of individuals to diseases and stressors, and the risks of death they face; and *selective mortality*, which relates to the fact that palaeopathological assemblages represent the dead, thus, they are biased representatives of the once-living population (Wood et al., 1992).

Regardless of these limitations, palaeopathological research holds a central place in bioarchaeology and is among the most commonly explored topics globally. Palaeopathological research in the EMME has focused on diseases with different etiology and employed different analytical methods. For instance, studies in this region have examined infectious (Tomczyk, 2013), metabolic (Pitre et al., 2016), neoplastic (Khwaileh, 2016) and joint (Karligkioti et al., 2022) diseases, as well as trauma (Bourbou, 2003), among others. The methods used to identify the above diseases have been macroscopic but also microscopic (e.g. palaeoparasitology - Anastasiou et al., 2018), molecular (ancient DNA – Hershkovitz et al., 2008) and radiographic (Bourke, 1967). Some of the palaeopathological studies had a methodological focus, stressing the potential and limitations of differential diagnosis (e.g. Khwaileh, 2016; Tomczyk, 2013), while others have emphasized the interpretation of the pathological lesions in the context of diet and cultural behaviors (e.g. Bourbou, 2003; Karligkioti et al., 2022; Pitre et al., 2016).

2.2.2. Diet

Different bioarchaeological proxies may be used to study the diet of past populations. Non-destructive methods rely on dental disease and dental wear patterns, while destructive methods include stable isotope and dental calculus microdebris analysis. Dental diseases and dental wear patterns offer an indirect approach to reconstructing subsistence practices and dietary habits by pointing to the relative consumption of carbohydrates and proteins, as well as food processing strategies (e.g. food softening, removal/addition of inclusions) (Forshaw, 2014). Stable isotopes, especially of carbon and nitrogen, in human bone and teeth reveal details about dietary patterns and food intake (Makarewicz and Sealy, 2015). Using such isotopes, a diet may be classified as high or low in animal-derived protein, high or low in C3 (such as legumes, cereals) or C4 (such as millet, maize) plants, or as fish-based or not. Finally, the micro-excavation of dental calculus deposits may identify starches, phyto-

liths and other particles originating from consumption practices, though the calculus matrix also entraps microparticles that have entered the mouth accidentally through inhalation or the use of the teeth as tools (Radini et al., 2017).

In the EMME, palaeodietary studies have employed macroscopic, microscopic and isotopic approaches. The research questions have varied, including, among others, sex differences in dietary patterns (Vergidou et al., 2021), diachronic dietary change (Afshar et al., 2019), diet and animal management practices (Scirè-Calabrisotto et al., 2020), as well as subsistence strategies (Al-Bashaireh and Al-Muheisen, 2011).

2.2.3. Mobility

Past mobility may be explored via biodistance, isotopic and ancient DNA analysis. Biological distance or biodistance is a measure of biological affinity (or divergence) between and within human groups, based on skeletal and dental phenotypic variation (Mardini et al., 2023; Nikita et al., 2019; Pilloud and Larsen, 2011). Biodistance analysis is based on the premise that skeletal and dental shape and size are partly heritable, thus the phenotype can be used as a proxy for the genotype (Rathmann and Reyes-Centeno, 2020). Since biological affinities identified at an inter- and intra-regional scale may be interpreted as the result of gene flow (the movement of individuals and the genetic material they carry from one group to another), biodistances offer insights to past mobility patterns (Pilloud and Hefner, 2016). Past mobility may also be examined via isotopic analysis, especially combining strontium and oxygen isotopes. Comparing these isotope values between the teeth of past individuals and the so-called baseline in the area where these individuals were found, suggests whether the individuals were 'local' or 'non-local' (Bentley, 2006; Pederzani and Britton, 2019). A limitation of this approach is that it cannot securely identify the point of origin of the 'non-locals'. To address this issue, there has been an increasing number of studies establishing bioavailable baselines and isoscapes across the world (Blank et al., 2018; Reynaga et al., 2021) and in the EMME more specifically (Dotsika et al., 2018; Ladegaard-Pedersen et al., 2020). Finally, ancient DNA (aDNA) analysis investigates human migration by identifying the past and present populations with whom archaeological individuals under study are genetically most similar (Bongers et al., 2020; Gao et al., 2015).

Mobility studies in the EMME have adopted biodistances, isotopic and ancient DNA analyses to explore various topics, such as the association between mobility and economic change (Afshar, 2014), residential mobility (Buzon and Simonetti, 2013), social endogamy (Alt et al., 2013), the presence of pilgrims (Wong et al. 2018), mobility as a response to climate change (Gregoricka, 2016), population dynamics during the European Neolithic expansion (Silva et al., 2022) and others.

2.2.4. Activity

Physical and mechanical stress due to manual labor may result in activity-related skeletal changes, such as osteoarthritis, Schmorl's nodes, entheseal changes, and enhanced biomechanical properties (Schrader, 2019). Although the exact nature of the physical activities in which past individuals engaged is impossible to securely assess exclusively via skeletal evidence (Jurmain et al., 2011), the examination of the above-mentioned skeletal changes can help make inferences on broad past patterns of manual labor (e.g. Eng, 2016; Nikita et al., 2011; Üstündağ, 2009).

Such skeletal changes have also been utilized in the EMME to assess gender-related labor division in different groups (Üstündağ, 2020), or among individuals with different social status to examine how labor may be divided based on social stratification (Refai, 2019), as well as between different assemblages to explore chronological and regional differences in occupational stress (Karligkioti et al., 2022).

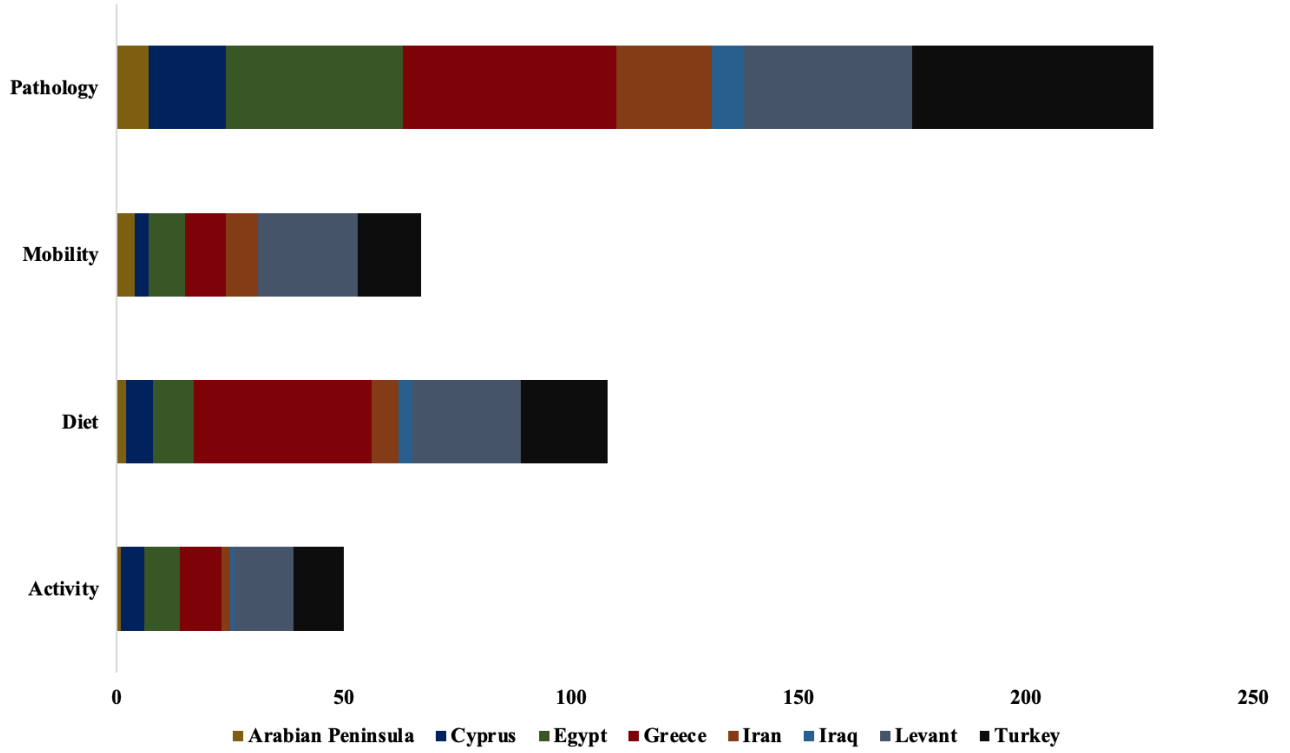

Figure 2. Number of papers published during 2015-2021 sorted by key theme and region. Data retrieved from Bi(bli)oArch (Nikita et al., 2021).

The above themes –pathology, mobility, diet, activity- represent topics commonly addressed in the international bioarchaeological literature. Some of these themes are also strongly linked with pressing contemporary issues. For example, these themes could be examined in the context of addressing questions such as: How did climate change affect health and disease (pathology), mobility patterns (migration or other forms of movement), diet and occupational patterns (activity)? What forms did violence take in the past (e.g. physical violence manifesting as trauma (pathology) and/or structural violence taking the form of unequal access to dietary resources, labor division (activity) disadvantaging certain groups, physiological stress (pathology), among other forms of violence)? How did mobility affect dietary preferences and exposure to diseases? The following section examines the degree to which the themes of pathology, mobility, diet and activity have actually been explored within such broader pressing research topics in the EMME.

3. ADDRESSING CONTEMPORARY ISSUES IN THE EMME

The EMME region has witnessed complex economic, social and political changes and transitions throughout its history. As bioarchaeology serves to interpret human remains within their biological, sociocultural, historical, and environmental framework, it can offer a deep time perspective to pressing contemporary issues and contribute towards a better understanding of the diachronic effects of climate change, human mobility, and violence, among many other important processes (Agarwal and Glencross, 2011). A recent major review paper highlighted a series of topics of contemporary significance that would be promising trajectories for bioarchaeological research (Buikstra et al., 2022). These topics include ethics, social inequality, identity (including intersectionality), climate change, migration, violence, epidemic disease, adaptability/plasticity, the osteological paradox, and the developmental origins of health and disease. While all these themes are highly relevant in most parts of the world, including the EMME, we felt that, among them, climate change, migration, violence and intersectionality are particularly relevant in the EMME region; hence they form the focus of this section. More specifically, the EMME is at high risk of becoming a climate change hotspot, with the region warming up almost twice as fast compared to the global average (Zittis et al., 2022). Regarding migration, according to a report by the UN Refugee Agency, in 2022 there were 3.6 million Syrians under temporary protection in Turkey, and another 22,730 displaced individuals arrived in Europe through the Eastern Mediterranean route (https://data.unhcr.org/en/documents/details/98768; accessed 17/02/2023). Finally, the tumultuous political history of the region, marked by repeated and ongoing war-

fare and other forms of conflict (Axt, 2022), has resulted in elevated violence; both in the form of direct violence and in terms of oppression, with women, children, and other vulnerable groups suffering disproportionately (structural violence and intersectionality). This section of the paper explores the extent to which bioarchaeological research has been used to shed light on the diachronic character of these topics, which reflect pressing contemporary issues affecting the economic, social, and political structure of the EMME region.

3.1. *Intersectionality*

Intersectionality refers to the fact that all individuals have multiple identities (e.g., gender, age, social status, ethnicity) that intersect and shape us as *Homo sapiens*. The intersectionality approach explores social relations by examining intersecting forms of discrimination; it acknowledges that social systems are complex and many forms of oppression (e.g. racism, sexism, ageism), may be present in a person's life simultaneously and interact interchangeably (Crenshaw, 1989). Therefore, intersectionality is a necessary framework when engaging with issues of privilege and power. Intersectionality has recently started being embedded in bioarchaeological interpretations. In his study of industrial-era skeletal assemblages from England, Yaussy (2019) assessed the intersecting axes of privilege, marginalization, and structural oppression by highlighting how high-status females were often impervious to negative health outcomes, while low-class males were susceptible to injury and disease. Intersectional facets can be also attested in other studies from North America and the United Kingdom (Byrnes, 2017; Knudson et al., 2020; Mant et al., 2021).

Because it represents socioeconomic structures that conceal multiple subregional, national, and subnational disparities, the EMME is a prime region in which to employ intersectional bioarchaeological research. Social disparities and inequalities are intertwined with the region's rooted religious and ethnic affiliations and divides, as many sectarian groups are divided across several states and maintain different power positions depending on the geographical area they are in (Mahmood, 2015; Makdisi, 2000). This exacerbates the region's inequality-related challenges, which has been characterized by ongoing conflicts, mass migration, governance and institutional deficits, and unstable economic development (Arghyrou, 2015; Guechati and Chami, 2022; Haas, 2005; Hammond, 2015; Vatikiotis, 2016). Finally, an important dimension of intersecting social norms and power structures are gender-based inequalities (Al-Shami, 2021; Nazir, 2005).

Bioarchaeological studies from the EMME region have yet to integrate the theory of intersectionality explicitly in their framework, with the only important exception being the work of Sulosky Weaver (2022) on marginalised (in terms of disability, socioeconomic status, ancestry and ethnicity) groups in the ancient Greek world, which argues that intersectionality promoted social marginalisation in the Late Archaic/Classical Greek world. Nonetheless, several bioarchaeological studies in the EMME have explored issues of health, dietary and other forms of inequality, both between genders (or rather biological sexes) and other social groups to examine different expressions of hierarchy (see contributions in Lagia and Voutsaki, in press; Schepartz et al., 2017). In the future, it is essential to embed such studies more explicitly in the analytical framework of intersectionality since the EMME region was at the crossroads of civilizations with highly diverse social structures and divisions; hence, following the intersectionality approach will allow a better understanding of past identities, in addition to elucidating the structures that instigated and reinforced inequalities in the past.

3.2. *Climate change*

The EMME region has a radius of 2,000 kilometers. Industrialization, population growth, and land conversion have resulted in this region becoming a climate change 'hotspot' (Lelieveld et al., 2012). The climate has undergone substantial changes in the last decade, with significantly dryer and warmer conditions emerging, while future projections are even more grim. The mean temperature is expected to rise by 3-5 degrees Celsius by mid-century, a decrease in rain fall is expected to result in river discharge decrease of 10-30% by the end of the 21st century, while extended heat waves, and increase in ozone smog and fine aerosol particles are also foreseen (Lelieveld et al., 2016; Shaheen et al., 2021). The milder winters and hotter summers are expected to alter EMME's biodiversity in fauna and flora, as well as promote an increase in invasive species (Bardsley and Edwards-Jones, 2007; Gordo and Sanz, 2010).

Bioarchaeology can offer a deeper understanding of the ways in which past societies adapted to climate change under different circumstances (Robbins Schug, 2020). It has a key role in understanding diverse stressors (e.g. diseases, dietary inefficiencies) and biocultural identities (e.g. social status, kinship), which are crucial in exploring aspects of human resilience to environmental stressors (Buikstra et al., 2022). Climate change has been studied systematically through bioarchaeology in recent years to test the degree of resilience of past communities across different temporal and spatial scales (mostly in North

America, mainland Europe and south Asia) (Hegmon et al., 2008; Nelson et al., 2006; Robbins Schug, 2011; Stojanowski, 2019; Tung et al., 2016).

Although the EMME is a 'hotspot' for climate change, few studies have addressed this topic in the framework of bioarchaeology. For example, Gregoricka (2016) examined changing climatic patterns at the Bronze Age sites of Umm an-Nar and Wad Suq in the Arabian Peninsula using stable oxygen isotope ratios. The isotopic data revealed homogeneous signatures indicative of continuity, elucidating the successful adaptability of local communities to changing environments and preservation of their way of life. In contrast, the adaptive response of Syrian Neolithic communities to climate instability and the transition from rain-fed agriculture to marginal environments involved the introduction of neurotoxic grass peas (*Lathyrus sativus*) into their diet, posing risks to human health (Merrett and Meiklejohn, 2015). The above studies showcase the potential of bioarchaeology to shed light to the diverse responses of past societies to climate change and their implications for the short- and long-term sustainability of these societies. Much more research in this direction is necessary so that climate change adaptation can be elucidated with higher spatial and temporal resolution.

3.3. Violence

Galtung (1990) identified three interconnected dimensions of violence: direct, structural, and cultural. *Direct violence* threatens one's life and/or inhibits an individual from meeting basic human needs. *Structural violence* refers to the systematic and unjust means by which some marginalized groups are denied opportunities to access goods and services that enable them to fulfil their basic human needs (Vorobej, 2008). Finally, *cultural violence* reflects social beliefs that normalize direct and structural violence (Burton, 1997).

Direct violence has been extensively studied in bioarchaeological research through the recording of skeletal trauma resulting from inter-personal aggression (Judd and Roberts, 1998, 1999; Lebedev et al., 2018; Milner et al., 2008; Osterholtz et al., 2019). More recently, structural and cultural violence have also started being critically examined, for instance in the context of health disparities affecting vulnerable or marginalized segments of past communities (e.g. females or individuals of the lower social strata) (Tremblay and Reedy, 2020).

Violence is a well-addressed topic in bioarchaeological research throughout the EMME region, with studies often tackling aspects of past violence in tandem with other variables such as gender-divisions (Monge and Selinsky, 2019), climate change (Floreanova et al., 2020), migration (Osterholtz, 2017), and social stratification (Glencross and Knüsel, 2015; Knüsel et al., 2018; Lorentz and Casa, 2020). As described above, structural violence is more than just physical trauma; it also encompasses embodied sociopolitical power dynamics and inherent inequalities. Therefore, aside from skeletal trauma, the effects of structural violence can manifest as skeletal 'nonspecific stress markers' (Tuchscherer, 2019), nutritional deficiencies (Pitre et al., 2016), infectious diseases, and mechanical strain (Kyle et al., 2016), all of which are aspects that have been examined in the EMME, though not explicitly linked with structural violence. Another aspect of structural violence in bioarchaeology relates to the postmortem treatment of the body. Studies from the EMME have explored the mistreatment, neglect, or destruction of skeletal remains based on past notions of conflict (Weerasinghe, 2020), though again not explicitly linking these phenomena to structural violence. In the future, we foresee more publications explicitly discussing aspects of structural violence, potentially in conjunction with intersectionality.

3.4. Migration

Throughout time, large segments of the human populace were actively mobile. This mobility took diverse forms (e.g. long- or short-distance, temporary or permanent) and had diverse motivations (e.g. slavery, intermarriage, military service, trade) (Pitoski et al., 2021). The impact of mobility throughout history has been variable and dependent on its character and context. Looking at recent data, in 2015, more than one million asylum seekers arrived to Europe by sea (Achilli, 2015). The majority of the asylum seekers were housed in rural communities and small towns that had not previously experienced large-scale immigration (Rudolph and Wagner, 2022) and certain political parties stressed that asylum seekers posed a threat to European identity, national security, and social and cultural homogeneity (Paluck et al., 2019). These pressing issues, however, do not constitute an exclusively modern phenomenon. Bioarchaeology is ideally placed to explore past mobility at different scales (from the individual to the population), but also assess the impact of mobility on health and disease, diet, violence, and other aspects of the lifeway of past people (Dahlstedt et al., 2021; Diaz-del-Rio et al., 2022; Stantis et al., 2022).

Palaeomobility studies from the EMME region are highly relevant in bioarchaeological research, covering themes of social/ethnic identities (Somel et al., 2016, Stantis et al., 2020), kinship/biological-relatedness (Gregoricka and Sheridan, 2017), admixture (Haber et al., 2018), forced migration/enslavement (Matisoo-Smith et al., 2018), disease transmission (Donoghue et al., 2015), and climate change (Benz et

al., 2016). Although more research is required to refine understanding of past mobility across time and space in the EMME, existing studies highlight the complexity of human movement and its impacts, and contradict deterministic modern political rhetoric that stresses the deleterious impact of human migration.

4. SUMMARY AND CONCLUSION

Bioarchaeology of the EMME has largely kept pace with methodological and conceptual developments in Western Europe and North America, and it has made substantial contributions to the understanding of life in past human communities, elucidating aspects of activity, demography, diet, disease, mobility, kinship and others. Several studies in the EMME have addressed pressing issues of the past with contemporary implications (e.g. climate change, violence, migration) as well as adopted explicitly or implicitly theoretical approaches that acknowledge the complexity of past identities (e.g. intersectionality).

As briefly presented above, the intersectionality approach focuses on intersecting forms of discrimination and oppression, and it has recently started being explicitly adopted in bioarchaeological studies on privilege and marginalization across the world. The EMME, a region characterised by social inequalities rooted in religious, ethnic, economic, and other divides, is a prime area for the application of the intersectionality approach in bioarchaeological research with the aim of offering a deeper time perspective on these issues. Several bioarchaeological studies in the EMME have explored issues of inequality; however, we could only find a single study that explicitly framed this research in the context of intersectionality; stressing the great potential of this approach and the need for further emphasis in this direction. In terms of climate, the EMME region is considered a climate change 'hotspot'. Bioarchaeological research has elucidated the adaptive responses of different groups in the region to climate instability, highlighting diverse strategies for sustainability and the need to move beyond deterministic scenarios that support that mass migrations, violence and instability are a one-way response to climate change. Regarding violence, direct inter-personal violence has been systematically studied in the EMME, often in association to climate change, migration, gender or other social divisions. In contrast, structural violence, which expresses socio-political power dynamics and inequalities, has been examined in terms of differential susceptibility to physiological stress, nutritional deficiencies, infectious diseases, and mechanical strain, as well as with regard to the mistreatment of the dead, though relevant research was not explicitly linked with structural violence. Contrary to the above themes, mobility (in the form of migration and other types of movement) has been systematically examined in the EMME, stressing its complex character and motivations in different contexts across time and space.

Existing studies exemplify how much can be achieved in the region and show the potential of adopting in bioarchaeology rigorous multi-scalar techniques that approach important questions about past human life that are relevant to modern society. More systematic research is required, developed taking into consideration the above matters from its inception stage, and current trends in published studies support that indeed such research is under way.

Author Contributions: Conceptualization, M.M. and E.N.; methodology, M.M. and E.N.; investigation, M.M. and E.N.; resources, E.N.; data curation, M.M. and E.N.; writing—original draft preparation, M.M. and E.N.; writing—review and editing, M.M. and E.N.; visualization, M.M.; supervision, E.N.; project administration, M.M. and E.N.; funding acquisition, E.N. All authors have read and agreed to the published version of the manuscript.

ACKNOWLEDGEMENTS

This work was co-funded by the European Regional Development Fund and the Republic of Cyprus through the Research and Innovation Foundation [Project: EXCELLENCE/0421/0376]. We thank the anonymous reviewers for their valuable feedback and constructive comments, which helped improve the quality of this article.

REFERENCES

Achilli, L. (2015) Syrian refugees in Jordan: a reality check. *Migration Policy Center*, Vol. 2, pp.1-12.

Afshar, Z. (2014) *Mobility and economic transition in the 5th to the 2nd millennium BC in the population of the Central Iranian Plateau, Tepe Hissar*. Unpublished Ph.D. Dissertation, Durham University, United Kingdom.

Afshar, Z., Millard, A., Roberts, C. and Gröcke, D. (2019) The evolution of diet during the 5th to 2nd millennium BCE for the population buried at Tepe Hissar, north-eastern Central Iranian Plateau: The stable isotope evidence. *Journal of Archaeological Science: Reports*, Vol. 27, pp. 101983.

Agarwal, S.C. and Glencross, B.A. (2011) *Social bioarchaeology*. John Wiley and Sons.

Al-Bashaireh, K. and Al-Muheisen, Z. (2011) Subsistence strategies and palaeodiet of Tell al-Husn, northern Jordan: nitrogen and carbon stable isotope evidence and radiocarbon dates. *Journal of Archaeological Science*, Vol. 38, No. 10, pp. 2606-2612.

Al-Shami, F. (2021) The Mediterranean Region: A Hotspot of Inequalities in the Aftermath of COVID-19. *IEMed. Mediterranean Yearbook,* Vol. 2021, pp. 124-130.

Alessi, E.J., Kahn, S., Woolner, L. and Van Der Horn, R. (2018) Traumatic stress among sexual and gender minority refugees from the Middle East, North Africa, and Asia who fled to the European Union. *Journal of Traumatic Stress*, Vol. 31, No. 6, pp. 805-815.

Alt, K.W., Benz, M., Müller, W., Berner, M.E., Schultz, M., Schmidt-Schultz, T.H., Knipper, C., Gebel, H.K., Nissen, H.J. and Vach, W. (2013) Earliest evidence for social endogamy in the 9,000-year-old-population of Basta, Jordan. *Plos One*, Vol.8, No. 6, pp. e65649.

Anastasiou, E., Papathanasiou, A., Schepartz, L.A. and Mitchell, P.D. (2018) Infectious disease in the ancient Aegean: intestinal parasitic worms in the Neolithic to Roman period inhabitants of Kea, Greece. *Journal of Archaeological Science: Reports*, Vol. 17, pp. 860-864.

Angel, J.L. (1970) A Mesolithic population in Greece. *American Journal of Physical Anthropology,* Vol. 33, No. 1, pp. 125.

Angel, J.L. (1972a) Ecology and population in the Eastern Mediterranean. *World Archaeology,* Vol. 4, No. 1, pp. 88–105.

Angel, J.L. (1972b) Biological relations of Egyptian and Eastern Mediterranean populations during pre–Dynastic and Dynastic times. *Journal of Human Evolution* Vol. 1, No. 3, pp. 307-313.

Angel, J.L. (1975) Human skeletons from Eleusis. In *Το δυτικόν νεκροταφείον της Ελευσίνος* [*The western cemetery of Elefsinos*], G.E. Mylonas (ed.), Athens: Library of the Archaeological Society of Athens, pp. 435–438

Angel, J.L. (1977) Appendix 5: Human skeletons. In *Keos I: Kephala, a late neolithic settlement and cemetery*, J.E. Coleman (ed.), Princeton, NJ: American School of Classical Studies, pp. 133–156.

Angel, J.L. (1979) A Byzantine monastic population at Kalenderhane Camii, Istanbul. *American Journal of Physical Anthropology* Vol. 50, No. 3, pp. 415.

Angel JL. (1980) Early Bronze Age Anatolians: nutrition, occupations, and pathology. *American Journal of Physical Anthropology*, Vol. 52, No. 2, pp. 201.

Anne, S., Ozga, C. and Andrew, T. (2019) Ancient DNA in the Study of Ancient Disease, In *Ortner's Identification of Pathological Conditions in Human Skeletal Remains*, J.E. Buikstra (ed.), Elsevier, pp. 183–210.

Arghyrou, M.G. (2015) The global financial crisis in Greece: its background causes, escalation and prospects for recovery. In *The Global Financial Crisis and its Budget Impacts in OECD Nations*, J. Wanna, E.A. Lindquist, and J. de Vries (ed.), Edward Elgar Publishing, pp. 255-283.

Axt, H.J. (2022) Conflicts and Global Powers in the Eastern Mediterranean. An Introduction. *Comparative Southeast European Studies*, Vol. 70, No. 3, pp. 393-413.

Baker, B.J. and Agarwal, S.C. (2017) Stronger together: Advancing a global bioarchaeology. *Bioarchaeology International*, Vol. 1, No. 1-2, pp. 1-18.

Bardsley, D.K. and Edwards-Jones, G. (2007) Invasive species policy and climate change: social perceptions of environmental change in the Mediterranean. *Environmental Science and Policy*, Vol. 10, No. 3, pp. 230-242.

Bentley, A.R. (2006) Strontium isotopes from the earth to the archaeological skeleton: a review. *Journal of Archaeological Method and Theory*, Vol. 13, No. 3, pp. 135-187.

Benz, M., Fecher, M., Mark, S., Kurt, A., Erdal, Y., Şahin, F. and Özkaya, V. (2016) Results of Stable Isotopes from Körtik Tepe Southeastern Turkey. *Arkeometri Sonuçları Toplantısı*, Vol. 31, pp. 231-252.

Blank, M., Sjögren, K.G., Knipper, C., Frei, K.M. and Storå, J. (2018) Isotope values of the bioavailable strontium in inland southwestern Sweden—A baseline for mobility studies. *PloS one*, Vol. 13, No. 10, pp. e0204649.

Bongers, J.L., Nakatsuka, N., O'Shea, C., Harper, T.K., Tantaleán, H., Stanish, C. and Fehren-Schmitz, L. (2020) Integration of ancient DNA with transdisciplinary dataset finds strong support for Inca resettlement in the south Peruvian coast. *Proceedings of the National Academy of Sciences*, Vol. 117, No. 31, pp. 18359-18368.

Bourbou, C. (2003) Health patterns of proto-Byzantine populations (6th–7th centuries AD) in south Greece: the cases of Eleutherna (Crete) and Messene (Peloponnese). *International Journal of Osteoarchaeology*, Vol. 13, No. 5, pp. 303-313.

Bourke, J.B. (1967) A review of the palaeopathology of the arthritic diseases', In *Diseases in Antiquity*, D.R. Brothwell, and A.T. Sandison (ed.), Thomas, Springfield.

Buikstra, J.E. (1977) Biocultural dimensions of archaeological study: A regional perspective. In *Biocultural adaptation in prehistoric America*, R.L. Blakely (ed.), University of Georgia Press, pp. 67-84.

Buikstra, J.E. (2019) *Ortner's identification of pathological conditions in human skeletal remains*. Academic Press.

Buikstra, J.E., DeWitte, S.N., Agarwal, S.C., Baker, B.J., Bartelink, E.J., Berger, E., Blevins, K.E., Bolhofner, K., Boutin, A.T., Brickley, M.B. and Buzon, M.R. (2022) Twenty-first century bioarchaeology: Taking stock and moving forward. *American Journal of Biological Anthropology*, Vol. 178, No. Suppl. 74, pp. 54-114.

Burton, J. (1997) *Violence explained: The sources of conflict, violence and crime and their prevention*. Manchester University Press.

Buzon, M.R., and Simonetti, A. (2013) Strontium isotope (87Sr/86Sr) variability in the Nile Valley: identifying residential mobility during ancient Egyptian and Nubian sociopolitical changes in the New Kingdom and Napatan periods. *American Journal of Physical Anthropology*, Vol. 151, No. 1, pp. 1-9.

Byrnes, J. F. (2017) Injuries, impairment, and intersecting identities: The poor in Buffalo, NY 1851-1913. In *Bioarchaeology of impairment and disability: Theoretical, ethnohistorical, and methodological perspectives*, J.F. Byrnes, and J.L. Muller (ed.), Springer, pp. 201-222.

Cornwall, P.B. (1943) The Tumuli of Bahrain. *Asia and the Americas,* Vol. 42, No. 4, pp. 230–234.

Cornwall, P.B. (1944) *Dilmun: The history of Bahrein Island before Cyrus*. Unpublished Ph.D. dissertation, Harvard University.

Cornwall, P.B. (1946) On the location of Dilmun. *Bulletin of the American Schools of Oriental Research*, Vol. 102, pp. 3–11.

Crenshaw, K. (1989) Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist policies. *University of Chicago Legal Forum*, Vol. 1989, No. 8, pp. 139–167.

Dahlstedt, A.C., Schach, E.E., Baitzel, S.I. and Knudson, K.J. (2021) Stable oxygen and radiogenic strontium variability in the Osmore Drainage, Peru: Implications for intra-regional Andean paleomobility studies. *Journal of Archaeological Science: Reports*, Vol. 37, pp. 102933.

Diaz-del-Rio, P., Uriarte, A., Becerra, P., Pérez-Villa, A., Vicent, J.M. and Díaz-Zorita, M. (2022) Paleomobility in Iberia: 12 years of strontium isotope research. *Journal of Archaeological Science: Reports*, Vol. 46, pp. 103653.

Donoghue, H.D., Taylor, G.M., Marcsik, A., Molnár, E., Pálfi, G., Pap, I., Teschler-Nicola, M., Pinhasi, R., Erdal, Y.S., Velemínsky, P. and Likovsky, J. (2015) A migration-driven model for the historical spread of leprosy in medieval Eastern and Central Europe. *Infection, Genetics and Evolution*, Vol. 31, pp. 250-256.

Dotsika, E., Diamantopoulos, G., Lykoudis, S., Poutoukis, D. and Kranioti, E. (2018) Isotopic composition of spring water in Greece: Spring waters isoscapes. *Geosciences*, Vol. 8, No. 7, pp. 238.

Eng, J.T. (2016) A bioarchaeological study of osteoarthritis among populations of northern China and Mongolia during the Bronze Age to Iron Age transition to nomadic pastoralism. *Quaternary International*, Vol. 405, pp. 172-185.

Floreanova, K., Gilat, E., Koren, I. and May, H. (2020) Ear infection prevalence in prehistoric and historic populations of the southern Levant: A new diagnostic method. *International Journal of Osteoarchaeology*, Vol. 30, No. 4, pp. 449-457.

Forshaw, R. (2014) Dental indicators of ancient dietary patterns: dental analysis in archaeology. *British Dental Journal*, Vol. 216, No. 9, pp. 529-535.

Frohlich, B., Ortner, D.J. and Al-Khalifa, H. (1989) Human Disease in the Ancient Middle East. *Dilmon*: *Journal of the Bahrain Historical and Archaeological Society*, Vol. 14, pp. 61–73.

Galtung, J. (1990) Cultural violence. *Journal of Peace Research*, Vol. 27, No. 3, pp. 291-305.

Gao, S.Z., Zhang, Y., Wei, D., Li, H.J., Zhao, Y.B., Cui, Y.Q. and Zhou, H. (2015) Ancient DNA reveals a migration of the ancient Di-qiang populations into Xinjiang as early as the early Bronze Age. *American Journal of Physical Anthropology*, Vol. 157, No. 1, pp. 71-80.

Glencross, B.A. and Knüsel, C.J. (2015) Changing Perspectives on Social Relations at Neolithic Catalhoyuk: Evidence from Cranial Trauma. *American Journal of Physical Anthropology*, Vol. 156, pp. 146.

Gordo, O. and Sanz, J.J. (2010) Impact of climate change on plant phenology in Mediterranean ecosystems. *Global Change Biology*, Vol. 16, No. 3, pp. 1082-1106.

Gregoricka, L.A. (2016) Human response to climate change during the Umm an-Nar/Wadi Suq transition in the United Arab Emirates. *International Journal of Osteoarchaeology*, Vol. 26, No. 2, pp. 211-220.

Gregoricka, L.A. and Sheridan, S.G. (2017a) Lineage and Lifestyle in Early Bronze Age Jordan: A Biogeochemical Investigation of Charnel House Human Remains. *American Journal of Physical Anthropology,* Vol. 162, pp. 202-202.

Gregoricka, L.A. and Sheridan, S.G. (2017b) Continuity or conquest? A multi-isotope approach to investigating identity in the Early Iron Age of the Southern Levant. *American Journal of Physical Anthropology*, Vol. 162, No. 1, pp. 73-89.

Gregoricka, L.A. (2019) Temporal trends in mobility and subsistence economy among the tomb builders of Umm an-Nar Island. In *Mortuary and Bioarchaeological Perspectives on Bronze Age Arabia*, K.D. Williams, and L.A. Gregoricka (ed.), University Press of Florida, Gainesville, pp. 201-219.

Guechati, I. and Chami, M. (2022) Lebanon, economic and financial crises, reasons for collapse. *Revue Française d'Economie et de Gestion*, Vol. 3, No. 6, pp. 276-291.

Haber, M., Doumet-Serhal, C., Scheib, C., Xue, Y., Danecek, P., Mezzavilla, M., Youhanna, S., Martiniano, R., Prado-Martinez, J., Szpak, M. and Matisoo-Smith, E. (2017) Continuity and admixture in the last five millennia of Levantine history from ancient Canaanite and present-day Lebanese genome sequences. *The American Journal of Human Genetics*, Vol. 101, No. 2, pp. 274-282.

Haddow, S.D. and Knüsel, C.J. (2017) Skull retrieval and secondary burial practices in the Neolithic Near East: Recent insights from Çatalhöyük, Turkey. *Bioarchaeology International*, Vo.1, No. 1-2, pp. 52-71.

Hammond, T.G. (2015) The Mediterranean migration crisis. *Foreign Policy Journal*, Vol. 19, No. 5, pp. 1-12.

Harper, N.K. and Fox, S.C. (2008) Recent research in Cypriot bioarchaeology. *Bioarchaeology of the Near East*, Vol. 2, pp. 1-38.

Hegmon, M., Peeples, M.A., Kinzig, A.P., Kulow, S., Meegan, C.M. and Nelson, M. C. (2008) Social transformations and its human costs in the Prehispanic U.S. Southwest. *American Anthropologist*, Vol. 110, No. 3, pp. 313– 324.

Henckel, K.O. (1930) Zur Kraniologie Palästinas [On the craniology of Palestine]. *Zeitschrift für Morphologie und Anthropologie*, Vol. 28, No. 3, pp. 238-243.

Hershkovitz, I., Donoghue, H. D., Minnikin, D. E., Besra, G. S., Lee, O. Y., Gernaey, A. M., Galili, E., Eshed, V., Greenblatt, C., Lemma, E., Bar-Gal, G.L. and Spigelman, M. (2008) Detection and molecular characterization of 9000-year-old Mycobacterium tuberculosis from a Neolithic settlement in the Eastern Mediterranean. *PloS One*, Vol. 3, No. 10, pp. e3426.

Højgaard, K. (1980a) Dentition on Umm an-Nar (Trucial Oman), 2500 BC. *Scandinavian Journal of Dental Research* Vol. 88, No. 5, pp. 355-364.

Højgaard, K. (1980b) Dentition on Bahrain, 2000 BC. *European Journal of Oral Sciences,* Vol. 88, No. 6, pp. 467–475.

Højgaard, K. (1981) Dentition on Umma an-Nar, c 2500 BC. *Proceedings of the Seminar for Arabian Studies,* Vol. 11, pp. 31-36.

Højgaard, K. (1983) Dilmun's ancient teeth. *Dilmun: Journal of the Bahrain Historical and Archaeological Society,* Vol. 11, pp. 11-13.

Højgaard, K. (1984a) Various aspects of ancient teeth from the Gulf. *Proceedings of the Seminar for Arabian Studies,* Vol. 14, pp. 43-49.

Højgaard, K. (1984b) Annexe 3: Dentitions from Janussan (Bahrain). In *La nécropole de Janussan (Bahrain)*, P. Lombard and J.F. Salles (ed.), Lyon: Travaux de la Maison de l'Orient, pp. 163-171.

Højgaard, K. (1985) SEM (scanning electron microscopic) examination of teeth from the third millennium BC excavated in Wadi Jizzi and Hafit. In *South Asian Archaeology 1983: Papers from the Seventh International Conference of the Association of South Asian Archaeologists in Western Europe*, J. Schotsmans, and M. Taddei (ed.), Naples: Instituto Universitario Orientale, pp. 151–156.

Højgaard K. (1986) Dental anthropological investigations on Bahrain. In *Bahrain through the ages: The archaeology,* S.H.A. al-Khalifa, and M. Rice (ed.), London: Routledge, pp. 64–71.

Ioannou, G. and Lorentz, K.O. (2022) Bioarchaeological research in Cyprus: A review. *Bioarchaeology of the Near East*, Vol. 16, pp. 1-27.

Judd, M.A. and Roberts, C.A. (1998) Fracture patterns at the medieval leper hospital in Chichester. *American Journal of Physical Anthropology*, Vol. 105, pp. 43-55.

Judd, M.A. and Roberts, C.A. (1999) Fracture trauma in a medieval British farming village. *American Journal of Physical Anthropology*, Vol. 109, No. 2, pp. 229-243.

Jurmain, R., Cardoso, F.A., Henderson, C. and Villotte, S. (2011) Bioarchaeology's Holy Grail: The reconstruction of activity. In: *A companion to paleopathology,* A. Grauer (ed.), New York: Wiley, pp. 531-552.

Kansu, Ş.A. (1930) Hititlerin kraniyolojik tetkikatına methal [An approach to the craniological examination of the Hittites]. *Türk Antropoloji Mecmuası* Vol. 6, No. 10, pp. 3-17.

Kansu, Ş.A. and Tunakan, S. (1946) Alaca-Höyük 1943-1945 kazılarında çıkarılan Kalkolitik, Bakır ve Tunç Çağlarına ait Halkın antropolojisi [Anthropology of the People of the Chalcolithic, Copper and Bronze Ages excavated in Alaca-Höyük 1943-1945 excavations]. *Belleten,* Vol. 10, No. 40, pp. 539-555.

Karligkioti, A., Mardini, M., Christofi, P., and Nikita, E. (2022) First bioarchaeological insights to living conditions in Cyprus from Venetian to Ottoman times. *Journal of Archaeological Science: Reports*, Vol. 45, pp. 103640.

Keita, S.O.Y. (1993) Studies and comments on ancient Egyptian biological relationships. *History in Africa*, Vol. 20, pp.129-154.

Khwaileh, A.M. (2016) A case of multiple myeloma and congenital anomalies of an early Islamic skeleton from Tell Abu Al-Kharaz, Jordan. *Anthropologie*, Vol. 54, No. 3, pp. 317-323.

Knudson, K.J. and Stojanowski, C.M. (2020) *Bioarchaeology and identity revisited*. University Press of Florida.

Knüsel, C.J, Glencross, B. and Milella, M. (2018) Learning to live together: social tolerance and violence at Neolithic Çatalhöyük (7100-6000 cal BC). *American Journal of Physical Anthropology*, Vol. 165, No. Suppl. 66, pp. 143.

Krogman, W.M. (1940) The skeletal and dental pathology of an early Iranian site. *Bulletin of the History of Medicine,* Vol. 8, No. 1, pp. 28-48.

Kyle, B., Schepartz, L.A. and Larsen, C.S. (2016) Mother city and colony: bioarchaeological evidence of stress and impacts of Corinthian colonisation at Apollonia, Albania. *International Journal of Osteoarchaeology,* Vol. 26, No. 6, pp. 1067–1077.

Ladegaard-Pedersen, P., Achilleos, M., Dörflinger, G., Frei, R., Kristiansen, K. and Frei, K.M. (2020) A strontium isotope baseline of Cyprus. Assessing the use of soil leachates, plants, groundwater and surface water as proxies for the local range of bioavailable strontium isotope composition. *Science of the Total Environment*, Vol. 708, pp. 134714.

Lagia, A. and Voutsaki, S. (in press) *Bioarchaeological perspectives on inequality and social differentiation from the ancient Greek world.* University Press of Florida.

Lebedev, M., Dobrovolskaya, M. and Mednikova, M. (2018) A case of decapitation from Giza. *Pražské egyptologické studie (Prague Egyptological Studies)*, Vol. 21, pp. 106-119.

Lelieveld, J., Hadjinicolaou, P., Kostopoulou, E., Chenoweth, J., El Maayar, M., Giannakopoulos, C., Hannides, C., Lange, M.A., Tanarhte, M., Tyrlis, E. and Xoplaki, E. (2012) Climate change and impacts in the Eastern Mediterranean and the Middle East. *Climatic change*, Vol. 114, No. 3, pp. 667-687.

Lelieveld, J., Proestos, Y., Hadjinicolaou, P., Tanarhte, M., Tyrlis, E. and Zittis, G. (2016) Strongly increasing heat extremes in the Middle East and North Africa (MENA) in the 21st century. *Climatic Change,* Vol. 137, No. 1-2, pp. 245–260.

Lorentz, K.O. and Casa, B. (2020) First metacarpal fractures from Chalcolithic Cyprus: A fall or a fist?. *International Journal of Osteoarchaeology*, Vol. 30, No. 5, pp. 712-735.

Mahmood, S. (2015) *Religious difference in a secular age: a minority report*. Princeton University Press.

Makarewicz, C.A. and Sealy, J. (2015) Dietary reconstruction, mobility, and the analysis of ancient skeletal tissues: Expanding the prospects of stable isotope research in archaeology. *Journal of Archaeological Science*, Vol. 56, pp. 146-158.

Makdisi, U. (2000) *The culture of sectarianism: community, history, and violence in nineteenth-century Ottoman Lebanon*. University of California Press.

Mant, M., de la Cova, C., and Brickley, M.B. (2021) Intersectionality and trauma analysis in bioarchaeology. American Journal of Physical Anthropology, Vol. 174, No. 4, pp. 583–594.

Mardini, M., Badawi, A., Zaven, T., Gergian, R. and Nikita, E. (2023) Bioarchaeological perspectives to mobility in Roman Phoenicia: A biodistance study based on dental morphology. *Journal of Archaeological Science: Reports*, Vol. 47, pp. 103759.

Martin, D. (2017) Bioarchaeology in the United Arab Emirates. *Arabian Archaeology and Epigraphy*, Vol. 18, pp. 124-131.

Matisoo-Smith, E., Gosling, A.L., Platt, D., Kardailsky, O., Prost, S., Cameron-Christie, S., Collins, C.J., Boocock, J., Kurumilian, Y., Guirguis, M. and Pla Orquín, R. (2018) Ancient mitogenomes of Phoenicians

from Sardinia and Lebanon: A story of settlement, integration, and female mobility. *PloS One*, Vol. 13, No. 1, pp. e0190169.

Merrett, D.C. and Meiklejohn, C. (2015) Living in a Marginal Environment: Climate Instability and Possible Lathyrism in the Syrian Neolithic. In *Climate and Ancient Societies*. S. Kerner, R.J. Dann, and P. Bangsgaard (ed.), Museum Tusculanum Press. University of Copenhagen, pp. 245-246.

Metcalfe, R., Cockitt, J. and David, R. (2014) *Palaeopathology in Egypt and Nubia: A century in review*. Oxford, Archaeopress

Milner, G.R., Wood, J.W. and Boldsen, J.L. (2008) Advances in paleodemography. In *Biological anthropology of the human skeleton*, Katzenberg, pp. 561-600.

Monge, J. and Selinsky, P. (2019) Patterns of violence against women in the Iron Age town of Hasanlu, Solduz Valley, Iran. In *Women in Antiquity: Real Women across the Ancient World*, S.L. Budin, and J.M. Turfa (ed.), Routledge, pp. 174-191.

Munoz, O. (2017) Transition to agriculture in South-Eastern Arabia: Insights from oral conditions. *American Journal of Physical Anthropology,* Vol. 164, No.4, pp. 702-719.

Nazir, S. (2005) Challenging inequality: Obstacles and opportunities towards women's rights in the Middle East and North Africa. *JIJIS*, 5, pp. 31.

Nelson, M.C., Hegmon, M., Kulow, S. and Schollmeyer, K.G. (2006) Archaeological and ecological perspectives on reorganization: A case study from the Mimbres region of the US southwest. *American Antiquity*, Vol. 71, No. 3, pp. 403–432.

Netolitzky F. (1943) Nachweise von Nahrungs- und Heilmitteln in den Trockenleichen von Naga- ed-der (Ägypten) [Evidence of food and medicine in the dry corpses of Naga-ed-der (Egypt)]. *Mitteilungen des Deutschen Instituts für Ägyptische Altertumskundein Kairo*, Vol. 1, pp. 1-33

Nikita, E., Ysi Siew, Y., Stock, J., Mattingly, D. and Mirazón Lahr, M. (2011) Activity patterns in the Sahara Desert: An interpretation based on cross-sectional geometric properties. *American Journal of Physical Anthropology*, Vol. 146, No. 3, pp. 423-434.

Nikita, E. and Triantaphyllou, S. (2017) Human osteoarchaeology in Greece: research themes, challenges and potential. *Archaeological Reports*, Vol.63, pp. 63-75.

Nikita, E., Schrock, C., Sabetai, V. and Vlachogianni, E. (2019) Bioarchaeological perspectives to diachronic life quality and mobility in ancient Boeotia, central Greece: Preliminary insights from Akraiphia. *International Journal of Osteoarchaeology*, Vol. 29, No. 1, pp. 26-35.

Nikita, E., Mardini, M., Mardini, M., Tsimopoulou, C. and Karligkioti, A. (2021) Bi(bli)oArch: An open-access bibliographic database for human bioarchaeological studies in the Eastern Mediterranean and Middle East. *Journal of Archaeological Science: Reports*, Vol. 39, pp. 103151.

Nikita, E. and Chovalopoulou, M.E. (2023) Sisters but not identical twins: Some cautionary notes on adopting forensic anthropological methods in bioarchaeology. *Scientific Culture* Vol. 9, No. 1, pp. 1-20.

Ortner, D.J. (2003) *Identification of pathological conditions in human skeletal remains*. Academic Press.

Osterholtz, A.J. (2017) Bodies in Motion: Migration and Identity in Bronze Age Cyprus. *American Journal of Physical Anthropology*, Vol. 162, pp. 306-306.

Osterholtz, A.J., Harrod, R.P. and Miller, D.S. (2019) Analysis of pathology and activity-related changes to the patellae of individuals from Tell Abraq. *International Journal of Osteoarchaeology*, Vol. 29. No. 2, pp. 294-302.

Paluck, E.L., Green, S.A. and Green, D.P. (2019) The contact hypothesis re-evaluated. *Behavioural Public Policy*, Vol. 3. No. 2, pp. 129-158.

Pederzani, S. and Britton, K. (2019) Oxygen isotopes in bioarchaeology: Principles and applications, challenges and opportunities. *Earth-Science Reviews*, Vol. 188, pp. 77-107.

Perry, M.A. (2007) Is bioarchaeology a handmaiden to history? Developing a historical bioarchaeology. *Journal of Anthropological Archaeology*, Vol. 26, No. 3, pp. 486-515.

Perry, M.A. (2012a) *Bioarchaeology and behavior: The people of the ancient near East*. Gainesville: University Press of Florida.

Perry, M.A. (2012b) Paleopathology in Lebanon, Syria, and Jordan. In *The global history of paleopathology: Pioneers and prospects*, J.E. Buikstra, and C. Roberts (ed.), Oxford University Press, pp. 451-469.

Pilloud, M.A. and Hefner, J.T. (2016) *Biological distance analysis: forensic and bioarchaeological perspectives*. Academic Press.

Pilloud, M.A., Haddow, S.D., Knüsel, C.J. and Larsen, C.S. (2016) A bioarchaeological and forensic re-assessment of vulture defleshing and mortuary practices at Neolithic Çatalhöyük. *Journal of Archaeological Science: Reports*, Vol. 10, pp. 735-743.

Pilloud, M.A. and Larsen, C.S. (2011) "Official" and "practical" kin: Inferring social and community structure from dental phenotype at Neolithic Çatalhöyük, Turkey. *American Journal of Physical Anthropology*, Vol. 145, No. 4, pp. 519-530.

Pitoski, D., Lampoltshammer, T.J. and Parycek, P. (2021) Drivers of human migration: a review of scientific evidence. *Social Sciences*, Vol. 10, No. 1, pp. 21.

Pitre, M.C., Stark, R.J. and Gatto, M.C. (2016) First probable case of scurvy in ancient Egypt at Nag el-Qarmila, Aswan. *International Journal of Paleopathology*, Vol. 13, pp. 11-19.

Pollard, A.M. (1998) Archaeological reconstruction using stable isotopes. In *Stable Isotopes*, H. Griffiths (ed.), Garland Science, pp. 285-301.

Porter, B.W., Boutin, A.T. (2014) *Remembering the Dead in the Ancient Near East. Recent Contributions from Bioarchaeology and Mortuary Archaeology*. University Press of Colorado.

Radini, A., Nikita, E., Buckley, S., Copeland, L. and Hardy, K. (2017) Beyond food: The multiple pathways for inclusion of materials into ancient dental calculus. *American Journal of Physical Anthropology*, Vol. 162, pp. 71-83.

Rathmann, H. and Reyes-Centeno, H. (2020) Testing the utility of dental morphological trait combinations for inferring human neutral genetic variation. *Proceedings of the National Academy of Sciences*, Vol. 117, No. 20, pp. 10769-10777.

Refai, O. (2019) Entheseal changes in ancient Egyptians from the pyramid builders of Giza—Old Kingdom. *International Journal of Osteoarchaeology*, Vol. 29, No. 4, pp. 513-524.

Reynaga, D.K.M., Millaire, J.F., Balderas, X.C., Berrelleza, J.A.R., Luján, L.L. and Longstaffe, F.J. (2021) Building Mexican isoscapes: Oxygen and hydrogen isotope data of meteoric water sampled across Mexico. *Data in Brief*, Vol. 36, pp. 107084.

Robbins Schug, G. (2011) *Bioarchaeology and climate change: A view from south Asian prehistory*. University Press of Florida.

Robbins Schug, G. (2020) *The Routledge handbook of the bio-archaeology of climate and environmental change*. Routledge.

Rose, J.C. (2017) History of and recent trends in bioarcheological research in the Nile valley and the Levant. *Bioarchaeology of the Near East*, Vol. 11, pp. 7–28.

Rudolph, L. and Wagner, M. (2022) Europe's migration crisis: Local contact and out-group hostility. *European Journal of Political Research*, Vol. 61, No. 1, pp. 268-280.

Scirè-Calabrisotto, C., Webb, J.M., Frankel, D., Ricci, P., Altieri, S. and Lubritto, C. (2020) New evidence for diet and subsistence economy in Early and Middle Bronze Age Cyprus. *Journal of Archaeological Science: Reports*, Vol. 33, pp. 102518.

Schepartz, L.A., Stocker, S.R., Davis, J.L., Papathanasiou, A., Miller-Antonio, S., Murphy, J.M.A., Richards, M. and Malapani, E. (2017) Mycenaean hierarchy and gender roles: diet and health inequalities in Late Bronze Age Pylos, Greece. In *Bones of Complexity: Bioarchaeological Case Studies of Social Organization and Skeletal Biology*, H.D. Klause, A.R. Harvey, and M.N. Cohen (ed.). Gainesville, FL: University Press of Florida, pp. 141-172.

Schotsmans, E.M., Haddow, S.D., Marin A. Pilloud, M.A. Millela, M., Glencross, B., Betz, B.J. and Knüsel, C.J. (2017) Manipulation of the dead: exploring delayed burial practices at Neolithic Catalhoyuk. *American Journal of Physical Anthropology*, Vol. 162, pp. 249-250.

Schrader, S. (2019) *Activity, diet and social practice: Addressing everyday life in human skeletal remains*. Springer.

Silva, N.M., Kreutzer, S., Souleles, A., Triantaphyllou, S., Kotsakis, K., Urem-Kotsou, D., Halstead, P., Efstratiou, N., Kotsos, S., Karamitrou-Mentessidi, G., Adaktylou, F., Chondroyianni-Metoki, A., Pappa, M., Ziota, Ch., Sampson, A., Papathanasiou, A., Vitelli, K., Cullen, T., Kyparissi-Apostolika, N., Zeeb Lanz, A., Peters, J., Rio, J., Wegmann, D., Burger, J., Currat, M. and Papageorgopoulou, C. (2022) Ancient mitochondrial diversity reveals population homogeneity in Neolithic Greece and identifies population dynamics along the Danubian expansion axis. *Scientific Reports*, Vol. 12, No. 1, pp. 1-15.

Shaheen, A., Wu, R., Lelieveld, J., Yousefi, R. and Aldabash, M. (2021) Winter AOD trend changes over the Eastern Mediterranean and Middle East region. *International Journal of Climatology*, Vol. 41, No. 12, pp. 5516-5535.

Sheridan, S.G. (2017) Bioarchaeology in the ancient Near East: Challenges and future directions for the southern Levant. *American Journal of Physical Anthropology*, Vol. 162, pp. 110-152.

Sołtysiak, A. (2006) Studies on human remains in Syria and Iraq, seasons 2001–2002, A general overview. *Studies in Historical Anthropology*, Vol. 3, pp. 131-134.

Somel, M., Kilinc, G.M., Ozer, F., Omrak, A., Yaka, R., Donertas, M., Dagtas, N.D., Yuncu, E., Koptekin, D., Büyükkarakaya, A.M. and Acan, S.C. (2016) Archaeogenomic analysis of ancient Anatolians: first genetic indication for Neolithic cultural diffusion in the Near East. *American Journal of Physical Anthropology,* Vol. 159, No. Suppl. 62, pp. 297-298.

Stantis, C., Schwartz, G.M., Nowell, G., Batey, E.K., Maaranen, N. and Schutkowski, H. (2020) March. Life Course Perspective of the Elite Burials of Early Bronze Age Umm el-Marra, Syria. *American Journal of Physical Anthropology*, Vol. 171, pp. 273.

Stantis, C., Maaranen, N., Kharobi, A., Nowell, G.M., Macpherson, C., Doumet-Serhal, C. and Schutkowski, H. (2022) Sidon on the breadth of the wild sea: Movement and diet on the Mediterranean coast in the Middle Bronze Age. *American Journal of Biological Anthropology*, Vol. 177, No. 1, pp. 116-133.

Stojanowski, C.M. (2019) Persistence or pastoralism: The challenges of studying hunter-gatherer resilience in Africa. In *Hunter-gatherer adaptation and resilience: A bio-archaeological perspective*, D.H. Temple, and C.M. Stojanowski (ed.), Cambridge University Press, pp. 193-225.

Sulosky Weaver, C.L. (2022) *Marginalised Populations in the Ancient Greek World: The Bioarchaeology of the Other*. Edinburgh University Press.

Tomczyk, J., Mańkowska-Pliszka, H., Taylor, G. M., Pinhasi, R. and Jakuciński, M. (2013) Palaeopathology and Differential Diagnosis—A Probable Case of Secondary Infection (Tell Masaikh, Syria). *Advances in Anthropology*, Vol. 3, No. 01, pp. 33-37.

Tremblay, L.A. and Reedy, S. (2020) *The Bioarchaeology of Structural Violence*. Switzerland: Springer.

Tuchscherer, N.K. (2019) Stress in Greek mother cities and colonies. *American Journal of Physical Anthropology*, Vol. 168, No. Suppl. 68, pp. 251

Tung, T., Miller, M., DeSantis, L., Sharp, E.A., Kelly, J. (2016) *Patterns of Violence and Diet Among Children During a Time of Imperial Decline and Climate Change in the Ancient Peruvian Andes*. In The Archaeology of Food and Warfare, A. Van Derwarker, and G. Wilson (ed.), Springer, Cham.

Üstündağ, H. (2009) Schmorl's nodes in a post-medieval skeletal sample from Klostermarienberg, Austria. *International Journal of Osteoarchaeology*, Vol. 19, No. 6, pp. 695-710.

Üstündağ, H. (2020) Entheseal changes in the Hellenistic-Roman population of Boğazköy, Turkey. *Bioarchaeology of the Near East*, Vol. 14, pp. 27-49.

Vatikiotis, P.J. (2016) *Conflict in the Middle East*. Routledge.

Vergidou, C., Karamitrou-Mentessidi, G., Voutsaki, S. and Nikita, E. (2021) Oral health and its implications on male-female dietary differences: A study from the Roman Province of Macedonia. *Journal of Archaeological Science: Reports*, Vol. 35, pp. 102784.

Vorobej, M. (2008) Structural violence. *Peace Research*, Vol. 40, No. 2, pp. 84-98.

Weerasinghe, P. (2020) *Skeletons in wells: Post-mortem treatments in Roman Eretria, Greece*. Unpublished Master's Dissertation, University of Waterloo, Canada.

Woo, T.L. (1930) A study of seventy-one Ninth Dynasty Egyptian skulls from Sedment. *Biometrika,* Vol. 22, No. 1-2, pp. 65–93.

Wood, J.W., Milner, G.R., Harpending, H.C., Weiss, K.M., Cohen, M.N., Eisenberg, L.E., Hutchinson, D.L., Jankauskas, R., Cesnys, G., Česnys, G. and Katzenberg, M.A. (1992) The osteological paradox: problems of inferring prehistoric health from skeletal samples [and comments and reply]. *Current anthropology*, Vol. 33, No. 4, pp. 343-370.

Yaussy, S.L. (2019) The intersections of industrialization: Variation in skeletal indicators of frailty by age, sex, and socioeconomic status in 18th- and 19th-century England. *American Journal of Physical Anthropology*, Vol. 170, No. 1, pp. 116–130.

Zittis, G., Almazroui, M., Alpert, P., Ciais, P., Cramer, W., Dahdal, Y., Fnais, M. et al. (2022) Climate change and weather extremes in the Eastern Mediterranean and Middle East. *Reviews of Geophysics*, Vol. 60, No. 3, pp. e2021RG000762.