UNIVERSITY OF GHANA

COLLEGE OF HUMANITIES

Contributions of Bioarchaeology to Understanding the Past: A Study of Excavated Human Skeletons from Hani-Begho, Ghana.

BY

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This thesis is submitted to the University of Ghana, Legon, in partial fulfilment of the requirement for the award of **MPhil Degree in Archaeology**

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DECLARATION

I hereby declare that this work, with the exception of duly acknowledged quotes, ideas and references, represents my own research carried out at the Department of Archaeology and Heritage Studies, University of Ghana, Legon, under the meticulous supervision of Dr Wazi Apoh and Professor Raphael Alabi. This work has not been presented in part or in full to any other institution for examination.

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ABSTRACT

The complexity of the archaeological record and its interpretation require a holistic comprehension of its makeup from an objective point of view rather than from a single subjective perspective. The analyses of materials recovered from the archaeological record of most sites in Ghana often neglect the analysis of human skeletal finds. This development affects the holistic interpretation of those sites. In view of such gaps, this research sought to subject the skeletal remains from Hani-Begho, within the Tain District of the Brong-Ahafo Region of Ghana, in the storage of the Museum of Archaeology, University of Ghana, to an in-depth bioarchaeological analysis. This was based on the idea that human skeletal remains have the potential to provide insights into the past. The research focused on the extent to which the bioarchaeological study of human remains from the Hani-Begho site can bolster understanding of the anthropology of death and archaeothanatological practices at the site.

The study of the samples revealed eight individuals from Hani-Begho (five females and three males), which can be dated by reference to materials from the site to between the 11th and 15th centuries. Funeral treatments varied considerably in Hani-Begho's social, cultural and religious parameters, for example *Chromolaena odorata* (Acheampong) leaves and schnapps were used to preserve dead bodies. The predominance of occlusal wear in molars and premolars could have resulted from masticatory behaviour. Additionally, evidence of ante-mortem teeth loss on the samples masked possible evidence of poor dental health. Also evident on some of the skeletons were blunt force trauma on skulls and the creation of artificial diastema and teeth filling within the community. The research forms the basis for sophisticated scientific analysis of human skeletal remains and the cataloguing and accessioning of these remains in the Museum of Archaeology.

KEY WORDS: Bioarchaeology, Human skeletal remains, Bio-history, Archaeological record.

DEDICATION

I dedicate this work to God and my blessed family (THE LAMPTEYS'). A very big thank you to everyone especially my parents. I pray that this work inspires my siblings to challenge themselves, trust God, trust the process and believe that their end shall surely be glorious.

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ABBREVIATIONS

DAHS - Department of Archaeology and Heritage Studies

BABAO- British Association of Biological Anthropologists and Osteologists.

HAD- Honoring the Ancient Dead

CHAPTER ONE

INTRODUCTION

1.0 Overview

Archaeology is the study of the past and contemporary cultures of people within temporal and spatial contexts. Archaeology focuses on the analysis of tangible material cultures. Through such analysis, archaeologists are able to reveal intangible evidences to provide insights into the cognitive and behavioural aspects of the lifestyles of people.

Skeletal remains form part of the tangible material remains and are often classified as biofacts within the archaeological record. As a sub-discipline of archaeology, bioarchaeology or zooarchaeology (Clark, 1972), refers to the study of biological remains (human, plant and animal) within their cultural (archaeological) contexts in order to solve physical anthropological questions (Killgrove, 2013: 1). Bioarchaeological practices may be employed in medico-legal issues related to forensic anthropology. Bioarchaeological practices often aid in forensic investigations associated with human skeletons.

According to Killgrove (2013: 1), bioarchaeology has become one of the more scientifically focused fields of social research (see Oxford Bibliographies article on Processual Archaeology). In combining methods and theories in archaeology, biology, chemistry, history and demography, among others, bioarchaeologists bring to the fore an eclectic and multidisciplinary perspective to revealing and understanding the lifeways of humanity.

Most of what is known about past and recent histories of humans are based on inferences derived from the analysis of artefacts, ecofacts, biofacts, documents, oral histories, and other products of human cultural activities (Walker, 2000). The material culture of a people is studied as evidence of their occupation and adaptation to their environment (whether favourable or unfavourable).

However, owing to their symbolic content and multiple usage histories, such cultural remains are difficult to interpret from a single perspective.

This subjective way of interpretation of cultural materials recovered by archaeologists is sometimes influenced by the current cultural setting and their academic perspectives. Historical studies often reveal more about the etic perspective (cultural values and political biases) of the historian than they do about the reality of the historical event being described. Interpretations of archaeological finds are therefore subjective and are mostly analogies drawn from the vast pool of ethnographic data (emic perspective) gathered from the community.

Until recently, skeletons were merely seen as bones and most people held the view that the dead told no tales. However, scholars like Larsen (1997, 2000, 2002) among others, have revealed through remarkable researches that skeletons can indeed speak volumes on the lives and lifestyles of past peoples/ populations. Through insights into bioarchaeology and study of skeletal remains, human skeletons have come to be appreciated as amazing storehouses of information on genetic and physiological responses of people to the environment.

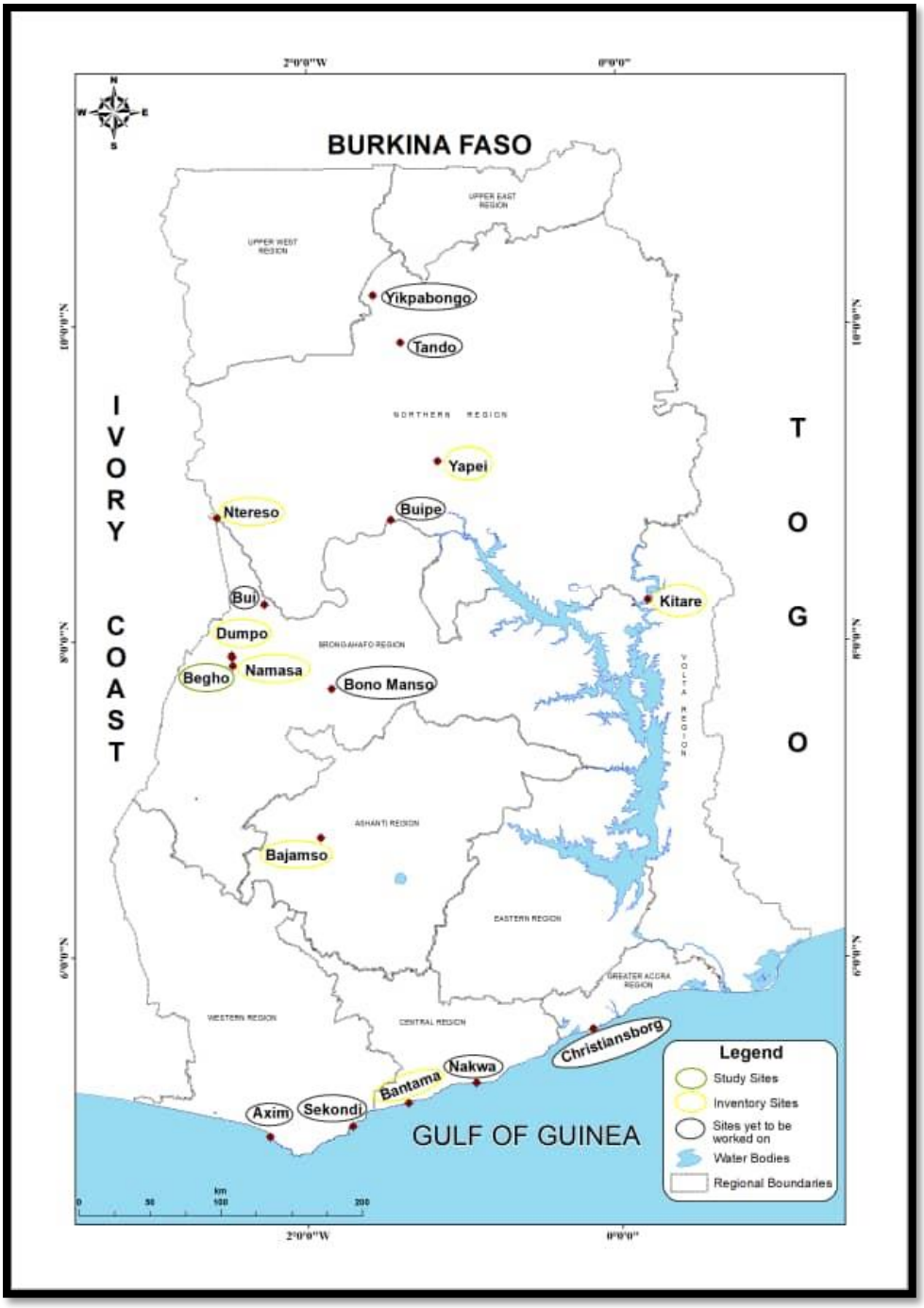
The environment includes the physical activities to which we expose our bodies, the foods we eat and the illnesses we experience. According to Larsen (2000), the human skeleton, specifically bones and teeth record circumstances of growth and development as reflected in factors of stress, activity and injury, climate, disease, diet and nutrition. Thus, the skeleton is a ‘memory’ and ‘voice’ of the past just as artefacts, ecofacts and features. The quantity of information that can be gleaned from human skeletons suggests the level of agency inherent in them. It is in this respect that skeletons from Hani-Begho were subjected to analysis for this thesis.

The research samples included a number of fragmentary and complete skeletal elements obtained from different quarters within the Hani-Begho site by various scholars from the Department of Archaeology and Heritage Studies in the 1960s and 70s (Table 2.1).

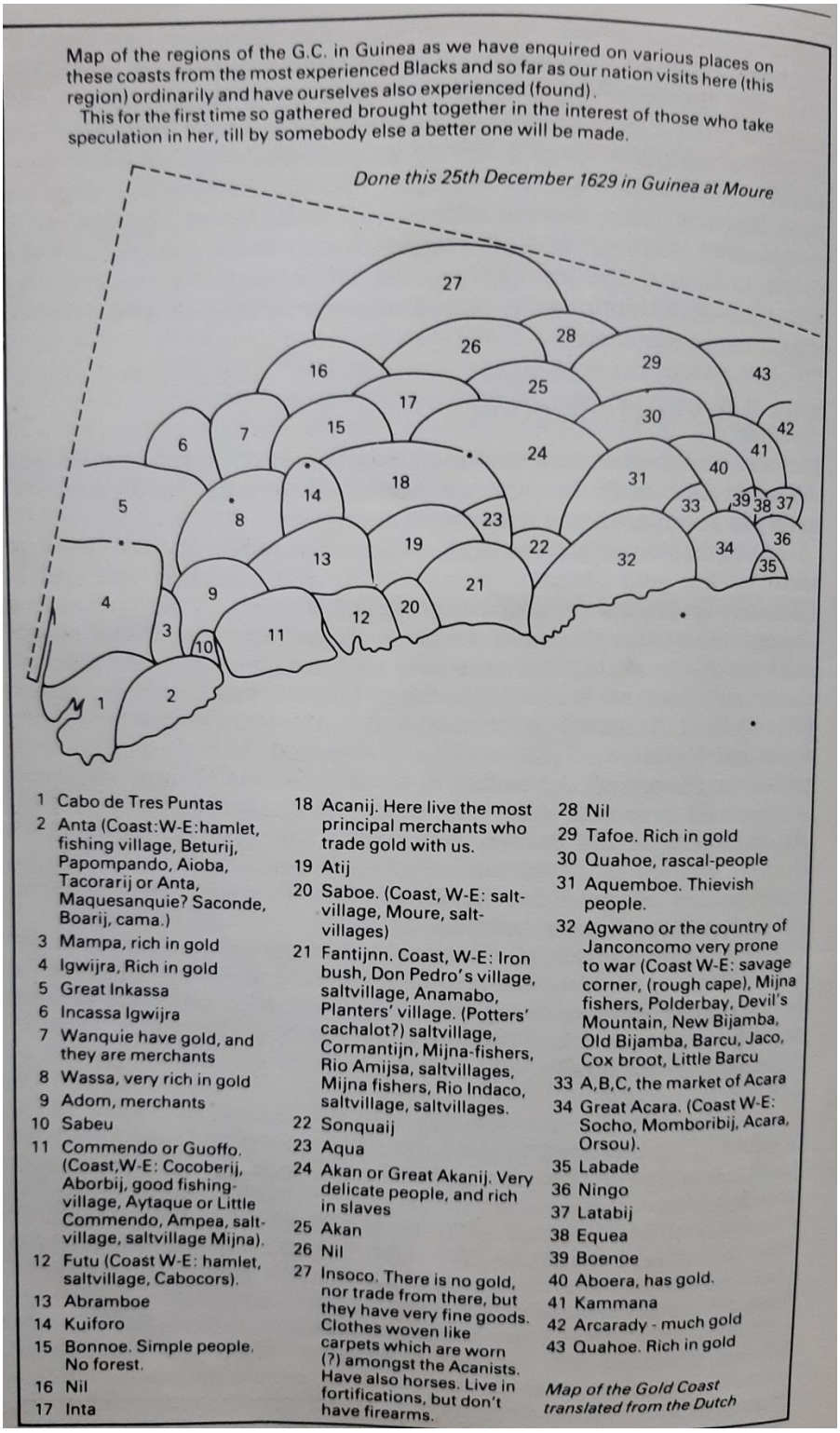
1.1 Research Material and Study Area

Begho, located at the south of the Black Volta at the transitional zone between the forest and savannah, north-west of the Brong-Ahafo Region, was considered by scholars as a cosmopolitan trading town that linked the Akan forest producers of gold, kola and ivory with the Sudanic Trans-Saharan trading points like Jenne (Bravmann & Mathewson, 1970). The ancient Begho site has been dated to span the 11th to the 15th centuries AD (Anquandah, 1995b). Economic attraction to the trading commodities such as gold, ivory and kola created a flourishing commercial activity within the Begho region during this period. This trade did not only lead to the development of Begho as a major trading town but it was also instrumental in the emergence of other market towns at Old Banda and Ahwene Koko, east of Begho in the Brong-Ahafo Region of Ghana as well as Techiman and Bono-Manso in the Bono-East Region of Ghana (Stahl, 2016).

In December 1629, Hans Propheet, a Dutch trade officer at Fort Nassau, Mouri, completed a map of the Gold Coast in Dutch indicating that Begho (then referred to as *Insoco*, now '*Nsokɔ*' (Konadu, 2010), was famous for its textile industries (Anquandah, 2013). Begho is noted to have been characterized by five multi-ethnic suburbs ordered along ethnic/functional lines (Anquandah, 1995). These include the Brong, Dwabirim, Dwimfuor, Kramo and Dapaa quarters. The Brong quarter is the capital site and residence of the chiefs and the Dwabirim quarter has been described as the actual trading/market centre and residence for specialist traders. The Dwinfuor quarter has been denoted as the artisanal centre and residence for coppersmiths and blacksmiths. The Kramo quarter has been described as the residence for the Muslim Mande traders and the Dapaa quarter has been noted as an iron smelting site (Anquandah, 1995b).



Map 1. 1 Study Site and other sites from which the Human Remains were excavated. (Map by Author).



Map 1. 2 Dutch Map of the Gold Coast in the 17th and 18th Centuries by Hans Propheet, indicating Insoco (27). (Reproduced from Anquandah, 1982)

1.2 Statement of Research Problem

The Museum of Archaeology at the Department of Archaeology and Heritage Studies, University of Ghana has since its inception in 1951 housed a number of materials including objects (artefacts and ecofacts) and biofacts such as human remains from various excavations. Usually archaeologists do not conduct proper and adequate on-site and laboratory analyses on human remains that are chanced on during field work. Besides taking photographic records and salvaging some of the remains into the storage of the Department, the rest are most often reinterred without further studies conducted on them. This is true in the case of Ghanaian archaeology.

Most human skeletal remains collected during excavations are kept in storage at the Museum of Archaeology with the intention of carrying out further analyses on them. Examples of such remains include samples from various Regions in Ghana: Yapei and Ntereso situated in the Savannah Region, Bui (now inundated), Begho and Bono Manso in the Brong-Ahafo Region, Christiansborg in the Greater Accra Region, Nakwa and Bantama located in Central Region, Yikpabongo and Tando in the North-East Region and Sekondi and Axim in the Western Region (Map 1.1). These were brought in by early pioneers of archaeology in Ghana between the 1970s and 1980s. Analyses of the artefacts found in context and associated with these human remains have long been done with; but unfortunately, the analysis of their associated bones have been left undone.

The problem of inadequate analyses of human skeletal remains stems from the lack of ample expertise in forensic science and bioarchaeology in the Archaeology Department. Secondly, the salvaged human skeletal remains often tend to lose their documented provenience information attached to them. This has created a void in the holistic understanding of the archaeological contexts. There is the need to conduct an in-depth study into the life histories of the skeletons in order to determine their biohistory such as age, sex and stature to unearth new knowledge on past

nutrition, paleopathology, paleo-demography and population movement through space and time. The aim of this research is to begin addressing the aforementioned problems in this thesis by conducting in-depth scientific analyses on the stored skeletal remains from Hani-Begho.

1.3 Aim

This research focuses on inventorizing and subjecting the human remains from Begho in the storage of the Museum of Archaeology at the Department of Archaeology and Heritage Studies, University of Ghana to an in-depth bioarchaeological analysis. Among many others, it also assesses their contribution to the understandings of the archaeological record/ context of finds and ultimately the past of the excavated sites of Begho.

1.4 Objectives of the Study

To achieve the above aim, this research was driven by some key specific objectives including:

1. taking inventory of the skeletons in storage at the Department of Archaeology and Heritage Studies (DAHS).
2. determination of the MNI (Minimum Number of Individuals) and the elements present or absent as well as the state of preservation and deterioration of the skeletal remains; especially from Begho.
3. subjection of the Begho human remains to an in-depth bio-archaeological and forensic analyses in order to determine their biohistory; which includes determination of sex, age, stature and pathology.
4. assessment of the provenance of the Begho skeletal remains by reviewing related documents in order to understand their cultural contexts and environment.
5. outlining ethical ways by which human remains excavated by DAHS scholars should be scientifically handled off the field sites.

1.5 Research Questions

The key questions that guided the research include:

1. What is the nature of the skeletons stored in the Museum of Archaeology?
2. What are the documented provenience information on the Begho remains in storage?
3. What elements and minimum number of individuals are present in the Begho human skeletal collections?
4. What are the life histories of the human remains in terms of sex, age and stature?
5. What curatorial and ethical measures can ensure that the human remains are properly conserved in the storage?
6. To what extent can the human remains bolster understandings of the archaeological record and anthropology of death at the Begho sites?

1.6 Research Approach and Methodology

I employed an eclectic approach to derive data to meet the set objectives of the study. Both primary and secondary data sources were used for the study. Primary data is any original information that is obtained from the field. It is important to note that the original method employed included archaeological excavations at Begho in the 1960s and 1970s, to unearth the skeletal remains. These Begho human skeletal remains in the storage constituted the primary study collections for this thesis.

The method used to obtain primary data involved firstly, a review of the provenience information on the paper labels attached to the burial boxes and some skeletal elements. This was to gain a fair idea of the context from which the skeletal remains were recovered and excavated as well as the condition of the remains when they were excavated.

Secondly, an ethnographic research at the Begho site was conducted. The method of research included the use of semi-structured interviews within focused group discussions to gather qualitative data on past and present death practices in Hani-Begho. That is to assess the similarities and differences between how the body was treated before burial in past and contemporary times. Focus groups were selected using the purposive sampling technique due to the characteristics of the sample size I was working with and the objectives of the study. Informal interviews were conducted with researchers who conducted various projects on the site over the years as well as some project team members. Particular among the team members who aided in excavation and ethnographic data collection were Mr. Oga (Accra), Mr Barnabas Apaw and Mr. Anderson Darko (Hani-Begho). This method was used to gather ample contextual information about the excavated skeletons and the emic perspectives on archaeothanatological practices in Begho. Archaeothanatology refers to the study of the biological and social components of death, treatment of the body, burial and associated grave goods among societies (Boulestein & Duday, 2005).

Another method involved archival and library research. It was characterized by a review of materials/ documented sources on bioarchaeology and histories of the research area. Much of this aspect of the research was undertaken at the Gunnerus and Dragvoll Libraries in Trondheim, Norway as well as the Department of Archaeology and Heritage Studies Library. The most fascinating thing about documented sources are the vivid details and rich information they provide. Their use also enabled the researcher to explore the subject matter deeply.

The inventory of the study samples was done by recording and through the use of non-metric analyses. The samples were also observed and counted to determine the various elements present or absent and their physical conditions. Furthermore, metric analysis was used through the application of standard cladistic measurements of the various elements and the scoring of the data according to standard forensic and bioarchaeological examinations and analyses.

Furthermore, photographs provided visual representations and documentation of how the skeletal remains looked like pre- and post-analysis. This captured visual representations of how the skeletal remains appeared in anatomical positions to enable readers to follow or relate with the chain of presentation of materials. Possible trauma/injuries evident on the human remains were also recorded to provide first-hand information.

The use of sampling was necessary due to the high number of sites (Map1.1) and skeletal elements in storage at the Department of Archaeology and Heritage Studies. In view of the limited time-frame for this thesis, the purposive sampling technique was adopted. The purposive sampling method is a type of non-probabilistic sampling which enabled remains from four sites out of 13 sites to be inventorised. The Begho site which produced a minimum number (MN) of eight individuals, proved to be a substantive sample size for the project.

1.7 Theoretical/ Conceptual Framework

A theory refers to an established thought or principle that relates to the nature and variability of the subject matter. This study employed a number of concepts and theories to guide the analyses of the research findings. These include the concepts and practices of bioarchaeology, anthropology of death and archaeothanatology, as well as body and agency theories.

Firstly, the analyses of the skeletons based on ante-mortem or a life-course perspective using bioarchaeology as a concept and practice can help gather ample data on the biohistory of skeletal remains. It also helps to understand the morphology of the bones in the course of the person's lifetime. This is because signatures of diet, activity, disease or pathology and other ante-mortem practices are usually evident on the bones of a dead person. The term "ante-mortem" refers to activities or degenerative and environmental factors to which a person is exposed during his lifetime. On the other hand, "peri-mortem" refers to changes or factors that affect a person near or

at the time of death. “Post-mortem” refers to anything that happens to the body after death and burial.

Secondly, the concept of anthropology of death was used to explore how human societies respond to death (conceptual/ideological and organizational) using two methodological approaches: ethnographic and comparative approaches.

Furthermore, the body theory was used to interpret the findings, based on the assumption that since the framework/skeleton of a person makes up the person, the biohistory of the skeleton infers the persons’ identity (sex, age and stature). In general, skeletons provide vivid windows to the past that other archaeological finds like beads, bottles and shells cannot. Skeletons literally bring researchers/archaeologists face-to-face with the history of the biology of the people they try to study and reconstruct.

Lastly, Agency theory infers that the material evidence of the skeleton or framework of a person after death still exhibits agency in themselves as they are able to reveal vivid details of the biohistory and lifestyles of the person. These range from sex, age, stature, ante-mortem and peri-mortem trauma/pathology and dental health as well as dietary patterns among other behaviours and activities. These theories enabled the researcher to glean vital data that were necessary for interpretating and reconstructing past lifestyles of the Begho skeletal samples when juxtaposed with contemporary lifestyles.

1.8 Limitations of the Study

Some limitations faced in this bioarchaeological analysis of human skeletal remains in Ghana include unavailability and limited access to relevant literature on skeletons in Ghana. There are also inadequate written records on this subject matter in West Africa. Additionally, the fragmentary and deteriorated nature of the human skeletal remains and the labels made it difficult

to properly interpret the context of some of the elements. Moreover, during the ethnographic research, people were reluctant to divulge information. To help address the above limitations, the study focused on the use of forensic and bioarchaeological techniques, pathological datasets, written records and provenience data as well as the analysis of the human remains. Some of the community members who were once a part of previous archaeological excavations conducted in the area were also contacted for help.

1.9 Significance of the Research

This research is one of the first bioarchaeological studies on human remains from the Hani-Begho site that compliments the comprehensive study of human skeletons from Elmina in Ghana (Nyame Akuma, 2016). Thus, it provides the foundation for in-depth scientific bio-analyses of human remains in the Department of Archaeology and Heritage Studies. The recommendations provided can be of value to the Department as it documents the remains and catalogues them as part of the museum collections. Such an in-depth study will preserve the remains for posterity or for further comparative studies while adhering to ethical measures. Analytical templates developed and used in the data collection process will be useful for analyses of other excavated human skeletal remains in the Department. Ultimately, the study will add a new expert analytical dimension to the understanding of the archaeological record in Begho.

1.10 Organization of the Study

This thesis is organized into Six Chapters. Chapter One is an introduction to the study, while Chapter Two provides background information and literature review on the research site and research data. Chapter Three discussed the examination and application of the conceptual/ theoretical framework of the study and reviewed related research studies as a comparative analysis of the theories used. Chapter Four explored the methodology used in obtaining and processing the data with regards to laboratory and ethnographic work. Chapter Five discussed the research

findings from the bones and from the field work in contemporary Begho. Chapter Six covered ethical concerns with handling human skeletal remain across the world and in Ghana in particular. It also presented a summary of the research, recommendations and conclusion.

CHAPTER TWO

BACKGROUND INFORMATION ON THE HANI-BEGHO SITE

2.0 Introduction

This chapter explores relevant literature on the research site and subject area. It assesses issues related to the research site of Hani-Begho and reviews projects conducted within the Hani-Begho Region in order to better interpret the skeletal remains from the respective quarters of the site.

2.1 Literature Review

There are earlier controversies surrounding the location of *'Bicu'* or '*Begho'* (Posnansky, 2015: 95); also called '*Bew*' and '*Nsokɔ*' by the Akan (Konadu, 2010). In the early 20th century, scholars pinned the area at various locations. The name *'Bicu'* or Begho was documented in Islamic literature while '*Nsokɔ*' then *'Insoco'* was noted on a 1629 Dutch map of Gold Coast (Propheet, 1629). In the attempt by scholars to locate the site, various locations were suggested. The key difficulty was that the locals has replaced the name Begho with Hani a long time ago. One school of thought situated it in the vicinity of Bondoukou in Ivory Coast while another school of thought put it in the north-east and south-east of the present village of Namasa (Wilks, 1993). A third group located it in the modern village of Hani which is about 6 km south of Namasa and 51 km north-west of Wenchi (Anquandah, 1981). Later in 1970, Bravemann and Mathewson (1970) called an area about 40-50 km^2 in the Hani-Namasa area, '*Bicu'*, noting that the oral history of Hani and Nsawkaw (16km east of Hani) is quite definite in placing *'Bicu'/Begho* at a place known to the indigenes as *Amanfokeseeso* (Posnansky, 1970).

Posnansky (1970) notes oral tradition further describes the town of Begho as consisting of three major geographically-distinct quarters, namely Brong, Kramo/ Muslim Trading Community and

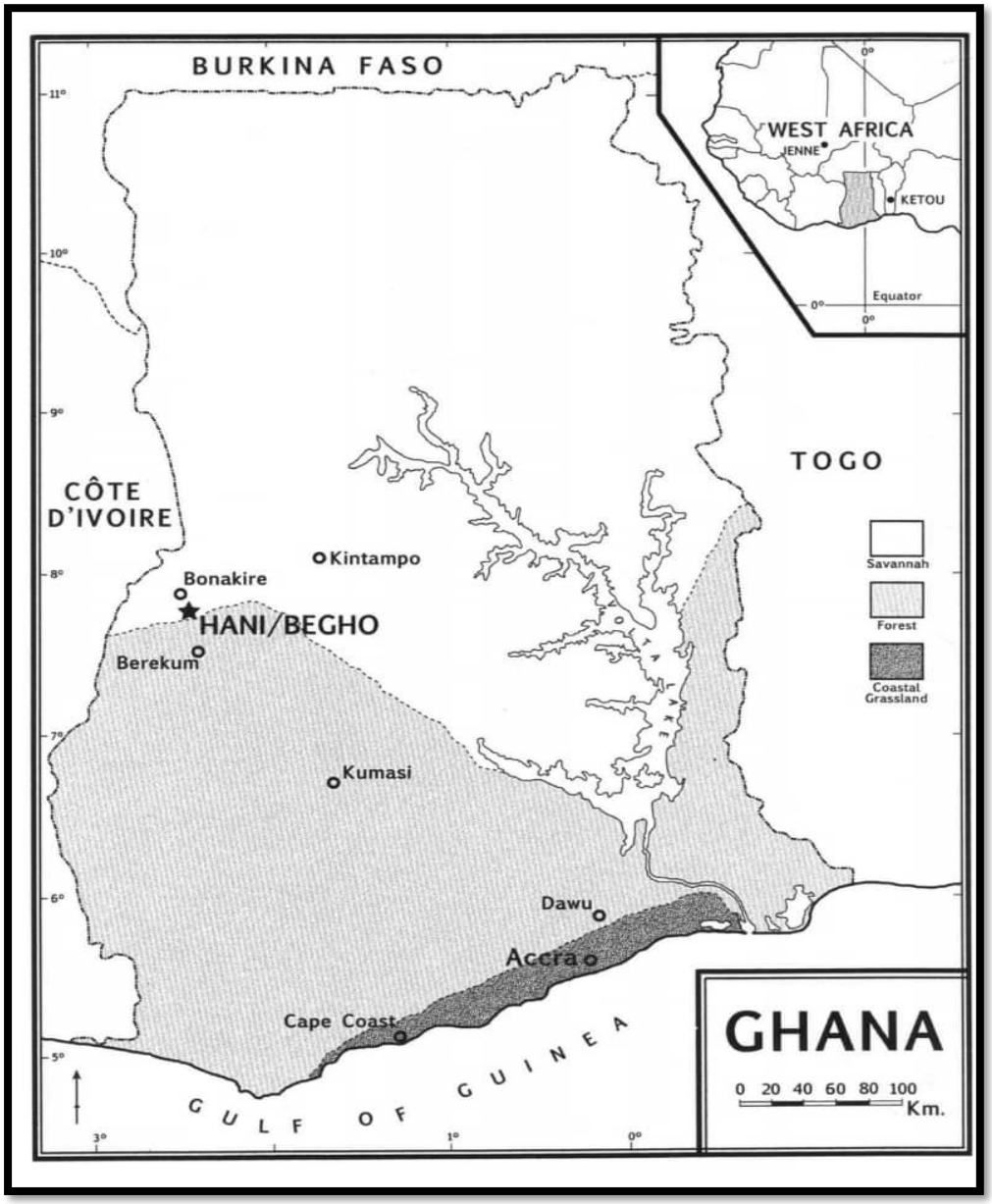
Numu (Blacksmiths; Tomfo or Tumfuo). However, Posnansky (2015: 95) stated that there were at least six quarters in the town with two associated with the local Brong, two Kramo quarters and the rest being Dapaa and Dwinfour quarters. Daniel Kumah (pers comm., 2018) of the DAHS, noted the discovery of two additional sites, Nkwankramu and Donkontereso during a field survey he conducted at Begho in 2018.

Begho is considered as one of the most important historical sites in Ghana (Map: 2.1), with evidence of a distinct early culture known as the Kintampo culture complex (Posnansky, 1970). As Begho emerged as a cosmopolitan trading town, economic attraction to the trading commodities of gold, ivory and kola created flourishing commercial activities within the Tain Basin which then led to the development of Begho as a major trading town.

Begho was also instrumental in the emergence of other feeder market towns of Old Banda, Ahwene Koko, Techiman and Bono-Manso (Posnansky, 2015: 96). Posnanshy (2015: 96), stated that Begho could have probably been the largest town in the interior of Gold Coast in 1471 when the Portuguese arrived on the coast and that 'between the 13th and 19th centuries, Begho was either a cultural entity or a city-state'.

Findings from Begho have been dated from the 11th to the 15th century AD (Anquandah, 1995b), and the site has been noted by researchers to be founded in the 11th (Meyerowitz, 1952) or late 10th century (Pearson, 1961). The site is also known to have been abandoned or destroyed between the 14th (Delafosse, 1904) and 18th centuries (Ozanne, 1965). However, a tentative date for the site has been established from oral traditions as well as from the twelve radiocarbon dates produced by eight separate field excavations of the Department of Archaeology and Heritage Studies in 1970, 1971, 1972, 1975, and 1975-76. Researchers at the University of California, Los Angeles also excavated and dated the site in 1979 (Posnansky, 2015: 96). Archaeological materials such as tobacco pipe bowls and stems and findings of copper wire were also dated (Posnansky, 2015: 98).

The earliest dates fell within the 12th and 14th centuries at the Nyarko quarter whilst other dates fell within the 15th, 17th and the 18th centuries (Posnansky, 2015: 96,98).



Map 2. 1 Map of Ghana indicating Hani-Begho and other archaeological sites (reproduced from Posnansky, 2015)

Map 2. 2 Showing present day Begho- Hani (source: Google Earth Pro, 2018)

Wilks (1993) and others have documented some historical sources, oral traditions and the cultural anthropological evidences of Begho to reveal the foundation of Begho and the development of the long distance trade resulting from the expansion of the Mande- speaking people (Posnansky, 1970). According to Posnansky (2015:98), trade relations or networks with Mo villages like Bondakyire, Brawhani and Debibi that supplied goods to Begho, exist with Hani at the centre. Notable goods traded include ceramics, iron goods and hand-crafted narrow-stripped indigo dyed cloth coming in from the respective villages.

According to Posnansky (1970), excavations in the Brong quarter (1970 and 1972), Dwinfour (1972) and Kramo quarters (1971) produced a number of finds, the most prominent being pottery (red-slipped wares of distinct designs). Architectural evidence indicated that buildings without foundations were built of swish style on a rectangular pattern. The rooms measured 2-3m wide and up to 4-5m long. A recurrent feature is the presence of plinths up to 40 cm above floor level located outside and inside of the edge of the rooms or facing the courtyard. These typologies/

characteristics are still features of Brong architecture. Posnansky also noted in a research report that, one house in the Brong Quarter, with earthenware cylindrical drain pipes was excavated indicating that the flat roofed Sudanic house was perhaps attempted in the 17th century in the community (Posnansky, 1972).

2.2 Population and Occupations of the Indigenes at Hani-Begho

Estimating the population of a town like Begho can sometimes be difficult and misleading because there was often no difference between houses/ rooms/ spaces meant for sleeping and that which was meant for cooking. Also, the mounds of collapsed houses were often used as foundations for new buildings. Posnansky (2004: 34) however noted that, the population growth rate was over 3% per annum and that as at 1995, the village had grown to at least 167 separate households with a population of 2,650 people and with 64% of large families having about 3-8 surviving children (Figure: 2.2).

Begho town is today characterized by rectangular houses built with mud bricks plastered with mortar and roofed with aluminium roofing sheets. Just about 10% of kitchen structures were erected with palm fronds or thatch with wood planks and logs, the rest are of mud bricks plastered with mortar. The soil for the mud bricks/ houses was and is obtained from a dug pit usually located adjacent to, or at the back of the house.

The Begho community is today occupied by the Hani people, who are predominantly farmers but also hunt and trap animals alongside petty trading. Posnansky (2015: 103-105) noted that the people cultivated crops such as yam (*Dioscorea alata*), sorghum (*Sorghum bicolor*), millet (*Pennisetum glaucum*), dry rice (*Oryza glabberima*) and oil palm (*Elaeis guineensis*). Oil palm fruits in particular are a regular part of their diet and palm wine is also an essential ingredient in their ceremonial life. Currently, cashew (*Anacardium occidentale*) is being cultivated in Hani-Begho on a commercial scale and other crops like okro (*Abelmoschus esculentus*) and pepper

(*Capsicum annuum*) are grown on a subsistence scale. Many people collected forest snails (*Archachatina* sp.) and removed them from their shells before drying and smoking them for storage and exchange. They also exploited game such as Grasscutter (*Thrynomys swinderianus*), rabbit (*Oryctolagus cuniculus*) and giant forest rat (*Cricetomys gambianus*) among others. Mudfish (*Neochanna burrowsius*) is a valuable resource in drying rivers. Chicken (*Gallus gallus*), goats (*Capra aegagrus hircus*) and sheep (*Ovis aries*) are still reared for food, sacrifice or traded for wealth/money. They also utilise the bark of the fig tree (Ficus) for basketry, cloth and mats. Other edible roots, leaves and shoots are utilized from the natural environment. According to current oral narratives, some people harvest the 'Acheampong' (*Chromolaena odorata)* leaves (Figure. 2.1) for medicinal purposes and for the preservation of cadavers in the past before the advent of mortuaries. This is still practiced by those who do not have the luxury of affording a space in the mortuary for their deceased.

Figure 2. 1 'Acheampong' (*Chromolaena odorata*) leaves. (Picture source: Google)

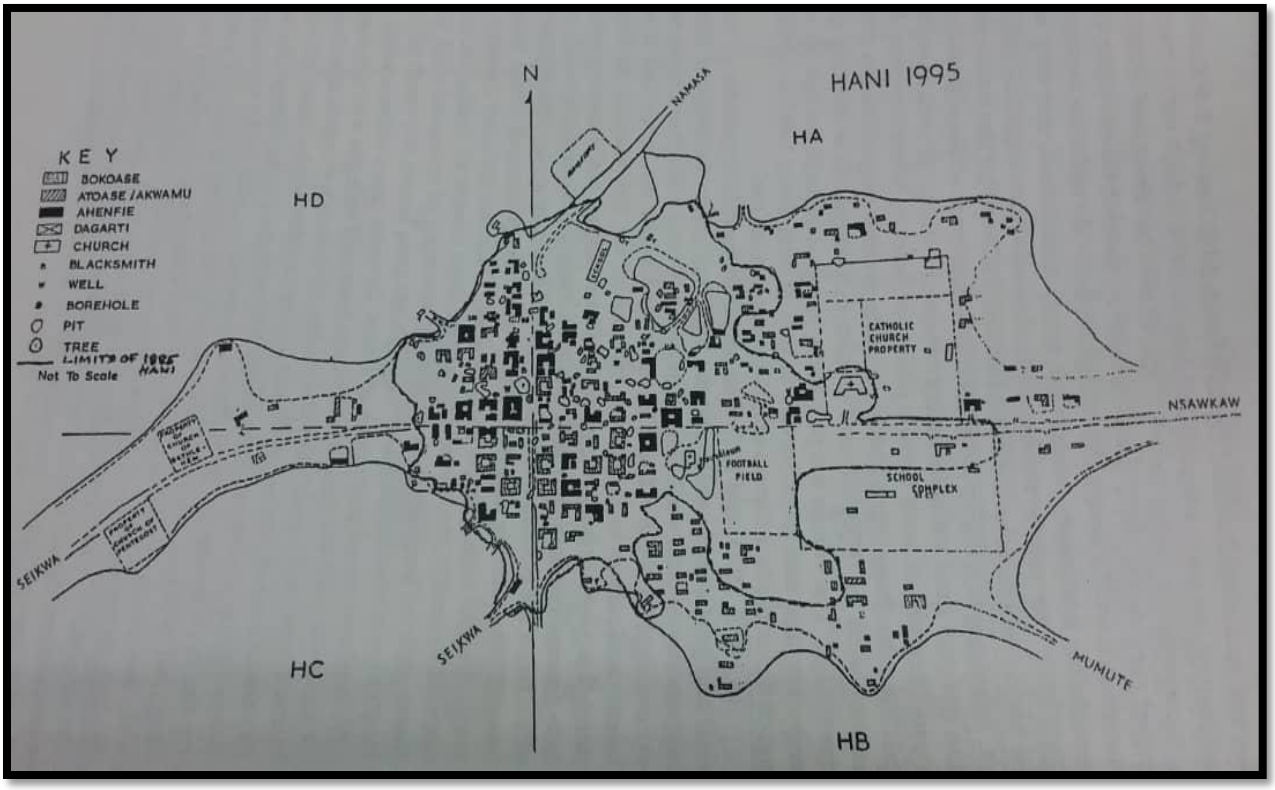


Figure 2. 2 A 1995 plan of Hani, indicating growth since 1985 and clans. (Reproduced from Posnansky, 2004).

There are three main religious groups in Hani-Begho, notably Christianity, Islam and Traditional African. Christianity currently dominates and comprises of about three different denominations, notably Catholic, Presbyterian and Methodist. The Hani people are part of the Bono ethnic group, who celebrate the Apoo festival to purify themselves and to honour their ancestors.

2.3 The Thesis Research Data

Archaeological research conducted at Begho in 1970, 1971 and 1972 by Merrick Posnansky and in the 2000s by Derick Watson among others, unearthed a few human skeletal remains which were stored in the Museum of Archaeology in burial boxes. In total, there are six burial boxes containing human skeletal remains from Begho. Aside the fact that the human remains were excavated in different years, they were also from different quarters within the Begho site (Figure. 2.3). Burials were found in the Kramo and Brong quarters (Table 2.1).

According to Posnansky (1970), skeletal remains of the Brong quarter were in no consistent pattern of orientation but others were flexed. The two found in the Kramo quarter were of north-south orientation (head in the north wall and leg towards the south wall) probably indicating that they are those of Muslims, though the direction of Mecca is north-east rather than north-south. From research carried out in Northern Ghana by Benjamin Kankpeyeng in the Department of Archaeology and Heritage Studies, particular among Muslims, men were buried facing the east and women buried facing the west. This depicts the fact that men are expected to wake at sun rise, for the day's business of farming while women are expected to be reminded by the sun-set to start preparing the evening meal for the family. However, other signs/symbols of Islamization, like going on 'pilgrimage', use of water flasks of North African origin or mosques, were not found in the quarter (Posnansky, 1970).

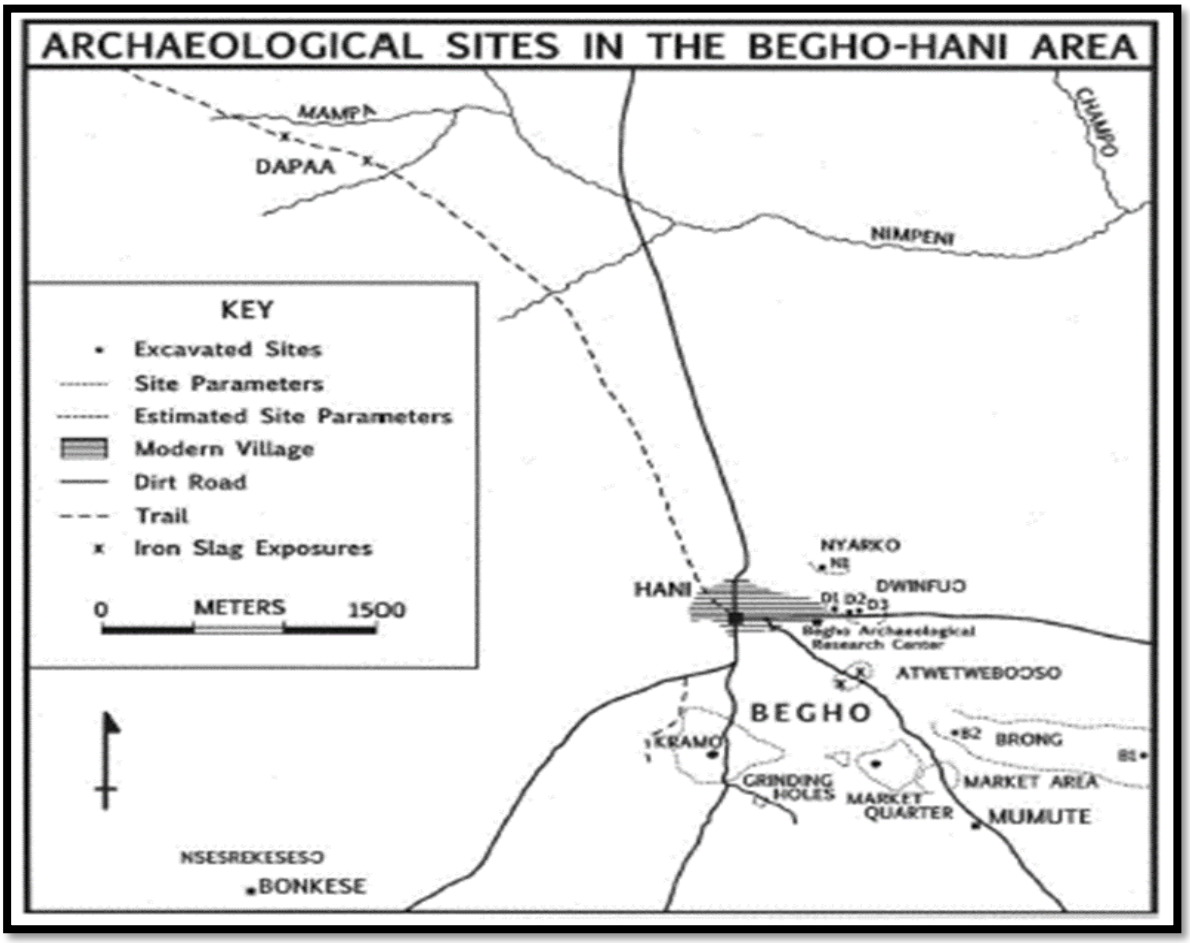


Figure 2. 3 Sites and quarters within the Begho area (source: Posnansky, 1970).

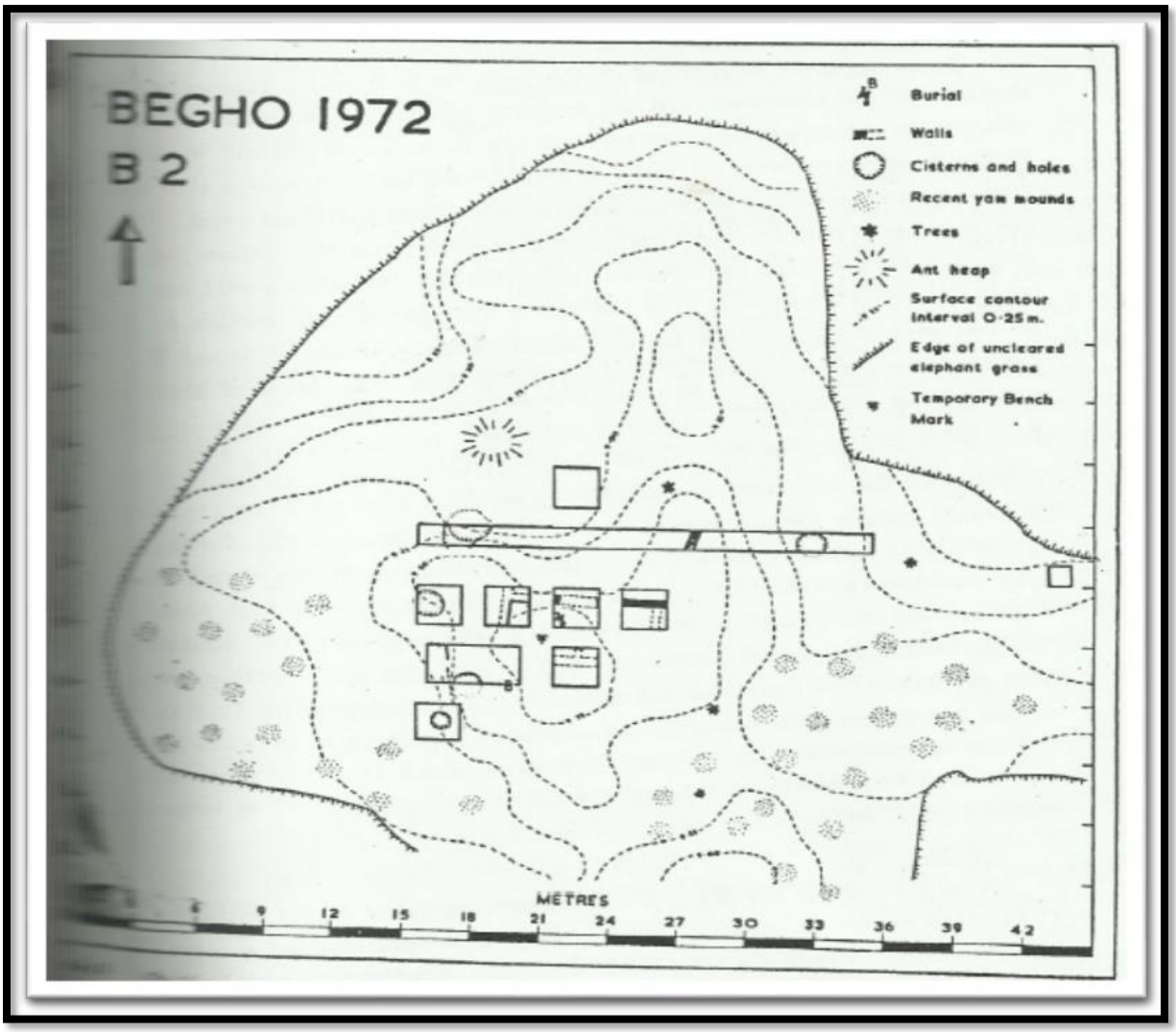


Figure 2. 4 Units laid in the Brong quarter during the 1972 excavation (source: Posnansky, 1970).

Figure 2. 5 Hanihene pouring libations before removal of skeleton. No grave goods were found but the skeleton represents a respected member of the community buried beneath a house floor (B1 or B2?) (source: Posnansky, 1970).

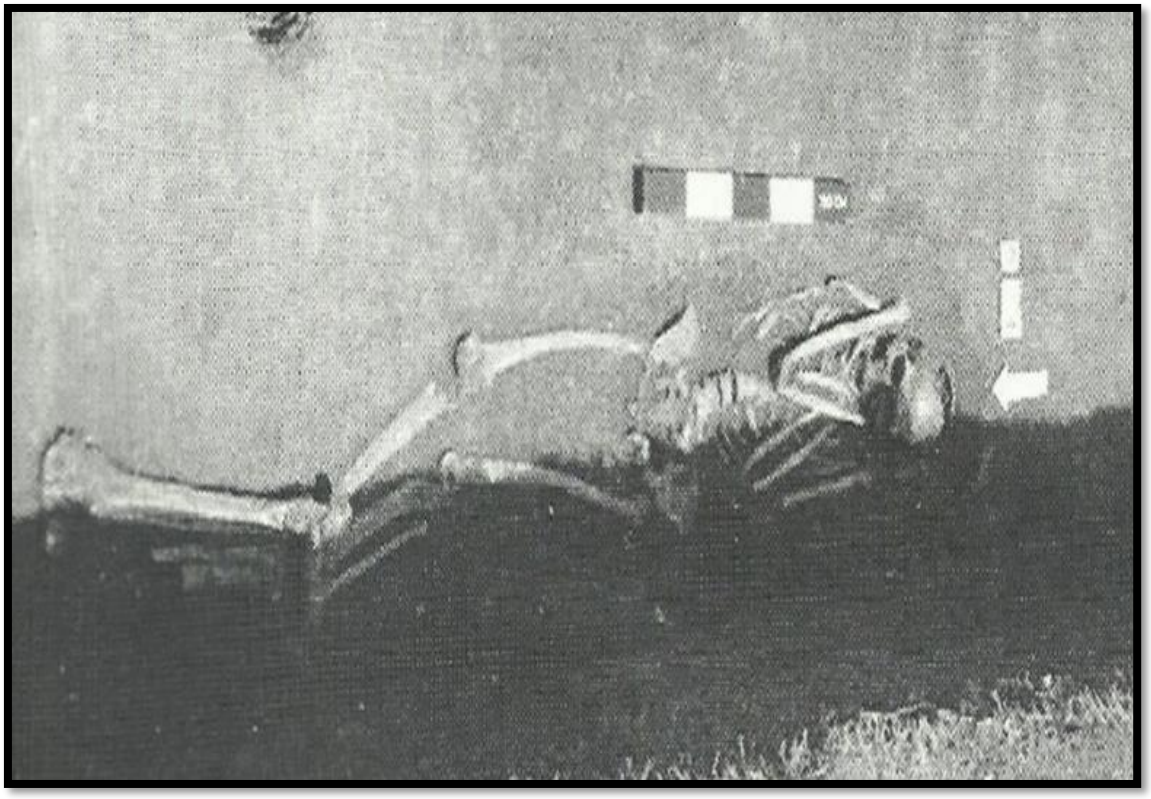


Figure 2. 6 Skeleton lying in a dorsal view in K1 site of Kramo quarter. (source: Posnansky, 1970).

The provenience information on the paper labels attached to the bones and the burial boxes in the Department of Archaeology and Heritage Studies' storage revealed the following: burial box with inscription, Bg. D74 & F74 contained remains from the Kramo quarter. Other burial boxes with inscription Bg. 72 B2, burial A; Bg. 70 B1- burials B & D; Bg. 71 B1 -burial B & D; Bg. 70 B1, burial C and Bg. 70, contained remains from the Brong quarter. Since the site has been dated to span between the 11th and 17th centuries, this date can probably be used to relate to or date the skeletons.

Table 2. 1 Burial Box Inscriptions of Human Skeletal Remains and Excavated Context.

Burial Box Inscription	**Remains Context**
Bg. 70	Brong Quarter
Bg. 70 B1- burial B	Brong Quarter
Bg. 70 B1- burial C	Brong Quarter
Bg. 70 B1- burial D	Brong Quarter
Bg. 71 B1 -burial B	Brong Quarter
Bg. 71 B1 -burial D	Brong Quarter
Bg. 72 B2, burial A	Brong Quarter
Bg. D74	Kramo Quarter
Bg. F74	Kramo Quarter

In conclusion, this chapter reviewed relevant materials on the subject area in order to provide a background to study of the Begho skeletal finds. It provided some definitions and pointed out some major arguments in the literature and discourse in general. It also sought to discuss in detail the research projects undertaken at Begho over the years and the research results.

CHAPTER THREE

CONCEPTUAL/THEORETICAL FRAMEWORK OF STUDY

3.0 Introduction

This chapter seeks to outline and throw more light on some concepts and theories that guided this bioarcheological skeletal analyses and the research in general. These are discussed to assess their applicability in the interpretation of findings from the research datasets. The concepts and theories used here include bioarchaeology, body theory, agency theory and concept of archaeothanatology.

3.1 Concept of Archaeothanatology

The term 'Archaeothanatology' was suggested by Boulestin and Duday (2005: 17-35) to avoid the confusion that may arise from dealing with problems derived from biology including the study of bones, decomposition of the corpse and the products of decomposition in an attempt to understand phenomena of cultural practices associated with the treatment and disposal of the dead (Duday et al., 2009: 3). Similarly, 'thanatology' studies the biological and social components of death (Duday et al., 2009:3). This approach to burials or funerary archaeology was developed in France in the early 1980s when rescue archaeology was being established (Duday et al., 2009: 3). Initially it was termed as '*l'anthropologie du terrain'* meaning field anthropology, in which anthropologists studying human bones do not only work in the laboratory but also in the field on archaeological excavations in order to participate directly in the collecting and recording of data" (Duday et al., 2009: 3).

The objective of 'archaeothanatology' is to reconstruct the attitudes of ancient populations towards death by focusing on the study of human skeletons and analyzing the acts linked to the management

and treatment of the corpse (Duday et al., 2009: 6). The methodological choice for 'archaeothanatology' or 'l'anthropologie du terrain' simply consists of placing the deceased at the center of interest in the tomb (Duday et al., 2009: 6). This is not to undervalue the importance of grave goods and their pivotal role in reconstructing the relative chronology of different types of artefacts, the status of the individual, as well as the social dimension of the skeleton or burial, some phenomena directly linked to funerary ideology. As a result, some grave goods in association with some of the research samples were put in proper context.

Traditionally, most researches or definitions of the archaeology of death have focused on the loss of a social being (Stutz, 2010: 33) rather than the body itself and how people / cultures conceptualize death and handle that unfortunate circumstance. Mortuary practice, which is a variant of the archaeology of death has been viewed as a strategy or means of representing religious faith/ affiliations, social structure/ organization (including ritualized activities) and political power among the living or as a strategy to express and overcome grief and bereavement (Tarlow 1999).

Death results not only in the loss of a social being but also in the emergence of cadavers and skeletons which are in an irreversible state of change (i.e., disintegration and decomposition). Invariably, this material outcome of death has, until recently, gained little attention in archaeological expositions in Ghana. This has created a void in understanding the archaeological record as well as reconstructing the lifestyles of the people under study. Even though the void created is gradually being filled, the study of human skeletal remains in buried and archaeological contexts is expedient. This is because human skeletal remains are excellent indicators or sources of information on the physiological and genetic responses of humans to the environment (socio-cultural and natural).

Such knowledge helps researchers to understand the trend of events within a particular adaptive system or environment. Human skeletons also provide a comparative date for interpretations of

past lifeways (Walker, 2000). Since the human cadaver or skeletal remain plays a central role in revealing the biohistory of the dead person, it also offers direct/ tangible evidence of health and well-being, dietary history, past lifeways, ancestry and demography (Larsen, 2002). Such information helps to give insights into the dietary and socio-cultural practices in the contemporary community within which people existed. Associated grave goods can also give insights into mortuary rituals and the cultural context of burials.

It is expedient to subjectively consider the context from which skeletal remains are recovered owing to the fact that, no one artifact or biofact can be analyzed in a vacuum. In view of this, interpretations, analyses and reconstructions must be done in appropriate contexts. According to Beaudry et al. (1996) cited in Kankpeyeng and Insoll (2011), the recovery of meaning is predicated on the recovery of context not only by relating it to actual situations. This is because context is invariably bound up with meaning.

The contexts within which human skeletal remains are found vary. These could be in terms of purposeful/ deliberate disposal, accidental, crime or ritual contexts. The orientation of the skeleton in each primary context of disposition may differ. In view of that, no one explanation can be given to a particular site, skeletal remain and associated objects. In agreeing with Martin et al (2013: 1), before attempting interpretations, the bone deposits must be examined both from a point of view of context, recovery and taphonomical history. Moreover, the many ways in which people deal with the dead body gives form to central concerns regarding life and death, the living and the dead, the body and the person it embodies and of the society in which the person functions (Stutz 2010: 33).

There exist a great variety of cultural beliefs about death and dying in Ghanaian societies. This is because human societies or cultures in themselves are dynamic and unique to or within the environment in which they are created. The idea of death as an irreversible event is strong in

Western culture as well (Robben, 2004: 12). Furthermore, different cultures differ in substantive ways in giving meaning to the notions of death. According to Parkes et al (1997), the comparative study of responses to loss and bereavement have attracted considerable attention in that almost all cultures allow or encourage the expression of crying, fear and anger by mourners. For instance, women tend to cry while men exhibit anger or direct aggression away from themselves (Abramovitch, 2001: 3271). Some cultures have also developed formidable institutions and mechanisms to control the anger of the bereaved via the use of ritual experts (Rosenblatt et al, 1976). According to Robben (2004: 11), in many cultures, life does not end with biological death because of a belief in an external spirit, a surviving soul, a cycle of death or notions of reincarnation and regeneration. This seems to suggest that because of the belief in death and the after- life, the ongoing relationship between the living and the dead still persists.

Skeletons connote death, and questions about how people perceive death is determined in what scholars have termed, the anthropology of death. The concept of the anthropology of death refers to the socio-cultural or cross-cultural perspectives of dying, death and death-related behaviour (Srivastava and Srivastava, 1997). According to Abramovitch (2001), the ethnographic and comparative approaches are the two main methodological approaches used to expatiate concepts of death. This is because the ethnographic approach examines how single cultures cope with the demise of members while the comparative approach tries to make sense of the enormous cultural variations evident in how different cultures handle the issues as disposing of the corpse, expected behavior of the bereaved and the ongoing relations between the living and the dead (Abramovitch, 2001: 1).

All human cultures struggle to deal with the inevitability and mystery of death in whatever mode or form it appears (for example; natural, violent, planned or accidental). Anthropology of death as a concept and paradigm, examines and explains the differences and similarities in how human

societies around the world respond to death or the demise of their members. It is concerned with both the conceptual and organizational aspects. That is, what people believe about death, dying and the afterlife and what they actually do when they are faced with the crises of death in terms of grief and mourning as well as mortuary rituals and remembrance (Abramovitch, 2001: 1).

"Much work done relating to the concept of anthropology of death has been life-centered rather than death-centered" (Robben, 2004: 13). Death is regarded as a disturbance of life's social order, a laceration to the social body and a gap in family and social networks. Similarly, Hertz (1960), notes that, the occurrence of death disrupts social life severely and that "it is stricken in the very principle of its life in the faith it has in itself" (ibid: 78). He argues that, "the death of a person cannot be exclusively categorized as a biological reality or confined to the sorrow of the bereaved relatives but that, death evokes moral and social obligations expressed in culturally determined funeral practices" (Hertz, 1960).

Significantly, In the 19th century, the major concern of anthropologists was the objectification of death in material culture. Kan (1986; 1988) and Hallam and Hockey (2001), through their works drew attention to the important role material culture played in this ethnography of memorial potlatches with the latter focusing on Western culture. Western societies may have rather poor mortuary rituals but they have a rich death culture ranging from literature, cinema, and arts to commemorations, cemeteries, memorials and oral culture (Robben, 2004: 13). However, the inter and intra cultural comparison of issues/ studies relating to death still remains underdeveloped. In view of this, the comparative and structural approaches of Gennep and Hertz (1960) may help to elevate the acceptance of anthropology of death as a concept to attempt offering analytical frameworks that can be applied to most mortuary rituals (Robben, 2004: 13).

Conversely, Suzuki (2000) in her article, demonstrated that rites of passage are not static scripts but dynamic practices. However, within intercultural and intracultural contexts there may exist

some form of change and continuity of aspects of the rites of passage over time. She also shows that because of the complex mix and difficult separation of the spirit of the deceased from the bereaved, mortuary practices encompass emotions, subjectivities and life processes (Suzuki, 2000). Similarly, Robben (2004) maintains that, mortuary rituals are universal cultural practices that show people's resistance to accepting biological death as a self-contained event and their desire to prolong their separation from the dead through a process of phased transitions (Robben, 2004: 9).

Within the notion of 'objectification of death' is the hidden relevance of mortuary ritual and grave goods. An extremely important contribution to the anthropology of death is Gennep's (1960) interpretation of mortuary rituals as one among similar rites of passage. He is of the view that, "the life of an individual in any society is a series of passages from one age to another and from one occupation to another" (p: 2-3). These transitions as in birth, puberty, marriage and death are life phenomena and become the subject of elaborate 'elevation' rituals as a person rises from one status to the next (Robben, 2004: 10).

3.2 Bioarchaeology

The study of human skeletons falls under various disciplines such as physical anthropology, skeletal biology, anatomy and bioarchaeology. By the second half of the 19th century, the field of physical anthropology had been recognized in Europe with early key practitioners as Paul Broca, a surgeon in France and Rudolph Virchow, a physician and anatomist in Germany. They advanced research on the study of human remains (Roberts, 2009: 6-7). In Britain for instance, early work on physical anthropology concentrated on measuring bones, including skulls (Roberts, 2009: 7). According to Roberts (2009: 7), considerable interest in the study of skulls developed over the course of the 19th century with works of Davis and Thurman (1865), for example.

Even though much of the works or studies on skulls took dangerous directions under the eugenicist discourse, there were some very real advances (Roberts. 2009: 7). Researchers like Karl Pearson took a statistical approach in examining large samples and exploring the belief that evolution progressed by small continuous variations. He also criticized some researchers on the basis of sample size and the non-standardization of contemporary methods of analysis (Roberts. 2009: 7). Others like Keith (1924: 16) and Parsons and Box (1905) published on a range of subjects based on the study of human skeletons or remains from archaeological sites, looking also at ageing adult remains using cranial suture closure as well as cranial suture morphology. The study of disease in bones or bone pathology had already been established by Esper (1774) when he identified a cancerous bone in a cave bear (Roberts, 2009: 7-8).

The term bioarchaeology was first coined in 1972 by the British archaeologist, Graham Clark, as a reference to zooarchaeology or the study of animal bones from archaeological sites (Clark, 1972). He applied the term to his study of faunal remains at Star Carr in Yorkshire, England. But his main focus was on paleo-economics and looking at the evolution of the relationship between humans and their environment. This approach enabled him to discuss prehistoric economies of hunting and butchering among other practices (Clark, 1972: 1). However, in Clark's (1973) work, he defined 'bioarchaeology' as "the archaeology concerned first and foremost with life" and as "the archaeology of how men occupied territories and maintained life". This is in relation to issues of human adaptation to both cultural and environmental factors. These factors over time affect the morphology and development of the human skeleton which becomes evident on the bones after death and decomposition of soft tissues.

The late 20th century equally saw some major developments in Europe where more population-based innovative works became increasingly common. Combining expertise in archaeology and anthropology with knowledge of both zoology and geology to undertake their bioarchaeological

studies, Wells (1960) and Brothwell (1981) are the two key people who advanced the study of human skeletons from archaeological sites in Britain (Roberts, 2009: 8).

Refined in the United States as a scientific study, Buikstra (1977) viewed bioarchaeology as a concept and a practice focused on the study of human skeletal remains from archaeological sites. She also sees it as the application of biological anthropological methods to the study of archaeological problems. Buikstra (1977) is of the view that bioarchaeology is a multidisciplinary research approach that addresses questions of burial, social organization, behavior and activities, paleodemography, population interaction, diet and disease. She moved on to emphasize the need to generate and solve research questions about past human populations. This is in contrast with the strongly descriptive skeletal studies done in previous era of American archaeology. Although the term bioarchaeology is still quite broad, in the United States for instance, it is used to describe the study of human skeletal remains from archaeological sites, whereas in the United Kingdom it is used to refer to the study of all or a subset of biological remains; that is, humans, plants and animals (Killgrove, 2013).

According to Martin et al. (2013), bioarchaeology is the analysis of human remains within an interpretative framework that includes contextual information. That is to say that it is expedient to note the context from which the skeletal remains were situated since that will have a bearing on their holistic analysis and interpretation of findings. To Roberts (2009:10), this approach helps to interpret the skeletal data within patterns seen in the archaeological and historical data. For instance, if the focus is on skeletal indicators of dietary patterns and dietary deficiency then the bioarchaeologist needs to understand the subsistence economy practiced in the past by reviewing written records and/ or looking at flora and fauna remains at the site, along with exploring stable isotope analysis data which will reflect what the person was or was not eaten.

Bioarchaeology is a multidisciplinary science that draws on methods in other disciplines as geology, physics, biology, chemistry and other sub-disciplines of anthropology (Larsen, 2000: 1-2). This collaboration contributes to a broader and more informed perspective on the complexities associated with the study of the skeleton a well as the past. Bioarchaeologists apply the study of stable isotopes in bone tissues to reconstruct diet. They extract ancient DNA from bone samples to help identify population history and use developing and advanced technology, such as scanning electron microscopy and computer axial tomography (CAT or CT scans) to identify bone shape and tooth use. Above all they are able to analyze microscopic sections of bones and teeth to diagnose ancient diseases.

According to Larsen (1997: 2-3), central to bioarchaeological enquiry is the determination of the relationship that exists between biology and behavior. Grauer (1995) also notes that bioarchaeology tend to stress the interaction between the biology of the body and behavior in order to understand lifeways of modern populations recovered from archaeological sites. In this regard, "the body is the nexus between biology and culture" (Sofaer, 2006: 30).

According to Rubalcaba and Robertshaw (2010: 1), most people think the dead is silent, but to an archaeologist, the dead is a boisterous storyteller from which favorite tales from hundreds, thousands and millions of years ago can be told. They also show how specialized the field of archaeology has become and how new technology can both change a scientist's theory and the way the past is viewed and studied. Until release of the publication of Buikstra and Ubelaker (1994), bioarchaeologists in Britain used Brothwell (1981) and Bass (1987; 2005) for general guidelines on recording with no concern to using standard methods to collect their data. For instance, they used different methods to determine the age a skeleton and to measure bones.

In Stutz's (2008) article, she noted that many authors have eagerly pointed out that the body is a physical, corporeal and sensual element, but few have taken that notion further to make it a focus

for analysis. The body or human remains are conspicuously rare within 'the archaeology of the body' (see Sofaer, 2006). The reasons for this may be many; one explanation might be that the skeletal finds do not interest many archaeologists, despite our disciplinary focus on materiality. Many archaeologists are not trained in physical anthropology and so do not see it as their task to reflect on the biological side of the human body (Stutz, 2008: 21).

Additionally, the data gleaned from skeletal studies are of great value. This is because the methodological problems inherent in extracting evidence from skeletons are completely different from those archaeologists and historians face when they attempt to interpret the historical significance of the cultural products they work with. The only way we can reduce the cultural biases that distort our understanding of past events is by collecting a diversity of evidences from sources that are susceptible to different types of interpretative errors. The greater the diversity of the evidence we have about the past, the easier it is to rule out subjective interpretations that are unlikely to reflect actual events. This can be done by using a series of data sources open to eclectic interpretations to triangulate and reconstruct what really happened in the past.

Moreover, the unique perspective that skeletal evidence provides on a people's history makes it a potent weapon against cultural relativists and historical revisionists who view the past as a source of raw materials they can exploit to refashion history into whatever narrative currently considered politically expedient. However, human remains, in their buried state, are subject to taphonomic processes. These include the impact of acidic soils and termites which can reduce the elements and information insights that can be gleaned from them to aid in the understanding of the archaeological record. Hodder (1992, 1999) asserts that the structure of the archaeological record is crucial to archaeological interpretation and understandings of past behavioural dynamics. That is why much documentation of the excavation process and contextual information of finds are needed to aid in post field analyses and interpretation.

Elucidating past and to some extent present behavioural dynamics have until recently been focused on artefacts like pots/ potsherds, bottles and beads among other tangible material cultures. Little attention has been paid to biofacts as human skeletal remains in Ghana until now. Human skeletal remains can do an equal or a much better job of revealing past and present behavioural and environmental dynamics. It is in view of this that the research seeks to subject the excavated human skeletal remains from Begho in the storage of the Museum of Archaeology at the Department of Archaeology and Heritage Studies to an in-depth bioarchaeological analysis as an eclectic approach to understanding the past.

3.3 The Body Theory

One of the theories guiding this research is the body theory. The body theory is based on the assumption that, since the framework/skeleton of a person makes up the person, the biohistory of the skeleton infers the person's identity. Human remains are compelling in their materiality (Sofaer, 2006: 77), that is, human skeletal remains are more than the bodies themselves because they change over time and express the histories and lives of people. In view of that, the body as a material culture should be considered as both material and historical in archaeological investigations (Sofaer, 2006: 66).

Contemporary archaeological theory has benefited immensely from an interest in 'the body' and its contribution to understanding the past. According to Stutz (2008: 20), the 'body theory' was not until recently, a vibrant and a creative intellectual framework in the social sciences used to reflect on the relationships between nature and culture. More of this framework penetrated the archaeological discipline through the subfield of gender archaeology and more general reflections on structuration, agency and practice in the 1990s (Stutz, 2008: 20). Central to these studies was the recognition that the body does not have a 'priori nature', rather, it is created and experienced through the culture and language which reveals it (Thomas, 2002: 33). All these developments

depict archaeology as a 'discipline grounded in materiality, encompassing a long-term perspective and transgressing traditional disciplinary boundaries' Sofaer (2006: 76). As such, it also has the potential to contribute to the theorizing of the body. An understanding of 'the body' translates into an understanding of the past in more general terms.

Sofaer (2006: 2) notes that, archaeological practices tend to focus on the artefacts surrounding the bodies rather than the bodies themselves which are natural potential material resources. Notwithstanding the vast array of information which can be acquired from the study of human remains to contribute to understandings of social life and identity, the human skeleton is rarely used explicitly for analysis, interpretation and reconstruction of past lifeways. Suffice it to say, the physiological aspects of the body forming the foundation of osteological assessments have until recently been silent in its use to search for social meaning. In a nut shell, emphasis on analysis, interpretation and reconstruction of past lifeways have shifted from the body to artefacts/ objects associated with it. According to Sofaer (2006: 2-3), osteological research has remained distinct from the traditional material-culture-based interpretative approaches employed in archaeological investigations which create what she called, 'tension between osteoarchaeology and material-culture-based archaeology.

It has been argued that, 'while archaeology has integrated many interesting thoughts inspired by the social sciences, it has not yet truly achieved the potential of its transdisciplinary character and has tended to disregard the materiality of the body' Sofaer (2006: 2-3). An example can be seen in Julian Thomas' article (Thomas, 2000). His article sought to discuss death and the treatment of dead bodies in Neolithic Britain. While addressing bodily transformations, Thomas discussed architectural features in more details than the actual bodies and the processes they went through (p: 658). This consequently puts the actual bodies in a position where they remain conspicuously absent even within the archaeology that has been explicitly devoted to them.

According to Sofaer (2006: 76), the material qualities of the human body are key to its materiality as an archaeological body. What this means is that, the distinctive characteristics of individual bodies are indicators of the biohistory of one's skeletons when dead and to a large extent one's behavioral patterns when alive. These can be understood as the material outcome of "human plasticity over the life course of the person which is context dependent, temporally described and individually unique" (Roberts, 1995: 1). As noted by Roberts (1995), underlying the bioarchaeological approach to the study of human skeletons is the principle of plasticity (a key concept in contemporary human biology), defined as 'systematic changes within a person in his/her function and/ or structure' (Lerner, 1984: xi) or 'the capability of being moulded' (Roberts, 1995: 1). The plastic skeleton has the potential to be altered through human action including the intentional and unintentional consequences of past life choices. Hence, the skeleton should be considered as a material with its own physical and biological properties.

Sofaer notes that the materiality of the body is therefore not given and immutable but follows from specific material qualities of the human skeleton that permit or constrain change and development (Sofaer, 2006: 76). In plain terms, the human skeleton in the developmental process, exhibits material changes in the various elements unique to each individual. One of the key features of osteoarchaeology is an interest in human variation (Weiss, 1998: 274). The materiality of the body is the 'materiality of process' which is expressive of social values and habit (Sofaer, 2006: 77) but the body is not a pre-existing passive biological container to be filled with culture (Ingold, 1998: 26-7). Both Toren (1999: 2) and Ingold (1998) point out how the environment and the presence and activities of others aid in human growth. There are a number of researches and growing corpus of literature showing that social relations affect how a child develops in later life (Dickens, 2001); suggesting that those early experiences become 'biologically embedded' (Keating and Miller, 1999: 232). Our experiences are thus reflective in our relations and interactions with our parents

and people in our immediate environment. If these interactions or relations tend to be stressful, abusive and violent, they leave significant traces on the human skeleton.

The ideas presented by Stutz (2008: 25) to bring to the fore an understanding of the body as a 'social construction and a biological reality', with a focus on how to handle the cadaver, is an attempt to make modest steps to understand the body within the realms of mortuary archaeology. However, while Stutz (2008: 19) notes that the body as an embodied biological reality has been undertheorized in archaeology, Sofaer (2006: 76) argues that because the materiality of the body emphasizes histories, social relations and the dynamics of development, archaeological accounts should take into consideration its dual character as biological and social. She further argues that, culture as a way of life of a people, is not a superficial addition to the body but forms part of the developmental process that sees the incorporation of cultural norms into the body. It is therefore expedient for the idea that 'bodies are generated through practice and are culturally and socially (re-) produced' Sofaer (2006: 76) to be complemented by an understanding and recognition of the biological and physicality of the body within the discourse on 'the archaeology of the body' in general and particular terms.

Significantly, the argument above does not seem to suggest that the biological and the cultural or even the sociological are indistinguishable as concepts but rather that they overlap with unclear boundaries because the body is a developmental system. For Ingold (1990: 208), 'the social life of a person is an aspect of the organic life in general'. That is to say that the body is a living organism whose development forms part of an organic continuum as other organisms develop within the context of the environment within which they exist.

Adopting a range of approaches to the study of the body in archaeology is a strength and a sign of a dynamic discipline which underlines the body as an important archaeological resource. However, archaeological practice cannot "divide the physical, social or individual body into discrete parts

since each is dependent on the other. Therefore, the archaeologists must make 'living bodies' out of those that are dead" (Sofaer, 2006: 30). Meaning that archaeologists stand the chance of 'awakening' the individuals represented in the skeletal samples for them to tell stories that will provide insights into their lifeways.

3.4 Agency Theory

Skeletons are remnants of humanity. Humanity is embodied in human biological gender and cultural gender. Normally, studying agency archaeologically means inferring agents from materials such as artefacts (for example, beads, smoking pipes, pottery sherds, bottles, tools, among other things) found in the archaeological record. The agency theory plays a special role in archaeology by helping archaeologists to access the meaningful world of the past through the fragmented relics of the archaeological record. But one's choice of methodology and usage of a theory such as 'agency theory' to inform some aspects of social reproduction depends on their choice of data (Dobres and Robb, 2005: 161). That is to say that the data to be analyzed is at the forefront of the methodology and theoretical framework employed.

Since agency theory privileges the discovering of agents of a social reproduction or practice within a 'doxa' (social organization) (Bourdieu, 1990), understanding agency therefore requires investigation of the materiality resulting from ancient social reproduction or practice. That is, artefact, such as the bottles, smoking pipes, potsherds and ecofacts and features found in the archaeological record must be meticulously analyzed as objects from an action or practice to reveal their agents: makers and users.

With regards to the nature of this bioarchaeological research, the material evidence of the framework of a person after soft tissue decomposition is skeletonization. This exhibits agency in themselves as they are able to reveal vivid details of the biohistory and lifeways of the person ranging from sex, age, stature, ante-mortem and peri-mortem trauma/pathology and dental health

as well as dietary patterns among other behavior and activities. The use of agency theory as a theoretical framework for this research implies looking simultaneously at the skeletal remains/ bodies as biological entities, representational identities and material remains (Sofaer, 2006: 11).

Looking for agency in skeletal remains, which are perceived as material or biofact, suggests an inference of activity and behavior from the remains forming part of the archaeological record. According to Hodder (1987), "… material culture is and was in the past meaningful to the degree that it could act back on its makers and users" (Dobres & Robbs, 2005: 161; see also Gell, 1998). That is to say that these skeletal remains which form part of the meaningfully constituted material culture of the archaeological record have an element or feature of 'acting back' on the people they represent, their dental health, pathology and dietary patterns. Other behavioral patterns such as their social organization in terms of labor and gender roles as well as paleodemography can be analyzed from the remains. Insights into the former will help explain some stress and trauma signatures found on the bones.

To a large extent, the grave itself and the grave goods associated with the remains could also have agency. This is because such remains of past cultural practices reveal behavior of the people who buried the dead. The location of the graves in the landscape and the nature of the graves could give insights into how the people or society conceptualized death and how they tried to portray that ideology by the type of grave goods they attached to the dead. According to Pader (1982) and Lucy, (2000) (cited in Sofaer, 2006: 12), bodies have been studied in terms of their placement and arrangement, often by reference to orientation and position. Also, differences between bodies are interpreted in terms of the categorization of past individuals or social groups. The type of cremation or earth burial, that are the choice or means of disposal and orientation of the skeletal remain could suggest the type of rites or rituals performed among societies.

Pearson (1999) notes that the treatment of the body and choice of disposal, whether through inhumation, cremation or disarticulation and disaggregation, has been identified as a strong social statement and as a metaphor for social organization (Pearson, 1999: 124-135). He further notes that:

> "… where we put the remains is generally a conscious and carefully thought-out activity by which the dead are both remembered and forgotten and through which we reaffirm and construct our attitudes on death and the dead and to places and identity. Whether our loved ones' remains are left on the columbarium shelf, dumped in the sea or are scattered over the football pitch of their favorite team, speaks volumes about who we think we are as well as what we felt for them …" (Pearson, 1999: 125).

Invariably, ideas about how people conceptualize death and respond to the demise of their members will help offer a comparative basis to assess the ideological structures and consequently the behavioral patterns of the contemporary people at Begho.

CHAPTER FOUR

RESEARCH APPROACH

4.0 Introduction

This chapter discusses in detail the research approaches employed in the laboratory analysis of the research samples. It includes the processes of biodata determination and documentation as well as the ethnographic work.

4.1 The Begho Burial Boxes/ Study Samples

The Museum of Archaeology at the Department of Archaeology and Heritage Studies has about six burial boxes with skeletal remains from the Begho site in its storage. According to White (2000: 7), the ability to identify skeletal material is a skill that can be acquired only through intensive study of actual specimens. Similarly, according to Sarajilić and Gradaščevič, (2012: 51), the identification of human remains in advanced stages of decomposition or in a completely skeletonized state is a very complicated and sensitive process. It should be noted that the skeletal material collected from the archaeological record are human and therefore ought to be considered as representatives of the living as much as possible. Waldron (1994) and Wood et al. (1992) have noted that there are several factors that will affect how skeletons are studied and how much a sample represents the living. Also, analysis of skeletal remains is dependent on whether they are from discrete graves containing individual skeletons or are part of an assemblage of comingled and disarticulated remains. Regardless, the most basic information produced for a sample of skeletons is the minimum number of individuals (MNI). This is ascertained by counting, determination of side and grouping the most commonly occurring skeletal elements.

Part of the reasons for making the Begho site the focus of this research was the fact that it came with a significant MNI of eight skeletons (five complete and three partial). This is a substantive number for this research aside the site's historic significance in Ghana's trade history.

Each burial box came with its own written contextual information (Table 2.1). These are: Bg. 71 D74 & F74 (Figure 4.1) which contained remains from the Kramo quarter and Bg. 72 B2, burial A (Figure 4.2); Bg. 70 B1, burials B & D and Bg. 71 B1-burial B & D (Figure 4.4); Bg. 70 B1, burial C (Figure 4.5); Bg. 70 (Figure 4.3) also contained remains from the Brong quarter. The burial box with the provenience Bg. D74 & F74 and Bg. 70 B1, burials B&D had within them two individuals each. 'Bg' stands for Begho.

Figure 4. 1 Exterior and Interior of burial box Bg. 71 D74 & F74. (Photo by Author)

Figure 4. 2 Exterior and Interior of burial box Bg. 72 B2, burial A. (Photo by Author)

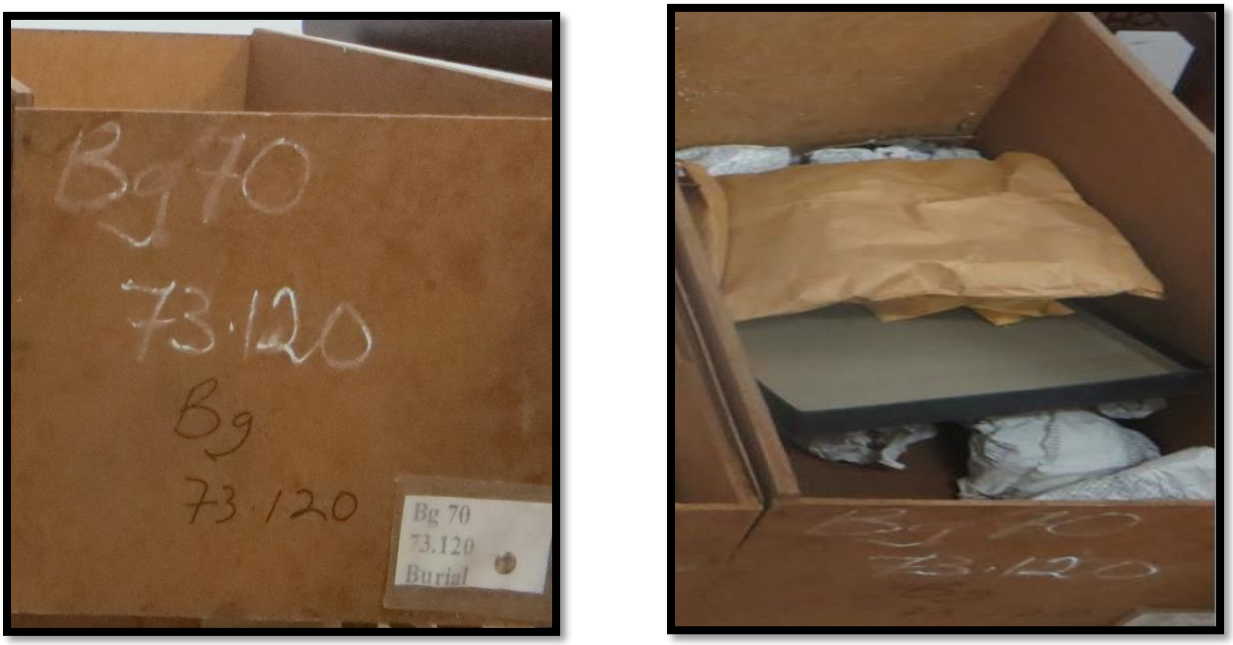


Figure 4. 3 Exterior and Interior of burial box Bg. 70. (Photo by Author)

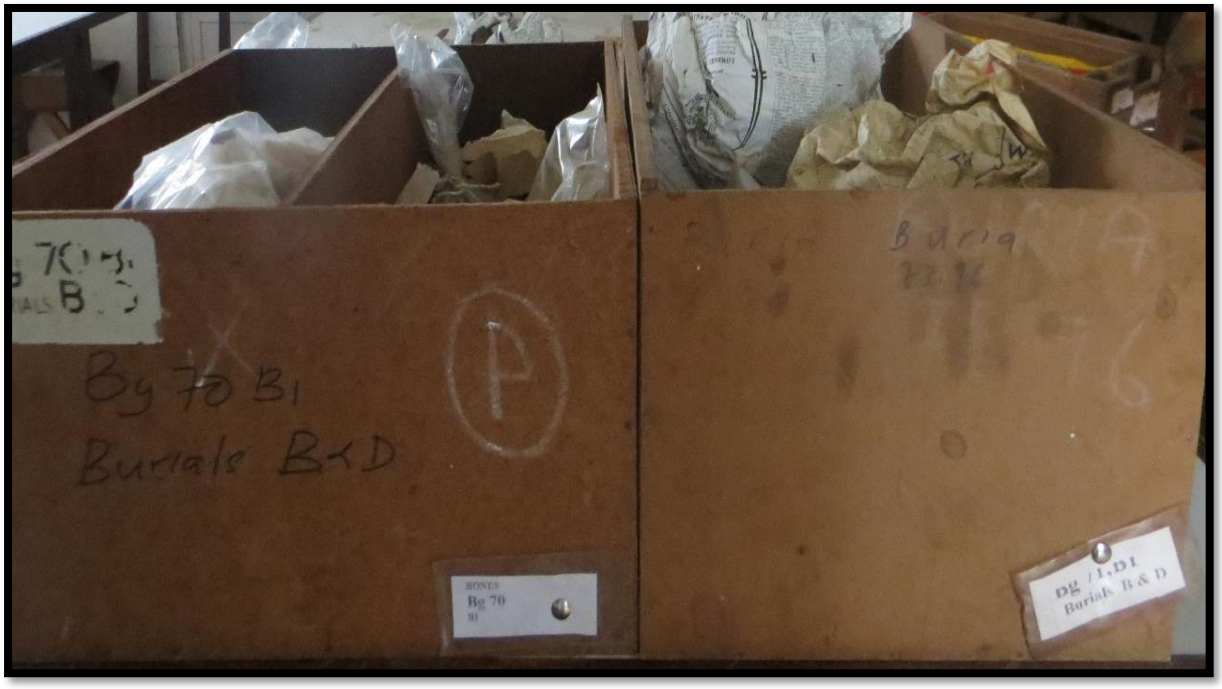


Figure 4. 4 Exterior and Interior of burial boxes Bg. 70 B1, burials B & D and Bg. 71 B1-burial B & D. (Photo by Author)

Figure 4. 5 Exterior and Interior of burial Bg. 70 B1, burial C. (Photo by Author)

4.2 General Description of Contents of Burial Boxes

Within all the burial boxes (padded with cotton and newspapers) with the inscription:

- Bg. 1971 D74 & F74 (Figure 4.1);
- Bg. 72 B2, burial A (Figure 4.2);
- Bg. 70 (Figure 4.3);
- Bg. 70 B1- burials B & D and Bg. 71 B1-burial B & D (Figure 4.4) and
- Bg. 70 B1, burial C (Figure 4.5)

are parts and fragments of human skeletal remains. The human skeletal remains were wrapped with either newspapers and with what looked like acid-free papers. Others were in brown envelopes or brown paper. Some elements like the teeth were stored in plastic bags and mini-sized envelopes. The skeletal remains appeared to have been washed and marked with an abbreviation of site name, quarter and some numbers. However, the skeletal remains in burial box Bg. 72 B2, burial A appeared not to have been washed but was labelled.

A common practice observed in all the burial boxes was the fact that the long bones seemed to be placed first followed by the other parts. This conforms with the ethics of packaging and transporting skeletal finds from the field in archaeological research. Heavier elements are placed under lighter elements.

In burial box Bg. 70 B1, burials B&D containing two individuals, a plywood was used to divide the box (Figure 4.4) to prevent the contents from mixing. Conversely, elements within burial boxes Bg. D74 & F74 containing a minimum number of two individuals were mixed up. In this case, sorting was done with the help of the numbers marked on the skeletal elements. Within burial box Bg. 71, B1- burials B& D the human remains were completely fragmented (Figure 4.4) making it very difficult to identify the various elements. Also, because these skeletal remains have been in

storage for a long period of time, almost all the paper labels were destroyed, making it almost impossible to view the year of excavation, unit and level number and excavator/ project name.

4.3 Analysis of Begho Skeletal Remains

Simmons and Haglund's chapter in Hunter and Cox (2005: 161), noted that the first stage of the analysis is to take an inventory of skeletal elements present or absent as well as elements that seem to be isolated as they will give an idea of the number of individuals represented. This is followed by a documentation of the condition of the remains. This could include taphonomic assessment of postmortem changes. For example, root etching, weathering/ breakage either from soil pressure or by other factors.

Central to taking a skeletal inventory is to arrange the elements in their anatomical positions. This is critical to documenting and maintaining a chain-of-custody which in this context refers to the record or documentation of the process and time that the human skeletal remains were brought to the storage of the Museum of Archaeology. It also includes a record of the time and processes of skeletal analysis through to the end. The second phase of the analysis, according to Simmons and Haglund's chapter in Hunter & Cox (2005), is the creation of a basic biological profile of the sex of the individuals (the biological consequence of chromosomal inheritance). This must be assessed first because it will prescribe the methods to use in estimating both age and statue (Hunter & Cox, 2005: 161).

The stages involved in my process of skeletal analysis included the methods in Simmons and Haglund's chapter in Hunter & Cox (2005). That said, the first stage involved assembling the tools for skeletal analysis, notably (i) inside and outside caliper for measuring skeletal elements; (ii) measuring tapes (mm and cm) for measuring long bones; (iii) pencils and erasers for documenting information; (iv) gloves; (v)nose masks' (vi) laboratory coat as protective clothing; (vii) a camera for visual documentation. Visual documentations were made before and after the contents of the

burial boxes were taken out for analysis. I also developed a five-page skeletal inventory form (Appendix 2) was also developed to record skeletal biodata.

The second stage was to record all available contextual information on the burial boxes into a database. Some of this provenience information were on deteriorated paper labels that accompanied the human remains in the boxes.

The third stage involved removing the skeletal parts/elements from the boxes and laying them in anatomical positions. This enabled a record of the various elements present or absent and their conditions on the skeletal inventory form with accompanying photographs. Skeletal codes were also developed for each individual (eg. BG'18.73.110). The skeletal codes included an abbreviation of the site name (BG for Begho), year of skeletal analysis ('18) and the numbers marked on the skeletal elements (eg. 73.110). These skeletal codes were to serve as Accession Numbers to help in cataloguing the human remains as part of the museum collections (Table 5.7). The fourth stage involved the recording of skeletal elements present or absent; notation of the condition and state of deterioration; the determination of the age and sex; the measurements of some long and short bones (where possible) and the identification of some pathological trauma on the skeletons.

4.4 Procedure for Biodata Determination

The biohistory of human skeletal remains often includes the determination of age, sex and stature. There are multivariate methods for determining sex and age of either a John-Doe or Jane-Doe (name given to an unidentified male or female skeleton respectively). These methods vary from a direct observation of specific elements of a skeleton to microscopic examination of a given segment. It often involves both non-metric observation and metric measurement of varied cranial and post-cranial indicators on the parts of the skeleton while comparing them against standard

cladistic measurement of the five-trait scoring system developed by researchers over the years (Brooks and Suchey, 1990; Iscan et al.,1987 and Phenice, 1969).

The five-trait scoring system followed Walker (2008) and Klales et al. (2012) for sex indication on the skull and pelvis respectively (Appendix C and D). Ubelaker's (1989) method was also used to indicate age based on dentition (Appendix E). These scoring systems provided standard cladistic descriptions of cranio-facial and pelvic sex indicators. Notable indicators on the skull included the prominence of (i) nuchal crest; (ii) mastoid process; (iii) supra-orbital margin; (iv) supra-orbital ridge/ glabella and (v) mental eminence. Key indicators on the pelvis included the prominence or presence of (i) ventral arc (ii) subpubic concavity (iii) medial aspect of the ischio-pubic ramus (iv) subpubic angle and (v) the greater sciatic notch on the innominate bone or pelvis are key.

For the purposes of this research, age determination was based on non-metric observational means, and sex determination was done by: non-metric observational means and metric means as well as the comparison of results to standard measurements. Methods for determining the sex of a skeleton have been outlined by White (2000) and critically reviewed by many others including Mays and Cox (2000).

For sex determination, the observational method involved visually observing skeletal elements. This includes the nature of the whole skeleton, morphology of the pelvic girdle (including the greater sciatic notch, sub-pubic angle) as well as cranio-facial elements like the mastoid process, supraorbital margin, mandible, ramus of mandible and nuchal crest. The sex of a John Doe or Jane Doe can be determined reliably from features of the two innominate bones (the pelvis) and from cranio-facial elements. The prominence or otherwise of these elements would indicate whether it is a John Doe (male) or Jane Doe (female). Standard methods of researchers like Klales et al. (2012) and Walker (2008) were used in the observational classification.

In all these assessments, caution was taken when applying these various methods since the morphology of the human bone varies with the presence or absence of ante-mortem trauma as well as age of the person (according to Lisa Mariann Strand, a PhD student of osteology at Stockholm University). In such cases if the person were a male, as he grows older his bone morphology changes to that of a female and that of the female turns more gracile.

The metric means were used in the measurement of the various sex indicative elements to prove or disprove the observational results. The stature of some of the individuals was also determined through metric means by measuring the long bones (humerus, radius, ulna, femur, tibia and fibula) and tabulating the results in a standard formula. In general, a persons' approximate height is = femur height × 2× 2/3 (Trotter and Gleser, 1977). This equation is used for fused (ossified) bones only. Stature was not estimated extensively because most of the skeletal elements, especially the long bones, were in fragments and also because the skeletal elements of two individuals were not completely fused.

According to Iscan (1989), "While sexing methods, when applied to well-preserved skeletons may reach an overall precision of up to 90%, post-maturity age assessment still remains one of the most difficult tasks in skeletal analysis" (cited in Hoppa and Vaupel, 2002: 48). This is because at maturity or adulthood, the bones have ossified and the exact age of an adult skeleton cannot be ascertained. In most cases through the use of research standards and other degenerative changes on the adult skeleton, an age range can be estimated. Sarajilić and Gradaščevič (2012: 51), are of the view that adult age determination is important in the identification process, but it is a very challenging process due to the fact that an adult skeleton keeps changing over time and the remodeling process is highly-individually based and subject to the influences of behavior and environment. Although bones and teeth undergo life-long ante-mortem age-related metamorphosis, each part of the skeleton, depending on its structure, location and function reflects

different aspects of the ageing phenomenon and consequently the life-long metamorphosis of the human skeleton (Figure. 4.5).

Although all bone markers point towards early adulthood, the specific ‘‘age windows’’ may vary according to the trait employed and the influence of confounding factors. Thus, some indicators will provide an accelerated estimate (Hoppa and Vaupel, 2002: 49). Rightly so, ageing methods in sub-adults could include an assessment of the degree of closure of the cranial sutures, epiphyseal seals of the ossification joints/centers and dental development. Ageing methods in adults also include a detection of morphological characteristics in teeth and bones. It involves an assessment of the sternal ends of ribs (particularly the fourth ribs) as well as the assessment of the auricular surface of the vertebral column and the morphology of the pubic symphysis. The degenerative changes that may occur on them provide good information on age. The first systematic studies aimed at the development of techniques that estimate age of remains, were conducted during the 1920s and were correlated with the observation of pubic symphysis morphology and cranial suture (Mays, 1998; Todd, 1920 and 1921; Yazedjian and Kešetović, 2008)).

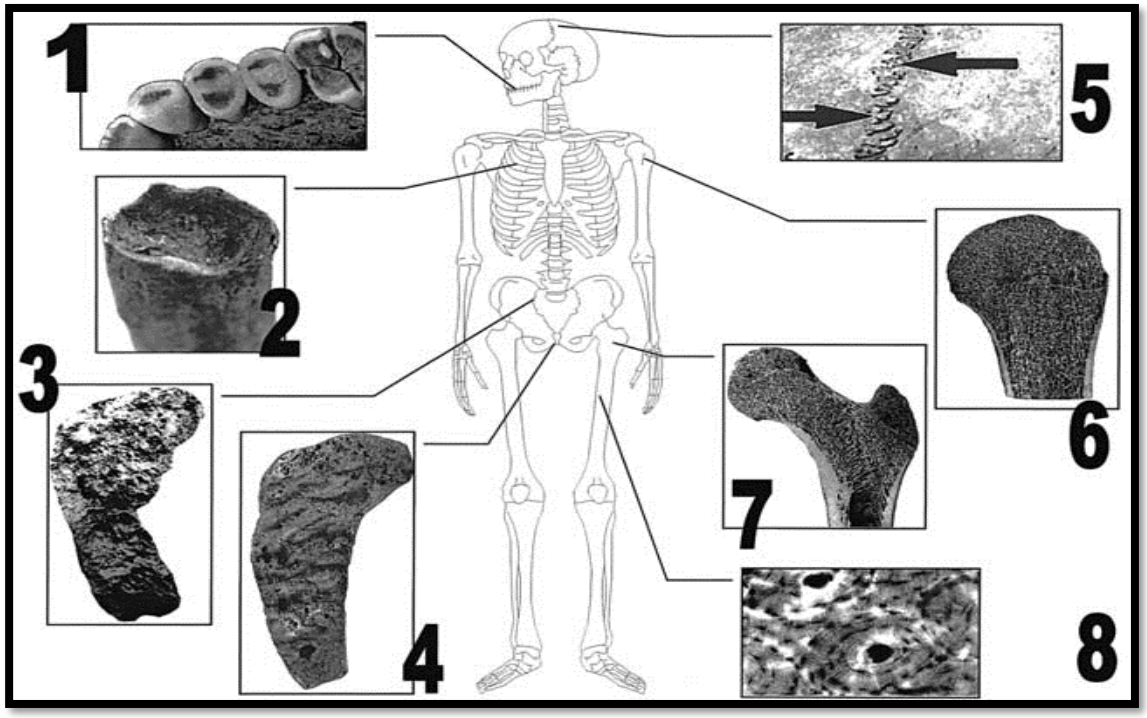


Figure 4. 6 Some of the most often used age indicators: 1, dental attrition; 2, sternal rib end; 3, auricular surface; 4, pubic symphysis; 5, cranial sutures; 6, epipheseal region of humerus; 7, epipheseal region of femur; 8, bone histology. (Young male, approximately 20—25 years old, Early Medieval cemetery). Reproduced from Hoppa and Vaupel, (2002).

For age determination of the skeletal materials from Begho, a number of classification methods were used. These included the observation of the degree of cranial-suture closure of the skull and the assessment of the auricular surface of the vertebrates, as well as dental development while comparing them against standard skeletal age determination chats.

Dental development is the most important means of age estimation. This is because both the deciduous and permanent dentition develop through well-defined stages of formation and eruption in the lifetime of a person (Garn et al. 1959: 245). However, variabilities should not be underestimated. Dental age is best evaluated through radiography although a visual inspection can give a rough estimate. In juveniles, nutrition, disease, altitude and other environmental factors affect both growth and maturation rates (Frisancho 1993; Scheuer and Black 2000). Ubelaker (1987) opines that, in an individual who had suffered from nutritional stress or disease, the skeletal

and dental ages will not always be in agreement. Skeletal growth may often be retarded by several months or years relative to dental maturation.

Additionally, the dental arcade/ teeth of an individual plays unique roles in preserving detailed microscopic records of development of the individual. This also includes records of disturbances to their development from childhood into adulthood. Rightly so, tooth defect sequences shed ample light on the consequences of biological and social transitions with evidence from the fossil and archaeological record. Hence as dental development seems to be less susceptible to periodic environmental stressors, dental estimates should be regarded as the more reliable age indicator.

This study could not employ this method extensively due to the nature of the materials as well as insufficient time and resources. The standard template used for the Begho analysis included that of Klales et al. (2012) and Walker (2008). In applying these methods of sex determination and age estimation to the research samples, caution was taken because human variation is population- or geography-specific. For instance, features applicable to Chinese populations may not be entirely applicable to remains of individuals from Ghanaian populations. The crania of Japanese males are extremely gracile by American standards (Bass, 1983; Sledzik and Ousley, 1991) and using US metric and visual cues may render them incorrectly classified (Hunter & Cox, 2002: 162).

It should be noted however that the materials (skeletons) sampled for this research are of African or Ghanaian origin whereas standards used for the estimation of sex and age are of western European origin because there are no standard categorization methods for African skeletons. In view of this, margins of error were considered. Possible pathology in addition to any sharp or blunt force trauma evident on the bones were recorded and photographed. These were viewed under ante-mortem, peri-mortem and post-mortem changes.

4.5 Ethnographic Field Approach

To gather emic perspectives on archaeothanatological practices among the Hani-Begho populations, ethnographic study was conducted in the town in 2019. This involved visiting the site to assess the nature and configuration of the community and familiarization with the historically-noted quarters within the community. The method of research included semi-structured interviews and focus group discussions to gather qualitative data on past and present archaeothanatological practices in Hani-Begho. Eighteen sets of focus groups ranging from two to nine members in each group were interviewed. Fifteen individuals were also interviewed in addition.

Out of the 88 respondents, 45 were aged 50 years and above while, 43 were between 20- 49 years (Chart 4.1). The interview guide was geared towards the collection of data on the emic perspective of the indigenes. These included (i) issues regarding death, (ii) treatment of the body before burial, (iii) stages involved in the funeral ceremony, (iv) role of men and women in these stages, (v) rituals involved at the family and community levels, (vi) grave goods and (vii) how different members of the Begho community have been/ are buried. Questions were also asked about ante-mortem bone and tooth modifications done in the past and currently and whether these modifications can be linked to or have bearings on medical practices within the community. Responses were correlated with various factors including age and whether the respondent is an indigene of Hani/Begho or not while observing general happenings in the community (Appendix 3).

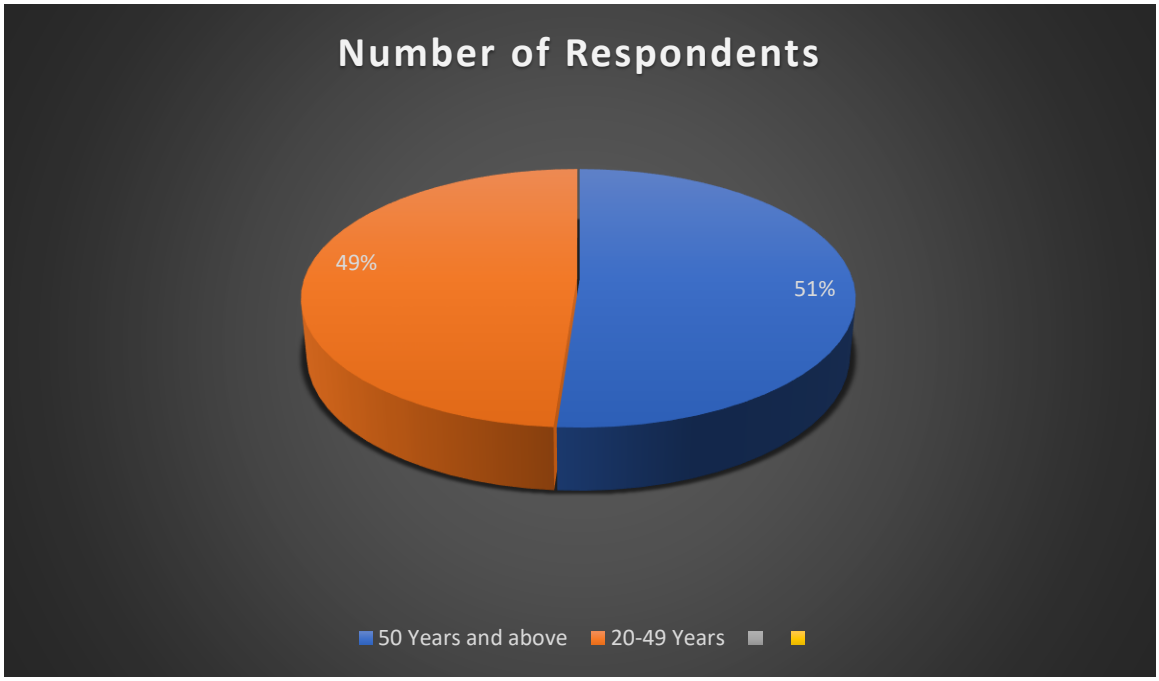


Chart 4. 1 Percentage of the 88 Respondents Interviewed.

After all the skeletal biodata were recorded and all other relevant information had been documented and an electronic inventory record created, the human remains were rewrapped with brown paper (an alternative for acid-free papers) and the contextual information transferred unto brown paper. The remains were then placed back in the burial boxes padded with newspapers and sent back into the museum storage.

Figure 4. 7 Ethnographic data collection session with some elders of the Begho community. (Mr Anderson Darko- left, Author- middle and herbalist- right).

(Photo by Mr. Gideon Agyare)

Figure 4. 8 Ethnographic data collection session with an elder of the Begho community. (Photo by Mr. Gideon Agyare)

Figure 4. 9 Presentation of gin, soft drinks and money at the chief's palace as part of protocol processes, '*Okyeame*' poured libation to appease and ask permission from the gods before commencement of research at Begho. (Photo by Mr. Gideon Agyare)

Figure 4. 10 Author classifying a skeletal sample in the laboratory of the DAHS.

(Photo by Prince Nuamah)

Figure 4. 11 Author classifying a skeletal sample in the laboratory of the DAHS.

(Photo by Prince Nuamah)

CHAPTER FIVE

RESULTS

5.0 Introduction

This chapter presents findings from the skeletal analysis done on the Begho skeletons as well as data from the ethnographic research done at Hani-Begho in 2019. Findings from ethnographic research in Begho were discussed in relation to the skeletal findings to provide a holistic picture of some practices in the Hani-Begho area. This chapter also presents a summary of the skeletal data, pictures of anatomically laid skeletons and associated materials.

5.1 Assessing the Begho Skeletons

The skeletal remains were subjected to analytical observations in order to answer the research questions posed earlier. As already mentioned the skeletal elements were both partial and complete. The code of completeness of the Begho skeletal remains were estimated based on the skeletal elements present (Table 5.1). It should be noted that, the code of completeness was assessed on the number of full skeletal elements that were present so that if an individual had most of his/her skeletal elements present in full, it was coded as > 75%. Conversely, an individual was coded < 25% if most skeletal elements were absent and in fragments. Additionally, an individual was coded =/> 25% </=75% if some of the skeletal elements were present in full and others in fragments.

Table 5. 1 Code of Completeness of all Begho Skeletal Remains.

BURIAL BOX	PROBABLE YEAR OF EXCAVATION	MNI	INVENTORY CODE	CODE OF COMPLETENESS
Bg70.B1-*Burials B&D*	1970	1	BG'18-B1. B 73.112	a) =/> 25% </=75%
Bg70.B1-*Burials B&D*	1970	1	BG'18-B1. D 73.114	b) =/> 25% </=75%
Bg 71. B1-*Burials B&D*	1971	1	BG'18-B1 73.96	<25%
Bg 1971. D74 &F74	1971	1	BG'18-D74, 73.119	a) =/> 25% </=75%
Bg. 1971. D74 & F74	1971	1	BG'18-F74, 73. 119 (T2)	b) < 25%
Bg. 70	1970	N/A	BG'18- 70, 73.120	< 25%
Bg 72 B2, burial A	1972	1	BG'18-72, B2-73.110	=/> 25% </=75%
Bg 70, B1, burial C	1970	1	BG'18. 73.113	=/> 25% </=75%

Table 5. 2 Notation of Mammalian Dental Formulae

MAMMALIAN DENTAL FORMULAE	NOTATION
I	Incisor
C	Canine
PM	Premolar
M	Molar

Burial box Bg 70 B1- Burials B&D came with a minimum of two individuals. These included skeletons with inventory codes BG'18-B1, B 73.112 from Burial B and BG'18-B1, D 73.114 from burials D.

The individual from Burial B has the inventory code, BG'18-B1, B 73.112. The condition of this skeleton indicated that it was washed after excavation. There was no evidence of charring, flaking or cut marks on the skeleton. The axial section; skull, ribs, cervical (identified C_3-C_5), lumbar and thoracic (identified T_1-T_5) vertebrae were fragmented. The manubrium and axis elements were present. With the appendicular skeleton, the left clavicle, scapulas, humeri, radii, ulnae, left femur, right tibia and left fibula were present and complete. The right clavicle, right pelvic bone, right femur and left tibia were however fragmented. Both the left and right carpals were partially complete whilst the left metacarpals were complete. The left and right tarsals and metatarsals were also complete. There were 38 fragmented bones of the skull, 26 fragmented pelvic bones and 12 unidentified elements of the vertebral column. All the teeth in the maxilla region (except the 3rd left molar) and in the mandibular region were present. The individual's sex and age have been outlined in (Table 5.3).

Table 5. 3 Summary of BG'18-B1, B 73.112 Skeletal Remains.

BURIAL BOX	INVENTORY CODE	MNI	AGE (YEARS)	SEX	JUSTIFICATION FOR SEX AND AGE
Bg 70 B1-Burials B&D	BG'18-B1, B 73.112	1	17-25	Female	Sex was determined on the basis of the scoring of the prominence of the mastoid process, the mental eminence, gonial angle and angle of the ramus of mandible scored after Walker (2008). The nature of the pelvic was scored after Klales et al (2012). Age was estimated based on the ossification centers/ epiphyseal joints not being completely fused, even though the individual had fully developed dentition.

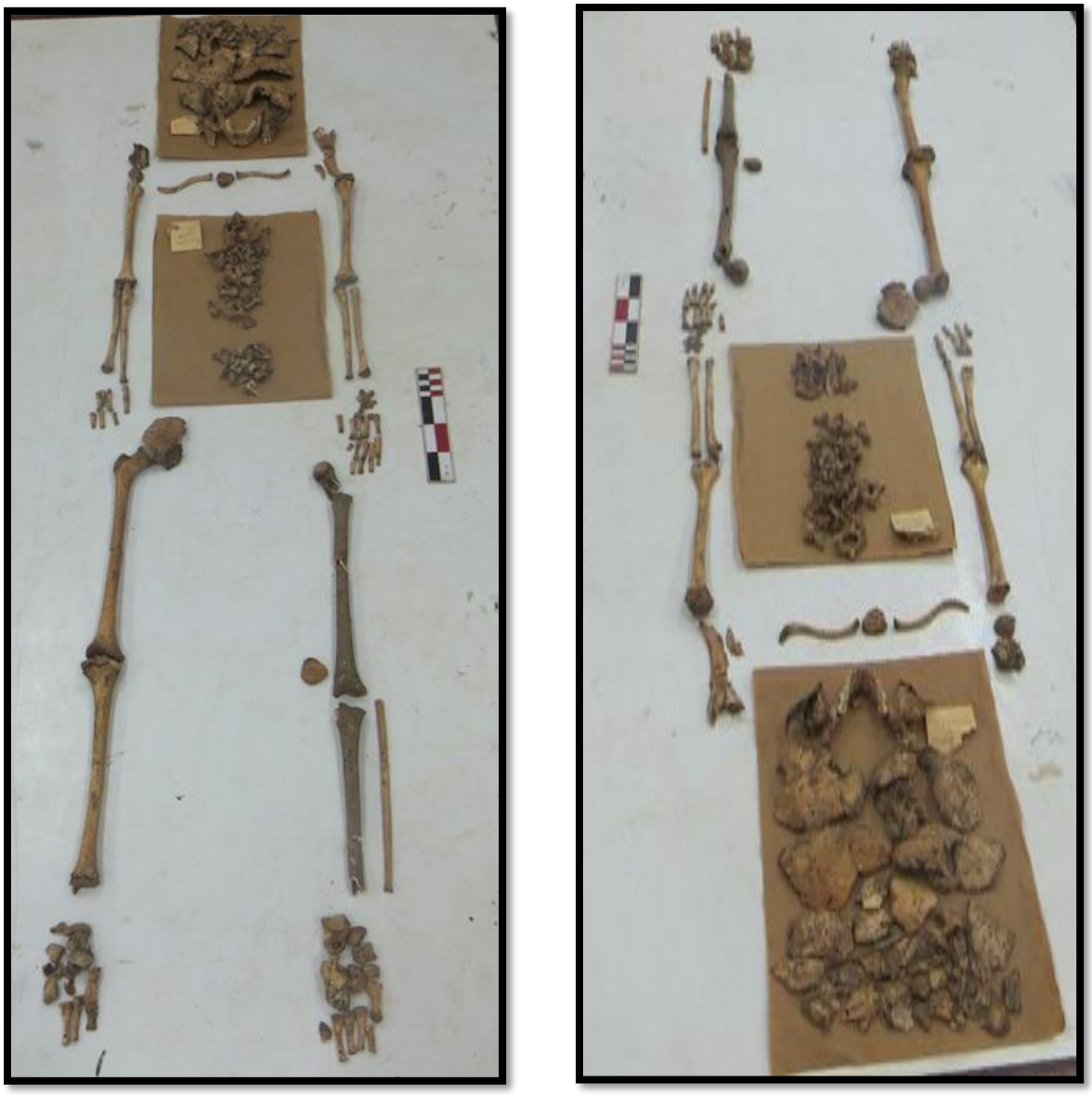


Figure 5. 1 Posterior views of the individual labelled BG'18-B1, B 73.112.

(Photos by Author)

The individual from Burial D has the inventory code, BG'18-B1, D 73.114. The skeletal remains appeared washed, not charred and had no cut marks. Most elements of the axial skeleton were fragmented, while the clavicle, scapula, lumbar vertebrae and sacrum were absent. There were 56 fragmented skull bones and 77 fragmented bones of the ribs. Within the appendicular skeleton, only the radii and ulnae were complete. The humeri and the right femur were fragmented but the left femur, tibias, fibulas, carpals, metacarpals, tarsals and metatarsals were absent. Some 34 unidentified elements were however consistent with human bones. In the buccal cavity, all except incisors in the mandible were present. The individual's sex and age have been outlined in (Table 5.4).

Table 5. 4 Summary of BG'18-B1, D 73.114 Skeletal Remains.

BURIAL BOX	**INVENTORY CODE**	**MNI**	**AGE (YEARS)**	**SEX**	**JUSTIFICATION FOR SEX AND AGE**
Bg 70 B1-Burials B&D	BG'18-B1, D 73.114	1	17-25	Female	Sex was determined based on the prominence of the nature of the bones, and the scoring of the prominence of the mastoid process, the mental eminence, gonial angle and angle of the ramus of mandible scored after Walker (2008). Age was estimated on the fact that the ossification centers/ epiphyseal joints were not completely fused even though the individual had a fully developed dentition.

Figure 5. 2 Posterior view of the individual labelled BG'18-B1, D 73.114.

(Photo by Author)

Burial box Bg 71 B1-bBurials B&D came with one individual with inventory code BG'18-B1 73.96. The skeletal elements appeared unwashed and completely fragmented. The axial skeleton had 129 cranial fragments, 69 fragmented vertebral elements and 36 rib bone fragments. This individual had in its dental arcade 8 incisors, 2 canines, 5 premolars and 8 molars. The appendicular skeletal elements included 148 bone fragments. The individual's sex and age have been outlined in (Table 5.5).

Table 5. 5 Summary of BG'18- B1, 73.96 Skeletal Remains.

BURIAL BOX	INVENTORY CODE	MNI	AGE (YEARS)	SEX	JUSTIFICATION FOR SEX AND AGE
Bg 71 B1-Burials B&D	BG'18- B1, 73.96	1	Indeterminable	Female	Sex was determined based on the prominence of the mastoid process, the mental eminence, gonial angle and angle of the ramus of mandible scored after Walker (2008). Age estimation was impossible due to the totally fragmented nature of the skeleton.

Figure 5. 3 Classification of the elements of the individual labelled BG'18- B1, 73.96 from Begho.

(Photo by Author)

Burial box Bg 1971 D74 & F74 came with more than a minimum of one individual. The provenience information found on the labels and date of the newspapers used to wrap the skeletal remains could suggest that they were probably excavated in April, 1971 from K1 at the Kramo quarter. These individuals were identified by inventory codes: BG'18-D74, 73.119 and BG'18-F74, 73.119 (T_2).

Skeletal remains with inventory number BG'18-D74, 73.119 in Burial Box Bg 1971 D74 & F74 appeared washed, uncharred and without cut marks. The axial skeletal elements present include the skull, clavicle, scapula, sternal body, ribs, all cervical and lumber vertebral elements, seven thoracic vertebral elements and the pelvic. Other thoracic vertebral elements like the sacrum were fragmented, in addition to these were 94 pieces of vertebral bones. The appendicular skeleton had the right humerus, right radius, carpal, metacarpal, tarsals and metatarsals all complete. However, the left humerus, left radius, femurs, tibias and fibulas were fragmented.

From the above element count, the code of completeness of the individual with inventory number BG'18-D74, 73.119 can be rated at =/>25% </=75% (Table 5.1). This individual showed signs of ante-mortem teeth loss with signs of healing/sealing of the premolar and molar sockets in the maxilla leaving $I^{2,}$ C, PM^1, PM^2 and M^2 and in the mandible leaving $PM^{2,}$ C, I^2 & I^1 on the right and $I^{1,}$ $I^{2,}$ C on the left. Additionally, the individual showed signs of osteoarthritis/ lipping on some vertebrae probably resulting from stress and other occupational habits that exerted pressure on the vertebrae. The lipping could also be as a result of degenerative changes in the body as the person aged. However, there is the probability of people developing osteoathritis an early age, due to occupational habits. The individual's sex and age have been outlined in (Table 5.6).

Table 5. 6 Summary of BG'18-D74, 73.119 Skeletal Remains.

BURIAL BOX	INVENTORY CODE	MNI	AGE (YEARS)	SEX	JUSTIFICATION FOR SEX AND AGE
Bg,1971 D74 & F74	BG'18-D74, 73.119	1	60-75	Male	Sex was determined by using sex indicators on the pelvis and scoring them after Klales et al. (2012). Age was estimated on the basis of the fused cranial sutures and epiphyseal joints, complete dental development and evidence of stress on the vertebrae.

Figure 5. 4 Anterior view of the full skeleton of individual labeled BG'18-D74, 73.119 from Begho.

(Photos by Author)

BG'18-F74, 73. 119 (Trench two) (Figure 5.5) in Box Bg 1971 D74 & F74 appeared washed, uncharred and without cut marks. Elements present include complete right and left femur, complete right tibia and fibula, fragmented left tibia and fibula, proximal head of a radius, the left and right patella and 23 fragmented pieces of bone probably of the lower limb. The code of completeness in this case could be rated at <25% (Table 5.1). Due to the absence of elements that could help estimate age and determine sex; such as the skull and pelvis, the lower limbs were used instead. Anthropologists can turn to other skeletal elements to determine sex only if the pelvis and cranium are not available. However, even though measurement of most postcranial elements such as the humeral and femoral heads provide a reasonable degree of accuracy, they are less reliable as compared to the cranium and pelvis (Hunter & Cox, 2002: 162). The individual's sex and age have been outlined in (Table 5.7).

Table 5. 7 Summary of BG'18-F74, 73. 119 (T_2) Skeletal Remains.

BURIAL BOX	**INVENTORY CODE**	**MNI**	**AGE (YEARS)**	**SEX**	**JUSTIFICATION FOR SEX AND AGE**
Bg 1971 D74 & F74	BG'18-F74, 73. 119 (T_2)	1	Post 40 years	Male	Sex and age were determined based on the nature (prominence and heaviness) of the femur, tibia and fibula and the fact that the ossification joints were completely fused.

Figure 5. 5 Proximal and distal view of the lower limbs of individual labelled BG'18-F74, 3. 119 (Trench two).

(Photo by Author)

Burial box Bg. 70, with inventory code BG'18-70, B2-73.120 contained fragmented skeletal elements of the frontal, occipital and left parietal bones plus 12 additional flat bones of the skull and the left and right mastoid process. The burial box also had in it two different maxilla regions with five molars, four premolars, two canines and two incisors in all. Also included were nine different right halves of the mandible with teeth and three different left halves of mandible with teeth. The teeth numbered 20: 11 molars, three premolars and six incisors in all. The axial skeletal elements included were the atlas and axis, C_3- C_5, five pieces of ribs, two thoracic and two lumbar vertebrae and a scapular bone. The appendicular skeleton included two humeral heads and the diaphysis (middle shaft) of a radius and four metacarpals. The code of completeness of this skeletal sample is therefore <25% (Table 5.1). The individual's sex and age have been outlined in (Table 5.8).

Table 5. 8 Summary of BG'18-70, B2-73.120 Skeletal Remains.

BURIAL BOX	INVENTORY CODE	MNI	AGE (YEARS)	SEX	JUSTIFICATION FOR SEX AND AGE
Bg. 70	BG'18-70, B2-73.120	Indeterminable	Over 40 years	Male	Sex determination was done by visually observing the prominence of the two (left & right) mastoid processes. An age range estimation was suggested from the fully developed dentition The nine different right halves of the mandible and three different left halves of mandible suggest that the remains belonged to more than one individual.

Figure 5. 6 View of individual labeled BG'18-70, B2-73.120 from Begho.

(Photo by Author)

Burial Box Bg 72 B2, Burial A contained one individual with inventory code: BG'18-72, B2-73.110. All skeletal elements appeared unwashed. Elements of the axial skeleton present include: the skull with almost half (the right side) of it destroyed; atlas; manubrium; pelvis and sacrum. In the maxilla region are PM^2 (left & right), I^2 (right), C, PM^1, PM^2, M^2, M^3 (right), and in the mandibular region are M^3, M^2 and PM^1 (right) and C, PM^1, M^1, M^2, M^3 (left), that makes two canines, one incisor, six premolars, seven molars in all. The left side of the maxilla has an extra premolar erupting adjacent the PM^2. Most of the ribs were fragmented with their sternal ends almost impossible to identify. Also, the skull looked compressed probably as a result of post mortem soil pressure after burial. Most elements of the vertebral column are fragmented and unidentifiable. The appendicular skeletal elements present include the right clavicle, right scapula, left and right humeri, radii, ulnae, left and right metacarpals, left and right femurs, left and right tibia and the left and right tarsals. From the above, the code of completeness of this individual can be rated as =/> 25% </=75% (Table 5.1). This individual has attritions in the mandibular teeth; with evidence of occlusal wear of the teeth in the lower jaw. The individual's sex and age have been outlined in (Table 5.9).

Table 5. 9 Summary of BG'18-72, B2- 73.110 Skeletal Remains.

BURIAL BOX	INVENTORY CODE	MNI	AGE (YEARS)	SEX	JUSTIFICATION FOR SEX AND AGE
Bg 72 B2, burial A	BG'18-72, B2-73.110	1	30-40	Female	Age was estimated based on the complete fusion of the epiphyses and fully developed dentition. The sex of this individual was determined based on the nature of the sex indicators on the pelvis as skull scored after Klales et al. (2012) and Walker (2008)

Figure 5. 7 Posterior view of individual labelled BG'18-72, B2- 73.110 from Begho.

(Photos by Author)

Burial Box Bg 70, B1, Burial C contained one individual with inventory code BG'18. 73.113. The skeletal elements appeared washed, uncharred and without cut marks. Elements of the axial skeleton present include the skull, all elements of the dental arcade, $T^{9,}$ T^{10}, four lumbar vertebrae, sacrum, pelvis, sternal body, 26 fragmentary rib bones and 122 unidentifiable fragmentary bones. The appendicular skeletal elements present are clavicles, the right scapula, humeri, radii, ulae, carpals and metacarpals, femurs, tibias, left tarsal and metatarsal. Code of completeness is therefore rated at =/> 25% </=75% (Table 5.1). This individual was in association with small-sized beads (Figure 5.9), recorded as found around the waist or pelvic bone. The individual's sex and age have been outlined in (Table 5.10).

Table 5. 10 Summary of BG'18. 73.113 Skeletal Remains.

BURIAL BOX	**INVENTORY CODE**	**MNI**	**AGE (YEARS)**	**SEX**	**JUSTIFICATION FOR SEX AND AGE**
Bg 70, B1, burial C	BG'18. 73.113	1	25-45	Male	Sex was determined based on the nature of the sex indicators on the pelvis and skull scored after Klales et al. (2012) and Walker (2008). Age was estimated based on the complete fusion of the epiphyses and fully developed dentition as well as the morphology of the sternal ends of the ribs (with the help of a pathologist).

Figure 5. 8 Posterior (A) and lateral (B) view of individual labelled BG'18. 73.113 from Begho.

(Photos by Author)

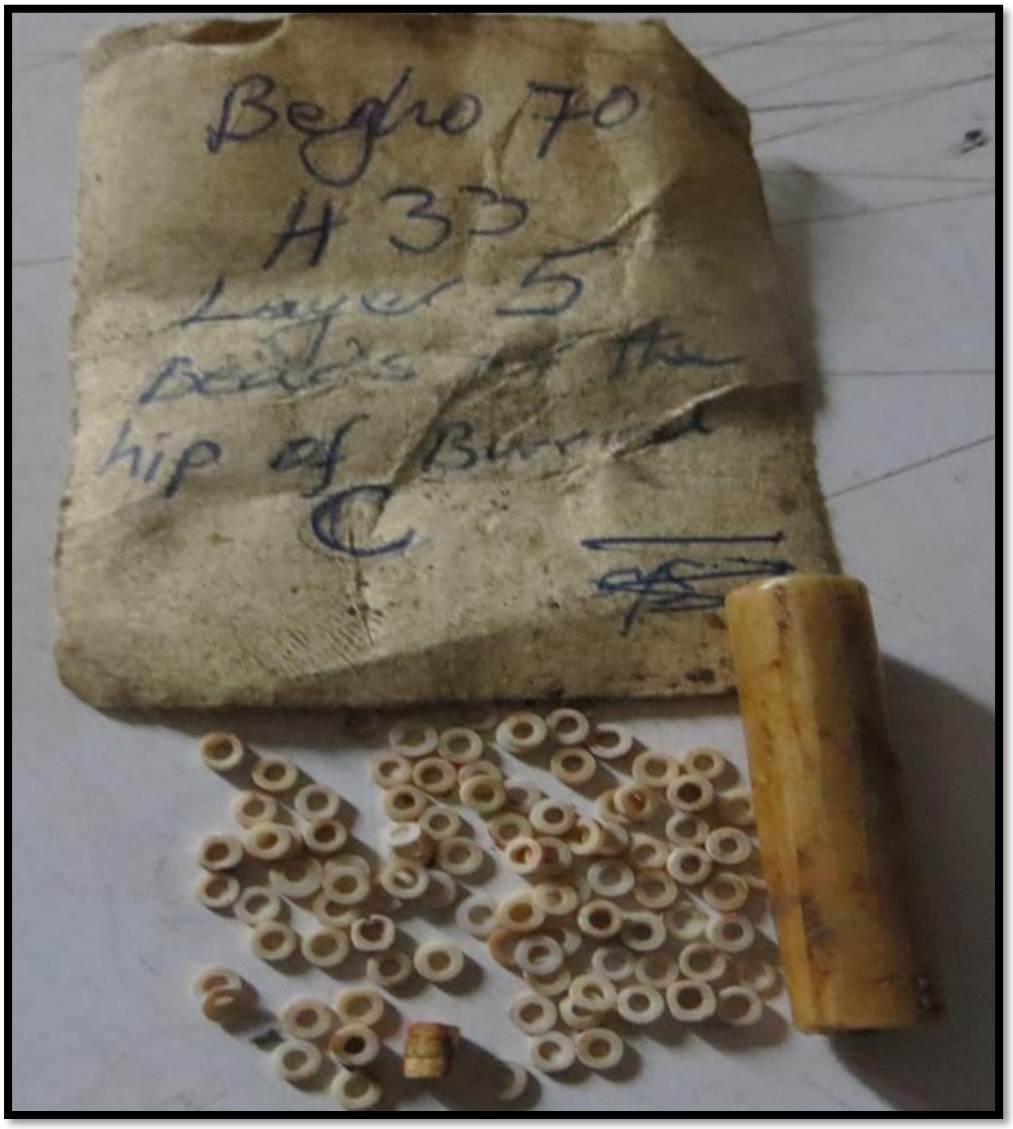


Figure 5. 9 Small-sized possible ostrich-shell beads in association with individual labelled BG'18. 73.113 from Begho.

(Photos by Author)

5.2 Identifying Injury /Trauma and Pathology on the Begho Skeletons

The general lifestyle conditions in past societies is revealed by the assessment of skeletal injuries in human remains (Larsen, 1997: 110) found in archaeological and other contexts. The prevalence of skeletal injuries on various elements gives insights into the influence of different activities or lifestyles. Trauma occupies second place to pathologies and affects the skeleton in several ways- fracturing or dislocating the bone, disrupting its blood or nerve supply or artificially deforming it (Redfern, 2017: 5). White (2000) also notes that the most common pathology affecting the skeleton is degenerative changes in bone morphology and development.

Everyday experiences are characterized by injury/trauma and sometimes pathology and memories influencing our outlook of life and events. This is particularly the case if our health and well-being are concerned (McCluskey et al., 2015: 1-5). Oftentimes, personal experiences could cause people to perceive violence and its related injury or trauma as cross-cultural and universal. On the contrary, it is unique to a person/ population, place/environment in which it happened and bound by time. Redfern (2017: 2) notes that, it is only within the few past years that bioarchaeology has recognized the diversity of violence in the archaeological record. This provides more culturally-sensitive and nuanced interpretation of the possibilities of the occurrence of horrific events in the past (see also Martin et al., 2013).

There are no universal meanings or definitions of violence (Redfern, 2017: 3). Since the 1970s, meanings have changed from the use of terms like ‘blows’ and ‘physical injury’ to a wide variety of concepts such as ‘assaults on self-esteem’; ‘personal possessions’ and ‘emotional and financial well-being’ (Merry, 2009: 5, 181). Violence has been described by Merry (2009: 4) as a ‘deceivingly simple concept’, because it depends on the social position of the observer and the context of the event. It is as a result of the complexities inherent in the definitions of violence that Riches (1991: 286) discusses and proposes that violence should only refer to matters of ‘contested

physical hurt'. However, this is not a binding or universally accepted definition (Strathern and Stewart, 1999: 89-90).

In bioarchaeology, conceptions of injury and trauma have been shaped by the fact that majority of the human remains under study lack soft tissues (Redfern, 2017: 5). Trauma can either be classified as sharp force or blunt force depending on the object or tool used. In the former case the surface and edge will look smooth whereas in the latter case the surface or edge will look jagged. A cut wound caused by the use of a sharp knife is an example of a sharp force trauma whiles a gunshot or mallet blow wound is an example of a blunt force trauma. A much rarer case of a sharp force trauma is trephination/trepanation which involves using a surgical instrument to remove or scrape a circular section of bone from the skull to let out pressure from the skull. Ortner and Putschar (1981: 51) describe trephination or trepanning as perhaps the most remarkable trauma seen by paleopathologists. (Figure 5.9; upper). The individual with inventory code BG'18-D74, 73.119 showed a likely case of trepanning on the skull (Figure 5.9; lower) even though it is not currently practised in the Region according to oral accounts at Begho. The trauma could also have been caused by wound received during a conflict, accident or warfare.

Figure 5. 10 Possible trephination/trepanation: artificially produced holes in the cranium vault. Evidence of substantial bony healing suggests the individual survived the operations. Reproduced from White (2000).

Figure 5. 11 Signs of possible trephination/trepanning or blunt force trauma to the skull of individual (BG'18-D74, 73.119) from Begho. (Photo by Author)

5.3 Interpreting Behavior from Skeletons

The explicit aim of osteoarchaeological research is to determine 'behavioural inference' from skeletons (Larsen 1997: 5). It is assumed that skeletal changes are the response of human tissue to events outside the body such as pathogens in the environment, patterns of work, cultural norms or pressures. In order to understand patterns of skeletal change, emphasis should be placed on adaptation and response to a system as well as adherence to social practices, which according to Prout (2000), are material as they shape the body through diet, health risks, exercise, life-style and disciplinary regimes. In Begho for instance, oral accounts have it that there was and is a social practice of creating gaps (diastema) in the front teeth of young adults and the elderly for

beautification purposes while ignoring the risks of severe headaches and sometimes death. Within the Begho community, accounts have it that, there was also the social practice of traditionally arranging fractured bones and applying some herbs on them to heal after a period of time.

This social practices of artificially creating diastema in between the incisors and traditional healing practices have over time had a bearing on the development and change of the natural look of the dental arcade and body respectively. These indicators can be useful in the investigation of behaviour and age. Additionally, environmental factors can change a people's behaviour and the consequent remodeling and adaptation of their bones to the environment. For instance, if an individual finds him/herself in an environment with limited food resources, poor nutrition and disease, this can prolong or disrupt tooth eruption, dental maturation and general bone growth/ development (Larsen, 1997: 59). However, improvements in living conditions in the life of such individuals can lead to recuperation in skeletally immature individuals (Bogin, 1999).

Other forms of behavior found to have significant effect on the skeleton or skeletal elements recorded at Begho include ante-mortem cranial and tooth modification. It should be noted that behaviour is invariably informed by the environment in which people find themselves and evolve in time and space under certain conditions. This is consistent with Bouvier & Hylander's (1981) assertion that the overall size and morphology of skeletal elements as well as cortical remodeling at the microscopic level is influenced by the environment.

5.4 Skeletal Markers of Trauma and Behaviour

Work/ activity and stress related traumas are recorded on the skeleton of the person who experiences them. Many stress indicators on the skeleton and dentition develop during childhood (Lewis, 2000), although it has been argued that such lesions are only visible in the skeletons of individuals strong enough to survive the stress episode (Wood et al., 1992).

Alternatively, bone lesions can disappear or remodel as the individual ages (Lewis, 2000). It can also be accelerated through strenuous work or activities involving repeated mechanical loads placed on the joints (Peyron, 1986; Radin et al., 1972). Skeletal modifications developed by life-styles or activities over time can be closely linked to an understanding of the human life course because histological studies of bone structures have enormous potential for elucidating behavioral adaptations and activities of past human populations or groups.

The skeleton also has the potential to record the habitual posture of an individual and to give an idea of the type of work or activity that the person engaged in before death. For instance, if a person squats while working, exerting strong pressure on the knees and ankles over a period of time, then extra articular facets will develop forming extensions on the joint surface. Additionally, if a person tends to use some parts of the body more extensively, those parts are likely to be more 'built' or 'robust' than others. Generally, the skeleton reveals tuberosities or events that mark the life of the individual and often correlate with the conditions of his/her everyday life. Again, osteoporosis (lipping on the auricular surface of the vertebrates) can be discussed with regards to ageing or the impacts of occupational habit in both men and women. About 90% of the elderly respondents of my ethnographic study complained of severe back/ waist pain resulting from the work they do (particularly farming). This development over time could cause lipping on the lumbar vertebrae.

Other factors affecting general bone morphology are dietary and subsistence patterns. Moreover, craniofacial and dental variation can also be caused by porotic hyperostosis, cribra orbitalia and dental damage respectively. Porotic hyperostosis is a term introduced by Angel (1966; see also Hill & Armelagos, 1990) to describe pathology involving the outer table of cranial bones and discussed in relation to skeletal changes associated with iron deficiency anemia (Larsen, 1997: 30). Similar lesions in the roof of the eye orbits is called cribra orbitalia also discussed in the context of vitamin deficiency and as such used to infer malnutrition in sub-adults and degenerative changes resulting from old age in adults. Other scholars (eg., Carlson et al., 1974; Lallo et al.,1977) have also argued that cribra orbitalia is one of the earliest manifestation of anemia with its subsequent deterioration being changes on the flat bones of the cranial vault. Slight cases of porotic hyperostosis and cribia orbitalia were observed in some of the skeletal remains from Begho.

Additionally, dental variations result from varied tooth wear from abrasion, attrition and erosion, calculus, caries (ante-mortem tooth loss, oral health and age indicator) and other artificial teeth modification. This development could also be related to localized behavioral characteristics and cultural practices associated with age and sex, diet and orofacial morphology as well as masticatory behavior. That said, as Larsen (1997: 247) explains, abrasion is caused by contact between the tooth and food or other solid exogenous materials while attrition is caused by tooth-on-tooth contact in the absence of food or other abrasives and erosion is the loss of tooth surface due to chemical dissolution.

A study of the dentition of the Begho skeletal remains revealed damaged enamel, ranging from slight chipping of occlusal margins to fractures and missing enamel of molars. The occlusal surface damage and crown fracture may have occurred as a result of masticatory behavior. Most people within the Begho community now have extensive occlusal wears on one or both sides of the dental arcade at the pre-molar region. Occlusal wear analysis could provide insights into grain and food

types exploited in the Begho area. In sum, bones and teeth bear the physical signs of a person's diet and masticatory behavior.

Figure 5. 12 Sealed teeth sockets in the mandible of individual (BG'18-D74, 73.119) from Begho as an indication of ante-mortem teeth loss. (Photo by Author)

Figure 5. 13 Evidence of occlusal wear of the teeth of individual (BG'18-D74, 73.119) from Begho. (Photo by Author)

BURIAL BOX	YEAR OF EXCAVATION	MNI	INVENTORY CODE	CODE OF COMPLETENESS	ESTIMATED AGE RANGE	ESTIMATED SEX	COMMENTS/ OBSERVATIONS
Bg70.B1- *Burials B&D*	Prob. 1970	1	BG'18-B1. B 73.112	=/> 25% </=75%	17-25 years	a) Female	Unable to determine the degree of cranial-suture closure due to the fragmented nature of the skull. Also, humeral, femoral and tibia heads are not completely fused even though she had well developed dentition. No associated materials/grave goods
Bg70.B1- *Burials B&D*	Probably 1970	1	BG'18-B1. D 73.114	=/> 25% </=75%	17-25 years	b) Female	Appear to be a sub-adult however, with fully developed dentition. No associated materials/grave goods

Bg 71. B1- *Burial B&D*	Probably 1971	1	BG'18-B1 73.96	<25%	Indeterminable	Female	Totally fragmented and had some charred bones bagged separately. No associated materials/grave goods
Bg 1971. D74 & F74	Prob. 1971	1	BG'18-D74, 73.119	=/> 25% </=75%	60-75 years	a) Male	Significant signs of ante-mortem teeth loss. No associated materials/grave goods
Bg. 1971. D74 & F74	Prob. 1971	1	BG'18-F74, 73. 119 (T2)	< 25%	Post 40 years	b) Male	No cranial and axial skeleton as well as upper limbs and extremities. No associated materials/grave goods
Bg. 70	Prob. 1970	N/A	BG'18- 70, 73.120	< 25%	Post 40 years	Male	Different left and right halves of mandibles suggest that the remains belonged to more than one individual. No associated materials/grave goods

Bg 72 B2, *Burial* A	Probably 1972	1	BG'18-72, B2-73.110	=/> 25% </=75%	30-40years	female	Skull looks smashed Extra premolars in the maxilla Attritions in the mandibular teeth. No associated materials/grave goods
Bg 70, B1, *Burial* C	Probably 1970	1	BG'18. 73.113	=/> 25% </=75%	25-45years	female	The parietal and frontal bones are not distinguishable because the skull looks squashed/smashed from soil pressure or compression during burial. No right foot bones Small-sized beads were found around the waist/ pelvis.

Table 5. 11 Summary of Skeletal Finds/ Inventory list by Burial boxes and Codes.

5.5 Archaeothanatology and Ethnographic Findings at Hani-Begho

Funeral complexes and treatments vary considerably based on social, cultural and religious parameters. Different cultures and religious sects bury the dead differently and this is often reflected in the orientation of skeletons or bones upon discovery. Within these complexes are the issues of rituals as well as the practice of primary and secondary burials. Explained within the Begho context, the most common ritual performed during funerals is the pouring of libation and offering of prayers to the ancestors and the earth deity *('asaaseyaa'*) in Akan. Other sacred rituals in addition to the holding of a durbar are performed when the deceased is a chief. Details of such rituals have not been provided because the people did not want to divulge such details.

Other possible interpretations of funerary treatments/ rites differ according to sex, social status, culture and religious sect. For instance, in Begho, a predominantly Christian community, the difference between a female and male funeral ceremony and burial is in the role played by male and female relatives and the grave goods attached to the deceased.

According to the respondents, inhumation (the act of burial in the ground) has always been the most common means of disposal of the dead at Hani-Begho. They explained that inhumation was the best way to keep the cause of death (in the case of a disease) from spreading within the community. The difference however from oral accounts was that, witches in Hani-Begho in the past had shallow graves as compared to other members of the community. The belief was that if a person had not been a good member of the community, family and community members did not have to give the person a befitting burial so he/she is either left on a midden or put in a shallow grave where animals could dig them up and feed on them.

The choice of cremation as an alternative mode of disposal of dead bodies in Ghana has been based on individual preferences, social status/ wealth and space management. However, such a practice has not been recorded in Hani-Begho even though some of the youth are of the opinion that it

would help save up space for more productive work. In a village close to Hani-Begho called '*Njau*', it has been reported in oral histories that the Shamans or '*Akomfo'*, in the past were buried (in reality, left) on a tree which the spirit chooses.

Notwithstanding the quality or quantity of the grave goods, the general rationale or intent behind their use is reflective of the people's belief in life-after-death. They believe that burying these materials with the deceased will aid him/her travel safely into the afterworld. About 90% of respondents with knowledge about grave goods explained that money/ coins for instance was to be used by the deceased to buy water on his/her way while journeying through/to the afterworld. However, these funerary treatments and practices are subject to change spatio-temporally. In relation to the sex of the deceased for instance, Muslims in Ghana bury men in a different orientation (facing the east) as compared to women (facing the west) without coffins.

Another significant aspect of the funerary treatment and ceremony within the Begho community is the role played by men and women in its execution. Due to the complexities inherent in the funeral rite or practice, it is somewhat normal (albeit unpardonable) to overlook or underestimate such significant roles that men and women play in the funeral process. In other words, the beauty of such rites lies in the distinct cultural roles played by members of both the bereaved family and the community.

Within the Begho context, when a family is hit with the ugly news of death, the onus lies on the family members to give him/her a befitting funeral ceremony and burial. Today, the bathing and dressing of the cadaver is done by men in the morgue or funeral home. However, in the past, if the deceased was a female, women relatives boiled water to bath the deceased, treat the cadaver with herbs like 'Acheampong' and Schnapps and laid her in-state. The reverse was the case if the deceased was a male. Men relatives would then inform the chief and elders of the community and obtain permission to dig the grave/ pit. They also inform and invite family members outside the

community. All respondents exclaimed that women in the family mostly do the crying and cooking and also provide the cloths for padding the coffin and dressing the deceased while the men in the family contribute to buy the coffin, sit to deliberate and plan the funeral ceremony and pour libation. After the ceremony, they sit to deliberate on the funeral expenditure, settle debts and to pick a successor like the clan or family head.

The community's way of sympathizing with the bereaved family especially when they are not well-to-do, is to contribute to buy a coffin, and the young men in the community are made to dig the grave and carry the coffin with the cadaver to the burial site. One Mr. Ntem Abraham, an indigene of Hani-Begho and a respondent, explained that though he was young at the time of his uncle's death, he was not allowed to join the grave-digging team because he was part of the bereaved family who were grieving over their loss.

The social status of a family is much seen when a member dies with regards to what goes into the funeral of the deceased. This is revealed in the treatment of the body, type of grave or grave design, coffin type through to the worth of grave good attached to the corpse. Different classes of people within the Begho community are buried differently. For instance, the chief is buried differently from other members of the community with more expensive grave goods and a durbar in honor of him, whereas the rich in the community are also buried differently from the poor. In the same vein, the elderly/ adult is buried differently from the adolescent and a child or infant. The reasons are that, the chief, the rich or the elderly have lived a good life, left legacies for their children and done a lot for the community compared to the poor, the adolescent and the infant.

About 90% of the respondents mentioned that when a foetus or a baby (between the ages of 0-1) die, it is put in a small pot locally called *'Kuku'/ 'Kukuo'* together with the placenta and some herbs particularly 'Acheampong' and buried in a shallow hole on a midden. Such babies are called '*Kuku-mma' or 'Kukuo-mma'* meaning 'pot babies'. Similarly, when children between the ages of

1-5 years) die, they are put in soap-boxes padded with cloth and buried either on a midden or anywhere around the house. When the deceased is a chief, he is laid in state in a well-decorated coffin, and buried in a grave dug within the family compound or in the palace compound sometimes without the coffin. This mode of burying Hani-Begho chiefs within the palace compound is a way of memorializing them and their reign.

Generally, from an archaeothanatological point of view, when someone (an elderly or chief) dies within the Begho community, the cadaver is dressed and the funeral is done in such a way as to depict the occupation or profession of the deceased. According to respondents, there have been cases where some dead teachers and nurses have been dressed in the attire or uniform of their profession so that anyone present at the funeral will have an idea of who the person was when he/she was alive. According to some members of the royal house and chief's palace, when a chief dies, he is dressed in royal regalia including sandals; what is traditionally referred to as *'Ahenema'*. The grave goods in either ways will differ in quantity and worth or quality depending on the deceased and the family. For instance, when a chief (at the highest rank in the community) dies, the grave goods comprise of a collection of precious goods/materials or heirlooms in the form of rings, cloths and money.

CHAPTER SIX

DISCUSSION, ETHICAL RECOMMENDATIONS AND CONCLUSION

6.0 Discussion

The archaeothanatological practice of burying the dead with grave goods of different valuable items explains the presence of the small-sized beads (Figure 5.9) recorded to have been associated with the remains in burial box Bg 70, B1, burial C found around the waist region. Secondly, cases of ante-mortem teeth loss among the elderly is prevalent in the Hani-Begho community. Teeth loss could result from degenerative changes that occur in a person as he/she grows. It could also be attributed to the deliberate removal by people suffering from extensive/recurrent dental caries as a way of easing the discomfort that comes with it or from accidental fall or accidentally hitting the jaw against something. Since these happened while the person was still alive, some sort of healing in the form of bone growth to seal up the holes may occur (Figure 5.12). This explains the empty spaces evident on the individual with inventory code BG'18-D74, 73.119 and also in the mandibular and maxilla regions of the jaw of some of the Begho skeletons. Ante-mortem teeth loss masks possible evidence of poor dental health.

Also evident in the dental arcade of all skeletal samples from Begho were extensive wears of the occlusal surfaces of the cusp or enamel of teeth, otherwise referred to as occlusal wear (Figure 5.13). Occlusal wear results from masticatory behavior. What we eat and how we eat or chew what we eat have lifelong consequences on our dentition. For instance, if a person uses the premolar of the left dental arcade extensively in masticating or chewing, over time the surface of the premolar may change or wear out compared to the other elements on the arcade. Moreover, cases of caries and dental calculus can change enamel surfaces over time and sometimes break parts of the teeth.

Occlusal wear analysis could provide insights into grain and food types such as kola nuts or rice with sand grains exploited in the Begho area in the past.

Naturally, some people, due to genetic factors can have small-sized teeth and diastema in-between their incisors. However, this ethnographic study and documentation of oral history have revealed that in times past diastema development between either the upper or lower incisors or both was regarded as a mark of beauty. As such, if one was born without it, he/she was considered ugly. This raised the perception of importance of diastema beauty in the community and has pushed people (young and old) to acquire it. They artificially hit a small knife (*sikan-ma)* against the incisors to break off parts of the teeth to create that space between the incisors irrespective of the pain and danger involved. This artificially-created diastema leaves the edges and ends of the teeth jagged and slashed due to the crude method employed. This practice explains some of the jagged edges of the incisors recorded among the skeletons analyzed, and provides insights into some behavioral aspects of the Hani people in the past. This evidence otherwise could not have been revealed in the archaeological record of the Begho site.

Trephination or trepanning was evident on the skull of one of the skeletons (Figure 5.11). Trephination or trepanning is the surgical procedure of creating or drilling holes in the skull to remove circular pieces of bones (Oxford English Dictionary). This practice (surgical) releases gases in the skull to reduce skull pressure (White, 2000). As dangerous as it sounds, if the person survives the operation and lives, the edges of the artificial cranial hole will show signs of healing with extra bone growth. This practice was not confirmed in the Hani-Begho community during the ethnographic research, so it is likely to have been an unconscious aspect/ consequence of some traditional medical practices in Begho in the past. Another possible interpretation of the trauma that looks like trephination is a probable ante-mortem blunt force trauma to the head.

The people of Hani-Begho were known to be farmers, and the contemporary population within the community are also predominantly farmers. It can thus be concluded that aside degenerative factors such as old age causing lipping, lipping on the vertebrae could also be caused by stress and occupational pressures such as from farming and food-processing exerted on the vertebral elements over time.

6.1 Human Remains and Ethical Concerns

"Ethics is a system of values that have implications for all aspects of human life whether professional or personal" (Hunter and Cox, 2005: 213). According to Hunter and Cox, (2005), ethics is also an understanding of the science of morals in human conduct, which informs standards of conduct and moral judgement. They further note that archaeological works and decision-making require a greater comprehension and engagement of professional ethics (p: 213)

"Human remains are not just another artefact; they have potency, charged with political, evidentiary and emotional meanings…" (Alfonso et al, 2006: 1) and so must be handled with care.

How human remains are viewed, excavated, analysed and treated after analysis should be bound within legal and ethical frameworks. According to Zimmerman et al. (2003), the excavation, study and curation of archaeological 'materials' in the broadest sense should be subject to serious ethical thinking within issues surrounding the nature of archaeology as a whole (Roberts (2009: 17). Such concerns vary considerably in different parts of the world on regional, societal and individual scales as they reflect both socio-cultural values and regional beliefs. It is important to note that different societies across time and space attach different sentiments to the issue of exhumation, excavation and study of human remains. The focus of some studies (Fforde et al, 2002; Scarre, 2006; Tarlow, 2006 and Walker, 2000) have been on the ethics of studying human remains from archaeological sites (Roberts, 2009: 17).

Some scholars have noted that the excavation and study of human remains is a privilege and not a right. Being given the permit to do so should make the scholar responsible (Joyce, 2005: 102). Nonetheless, in Britain the majority of human remains are excavated or exhumed from land planned for quarrying, construction of buildings/ houses and roads until the need to develop policies for the excavation of human remains were stressed (Roberts, 2009: 17) (Figure 6.1)

Figure 6. 1 Removal of a corpse from a post- medieval cemetery by contractors in advance of modern development. (Reproduced from Hunter & Cox, 2005).

Similar to the above development, human remains of some communities in Ghana had to be exhumed to resolve conflicts encountered by government regarding the relocation of the people of Bui and the construction of the Bui dam (Apoh and Gavua, 2016).

Figure 6. 2 Exhumation of a buried Elder of Bui from the room of a descendant to relocate to a new cemetery before the damming of the Black Volta to create the Bui Hydroelectric Power Dam (Photo by Dr Wazi Apoh)

Indeed, there have been debates and suggestions by professionals in archaeology about how human remains should be treated. In Britain, Reeve (1998) provided some clues to ethics regarding excavation and analysis of human remains to include: (i) assessment of potential sites, (ii) a statement of objectives, (iii) sampling, (iv) screening during excavation, (v) basic recording, (vi) disseminating of results, (vii) taking photographs, (viii) display and (ix) reinterment (Roberts, 2009: 18). By late 2007, the British Association of Biological Anthropologists and Osteologists (BABAO) sought to draw up a Code of Ethics to provide guidance on the study of human remains. The BABAO website now has a page devoted to reburial and repatriation (www.babao.org.uk).

In 1989, the First World Archaeological Congress held in South Dakota, USA, drew up the Vermillion Accord on Human Remains (www.worldarchaelogicalcongress.org) providing about six guidelines on handling of human remains (Roberts, 2009: 18). These were adopted by the World Archaeological Congress Council in 1990. Some of the guidelines in the accord include:

"(i) Respect must be accorded all the mortal remains of the dead regardless of race, origin, religion, nationality, custom and tradition; (ii) respect for the wishes of the dead, relatives or guardians and local community concerning disposition needs to be considered whenever possible lawfully or reasonably and (iii) respect for the scientific research value of skeletal, mummified and other human remains (including fossil hominids) shall be accorded when such value is demonstrated to exist" (Roberts, 2009: 18).

The complexities inherent in how the remains of the dead ought to be viewed and treated are affected by factors in the realm of belief systems, life experiences and other subconscious and conscious feelings. Religious beliefs do not only determine how a body is disposed of or buried today (Green and Green, 1992), but it also informs on any beliefs in an afterlife. This consequently affects whether it is acceptable to disturb the body by excavating and ultimately displaying them in museums (Roberts, 2009: 19). On one hand, more recent burials may evoke a sense of identity with the dead (relatives may still be alive) in that case there could be a strong desire for reburial after excavation.

On the other hand, much older burials may possess anonymity, especially in cases where the present community is not a descendant community. This development makes excavating, studying and curating more acceptable. For example, Jones and Harris (1998, 258) note that, "if no links can be established with a direct descendant or a group of descendants, then the remains should be available for proper scientific investigation, since the findings will in the broadest terms be applicable to all humanity" (Roberts, 2009: 19). Jones and Harris (1998, 258) further notes that:

> "…Where the cemetery contains indigenous remains which prove to be the (albeit, usually distant) ancestors of the living population, as in the case of Native American or Australian aboriginal groups, then excavation and analysis may be undesirable and if carried out, reburial should be required with or without analysis" (Roberts, 2009: 19).

Hubert and Fforde (2002: 1) stated that there is an increasing sensitivity and outward indication of people's sense of identity with their past. In this regard some are now 'contesting the ownership of human remains housed in museums and other institutions and are demanding that the remains be repatriated and /or reburied according to cultural beliefs associated with the dead (Roberts, 2009: 19). In some cases, even with no genealogical descendants or cultural communities to claim their ancestors officially or groups asserting descent to the human remains exist. These include groups often marginalized in contemporary Western society (Alfonso et al, 2006: 261), otherwise referred to as 'special interest' groups. An example is the Druidry, Wicca, Witchcraft and Shamanic traditions united into an organization called 'Honouring the Ancient Dead' (HAD) (www.honour.org.uk).

However, those who advocate for reburial are not, as Hubert and Fforde (2002, 5) put it, 'a homogenized undifferentiated whole, in which all share the same view'. As mentioned earlier in this text, different cultures view, treat and manage death in varied ways. On a radio programme in the 1970s, Sir Robert Eric Mortimer Wheeler, a British archaeologist, giving his view on burials in the archaeological record, said, 'we do no harm to those poor chaps. When I'm dead you can dig me up ten times for all I care' (Bahn, 1984: 214). Conversely, the inscription on William Shakespeare's gravestone in Stratford-upon-Avon, England which reads 'Good friend, for Jesus' sake forbear to dig the dust enclosed here; Bless be the man that spares these stones, and curse be he that moves my bones', clearly indicates that he does not want his body to be disturbed (Figure 6.2).

Figure 6. 3 Shakespeare's epitaph (source: www.poetsgraves.co.uk/shakespeare.htm).

According to Walker (2000), bioarchaeologists ought to adhere to three main ethical concerns regarding analysis or treatment of human remains. These include the respect for dignity ethic, descent ethic and the preservation ethic. Firstly, with regard to the respect for human dignity ethic, he noted that, the remains belong to people who were once living and it is unacceptable to treat them as things or objects because in doing so, one fails to respect the intrinsic human dignity of the people they represent. Second is the descent ethic which posits that once the remains have been analysed and biological relations traced to which there are living descendants, the descendant should solely determine how the reburial/reinterment should go. And lastly, the preservation ethic explained with the view that human remains are able to reveal valuable information on a people and history in general. Therefore, they ought to be properly curated and preserved for further studies in the future.

In summary, Tarlow (2006) notes that, archaeologists have an ethical responsibility to groups of people and the public at large and also because the study of people brings in many visitors to

museums and builds career; bioarchaeologists and museum curators have a responsibility to look after 'our' dead ancestors (Tarlow, 2006). However, it is expedient to maintain a balanced objective view between human rights and value judgements, although as Lackey (2006, 162) notes, 'there are no magical formulae for adjudicating the requirements of religion, art and science. Nonetheless Buikstra (2006), in admitting the no global solution to the issues raised, emphasizes that 'there is the need for openness, for communication, for mutual respect and for initiatives that are of interest to all collaborating parties is global' (p: 408).

6. 2 Recommendations

This study offers recommendations on future skeletal analysis in the Department of Archaeology and Heritage Studies.

1. On-site conservation measures are expedient in the field and in the laboratory classification of remains. This will help to consolidate the human remains throughout the procedure. However, these curatorial measures must be reversible in order not to interfere in further sophisticated analyses that can be done on the skeletal samples such as DNA and Stable-isotope analyses.
2. Skeletal analyses should be carried out with utmost urgency in order to acquire as much information as possible to aid in the interpretation and reconstruction of the life histories of the people we study as archaeologists. This is because biofacts such as skeletons get fragile with time as they are subject to decomposition. When they are exposed to some unfavourable conditions, they can lose their collagen contents. When this happens some sophisticated analysis like DNA extraction and stable-isotope analysis cannot be done or analytical results may be flawed thus limiting the interpretation.

3. Analyses of human skeletal remains must be done with sensitivity to uphold the human dignity and descent ethic proposed by Walker (2000). Skeletal samples must also be kept under favourable storage conditions.
4. Furthermore, some archaeological excavations are destructive. In view of this, ample documentation must be made on the excavation process, the finds and their associated materials as well as their analysis.
5. Also, because the analysis of field materials are equally as important as their documentation, as much as possible, all field notes, in addition to contextual and provenience information of finds and post-field analyses should be electronically documented. This is necessary since the paper labels often deteriorate faster through the years.
6. Lastly, with regards to ethical measures, due to the sensitivity regarding handling skeletal remains for research, ethical measures ought to be properly adhered to, to ensure high standards of practice and public confidence in both local and international research. In Ghana for instance, before any archaeological excavation and exhumation of skeletal remains can be carried out, permission must be sought from the Ghana Museums and Monuments Board (GMMB) and the coroner for a legal consent on how to handle human skeletal remains. The permit places a binding responsibility on the excavator to ensure that the skeletal remains are properly excavated, analysed within the right framework and documented in proper context.

6.3 Conclusion

The bioarchaeological study of human remains from Hani-Begho revealed eight individuals (five females to three males), which can be dated by association with dates acquired from the site ranging from the 11th -17th centuries. Funeral treatments vary considerably based on Hani-Begho

social, cultural and religious parameters amidst the use of *Chromolaena odorata* (Acheampong) leaves and schnapps to preserve the body. Occlusal wear predominant in molars and premolars resulted from masticatory behaviour. Additionally, cases of ante-mortem teeth loss among the skeletal samples masked possible evidence of poor dental health. Also evident on some of the skeletons were possible blunt force trauma to the head and artificial diastema creation.

Since the Begho site has been dated to range between the 11th-17th centuries, this date could be used to date the skeletal samples by association. Funeral complexes and treatments vary considerably based on social, cultural and religious circumstances in either single or multiple burials. Most of the observation made during the skeletal analysis were confirmed by oral accounts from the community.

In sum, the study of human skeletal remains from archaeological contexts helps to bolster understandings of the archaeological record and context of finds in order to complement findings made on the analysis and interpretation of material culture. Coupling the above-discussed with findings drawn from the analyses of artefacts and ecofacts, a holistic history of the people of Hani-Begho can be ascertained and appreciated.

Even though most people view skeletons with a mixed view of fascination and awe simply because they seem to be reminders of one's own death or mortality, we as archaeologists ought to view them as elements capable of revealing/giving an objective perspective to the histories we seek. Rather than simply relying on artefacts for reconstruction of life histories, archaeologists ought to incorporate the dynamic power of human skeletons in our quest for in-depth understandings into the cultural, social, behavioural and environmental aspects of a people's life across time and space.

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Appendix A: Ethnographic Data Collection Guide

CONSENT

My name is Pearl Lamptey, an MPhiL student at University of Ghana, Legon.
This research is to solicit for emic perspectives on issues regarding death, treatment of the body and burials including rituals and grave goods to help complete a Master's Thesis. Both respondents and information divulged will be treated or handled with absolute confidentiality. Note that questions are mainly open-ended requiring you to explain or give your own thoughts.
I …….. agree to fill this questionnaire willingly without compulsion.

QUESTIONS/ INTERVIEW GUIDE

1. Are you an indigene of Begho?

Yes No ☐

2. Age ?

10-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐

61-70 ☐ 71-80 ☐ 81 and above ☐

3. Sex?

Male ☐ female ☐

4. Have you ever witnessed a person dying or freshly dead before?

Yes ☐ No ☐

5. If answer to question 4 is yes, who was it?

Family member ☐ Friend (s) ☐ No relation ☐

6. Have you ever witnessed a funeral ceremony before?

Yes ☐ No ☐

7. What is done to the body when a person dies before burial?

……
……..

……
……..

……
…….

……
…….

8. How many stages are involved in the ceremony before burial?

one…….

Two…….

Three……

Four……
…….

Five……
……..

Six and
above……
…….

8. What role do men play in the process or stages when a person dies before the body is buried?

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……..

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9. What role do women play in the process or stages when a person dies before the body is buried?

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……

10. Do you participate in any of the stages above?

Yes ☐ No ☐

11. If answer to question 9 is yes, do you participate

Directly? ☐ or Indirectly? ☐

12. following your answer to question 11, explain what you do and why?

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……..

13. How the dead body is treated before and during burial? Describe.

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14. What are the rituals performed before and during the funeral ceremony?

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15. What are the rituals performed during the funeral ceremony?

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16. What are the rituals performed at the end of the funeral ceremony?

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17. What are the rituals performed before the body is buried?

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18. Are there different ways of burying different people either based on age, gender, status and wealth?

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19. How are people buried in your family?

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20. How are people buried in this community?

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21. Are bodies buried with grave goods?

Yes ☐ No ☐

22. What are some of the grave goods used in burying the dead?

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……..

23. What are these materials/ artefacts chosen for use?

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24. What is the reason behind the grave goods?

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25. Are the materials used same as that for infants, young adults and old dead?

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26. What materials are used for infants?

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27. What materials are used for adolescents?

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28. What materials are used for adults?

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……..

29. What other means does the community use to dispose of the dead apart from inhumation?

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30. Have you witnessed any other means of disposal before?

Yes ☐ No ☐

31. Which is your best method of disposal and why?

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32. What are some of the teeth modifications done in the community?

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33. What are some of the bone modifications done to the body before death?

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34. What are some of the bone modifications done on the bone after death?

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35. Are some of these modifications linked to medicinal practices?

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APPENDIX B: Skeletal Inventory Form

MUSEUM OF ARCHAEOLOGY

HUMAN REMAINS DOCUMENTATION PACKET

PROVIENIENCE

Site Name:_____

Year of Excavation: _____

Researcher: _____

ID Number: _____

Date: _____

Observer(s):_____

BIOLOGICAL PROFILE

MNI	AGE RANGE	SEX

FORM LIST (INDICATE FORM(S) USED)

SKELETAL INVENTORY ☐

AGE AND SEX ASSESSMENT ☐

DENTAL INVENTORY AND PATHOLOGY ☐

MEASUREMENTS ☐

PATHOLOGY CHECKLIST ☐

DEGENERATIVE JIONT DISEASE ☐

ISOLATED REMAINS ☐

SKELETAL VISUAL RECORDING MEDIUM ☐

ADDITIONAL FORMS/NOTES ☐

ELEMENT	***CONDITION***

	WASHED	**CRACKED**	**FLAKY**	**COMPLETE**	**FRAGMENTED**	**CHARRED**	**CUT MARKS**	**MISSING**
SKULL								
CLAVICLE LT/RT								
SCAPULA LT/RT								
STERNAL BODY								
RIBS LT/RT								
HUMERUS LT/RT								
RADIUS LT/RT								
ULNA LT/RT								
CERVICAL V. LT/RT								
THORACIC V.								
LUMBER V.								
SACRUM								
PELVIC BONE LT/RT								
FEMUR LT/RT								
TIBIA LT/RT								
FIBULA LT/RT								
CARPALS LT/RT								
METACARPALS LT/RT								
TARSALS LT/RT								
METATERSALS LT/RT								

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UNIVERSITY OF GHANA

SKELETAL INVENTORY

PROVENIENCE_____

ID NUMBER_____

CRANIAL	LEFT	RIGHT
FRONTAL	☐	☐
PARIETAL	☐	☐
OSSIPITAL	☐	☐
TEMPORAL	☐	☐
MANDIBLE	☐	☐
RAMUS OF MANDIBLE	☐	☐
ZYGOMATIC ARCH	☐	☐
MAXILLA	☐	☐
SPHENOID	☐	
ETHNOID	☐	
HYOID	☐	
UNIDENTIFIED	☐	

ASSOCIATED MATERIALS

	(#)
SHELLS	☐
BEADS	☐
NYAME AAKUMA	☐

OTHERS_____

CONDITION OF ASSOCIATED MTL___
_____
_____

TEETH	NUMBER	
	UPPER	LOWER
	LT/ RT	LT/ RT
INCISORS	☐ ☐	☐ ☐
CANINES	☐ ☐	☐ ☐
PREMOLARS	☐ ☐	☐ ☐
MOLARS	☐ ☐	☐ ☐
UNIDENTIFIED		

AXIAL	NUMBER	
ATLAX	☐	
AXIS	☐	
3-7 CERVICAL	☐	
1-9 THORACIC	☐	
$1O^{TH}$-12^{TH} THORACIC	☐	
1-5 LUMBER	☐	
SACRUM	☐	
COCCYX	☐	
PELVIS (LT/RT)	☐	☐
MENUBRIUM	☐	
STERNUM	☐	
RIBS (LT/RT)	☐	☐
UNIDENTIFIED	☐	

APPENDICULAR	LT(#)	RT(#)
CLAVICLE	☐	☐
SCAPULA	☐	☐
HUMERUS	☐	☐
RADIUS	☐	☐
ULNA	☐	☐
METACARPALS	☐	☐
CARPALS	☐	☐
FEMUR	☐	☐
FIBULA	☐	☐
TIBIA	☐	☐
METATARSAL	☐	☐
TARSAL	☐	☐
	☐	☐
	☐	☐
UNIDENTIFIED	☐	

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AGE & SEX ASSESSMENT

AGE:_____

SEX:_____

PROVENIENCE_____

ID NUMBER_____

AGE AT DEATH INDICATORS

CRANIAL SUTURE CLOSURE :CODE_____

OBSERVATION_____

_____

_____

EPIPHESEAL SEAL ON LONG BONES: CODE____

OBSERVATION_____

_____

_____

DENTAL DEVELOPMENT_____

_____

_____

CRANIAL & EPIPHESEAL CODES

0= OPEN , 1=MINIMAL

2=SIGNIFICANT , 3=COMPLETE

SEX INDICATORS

ON PELVIS

PELVIC OUTLET ☐

ANGLE OF GREATER SCIATIC NOTCH ☐

VENTRAL ARC ☐

SUB-PUBIC ANGLE ☐

ISCHIO-PUBIC CONCAVITY ☐

ON SKULL

NUCHAL CREST ☐

MASTOID PROCESS ☐

SUPRAORBITAL MARGIN ☐

GONIAL ANGLE ☐

MENTAL EMINENCE ☐

ANGLE OF RAMUS OF MANDIBLE ☐

PELVIS SCORES AFTER KLALES ET AL. (2012) & PHENICE

(0=NOT OBSERVABLE, 1=FEMALE, 2=PROB. FEMALE, 3=AMBIGUOUS, 4=PROB. MALE, 5=MALE)

SKULL SCORES AFTER WALKER,P. L. (2008)

(0=NOT OBSERVABLE, 1=FEMALE, 2=PROB. FEMALE, 3=AMBIGUOUS, 4=PROB. MALE, 5=MALE)

OTHERS: (0=N/O, 1= BROAD, 2= NARROW), (0=N/O, 1=U-SHAPED, 2-V-SHAPED), (0=N/O, 1=ACUTE, 2= 90°), GONIAL ANGLE=0=N/O, 1-V-SHAPED, 2=U-SHAPED

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DENTAL INVENTORY AND PATHOLOGY

PROVENIENCE_____

ID NUMBER_____

MARK AS DASH(-) IF NOT OBSERVABLE, (√) IF PRESENT AND (×) IF ABSENT

	Right								Left							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Maxilla	**M^3**	**M^2**	**M^1**	**PM^2**	**PM^1**	**C**	**I^2**	**I^1**	**I^1**	**I^2**	**C**	**PM^1**	**PM^2**	**M^1**	**M^2**	**M^3**
Inventory (1-9)																
Development (1-14)																
Caries (1-7)																
Calculus (1-3)																
Chipping (#)																

	32	**31**	**30**	**29**	**28**	**27**	**26**	**25**	**24**	**23**	**22**	**21**	**20**	**19**	**18**	**17**
Mandible	**M^3**	**M^2**	**M^1**	**PM^2**	**PM^1**	**C**	**I^2**	**I^1**	**I_1**	**I_2**	**C**	**PM^1**	**PM^2**	**M_1**	**M_2**	**M_3**
Inventory (1-9)																
Development (1-14)																
Caries (1-7)																
Calculus (1-3)																
Chipping (#)																

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PROVENIENCE_____
ID NUMBER_____

CRANIAL

NB: **RECORD ALL MEASUREMENT IN MILLIMETRES**

GOL Maximum Cranial Length		**IOKB** Interorbital Breadth	
XCB Maximum Cranial Breadth		. **FRC** Frontal Chord	
ZYB Bizygomatic Breadth		. **PAC** Parietal Chord	
MAB Maxillo-Alveolar Breadth		. **MDH** Mastoid Length	
MAL Maxillo-Alveolar Length		. **GNI** Chin height	
AUB Biauricular Breadth		. **HML** Mandibular Body Height	
NPH Upper Facial Height		. **TML** Mandibular Body Breadth	
FMB Upper Facial Breadth		.	
NLH Nasal height		. **WRL** Minimum Ramus Breadth	
NLB Nasal Breadth		. **MRL** Maximum Ramus Breadth	
OBB Orbital Breadth		. **XRL** Maximum Ramus Height	
OBH Orbital Height		. **MLT** Mandibular Length	
EKB Biorbital Breadth		. **MLX** Mandibular Angle	

POSTCRANIAL

Clavicle: Max. Length			. **Femur:** Max. Length		
Min. Diam. Midshaft			. **Tibia:** Max. Length		
Radius: Max. Length			. Max. Prox.Epiph. Breadth		
Sacrum: Anterior Length			. Middle Breadth		
Anterior Superior Breadth					
			. **Sternum:** Length Mesostern.		
Pelvis: Height			Max. Breadth 1st		
Iliac Breadth					
Pubis Length					
Ischium Length					

PROVENIENCE_____

ID NUMBER_____

- **List each identifiable element, indicate side and code completeness (C > 75%; P = 25-75%; F < 25%).**
- **Count remains by anatomical region and calculate totals.**
- **Describe the material and their characteristics, such as cracked, breakage, burnt etc.**

☐ Remains are burned. ☐Remains are consistent with human.
☐ Remains are consistent with animal.
☐ Remains are not able to be determined (animal/human?).

CRANIAL	**COUNT (#)_____**

AXIAL	**COUNT (#)_____**

APPENDICULAR	**COUNT(#)_____**

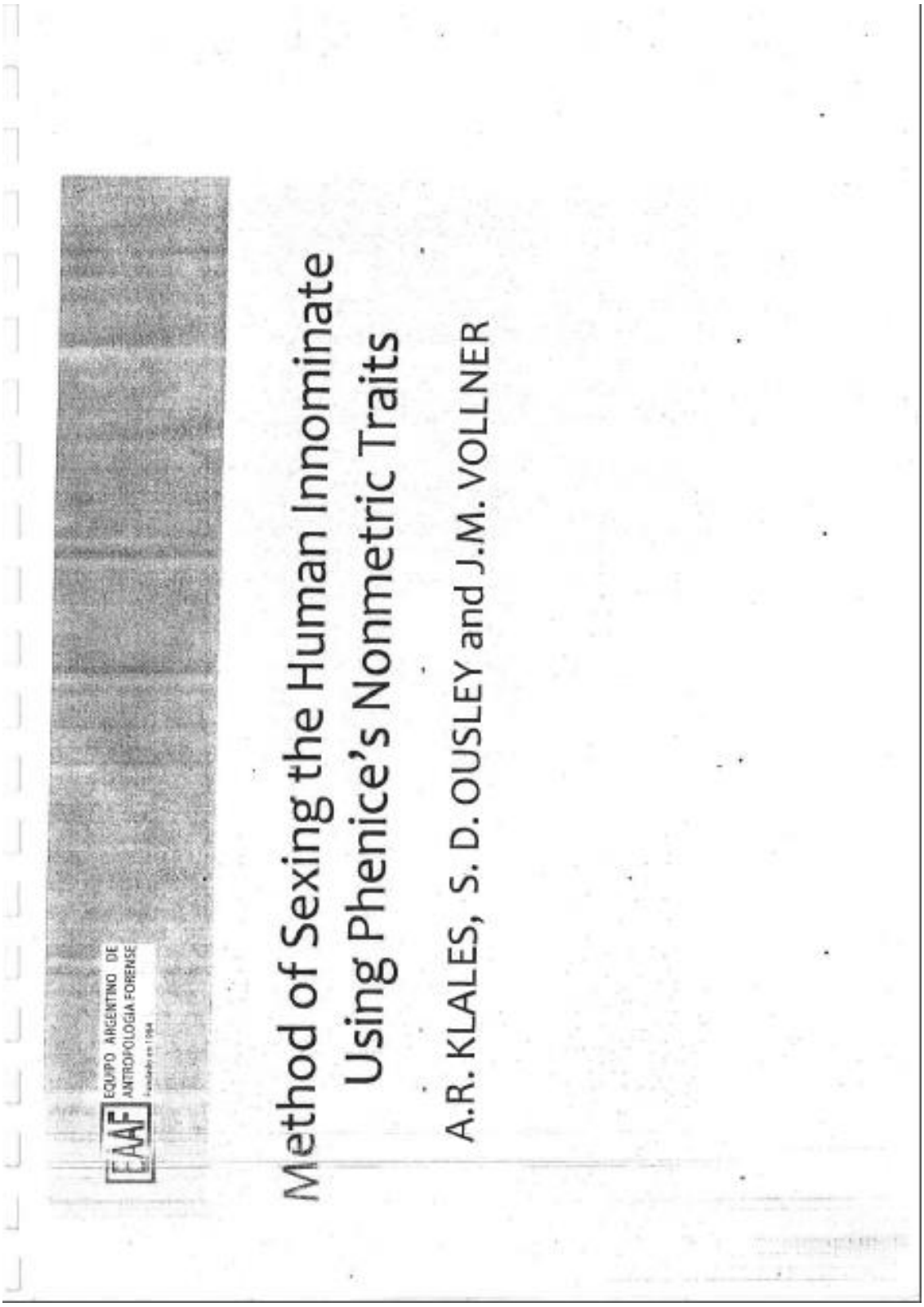
EXTREMIITIES	**COUNT(#)_____**

UNIDENTIFIED	**COUNT(#)_____**

AGE & SEX ASSESSMENT

COMMENTS

APPENDIX C: Klales et al. (2012) Skeletal Trait Scoring Sheet



EAAF EQUIPO ARGENTINO DE ANTROPOLOGIA FORENSE
Fundado en 1984

SEX

CASE NUMBER:

Analyzed by: **Date:**

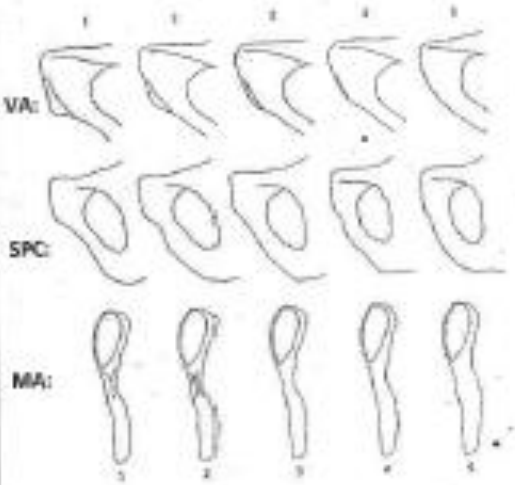
Pelvis:

0= Not observable / Score 1 to 5 after Klales et al. (2012)

Ventral Arc (VA) ☐

Subpubic concavity (SPC) ☐

Medial aspect of the ischio-pubic ramus (MA) ☐



Sex probability:	
pp FEMALE=	pp MALE=

0= Not observable / 1= Female / 2= Prob. Female / 3= Ambiguous / 4= Prob. Male / 5= Male

Pubis shape ☐ Greater Sciatic Notch ☐

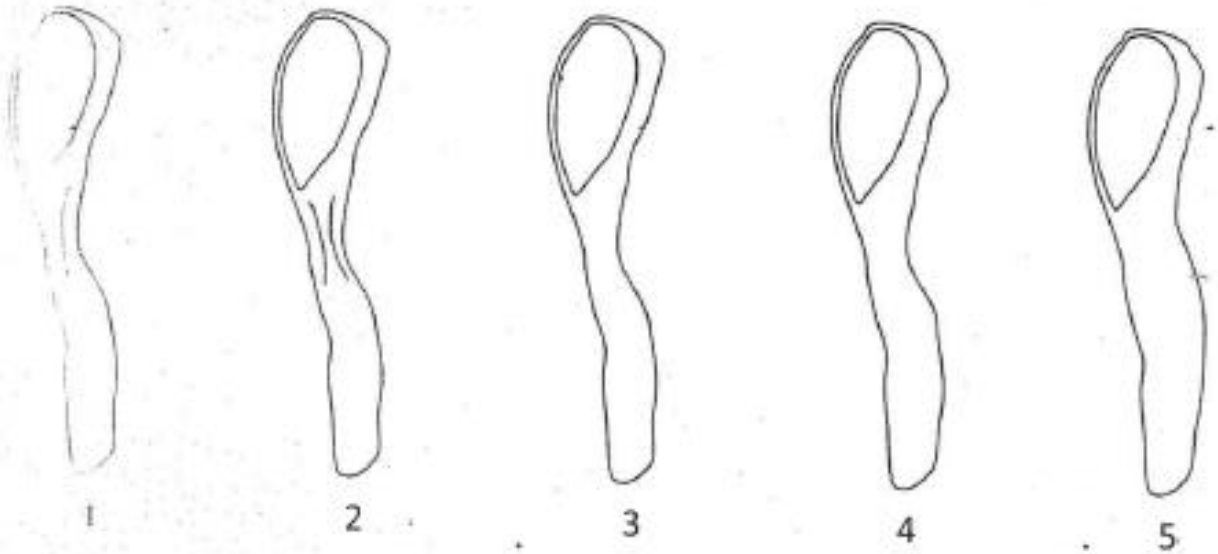
Obturator foramen ☐ Sacrum ☐

0= Not observable / 1= Absent / 2= Slight / 3= Marked

Preauricular sulcus ☐

CONCLUSION 1:

SCORES: MEDIAL ASPECT OF THE ISCHIO-PUBIC RAMUS (MA)



EAAF EQUIPO ARGENTINO DE ANTROPOLOGIA FORENSE
Fundado en 1984

Sexual dimorphism markers in pelvis:
Sciatic notch

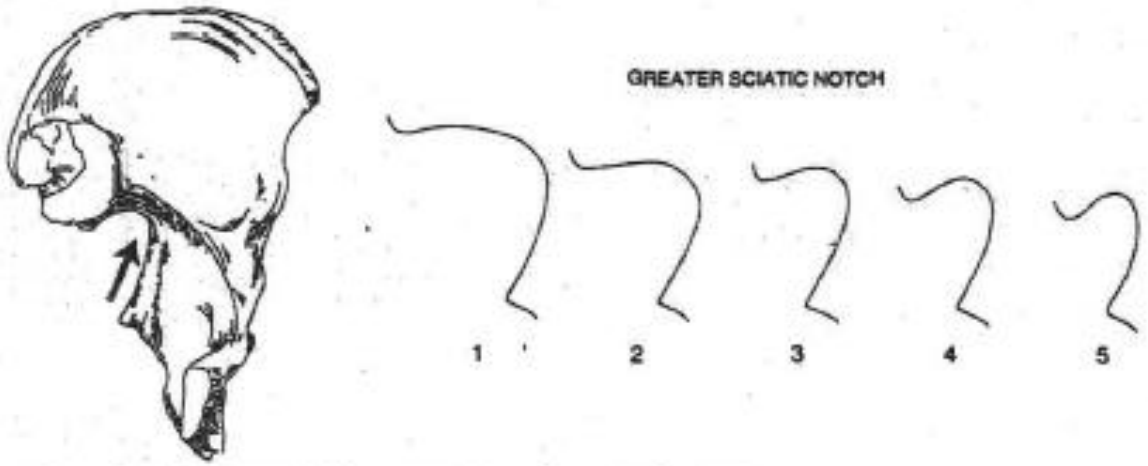
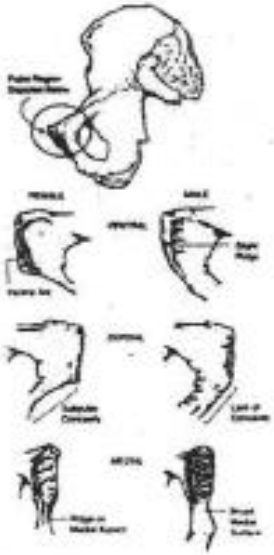


Figure 2. Sex differences in the greater sciatic notch. Drawing by P. Walker.

FEMALE ← **MALE**

EAAF EQUIPO ARGENTINO DE ANTROPOLOGIA FORENSE
Fundado en 1984

Sexual dimorphism markers in pelvis:
Pubis

WOMEN		MEN
Body of pubis is long and quadrangular		• Body of pubis is short and triangular
Wide subpubic angle (U shaped)		• Subpubic angle is narrow (V shaped)
Presence of ventral arch		• No ventral arch
Subpubic concavity		• No subpubic concavity
Presence of subpubic crest		• No subpubic crest

APPENDIX D: Walker (2008) Skeletal Trait Scoring Sheet

EAAF EQUIPO ARGENTINO DE ANTROPOLOGIA FORENSE
Fundado en 1984

SEX

CASE NUMBER:

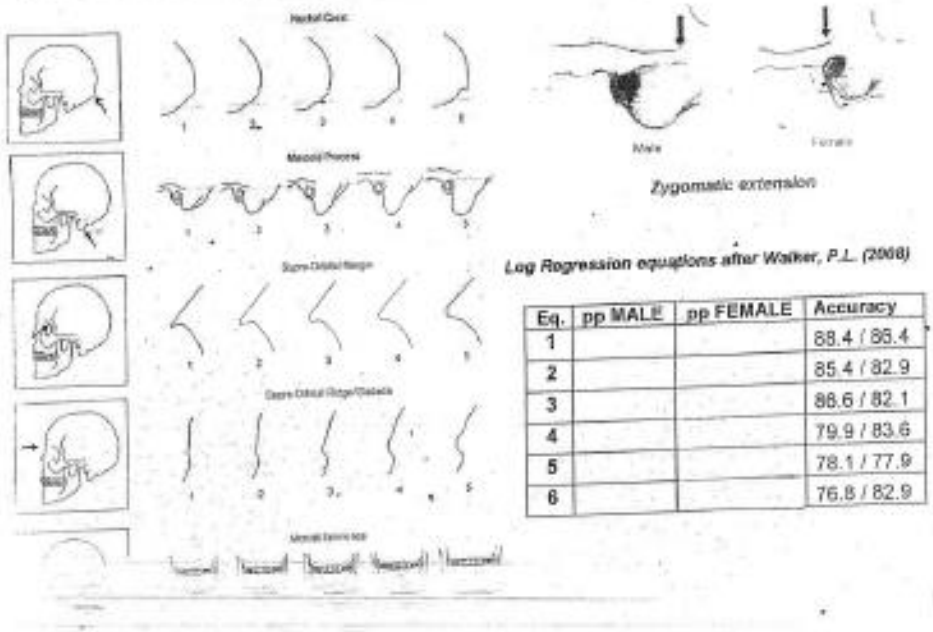
Analyzed by: **Date:**

MORPHOLOGIC VARIABLES:

Skull: **after Walker, P.L. (2008)*

0= Not observable / 1= Female / 2= Prob. Female / 3= Ambiguous / 4= Prob. Male / 5= Male

Nuchal crest *		Zygomatic extension	
Mastoid process *		**Mandible:** Mental eminence *	
Supraorbital margin *		Gonial eversion	
Prominence of Glabella *		**Skull general aspect:**	
Frontal inclination		Conclusion	



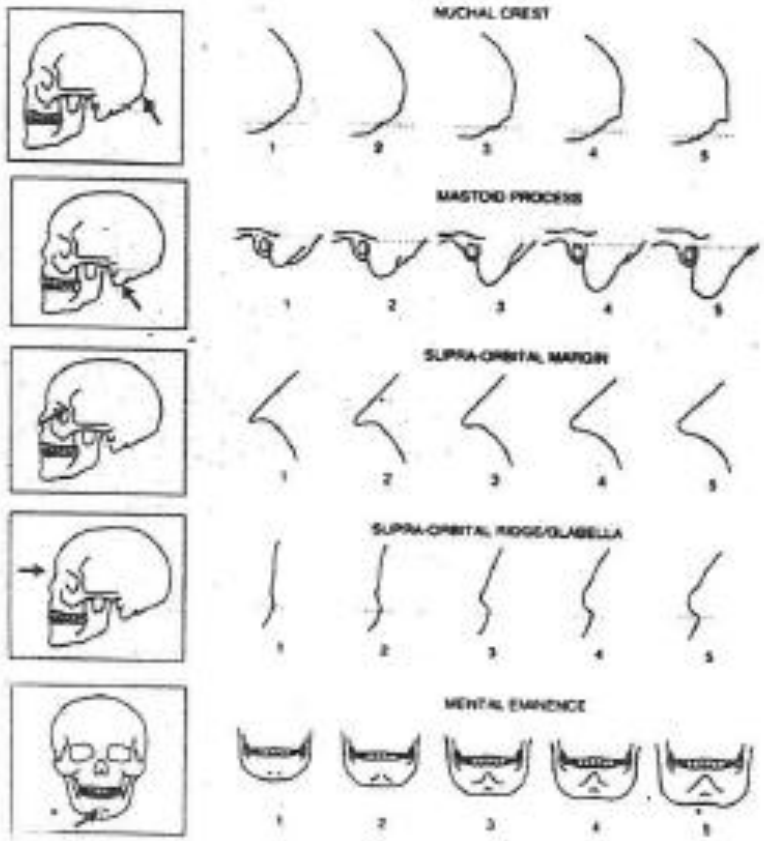
Zygomatic extension

Log Regression equations after Walker, P.L. (2008)

Eq.	pp MALE	pp FEMALE	Accuracy
1			88.4 / 86.4
2			85.4 / 82.9
3			86.6 / 82.1
4			79.9 / 83.6
5			78.1 / 77.9
6			76.8 / 82.9

EQUIPO ARGENTINO DE ANTROPOLOGIA FORENSE
Fundado en 1984

Sexual dimorphism in the skull



Occipital crest

Mastoid apophysis

Supra-orbital margin

Glabella

Shape of chin

FEMALE ← **MALE**

APPENDIX E: Ubelaker (1989)