

Bioarchaeological Research in Croatia – A Historical Review

Petra Rajić Šikanjić

Institute for Anthropological Research, Zagreb, Croatia

ABSTRACT

The study of human skeletal remains from archaeological sites gives us the opportunity to answer important questions about the lifestyle of past populations. The discipline that studies human skeletal remains is known as bioarchaeology. This paper provides a historical review of bioarchaeological research in Croatia. It is based on the available published material that analyzes human skeletal remains from archaeological sites located on the Croatian territory covering time span from the Neolithic period to the late Middle Ages.

Key words: bioarchaeological research, human skeletal remains, Croatia

Introduction

Archaeology is a study of the past human societies and their environments through the systematic recovery and analysis of material culture or physical remains¹. This is just one of many similar definitions that describe archaeology as a discipline and determine the subject of its study. Many definitions are consistent in their view that the primary interest of archaeology is the reconstruction of the ways that people who left the archaeological record lived^{2–4}. One of the most direct classes of evidence for answering those questions are the skeletal remains of past populations that are often recovered from archaeological settings.

The study of human skeletal remains from archaeological sites gives us an opportunity to answer important questions about the lifestyles of past populations. We can learn about their health and disease, diet, violence and trauma, activity patterns, population characteristics (age and sex ratios), genetic relationships etc.^{2–4}. Along with other archaeological and historical evidence, these data on skeletal remains can contribute to the study of a broader range of topics concerning the life of past populations.

In the past, the study of skeletal remains primarily was descriptive and focused on case studies. The emphasis was put on the research of population differences, especially in cranial morphology. This craniometric approach was used to make detailed reconstructions of population movements and their historical relation-

ships⁵. Over the past thirty years, the study has evolved from this descriptive phase to one that tests hypotheses in the context of anthropological archaeology. This theoretical reorientation has resulted in a new approach to the analysis of human skeletal remains that uses cultural, biological and paleoenvironmental evidence to illuminate the processes of human adaptation^{4,5}. Beside traditional measurements and observations that are now being employed in a new theoretical framework, there is also a rapid change in technology that forces the discipline to progress. Modern technology (e.g. computers, CT scans, chemical analyses, DNA analyses, etc.) assist researchers in answering questions that a few decades ago could not be addressed^{2–5}.

Historically, the study of human skeletal remains was referred to under several different names, all of which followed the progress of the discipline. These include: physical anthropology, skeletal biology, osteoarchaeology, biological anthropology and bioarchaeology. In this review, we have decided to use the term bioarchaeology.

The reason for choosing this term is its emphasis on the human biological component of the archaeological record that characterizes the discipline. Especially important is its interdisciplinary nature that has an enormous potential for understanding the past⁴. We believe this is the level to which the study of human skeletal remains in Croatia needs to aspire to.

Bioarchaeological Research in Croatia

The aim of this paper is to outline a historical review of bioarchaeological research in the Republic of Croatia. The review will be based on the available published material that analyzes human skeletal remains from archaeological sites located on Croatian territory, covering a time span from the Neolithic period to late Middle Ages (Table 1). This review will not cover earlier periods of human history, we prefer to leave that task to paleo-anthropologists.

In order to provide historical outlines of the bioarchaeological research in Croatia, we have divided the history of the discipline into three main phases. Those phases closely correspond to historical changes affecting the country.

The first phase, which lasted from the second half of the 19th to the mid 20th century, corresponds to the period when the first anthropological ideas were introduced, often by foreign researchers who worked in the region. The second phase followed after the Second World War, when Croatian anthropologists took over most of the local anthropological research projects. The third phase, which began in the 1990s, continues to the present day and is characterized by the fully professional development of the discipline.

The first phase began in the historic period when Croatia was a part of the Austro-Hungarian Monarchy. That is the main reason why the majority of scientists who worked on human skeletal remains were foreigners^{6,7}. Most of them were not professional anthropologists but experts in various disciplines such as medicine, pathology, zoology, ethnology, archaeology, etc. Historical perspectives, racial typology and classification dominated their work^{6,7}. Interest in those subjects did not change when Croatia left the Austro-Hungarian Monarchy and, together with Slovenia and Serbia, formed the Kingdom of Yugoslavia. From that time onwards, however, we can find a few local scientists, educated at major European universities, working side by side with foreign researchers. Lebzelter⁸ in his work on racial types in Yugoslavia, and Županić⁹ in his work on ethnogenesis of Yugoslav people based on the skull morphology, used material from several Croatian sites and diverse archaeological periods for comparative purpose.

A few important archaeological excavations, the most famous one at Krapina, turned the main focus of local scientists' interest to paleontology and paleoanthropology^{6,7}. The most famous figure in Croatian science of that period was Dragutin Gorjanović Kramberger, the excavator of the Neandertal site at Krapina. His work on Krapina¹⁰ has very important place in the history of science, and still today provides a solid base for investigations in the field of paleoanthropology.

Research after the Second World War

The second phase in the history of the study of human skeletal remains from archaeological contexts cov-

ers the years after the Second World War. The 1950s and 1960s witnessed the work of several local experts in anthropology (F. Ivaniček, B. Škerlj, etc.), educated at European universities who succeeded in making anthropology a part of the education system and expanded its research domain^{6,7}.

During this period, emphasis was on postcranial and especially cranial measurements, and their comparative studies aimed at reconstructing historical relationships and population movements^{6,7}.

The most significant scientist of this period was Franjo Ivaniček, best known for his analysis of the skeletal remains from the Ptuj necropolis, published in 1951¹¹. Ptuj is an early Medieval Slav necropolis located in the Republic of Slovenia, which was at that time – together with Croatia – a part of Yugoslavia. Anthropological analysis of 299 human skeletons included sex and age determination and postcranial and cranial measurements¹¹. An even more important work from the perspective of this review is his analysis of material and skeletal remains from Bijelo Brdo near Osijek¹². In that work, besides the description of the material culture remains, Ivaniček provided demographic profile and detailed biometric data of the recovered skeletal remains¹². Although his work on human skeletal remains was very comprehensive, especially regarding metric characteristics of the examined population, it remained an isolated endeavor until the 1960s.

A decade later, a new aspect of scientific interest in human skeletal remains appeared with Georgina Pilić, an archaeologist educated in physical anthropology at the Münster University, working at the Medical school in Zagreb⁷. She was interested in explaining the possible origins and routes of migrations of early Slav populations on Croatian territory. Using craniometric analyses on material from Slavic sites in Slavonia, such as Daraž Bošnjaci¹³, Bijelo Brdo¹⁴, Treštanovačka gradi- na¹⁵, Vukovar and Bribir¹⁶, she made her contribution to the study of human skeletal remains from the archaeological context.

Beside the two previously mentioned scientists whose work was primarily dedicated to the analysis of human skeletal remains and who are rightly to be called bioarchaeologists, several others »non-bioarchaeologists« were also in different ways involved with human skeletal remains. Those were mostly experts from other fields of study with some interest in certain aspects of human skeletal remains. Here we will mention just a few of them. Juraj Kallay, a dentist, has made several analyses of teeth from archaeological contexts^{17,18}. Other published articles deal primarily with material culture remains, but also mention human skeletal remains, or even give full demographic profiles and cranial or postcranial measurements. The authors of those articles usually did not perform skeletal analyses by themselves, but used data provided by another specialist¹⁹.

In the 1960s, changes in archaeological theory were sparked by a revolution in archaeological science. A general theoretical re-orientation and the influence of the

»New Archaeology« also stimulated changes in the study of skeletal remains^{4,5,20}. This new stimulus reformed the study of human skeletal remains from a purely descriptive to more theoretical discipline, one that demanded testing specific hypothesis and answering questions on population studies in order to reconstruct ancient environment^{4,5}. The seventies and eighties were a time of expansion in archaeological science based on new analytical methods and theoretical approaches^{4,5,20}. Unfortunately, at the time, this expansion was not – with a few exceptions – followed in Croatian bioarchaeological research.

Developments of the Last Decade

A few decades later, in the 1990s, we witness a period of prosperity in the study of human skeletal remains in Croatia. Although this is the most productive period in the bioarchaeological research, it still lags far behind the standards of bioarchaeological research found in some other countries. These include a relatively small number of educated experts, lack of formal education and insufficient financial support, etc. One of the most

significant researchers of this dynamic period of research is Mario Šlaus from the Croatian Academy of Sciences and Arts. His numerous analyzes, combine in a book, provide the core of the database of analyzed human skeletal remains for Croatia²¹.

At present the most obvious characteristic of bioarchaeological research in Croatia is uneven representation of the study material by geographic region and historical period (Table 1). The majority of the analyzed sites are from the Early medieval period, with just a few analyses dealing with other, earlier archaeological periods. One of the possible explanations for this discrepancy is the fact that a very small number of skeletons from prehistoric periods were preserved. The most probable reason is the absence of defined cemeteries from Neolithic and Eneolithic period, poor bone preservation and specific burial practices (e.g. secondary inhumations) at some sites²¹.

The most thoroughly analyzed site from the earlier periods is Bezdanjača cave. Various analyzes on the material from this Bronze Age site include demography²¹, disease classification^{21,18} and morphology of the occipital region²², as well as other, analyzes that are not com-

TABLE 1
BIOARCHAEOLOGICAL ANALYSES OF HUMAN SKELETAL REMAINS FROM THE CROATIAN TERRITORY

SITE NAME	DATATION	NUMBER OF INDIVIDUALS	ANALYSIS
Vukovar – High school	5000 BC	5	Demography, pathology ²¹
Smilčić		4 skeletons + 6 skulls	Demography, Neolithic burial practice ¹⁹
Vukovar – Vučedol	2900 BC	12	Demography, pathology ²¹
Vučedol	2900-2600 BC	13	Demography, artificial cranial deformation ³⁴
Bezdanjača		41	Demography, pathology ²¹
		–	Lead concentration in human bone samples ²³
		43	Demography on dental material ¹⁸
		27/29	Occipital bone analysis (qualitative and quantitative characteristics) ³⁵
	1300-1100 BC	2	Anomalies – upper portion of the vault ²²
		10	Blood types of ABO system ²⁴
		1	Oval defect on frontal bone ³⁶
		10	Morphological characteristics of lower jaws ³⁷
Vinkovci – »NAMA«	5.-4.c. BC	11	Demography, pathology ²¹
Štrbinci (Certissia)		26	Demography, pathology ^{21,38}
	4.c.	8	Demography, pathology ³⁹
Osijek (Mursa)	4.c.	28	Demography, pathology ^{21,38}
Zmajevac	4.c.	37	Demography, pathology ^{21,38}
Vinkovci (Cibalae)	4.c.	34	Demography, pathology ^{21,38}
Treštanovačka gradina		8	Cranial types ¹⁵
	4.c.	2	Dental measurements ¹⁷
Novigrad	5.–6.c.	13	Demography, pathology, correlation: grave type and sex/age ^{27,28}
Monkodonja	6.–7.c.	MNI 21 + MNI 15	MNI, traces of attacks on bones ²⁶
Vinkovci – Gepid	6.c.	34	Demography, pathology ^{21,40}
Jopić	8.c.	1	Case of artificial cranial deformation ²¹
Privlaka – Gole Njive		181	Demography, pathology ^{21,40,41}
	8.c.	31	Demography, pathology, discriminant analysis of crania ⁴²

TABLE 1
CONTINUED

SITE NAME	DATATION	NUMBER OF INDIVIDUALS	ANALYSIS
Stari Jankovci	7.–8.c	10	Demography, pathology, discriminant analysis of crania ⁴²
		62	Demography, pathology ⁴⁰
Buzet-Mejica	7.–8.c	31	Dental health ²⁵
Nin-Ždrijac	8.–9.c.	251	Demography, morphology and typology of crania ⁴³
	10.–11.c.	7	Demography, morphology and typology of crania ⁴³
Mravinci	9.–10.c.	27	Cranial measurements and indexes ⁴⁴
Daraž Bošnjaci	9.–14.	37	Demography, cranial measurements and indexes ¹³
Bijelo Brdo I		14 skulls	Demography, cranial measurements and indexes ¹⁴
Bribir 1	9.–11.c.	40	Multivariate craniometric analysis ¹⁶
Vukovar – Lijeve Bara	9.–11.c.	158	Multivariate craniometric analysis ¹⁶
Vinkovci (various sites, rescue excavation)	11.–12.c.	17	Demography, pathology ^{21,40}
Lobor	11.c.	11	Demography, pathology ^{21,40}
		1	Case of Osteochondroma in an adult male ⁴⁶
Šćitarjevo	11.–12.c.	13	Demography, pathology ^{21,40}
Đelekovec	11.–12.c.	19	Demography, pathology ^{21,40}
Stenjevec	10.–11.c.	84	Demography, pathology ^{21,40,47}
Zvonimirovo	11.c.	4	Demography, pathology ⁴⁸
		6	Demography, pathology ⁴⁹
Josipovo	11.c.	5	Demography, pathology ⁴⁹
Đakovo, phase I	11.–13.c.	31	Demography, pathology ^{21,40} ; craniometric differences between 2 phases ⁴⁵
Bribir 2	13.–14.c.	10	Multivariate craniometric analysis ¹⁶
Danilo Šematorij	10.–16.c.	42	Demography, pathology, multivariate craniometric analysis ⁵¹
Đakovo, phase II	14.–16.c.	42	Demography, pathology ²¹ ; craniometric differences between 2 phases ⁴⁵
Nova Rača	14.–17.c.	104	Demography, pathology ²¹
			Dental diseases ⁵²
			Sex differences in mortality profiles and stress levels ⁵³
Kamengrad	14.–15.c.	35	Demography, pathology ²¹
Sv. Vid	14.–16.c.	107	Description of the remains ⁵⁴
Tomaš	16.c.	20	Demography, pathology ²¹

monly carried out in Croatia. In several bone samples the lead concentration was determined in order to establish possible paleodietary input²³, and blood types of ABO system from bone samples were also obtained²⁴.

The majority of analyzed sites come from the continental part of Croatia, with a few exceptions from Istria^{25–28} and a noticeable absence of those from South Dalmatia. This status will change in the near future. At the moment skeletal remains from several South Dalmatian sites are being prepared for the analyses at the Institute for Anthropological Research in Zagreb. Domination of the skeletal material from continental Croatian sites could possibly be explained by specific interests of the bioarchaeologists, and by differences in archaeological recovery techniques that occasionally produce material in poor state of preservation or even do not recover it at all. Sometimes that problem lies in the lack of interest of the site investigator in bioarchaeological analysis.

When analyzing human skeletal remains, Croatian bioarchaeologists most often provide only demographic structure and disease classification for the site in question (Table 1). Very popular are craniometric analyzes, especially of the medieval material. This type of analyzes are employed to determine origins of the early Croats and possible directions of their migration^{29–31} (Table 1). Other works are just isolated cases that are trying to answer questions about past populations using various other methods. These include aforementioned analyses like lead concentration, blood types^{23,24} as well as discriminant function sexing of femora and tibiae developed for medieval Croatian populations^{32,33}.

The state of bioarchaeology in Croatia today is influenced by several factors. The most important one is the relatively small number of educated experts working in the field. At the moment there are four active experts: M. Šlaus, J. Boljunčić, M. Novak and P. Rajić Šikanjić.

Archaeologists also bear a part of the responsibility for the limited number of analyses that are carried out. They also need to be aware of the potential data that lies in human skeletal remains. Appropriate methods of recovery, handling and storage of the skeletal material should also be employed. Excavating skeletons is a time-consuming process in which, if not careful, one can destroy the fragile and sometimes crucial evidence. Furthermore, archaeologists sometimes ignore the importance of detailed and accurate documentation of the excavation, which is essential for answering many questions asked about the examined population.

Analysis of human skeletal remains from archaeological contexts is not an exclusive domain of bioarchaeologists, but also of archaeologists, as well as researches of various other professions. In order to answer questions about the ways of life of the past populations, it is essential that all these scientists work together.

It must be pointed out that, in certain periods, bioarchaeological research in Croatia followed scientific trends of the time. Scientists of the first period, interested mainly in cranial morphology and paleontology, even though educated in other disciplines, produced works of high scientific standard that can be compared

favorably to contemporary work coming from other European countries. The second phase in the study of human skeletal remains, represented with only two bioarchaeologists, followed the subjects and analytical methods that, at the time, were established in the European science. Unfortunately, they were not succeeded by new researchers, and the reform and expansion, that elsewhere marked the seventies and the eighties, was not followed in Croatia. In the 1990s, bioarchaeology in Croatia awoke, and the positive change is still unfolding. For the moment, bioarchaeology in Croatia is in the hands of small number of specialists.

We hope that, in a decade from now, a new review of bioarchaeological research in Croatia will be much longer and more extensive, especially regarding employed techniques, and will show that our research has progressed closer to the definition of bioarchaeology.

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P. Rajić Šikanjić

*Institute for Anthropological Research, Amruševa 8, 10000 Zagreb, Croatia
e-mail: petra@inantro.hr*

BIOARHEOLOŠKA ISTRAŽIVANJA U HRVATSKOJ – POVIJESNI PREGLED

S A Ž E T A K

Istraživanje koštanih ostataka ljudi s arheoloških lokaliteta pruža odgovore na važna pitanja o načinu života prošlih populacija, a disciplina koja se bavi takvim istraživanjem naziva se bioarheologija. U radu je dan povijesni pregled bioarheoloških istraživanja u Republici Hrvatskoj. Pregled se temelji na objavljenim radovima koji analiziraju koštane ostatke s arheoloških lokaliteta na teritoriju Republike Hrvatske i pokriva vremensko razdoblje od neolitika do kasnog srednjeg vijeka.