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Patterns of Traumatic Injury in Historic African and African American Populations

Christina Nicole Brooks
University of Tennessee - Knoxville

To the Graduate Council:

I am submitting herewith a thesis written by Christina Nicole Brooks entitled "Patterns of Traumatic Injury in Historic African and African American Populations." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Anthropology.

Murray K Marks, Major Professor

We have read this thesis and recommend its acceptance:

Andrew Kramer, George White

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Accepted for the Council:

Anne Mayhew
Vice Chancellor and
Dean of Graduate Studies

(Original Signatures are on file with official student records.)

Patterns of Traumatic Injury in Historic African and African American Populations

A Thesis

Presented for the

Master of Arts Degree

The University of Tennessee, Knoxville

Christina Nicole Benton Brooks

August 2005

Dedication

This thesis is dedicated to my husband, Kenric Brooks, a great support throughout this endeavor and in my life, my children, Joshua Brooks and Averie Brooks, who are my motivation to excel, my granny, may she rest in peace, who always "knew" I would be someone great and motivated me to be the best that I can be, my parents, Betty Benton and John Benton, for always believing in me, inspiring me and encouraging me to achieve my goals, and my sister, niece and nephew for all their help along the way.

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Abstract

For my master's thesis project titled, "Patterns of Traumatic Injury in Historic African and African American Populations," I examined trauma incidence in American slave and free populations. The objectives of this study were (1) to present frequency and distribution analysis of injuries in each sample, (2) to create cross tabulations to show similarities and differences in each site and compare these results to between, (3) interpret the frequency and distribution of injuries from a cultural aspect, to better understand the violence and physical demands endured by American slaves and freeborn African American. Most of the skeletal samples used in this research have been reinterred. Therefore, this research is based off the observations and interpretations of researchers and data found in published papers.

Unfortunately, during the time when most of these remains were examined there existed no universal research method when analyzing skeletal material. Each researcher used his or her own method for analyzing remains; some being more detailed then others. Because of this, this study contains basic information about each site including: site name, total number of individuals examined in each site, total number of individuals observed with fractures, total number of fractures observed in each site, sex of the individuals, which bone(s) were injured, if the injury occurred ante or peri mortem, which are slave communities and which are free populations. Whenever possible a mechanism such as accident, violent encounter or occupational-related injury, was assigned to each injury.

For this study trauma was defined as dislocations, fractures, muscle pulls, blunt force trauma and puncture wounds. All bones were examined.

There has been a lot of research attempting to reconstruct historic African American lifeways in anthropology. Most of this research consists of analyzing overall health of the populations studied. This study is important because there is not a lot of research specifically on trauma analysis of slave and free populations that discuss the physical demands of slavery as well as slave mistreatment. Due in large part to small sample sizes and fragmentary conditions of slave and African American skeletal series available for study, there is no effective means to measure the biological brutality of slavery. This study is intended to evoke interest in trauma studies in historic African and African American populations. As more studies of trauma in African American populations emerge, more comparisons can be made resulting in important questions being answered about the past. Studies of trauma distribution and frequency patterning in African American populations are essential for addressing questions about human adaptation to physical, environmental, and social constraints.

Table of Contents

List of Tables

Table **Page**

List of Figures

Figure **Page**

Chapter 1 Introduction

Slavery was indeed a "peculiar institution" (Stampp 1956). Today, its effects still reverberate throughout African American communities around the country. In the last twenty years, the study of slavery has become popular among scientists and researchers, including anthropologist in all four subfields (see below). There is an abundance of research attempting to reconstruct African and African American lifeways (see below). Most of this research consists of analyzing diet and nutrition, health and disease and social constructs. However, there is very limited research available on the physical exploitation endured by many African and African American slaves. Furthermore, there is little trauma analysis of slave populations that discuss the physical demands of slavery as well as slave mistreatment. Due in large part to small sample sizes and fragmentary conditions of available slave population samples, there is no effective means to measure the biological brutality of slavery and this study is not intended to do so. The objectives of this research are (1) to present frequency analysis and discuss distribution of injuries within each slave sample, (2) to create cross tabulations to show similarities and differences within each slave site, (3) to compare these cross tabulations of the slave populations to the free populations, (4) interpret the frequency and distribution of injuries from a cultural aspect, and (5) discuss the use and importance of African and African American ethnomedicine when treating trauma.

The remnants of what occurred from four hundred to one hundred and fifty years ago in the South, still affect all societies today, in particular, African Americans. It is clear and has been stated numerous times in the physical anthropology literature (Armelagos 1995; Caspari 2003; Livingston 1964; Smay 2000) that racial categories,

such as “African American,” are broad and lack clear definition and have no place in true anthropological research (see also Brace 2005). However, it is clearly understood that race exists in the context of how it has and continues to have social effects on societies that result from racism. The analysis of skeletal samples attempts to explore not only the osteological aspect but also to understand some of the social impacts of such an institution.

The history of Africans in the Americas reaches as far back as the 16th century (Franklin et al 1994, Gates and McKay, Mack 2002). The arrival into a new world brought many adjustments for these unwilling inhabitants of America, such as language barriers, climatic adjustments, poor living conditions, environmental changes, diet/nutrition, health, etc. The first Africans to arrive in the New World, to work as laborers, landed at Jamestown, Virginia in the early 17th century. Only twenty in number, these people survived the harsh “middle passage,” in the slave trade, that part of the Atlantic Ocean between Africa and the West Indies, from their homeland to the strange new land that was soon to be their home (Gates and McKay 1997). This initial group of Africans was not identified as slaves, but rather as indentured servants (Gates and McKay 1997). However, the growing plantation economy demanded a cheap labor force and subsequently, chattel slavery arose. This institution was where Africans became lifetime property of their European “masters.” According to Gates and McKay (1997), Africans brought to the New World were completely divested as much as possible of their culture to prevent Africans and their descendants from building individual identities except for those dictated by their master. American slavery became uniquely oppressive with its insistence that slavery was the “natural” condition for particular “races” (Davis 1967,

Franklin 1994, Wood 1997). It is no secret that slavery was a physically demanding, gruesome, and cruel institution and, no doubt, that this institution has been studied heavily (see below).

African and African American studies in anthropology

There is an abundance of literature on African American lifeways (Burnston 1981; Owsley 1997; Parrington 1986; Rankin-Hill 1997; Rathbun 1983; Rathbun 1987; Reitz 1985; Rose 1995, Savitt 1978; Steckel 1986; among others). In anthropology, cultural anthropologists and historians have carried out a majority of this research. These studies have focused on language, religion, race affairs, music, and the African American effect on past and present American society. Physical anthropology has focused on growth and development studies (Thompson et al 2003), racial typologizing (Baker 1994, Blakey 1997, Giles 1962), comparative anthropometrics, disease studies (Fontenot 1994, Hutchinson 2000, 1993, 1988, 1985, Logan 1996), nutritional analysis (Dettwyler 1993, Wilson 1994), demographic analysis (Burton 1990, Geronimus 1992, Guttentag and Secord 1983), and skeletal biological analysis (Armelagos 1982, Larsen 1997, Marks 1993, Parrington 1986, Rankin- Hill 1990, Rose 1985).

Anthropological studies of African Americans currently look at health and disease, and primarily focus on reconstructing lifeways (Rankin-Hill 1997), sometimes neglecting specifics such as physical trauma. Physical anthropologists reconstruct the adaptive efficiency of slaves by examining bones and teeth to access nutritional deficiency, occupational stress by looking at the joints and muscle attachments of bone as

well as robusticity, and mortality and morbidity rates. There has been little focus on violence in slave populations.

The issue of slavery became a heated topic for many anthropologists and researchers as a whole, perhaps starting with Stampp's 1956 publication, *The Peculiar Institution*. He argued that (1) slavery was not an economic necessity for the South because the greatest portion of agricultural output was produced by non-slave labor (2) African Americans were no better suited for slavery than whites or anyone else under the difficult climatic and disease conditions of the South; and (3) while slavery was economic; it was inhumane and living conditions for slaves were substandard. This was later criticized in 1974 by Fogel and Engerman's *Time on the Cross*. They refute Stampp's three points with three of there own: (1) slavery was an economical and valuable productive system to Southern economy (2) the diet of slaves was more than nutritionally adequate; and (3) the health and living conditions of slaves were no worse than that of contemporary whites. This sparked a huge debate over slave life that continues today. Although some details may never be known, osteological and archeological research bring us closer to understanding and reconstructing slave lifeways.

Dietary reconstruction based on plantation records, manuscript census and other documentary data have been used in slave life, reconstruction, and post-reconstruction (Rose 1985). Mortality and morbidity rates are other indicators that have been used to measure quality of life (Kiple and King 1985). Examination of disease pattern shows that blacks suffered a higher mortality rate than whites for all diseases except cancer (Rose 1985).

These studies have detailed the nutritional deficiencies and diseases that were common among African slave populations in the United States and the Caribbean (Kiple and King 1985). However, it has been within the last twenty years that the African American experience has begun to be in the forefront of anthropological analysis based on osteological evidence (Burnston 1981; Owsley 1997; Parrington 1986; Rankin-Hill 1997; Rathbun 1983; Rathbun 1987; Reitz 1985; Rose 1995, Savitt 1978; Steckel 1986; among others). During the last 25 years, African and African American skeletal series have emerged for study see Owsley 1990). Unfortunately, this is not the case now as new laws and mandates restrict the disinterment of human remains and burial artifacts. Though the few skeletal samples that are available are temporally, ecologically, economically and culturally diverse (see Table 1), according to Marks (1993), they share three recurrent themes: (1) high infant/child mortality, (2) severe malnutrition, and (3) high incidence of occupational stressors such as degenerative joint disease.

Table 1 Historic African American skeletal series

Site	Researcher	State	Time Period	Lifestyle	# of Individuals	Individuals with Trauma	% of Individuals with Trauma
Catoctin	Kelley and Angel	Maryland	1790-1820	Industrial slaves	31	6	19.4
Cedar Grove	Rose	Arkansas	1890-1927	Freeborn, rural farmers	79	14	17.7
First African Baptist Church	Rankin-Hill	Philadelphia	1821-1843	Freeborn, ex slaves	140	13	9.3
Jamestown	Owsley	Virginia	17th century	Plantation slaves	5	1	20
Memphis	Jantz	Tennessee	1899-1933	Freeborn	65	11	16.9
New York Burial Ground	Mack	New York	1712-1790	Urban slaves	424	56	13.2
President's Island	Marks and Kroman	Tennessee	1880-1920	Freeborn	9	1	11.1
Remley	Rathbun	South Carolina	1840-1870	Plantation slaves	36	1	2.8
St Peters	Owsley	Louisiana	1720-1810	Urban slaves	29	2	6.9
Belleview	Rathbun	South Carolina	1738-1756	Plantation slaves	2	0	0

Chapter 2 Enslaved African American Biohistory

History of slavery in US

The last half of the fifteenth century was the period in which primarily the Portuguese and Spaniards became accustomed to having enslaved Africans perform much of their labor and began exploring the possibilities of finding new tasks to help them expand their economic exploits. It was during this time that Europeans developed the rationalization for their deeds based on Christianity. According to Franklin and Moss (1994), there was never any profitable future for African slavery in Europe. It was the New World, with its vast natural resources and undeveloped regions that could make slavery and the slave trade profitable. When European countries undertook the exploration and development of the New World, they were primarily interested in the exploitation of its natural resources (Gates and McKay 1997). Labor was imperative and the cheaper the better. Europeans initially took advantage of the vast Native Americans labor available but soon learned their susceptibility to disease transmitted by Europeans made them less efficient and, hence, less desirable as a work force. Therefore, alternative workers in large quantities became a major preoccupation of the English and Spanish colonists during the seventeenth century. Africans, thought to be from a pagan land and without exposure to the ethical ideals of Christianity, could be handled with more rigid methods of discipline and could be morally and spiritually degraded for the sake of stability on the plantation (Gates and McKay 1997). African slavery soon became a viable, social, and economic solution to one of the most difficult New World problems, labor.

Historical race ideologies

Race has been a major component of the study of anthropology since its beginnings (see Brace 2005 and Shipman 2000). This is evident with Carolus Linnaeus' book *Systema Naturae* (1738) where he classified all animals. He divided humans into four categories: Europaeus, Asiaticus, Americanus and Afer and detailed each by color, clothes, and governance. This initiated the association between biology and behavior (Jurmain et al 2000). During this time two key themes developed: (1) races were real and (2) races could be ranked accordingly to fit social, political, and economic categories to justify discrimination (Armelagos and Van Gerven 2003). With the emergence of these two concepts people began to wonder "where did races come from?" Thus began the scientific studies to find out. The idea that races had separate origins became widespread and was supported by polygenist such as Louis Agassiz and Samuel Morton. This began the next phase of racial determinism in anthropology- craniometry (Gould 1981). This new "science" influenced the entire world and was thought to be indisputable proof that non-white people where indeed inferior. Major anthropological theories began to develop such as the unilinear cultural evolution theory by Morgan and Spencer (1859). Their theory emphasized that humans evolved from simple to complex and from savages to civilized. They sought to explain why non-Europeans and their children were inferior to Europeans and their children by describing how some cultures get stuck in their advancement from savagery to civilized. Craniometric studies continued to flourish with the work of Galton, Bean and Broca (see Shipman 2000). During this time, it was believed that racial classification should be based on characteristics exclusive to particular groups and evenly distributed with in them

(Jurmain et al 2000). These scientists attempted to identify physical characteristics thought not to be influenced by environment and were constant in each group.

The turn of the twentieth century brought a surge in Native American studies, particularly, by Franz Boas. Although it is believed that this new interest in Native American ethnology and archaeology was descriptive and not focused on race (Caspari 2003), such proved untrue. Many anthropologists worked for the Bureau of Indian Affairs (BIA) and may well have succumbed to the bureaucratic racism. Such is evident in the "blood quantum formulation" introduced in the General Allotment Act of 1887, stating that everyone eligible for land allotment had to be one half of more Indian blood (Jaimes 1994). Instead of speaking out against or boycotting this agency, anthropologist sat silently by and witnessed the maltreatment of Native Americans. During World War I, physical anthropologists were pressured by government and private funding sources to restore racial ideas and practices (Jaimes 1994). The government had become interested in restricting immigration on the grounds of race, while private forces such as eugenicists, controlled major funding (Caspari 2003 and Shipman 2000). In 1883, the word "eugenics" was coined by Francis Galton, a cousin of Charles Darwin. The idea was to promote the principle of perfecting the human race by getting rid of its "undesirables" while increasing its "desirables", by encouraging the proliferation of the fit and discouraging that of the unfit (Kelves 1995). The dominant figures in anthropology during this time were Franz Boas (Columbia), Ernest Hooten (Harvard) and Ales Hrdlicka (Smithsonian Institution). In the years following the war, eugenics or "race improvement" began to flourish in Europe and the United States (Jurmain et al 2000). It should be noted that at this time some anthropologists began turning away from

these racial typologies in fear of where the eugenics movement was heading (such as Boas in the 1900's, Hogben in the 1930's, Montagu in the 1940's, Levi-Strauss in the 1950's, Brace and Livingstone in the 1960's, among others). None the less, the concept of eugenics was a powerful one and such ideas continued to plague American and European anthropological thought.

Current race ideologies

During the mid 20th century, anthropology went through a period of self-examination that was mainly race centered (Caspari 2003). This introspection was brought on with the publication of Coon's *The Origin of Races* in 1962. Here, Coon argued that certain races reach the *Homo sapiens* stage of evolution before others. This explained why different races achieved different levels of civilization. Up until this time race was a major part of theoretical thought. Questions about race were intertwined in all areas of anthropology from its beginnings until this point (Armelagos and Van Gerven 2003, Goodman 1997). During this time, the study of race in physical anthropology had become a major foundation. However, osteological studies continued to reflect ideologies of the past. Even when anthropology as a whole moved past racial determinism, physical anthropology continued to use race as a method of explaining human variation (Caspari 2003). After World War II, anthropology attempted to refute the idea of race and the idea that races are pure and distinct entities (Kaszycka and Strzalko 2003). The study of clinal distributions on individual traits became popular at this time. This idea was an enhanced substitute to the racial methodologies some years earlier. Frank Livingston (1964) focused on the idea of clines in his essay *On the*

Nonexistance of Human Races (1964) were he argued that there are no races, but only clines and defined clines as a continuous gradation over space in the form or frequency of a trait.

Many anthropologists are moving away from the idea that race can be used to explain biological variation **(**Armelagos 1995; Caspari 2003; Livingston 1964; Smay 2000**)**. Although, biological race ideologies may not be found in many current textbooks, racial determinism is still taught in many college anthropology departments.

The new trend for studying race and racial taxonomy is now in genetics and biological anthropologists have used quantitative traits as more indirect measures of genetic variation within and between groups (Evars-Kiebooms 1987, Gould 1981, Hickman 1983, O'Rourke 2003). The assumption is that biological characteristics owe their expression to underlying genes and reflect genetic differences and similarities between both individuals and populations (O'Rourke 2003). It has been found that populations that are grouped by genetic traits, blood groups, for example, contradict the model of race based on human traits. Skin color is a good example. The conclusion is that the variation in human traits is greater within "races" than between "races". This conclusion has weakened the idea of biological race in physical anthropology.

The controversy over race is not likely to end soon. Anthropology has made an enormous attempt to change its ideas about race and biological variation. There is an obvious improvement in racial ideologies when comparing these ideologies from the commencement of anthropology to now.

Why the study of trauma in physical anthropology is important

The issue of physical trauma within American slave populations has been rarely investigated in anthropology. Some osteologists have noted trauma in slave populations in passing, but have yet to provide any inferences in thorough detail (i.e, Kelley and Angel 1983, Owsley 1987, Rathbun 1983). On the other hand, perhaps the issue of trauma is just continually lumped into the broad category of pathology. This study looks to provide an analysis on trauma in African slave populations in the United States and African American populations up through 1930. This research looks to unite the biological and cultural aspects of anthropology in order to provide a clear, concise reconstruction of the physical demands and violence in American slave populations in the United States compared to African American populations living during the reconstruction period and post-reconstruction period (through 1930).

African and African American ethnomedicine

Logan (1996) defines ethnomedicine as "the information specific to a given culture that allows its members to diagnose and categorize illness trauma, explain their onset or cause, and to seek appropriate therapies to the restoration or the maintenance of a critically ill patient".

Research on African American ethnomedicine

There is an abundance of information on the availability of modern African and African American health care (see Center for Disease Control). This force does not focus on the information specific to African Americans that allows them to explain the cause of

illnesses, and to seek appropriate therapies. According to Crowder (2001), most of those studies focus on explaining how Black and White healing modalities differ and how they merged to create a single American belief system. Fontenot (1994) argues that studies have failed to analyze African American medical tradition as a means to better understand cultural beliefs, behaviors, and attitude linked with the causes and cures for illness among African Americans. One major problem addressed by Baer (1982) is that ethnomedicine among African Americans is treated as a uniform phenomenon. While he does not offer any effective solutions to the problem, he does make a good point in saying that this overgeneralization has ultimately lumped the social life and culture of African Americans together.

African American ethnomedicine

According to Baer (1982), ethnomedicine among historic African Americans emerged within the context of North American slavery. African American folk medicine, according to Fontenot (1994), is a purely oral tradition and considered a legitimate form of ethnomedicine. As with other practices and belief systems that have emerged out of slavery, ethnomedicine is a blend of European folklore, African beliefs and customs, and Native American plant knowledge and modern science. This could be due to the historical events that shaped the African American experience. Africans belief in the supernatural, their conversion to Christianity, and the cultural mixing among Native Americans and Africans should be taken into consideration (Fontenot 1994).

According to Fontenot, there is no known comprehensive study on the early medical treatments administered to African slaves. Many accounts do substantiate that

Africans were thought to be a strange species different from European Americans. Fontenot explains that European American doctors developed a separate methodology to practice on slaves because they believed them to be a different species than whites. This belief of the white doctors as well as the relatively poor health conditions in the South during slavery exacerbated the need for health care. Diseases such as typhoid, malaria, hookworm, and dysentery were a few diseases that affected African Americans. Slaves maintained their own treatments and rarely relied on whites, a major reason being suspicion of white doctors (Baer 1982, De Smet 1999, Kiple and King 1980). According to Kiple and King (1980), European American doctors used slaves to experiment and practice things such as surgery, pain tolerance, etc. African healers were less invasive than white medical doctors, which often brought whites to black medicine. Both Fontenot and Kiple and King maintain that many African slaves had superior medical knowledge and were sometimes granted freedom or given the opportunity to learn conventional medicine from European doctors. The elderly women were often chosen as the best candidates.

Health conditions for African Americans did not improve after Emancipation, (Fontenot 1994; Rose 1985; Franklin et al 1994), only growing worse. As a result, the will to survive and self-preservation remained a large part of the African American medical tradition, as well as skepticism of conventional medicine among African American populations. This still exists today. A prime example that exhibits African Americans being misused by European American in modern times is the Tuskegee Project, which was conducted by the U.S. Public Health Service (PHS) in 1932, testing whether syphilis caused cardiovascular damage more often than neurological damage.

The project was also designed to determine if the normal course of syphilis in black men was different from that in whites.

The subjects, 616 impoverished sharecroppers from Macon County, Alabama, were unknowing participants in the study. The sharecroppers were not told that they had been injected with syphilis nor were they told that the disease could be transmitted through sexual intercourse, or offered any effective treatment. The subjects were told that they suffered from a range of ills known as "bad blood". It is estimated that more than 100 of the subjects died of syphilis, not including the numerous women and children that were infected with the disease as it rapidly spread through the black community. The study finally ended in 1972 when the program was exposed in the *Washington Star*, a local newspaper.

African American medical structure

As defined by Fontenot (1994), there are five structural similarities and differences between African American medical systems and mainstream medical systems. They are the definition of a healthy person, causes of illness, treatments, patients, and healers. She defines these as follows:

Healthy Person- For conventional medicine, a healthy person is a person free of pathologies based on medical tests. For many African American groups, sickness is defined culturally. An unhealthy person is defined as a person unable to function in their role in society and becomes a threat to themselves and to society.

Causes of Illness- The most popular responses were illness caused by germs and not taking care of oneself. Another major response to illness causation was God. It was and

continues to be believed that God plays a major role in health care. In southern African American communities, God has the power to make ill and heal for those who believe (Crowder 2001). African American communities throughout the south believe that there are natural and supernatural causes of illness (Fontenot 1994). Fontenot explains that natural causes are those for example, that are caused by going out in inclement weather dressed improperly resulting in a cold of flu. Alternatively, if someone has committed a sin against another person then this type of natural cause is an act against God and the illness is based on the religious belief that God punishes. Common ailments, such as headaches or coughs, are considered diseases with natural causes. Their symptoms are treated at the household level, without resorting to magical practices. For other illnesses, or when a common ailment persists, recourse is often sought to divination in combination with herbalism. Unnatural causes of illness are associated with the intentional acts committed against another person for the sole purpose of causing harm to that individual. This is known as hoodoo and curses. Not all illnesses are considered the result of curses or hoodoo; those terms are used to explain abnormal or unexplained causes.

Treatments- For both conventional and African American medical systems, preventive measures are taken to avoid sickness. For conventional medicine, prevention is centered on legal institutions and acts. The office of Public Health, health care resources and programs, and immunizations are some examples. In African American ethnomedicine, prevention is based on personal acts as opposed to legal ones. Steps must be taken by the individual to protect themselves from illness. This prevention includes amulets or other material items embodied with a divine spirit, the use of herbs or other folk medicine, seeking the services of a folk practitioner, and most important in the African American

medical system, prayer. Treatment is both spiritual and physical within African American customs and traditions.

Patients- In African American ethnomedicine, the patients are usually men, women, and children of African descent that believe in its efficacy. The patients of the local healer are usually kin or part of the community. Because of the nature of certain healing practices, the patients must be trusted and share certain social and cultural traits.

Healers- In the Southern United States, folk medical practitioners are depicted as "treaters", healers, or grannies, secret doctors, voodoo or hoodoo doctors (though these terms are viewed negatively by African Americans), or diviners. According to Fontenot, experience age, and sex play a major role in determining the kinds of diseases and types of persons one can cure. She explains that older male doctors treat severe illness and can typically heal anyone of any age or sex. While female doctors treat minor illnesses and usually treat women and children. Among the healers, there is a wide-range of herbal knowledge. This skill is usually learned from someone in the family who is a healer and passes down their knowledge. The patients are usually treated in the home of the healer, which is off limits to everyone while in use. Many healers admit that they are not against conventional medicine; however, they do not recommend it. According to De Smet (2000), surveys have consistently shown that most traditional healers are willing to learn more about Western medicine and to co-operate to some extent with their biomedical counterparts. Conventional biomedicine is usually practiced by white males and females (although there are other groups that practice) of different backgrounds and ages. They have obtained a formal education is medicine and their knowledge is based on scientific reasoning. Unlike a doctor trained in Western biomedicine, the traditional African healer

looks for the cause of the patient's misfortune in the relation between the patient and his social, natural, and spiritual environment. Another major difference is the reason to practice medicine. For many conventional doctors economic gain is the driving force behind them pursing a career in medicine. Conversely, many healers in African American ethnomedicine feel they are doing the work for God and their charges tend to be minimal.

Trauma and African American ethnomedicine

There is no literature available detailing how American slaves and African Americans treated and cared for traumatic injuries such as fractures and dislocations. Based on oral histories and slave narratives (Rawick 1972; Weld 1839), few slaves were fortunate to have seen a physician. Because of this, many slaves were forced to care for their own injuries. Many times, a designated "healer" was on the plantation that cared for a majority of the slaves. According to written and oral narratives, traumatic injuries were treated by "popping the bone back in place", making makeshift slings or doing nothing at all (Rawick 1972; Weld 1839). In some instances, if the injuries were severe enough, slaves would be seen by the plantation physician.

Conclusion

Unfortunately, there has not been extensive work done on this topic as a whole, in particular, African American ethnomedicine related to trauma. In fact, there is still a large array of topics that need to be addressed concerning African American ethnomedicine. African American ethnomedicine is still alive and present in many

communities throughout the south. It may appear to be vanishing because many African Americans today seek biomedical treatment. This could be partially due to the Civil Rights Movement. Going from might or might not be seen in a back room to being able to wait in a waiting room and actually be seen is an exercise of rights long been awaited by African Americans for many decade up to that point. Many African Americans seek use of hospitals, but will also seek the treatment of a healer, since hospitals do not deal with the religious etiology of an illness. As long as certain African Americans as well as other ethnic groups remain in marginal communities, their ethnomedical traditions will never be completely gone. African American ethnomedicine simply continues to be a large part of African American culture.

Chapter 3 Trauma Analysis and Biocultural Anthropology

> "Culture is the fundamental influence on a society's trauma pattern and, although there are deviations, a wide-spread pattern of injury has emerged cross-culturally" (Judd 2004).

Trauma

Trauma is customarily understood to generally represent injury to living tissue caused by many factors that is caused by force that is extrinsic to the body (Ortner and Putscher 1981). The examination of trauma in individuals as well as patterns of trauma in populations can reveal a great deal about the sociocultural aspects of past populations. It can provide information on the interactions of individuals and societies and how they interacted with one another. It can also provide information about how their lifestyles influenced the health morbidity, and mortality of the population. Because of the serious consequences to individuals, trauma is very important to study (Kilgore et al 1997). Throughout history, trauma was and remains to be a leading cause in human morbidity (Alvrus 1999). The most frequently reported class of severe injury in bone is fractures (Ortner and Putscher 1985). Skeletal trauma analysis has shifted in objective from identifying and describing the most unusual traumatic injury to interpreting the social, cultural, or environmental causes of traumatic injury (Lovell 1997). Skeletal trauma in pathology and paleopathology is usually identified as dislocations, fractures, post-traumatic deformity, and other conditions that do not affect the skeleton directly but can be inferred by the position or association of skeletal specimens (and depending on the researcher, muscle pulls). Dislocations are usually identified by joint remodeling

changes. These changes occur when the articular surfaces of two joints are displaced from one another. According to Lovell (1997), dislocations are most commonly caused by trauma and it is not uncommon for the joint displacement to be associated with a fracture. In order for this traumatic injury to be recognizable in dry bone, it must have occurred some time before or around the time of death. Muscle pulls are usually identified by ossified tendons. Healed fractures are typically identified by bilateral asymmetry and angular deformity (Ortner and Putchser 1981). The most common type of fractures (transverse, spiral, oblique, and crush) result from direct (occurring at the point of impact) or indirect (occurring in a place other than the point of impact) trauma (Lovell 1997). The presence of fractures, calluses, and cranial vault depressions are typically identified in the long bones, crania, hands, and feet.

A problem in assessing trauma is in determining antemortem (injuries that proceed death), perimortem (injuries at or around time of death), and postmortem (injuries occurring after death) injury. According to Sauer (1998), skeletonized remains will usually provide clues to the manner of death as opposed to the cause of death. Sauer provides a basis for distinguishing between antemortem, perimortem, and postmortem injuries to bones by first identifying and describing the nature of all bone surface disruptions. Second, attempts are made to identify the mechanism of delivery of any apparent traumatic lesions. His next step is to examine the margins of the lesions for indication of an osteogenic response and next, study the entire specimen for patterns that might suggest animal activity. Finally, he suggests evaluating the lesions for differential staining that may reflect damage that occurred following a period of deposition and contact with soil, water, or organic material.

Despite the advances that have been made in trauma analysis, there are inconsistencies in descriptions and interpretations of trauma in the literature (Lovell 1997, Ortner 1981-2004, Sauer 1998). These inconsistencies affect our understanding of the nature and the extent of interpersonal violence and have made it difficult to compare the results of these different studies (Lovell 1997).

Biocultural anthropology

There exists a huge distinction between biological anthropology and cultural anthropology. This can be seen in numerous anthropology departments across the nation. However, it is obvious, that in order to completely study and understand humans we must look at both biological and social traits. According to Levins and Lewontin (2001), human biology is a socialized biology and social life is a major form of evolution of the human species. They go on to explain that when speaking of human biology being a social biology four interpretations are recognized: First, the forms of basic biological functions become transformed socially. Eating is a good example. Second, biology is transformed into the social losing entirely its original physiological meaning. An example of this is the Last Supper, which is now a worldwide sacrament of the religion in which it was founded. Third, biological links can be created by social history. Fourth, a socialized biology creates new biological units. For example, it is known that humans cannot fly simply by flapping their arms. However, humans do fly due to social relations that have produced airplanes and other flying machines. Levins and Lewontin (2001) make a compelling argument that anthropology, if properly construed, cannot be separated into the physical and the social. Moran (2001) explains that biology and

culture are dialectically intertwined. He goes on to explain how biological anthropologists are inattentive to how large-scale sociocultural and political economic processes interrelate with local-level ecologies to shape biology. Biological markers could be the product of many different processes such as ecological, political, economic, and cultural. They affect human health and thereby complicate the bioarchaeology. Understanding that the means of coping for humans are cultural and biological adaptations to both the general and /or specific conditions of the environment is critical in studying the processes of human biocultural adaptation. The environment includes three components: inorganic (climate, water, soil), organic (from pathogens to predators) and sociocultural. These environmental properties are not static, meaning they are always changing. Therefore, humans always have to respond to these changes. This requires continuous adjustment. Cultural adaptive responses to environmental conditions can include material culture, social systems, behaviors, and ideology. According to Rankin-Hill (1997), these responses can mediate or create environmental conditions that in turn require a response, thus creating a dynamic process of biocultural adaptation. Through the application of a biocultural framework, biological and cultural interactions within a specific environmental context can be identified and the effects on population patterns of health and disease determined. In addition, multicausel effects can be investigated and understood.

Biocultural approach to trauma analysis

The biocultural framework model proposed by Goodman and coworkers (1988) can be used to address a particular area of research or problem. Data generated from

skeletal biological analysis must be placed within the context of a population's lifeways and history to explain conditions that produced disruptions (Rankin-Hill 1997). Building a new biocultural approach in anthropology is essential for understanding the ways in which the interaction of large-scale forces and local environments shapes the contexts for human biology and health (Leatherman 2001).

Leslie Rankin-Hill's First African Baptist Church biocultural model is a good example of this synthesized approach. She examines the bones and teeth of a historic population for pathology and growth disturbances. These disturbances are indicators of stress (physiological disruption) and provide a way to assess the general health of a population. According to Rankin-Hill (1997), the data generated from skeletal biological analyses must be placed within the context of a population's lifeways and history to explain the conditions that produced these disruptions. The biocultural framework model provides a way of asking processual questions about what caused the stress of a population and the results of that stress. It is important to breakdown this biocultural model of analyzing bone to better understand it. The first constituent of this model is the environmental conditions of a population. According to Rankin-Hill, this is the source of all necessary resources. In this model, environmental conditions include both stressors and limiting resources. Environmental conditions can produce circumstances that individuals must respond to and adapt. This produces restrictions that may affect survival or that may force limitations on the biological development of individuals and the population as a whole. Next are the cultural buffering system and the culturally induced stressors. The cultural buffering system refers to cultural practices, beliefs, or organizations that act to buffer the impact of environmental restrictions. While culturally

induced stressors can significantly enhance current stressors as well as produce new ones. The host resistance factors, as defined by Rankin-Hill (1997), account for the variation in the impact of stressors and the individual and population levels. She explains that resistance or susceptibility to stressors is "contingent upon the biological life-cycle stage and the general health status" (Rankin Hill 1997). The physiological disruption, as stated above, is a way to assess the general health of a population. The last step is identifying the indicators of stress by looking at pathology in bone and teeth as well as identifying the morbidity and mortality rates of a population.

Suggested methodology of trauma analysis and literature review

Any methodology should provide a means to assess what should and should not be incorporated into the analysis. Based on the suggestions of Rankin-Hill (1997), a research design should be developed that includes: 1) a document and literature search 2) demographic analysis and 3) skeletal biological analysis.

Document and literature review

The primary purpose of the document and literature review is to identify historical materials that are relevant to the population being studied. According to Rankin-Hill (1997) the objective is to provide a means of (1) describing the population in demographic, socioeconomic, religious and sociocultural factors, (2) reconstructing the environmental and sociohistoric contexts of its inhabitants, (3) describe the morbidity and mortality patterns that would facilitate the interpretations of skeletal biological assessments, and (4) clarifying what part of the population the sample represents.

Demographic analysis

Demography is concerned with virtually everything that influences or can be influenced by population size, distribution, processes, structure, or characteristics. Demographic analysis provides a means of understanding the vital rates and population structure. Records are examined in order to determine the morbidity, fertility, and mortality rates the population in question. According to Rose (1985), before any biological or cultural data obtained can be generalized to the entire community, the degree to which the demography of the excavated graves resembles a natural biological population must be determined. He suggests that demographic analysis is the ideal method for evaluating the stress level and adaptive success of a given population. When used in conjunction with skeletal analysis, demographic studies can provide a wealth of priceless population information. Once these demographic analyses are complete, the data should be analyzed statistically and put into a biocultural framework model as mentioned above.

Skeletal analysis

Bones provide a measure of biological and cultural factors that have affected the health of a population (Vaughn 1975). The skeleton as a whole is a dynamic system that is constantly changing, by undergoing growth and development and degeneraion throughout an individual's life. When observing trauma in a skeletal sample, it can generally be assessed that it was caused by cultural factors and physiological conditions that have directly affected the bone (Ortner and Putschar 1981). This is also true for other pathologies typically found in the skeleton. Paleopathological assessments provide

the indicators to determine individual and general populational health status (Buikstra and Cook 1980). The following is a suggested guideline for trauma analysis on a skeletal population within a biocultural framework.

Biological analysis of trauma

1. First, identify or specify how to define trauma and what will be looked for (i.e dislocations, fractures, and muscle pulls, puncture wounds, etc.).
2. Discuss what bones are to be examined (skull, long bones, hands and feet, vertebrae, etc.) and their completeness.
3. Identify how each lesion will be recognized (angular deformity, depressions, etc).
4. Sort injuries according to their predominant characteristics, either fracture, dislocation or muscle pull, rather than to classify injuries in a manner that implies causation (Lovell 1997).
5. Next, determine if trauma is antemortem, perimortem or post mortem (Sauer 1997).
6. Discuss how data will be documented (bone type, bone side and position on bone)
7. Finally, discuss results: compare trauma within population and between appropriate populations of same situation, to other populations of similar situations, other populations of dissimilar situations.

Cultural analysis of trauma

1. Trauma should be looked at regionally and temporally.
2. Biohistorical studies must take into account the diversity of populations created by time, history, culture, geography, and ecology.
3. Understand that the skeletal system is a dynamic organ system that is constantly being modified in interaction with the environment (Armelagos 2001).

The analysis of trauma in this research will follow steps one through seven based on published data, while cultural factors will be considered for each slave site in this study based on steps one through three. A prime example of implementing the biocultural framework model into research is Jerome Rose's *Gone to a Better Land* (1985). This research focuses on a rural African American cemetery in post-reconstruction Arkansas. Here, Rose provides a detailed history of the area as well as the people. In the history of the population, the environmental constraints are identified. He details the stressors of the population, which included floods, crowded dwellings, poor sanitation, as well as limiting resources such as food shortage. He then moves on to the cultural buffering system of the community, which was the Cedar Grove Baptist Church, as well as social organizations such as the Supreme Royal Circle of Friends of the World and the school. In combination with other factors such as stress, indicators of growth disruption were identified. Age at death, cause of death, disease frequencies, and trauma were all identified and analyzed through skeletal analysis. Rose's research design consisted of a document and literature search to identify historical material relevant to the Cedar Grove population. A demographic analysis was performed to evaluate the stress level for the

Cedar Grove population. Finally, a skeletal analysis was conducted to determine what stressors weighed heavily on the population.

Conclusion

Understanding trauma in a skeletal series is integral to understanding how past populations survived and adapted. It is imperative in order to achieve optimum understanding to approach trauma analysis from a biocultural standpoint, whenever possible. Uniting biological and cultural anthropology is imperative for both disciplines. It is often difficult to do one without the other. Moran (2001) makes an interesting point when stating that it is clear that cultural anthropologists are inattentive to biological consequences of changing cultures and environments. Biological anthropologists may be inattentive to how large scale sociocultural and political economy processes interrelate with local-level ecologies to shape biology. More effort should be placed into interconnect the two subdisciplines in order to bring anthropological analysis to its full potential.

Chapter 4 Materials and Methods

Unfortunately, most of the skeletal samples used in this research have been reinterred. Therefore, this research is derived from observations and interpretations of previously published research. Unfortunately, there exists no universal research method when analyzing skeletal material. This analysis contains basic information about each site including, the total number of individuals examined in each site, total number of individuals with fractures, total number of fractures, sex, which bone(s) were injured, and if the injury occurred ante or peri mortem. This analysis documents which sites were slave communities and which sites were free populations. Whenever possible, a mechanism (accident, violence or occupation-related) was assigned to each injury. For this analysis trauma was defined as dislocations, fractures, muscle pulls, and blunt force trauma and puncture wounds. All bones were examined. The injuries in this analysis were not classified by causation, but rather by their predominant characteristics (i.e. fracture, dislocation, etc). Finally, the trauma was classified as antemortem, perimortem or post mortem. The trauma in the slave populations were compared to one another and to other populations of similar circumstances (post slavery to 1930 African Americans). Diversity of the populations was taken into account created by history, culture, geography, and ecology.

Field notes, published articles, as well as some historical documents were obtained for the sites. Since most of the samples have been reinterred, this research is based on the data collected by the original researchers. Once obtained data was analyzed

using Microsoft Excel and SPSS statistical software. Frequency analysis as well as cross tabulations were performed in SPSS to do a comparative analysis of the groups.

Additional data that was collected from each site, but not available for every individual included: burial number, which side (left or right) the injury occurred on, and what caused the injury. These data were collected in order to do comparative analyses of the two groups (slave and free). Since there was no universal methodology in examining skeletal series at the time these remains were examined, the location of trauma on the bone as well as size, cause of trauma and a detailed description of the trauma could not be gathered for all sites. The data was entered into Microsoft Excel where the percent of individuals with fractures was tabulated. Next, the data was analyzed by SPSS to perform frequency analysis and cross tabulations.

Chapter 5 Results

Eight hundred and sixteen individuals representing nine different sites and time periods, were included in this study. Eighty-six individuals (or 10.5%)- fifty-eight males (67.4%), twenty-two females (25.6%), and six subadults whose sex could not be determined- exhibited some type of traumatic injury (Table 2). Of these, five hundred and twenty seven slaves were examined from six sites and two hundred and ninety three free individuals from four sites. Those exhibiting trauma included forty-six individuals representing the slave populations and forty individuals representing the free populations (Table 2).

Comparative analysis of skeletal samples indicate that slavery was not a massive structure meaning it was not an identical construct throughout, but rather, consisted of local environments with social features that produced variability in the biohistory of the individuals.

Table 2 Number of individuals and number of individuals exhibiting trauma

		Total Individuals	Individuals with Injuries	Females Injured	Males Injured	Subadults
Belleview	Slave	2	0	0	0	0
Catoctin	Slave	31	6	2	4	0
Cedar Grove	Free	79	14	6	8	1
FABC	Free	140	13	3	10	0
Jamestown	Slave	5	1	0	1	0
Memphis	Free	65	10	3	7	0
NYBG	Slave	420	36	8	24	5
President's Island	Free	7	1	0	1	
Remley	Slave	36	1	0	1	0
St Peters	Slave	29	2	0	2	0
Total		814	86	22	58	6

Slave sites

The Catoctin Furnace remains became available for study during a highway-widening project in Frederick County, Maryland in 1983. This series represents one-third of the entire cemetery population as the rest remains under a state highway. These 31 burials dating from circa 1790-1820. Of the 31 individuals, six individuals (19.4%) exhibited a total of ten injuries (2 females and 4 males). This sample, initially studied by Kelley and Angel (1983), lived in an iron working slave community. It has been suggested (Burnston 1981) that the individuals buried in this cemetery were African slaves, or possibly first or second generation African Americans. Though the remains were mostly fragmentary, Kelly and Angel (1983) were able to reconstruct the nutrition, occupation, accidents, and disease through a systematic study. The slaves worked in the Catoctin Iron Furnace Complex. The use of slave labor in the iron works was common practice in the region (Burnston 1981). Information recovered from the will of the slave owners suggests that the slaves were a "community of family groups" (Burnston 1981). Some examples of the types of traumatic injuries within this population are Colles fractures, greenstick, fractured vertebrae, clavicles, and hands and feet. Most of the injuries endured were primarily occupation-related. There was very little to no evidence of violent encounters and evidence of only a few accidents such as falls. One example of occupational trauma is burial #6 that has a healed fracture of the fourth metatarsal.

The remains of 420 enslaved Africans from the New York Burial Ground, were removed from under a parking lot in New York City in 1992. Of these individuals, 36 individuals (8.6%) exhibited a total of 46 injuries (8 female and 24 male). The cemetery was discovered in the heart of lower Manhattan. Enslaved Africans comprised a large

part of the creation of the colonial city from the beginning with slavery was common in the north as it was in the south. The burial ground dates back to the eighteenth century (1712-1790 approximately). This cemetery was the primary cemetery used by Africans in colonial New York. The analysis of the skeletal remains from the New York Burial Ground does not indicate a large group of individuals who systematically endured traumatic injuries leading to death. However, there are individual cases of death due to severe trauma. 2.9% of these injuries were attributed to violent encounters. The majority of injuries in this site were to the vertebrae and the occipital region of the skull. A majority of these injuries were occupation-related (52.9%). The most frequent occupation-related injury was the cranial ring base fracture primarily found in females and resulted from heavy loads being carried on top of the head. Additionally, compression fractures of the vertebrae were found due primarily to heavy lifting and pushing.

Remley Plantation (38CH778), in South Carolina, studied by Ted Rathbun in 1986, consisted of thirty-six individuals. Of these individuals one person (a male) (2.8%) exhibited a total of 4 injuries. This slave cemetery was discovered during a construction project and dates between 1840 and 1870. Rathbun (1986) suggests that slavery had a profound social as well as biological history on the African slave population. He points out that the mortality and morbidity rates of this South Carolina population are comparable to other slave populations of this time. Only one individual exhibited four traumatic injuries in this skeletal series. However, of the four injuries sustained by the individual one was a violent blow to the face.

Twenty-nine individuals were reported on from St Peter Street cemetery in New Orleans, Louisiana, by Owsley et al, in 1987. Of these individuals 2 males (6.9%) exhibited total of four injuries. This cemetery functioned as New Orleans primary cemetery while the city was under both French and Spanish rule from approximately 1720 to 1810 and represents the earliest well-documented African slave population studied to date in the United States. The objective of this analysis was to obtain adequate information on the health, nutritional status, and lifeways of this early New Orleans urban slave population. The skeletal analysis provided data on demography and skeletal and dental pathological lesions. Based on comparisons to other slave populations, Owsley et al (1987) point out urban slaves had different lifestyles than plantation slaves. Healed fractures within this population suggest that violence was more prevalent (4 injuries, 4 injuries due to violent encounters (100%)). This population does not reflect a lifeway characterized by heavy occupational stress. This site differs greatly from other urban sites in that the incidence of violence was high for slaves.

The Jamestown collection consisted of the re-analysis of 15 sets of human remains by Owsley in 1999. The sex of 12 individuals was identified and age assessments were revised for 10. Furthermore, the commingled remains of four individuals were separated and isolated components of two skeletons were reassociated. Seven individuals had been previously identified as Native American, and the remainder were unidentified. More extensive analysis using modern classification procedures and comparative databases recognized the additional presence of Europeans and Africans. Only three Native Americans were affirmed. Five individuals were reclassified as African Americans. Of these individuals one person, a male, exhibited a total of one injury. These remains

dating to the 17th century provide tangible evidence of the first Africans in the English colonies. Only one individual (an African American) exhibited trauma in this site, which is a gunshot wound to the head.

Belleview plantation is located near Charleston, SC, named sometime before the Civil War. The economic development of the plantation can be described as agriculture based with a shifting emphasis to industrial. During the first part of the eighteenth century, the primary activity was plantation agriculture. By the end of that century agricultural activity had began to decline as the soils became overworked leading to a replacement by ship building. Two slaves were examined, one male and one female. There was no trauma present in the slave samples that were recovered from this site. However, the number of individuals recovered and examined is not representative of the entire population.

No disproportionate amount of skeletal trauma was found in any slave population analyzed. The samples were compared to two European American sites (Governor's Landing, VA and Patuxent Point, MD). Twenty-three individuals were examined from Governor's Landing. Of these individuals, three individuals exhibited 3 traumatic injuries. Nineteen individuals were examined from Patuxent Point. Of these individuals, five individuals exhibited 6 traumatic injuries. Plantation slaves had the lowest incidence of trauma. However, they exhibited more injuries due to violent encounters, while the non-plantation slaves exhibited more trauma overall, but had the lowest frequency of trauma from violent encounters and the highest frequency of injury due to occupation-related events.

Table 3 presents the number and percent of traumatic injuries by bony element in the slave sites. Sixty-five traumatic injuries were identified in forty-six slaves in all five slave sites. Three traumatic injuries were reported, in which the bony element was unknown (i.e. reported as trauma in upper extremities).

The most frequently injured bones were the vertebrae (43.1%), the occipital (10.8%), and the radius (6.2%) (Table 3, Figure 1). These injuries occurred primarily in northern industrial/ urban environments and were occupation-related injuries. The next most frequent injuries to occur were in the femur (4.6%), the parietal (4.6%), and the ulna (4.6%) followed by the ribs (3.1%) (Table 3, Figure 1). These injuries occurred most frequently in the southern plantation/colonial environments and consisted of more injuries due to violent encounters, such as blows to the head, parry fractures (a fracture to the arm, where the arm is struck while protecting the head from a blow) and gunshots wounds.

Males dominated the number of injuries in all slave sites. In many cases such as Remley, St. Peters and Jamestown, males were the only individuals that showed any trauma (Figure 2). This is significant because, while not all of these sites are plantation sites, they are all southern sites. In the New York Burial Ground and Catoctin Furnace, which are northern urban/ industrial, females also showed signs of injury. The injuries in females were located mainly in the occipital region of the skull (cranial ring base fractures) and were mostly due from carrying heavy loads on top of the head (Mack 2002) (Figure 3).

Table 3 Location of trauma from slave sites (frequency by location)

Bone	Frequency of injury to bone	Percent of injury in each bone
Clavicle	1	1.5
Femur	3	4.6
Fibula	1	1.5
Frontal	1	1.5
Humerus	1	1.5
Mandible	1	1.5
Maxilla	1	1.5
Metacarpal	1	1.5
Metatarsal	2	3.1
Occipital	7	10.8
Parietal	3	4.6
Radius	4	6.2
Ribs	2	3.1
Scapula	1	1.5
Tibia	1	1.5
Ulna	3	4.6
Unknown	3	4.6
Vertebrae	28	43.1
Zygomatic	1	1.5
Total	65	100.0

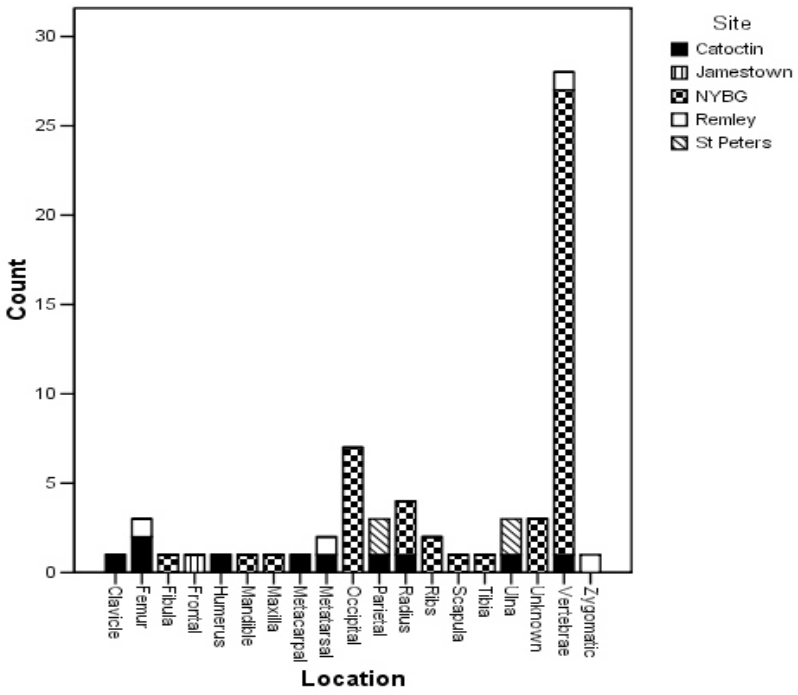

Figure 1 Location of injury by site

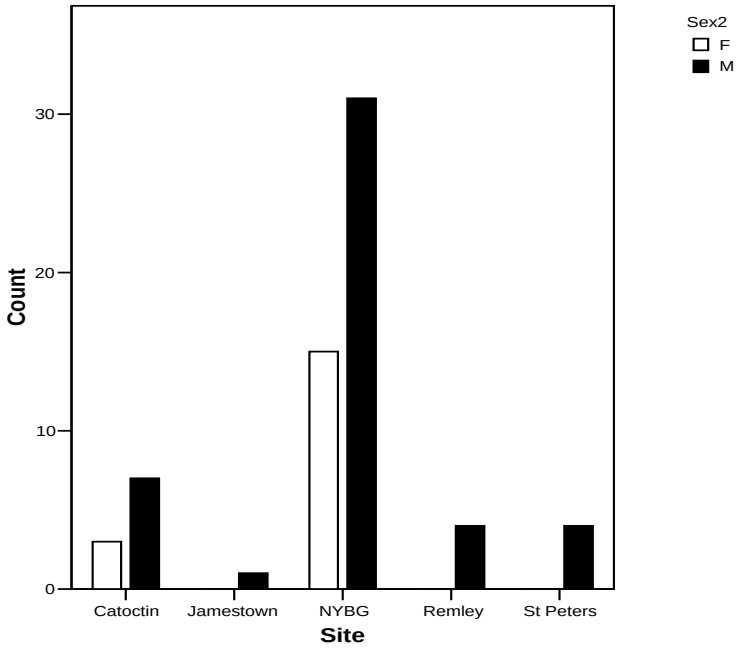

Figure 2 Sex of injured individual by site

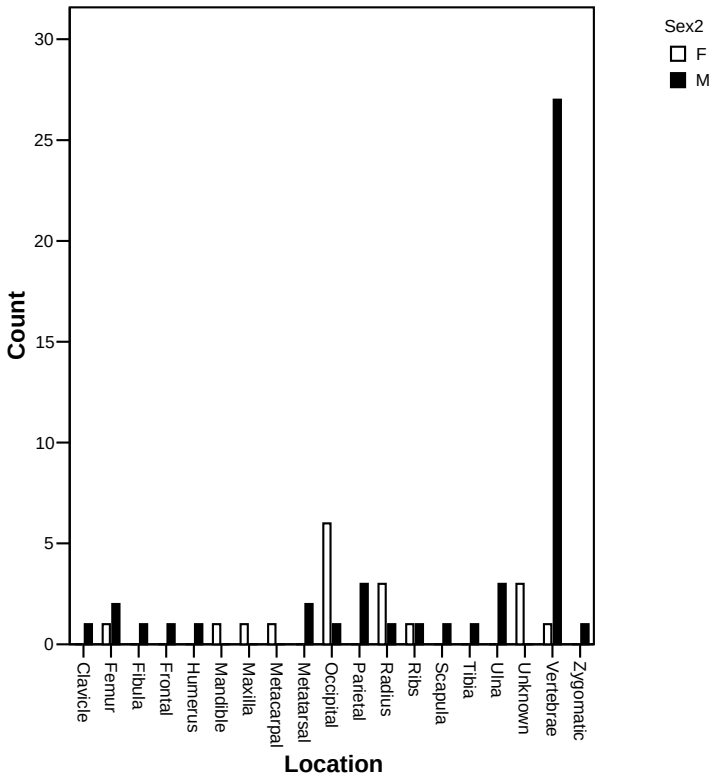

Figure 3 Sex of injured individual by location of injury

Free Sites

After Emancipation, African Americans virtually disappeared from the records. There are very few reports detailing life for African Americans between slavery and the Jim Crow period. One thing that has been documented in health literature is the demise of African American health during reconstruction and post reconstruction periods (Fontenot 1994).

One hundred and thirty five individuals were disinterred from the FABC Cemetery due to an accidental discovery during a construction project in Philadelphia. These individuals were identified as members of the First African Baptist Church used during

1823 to 1842. The remains consisted of 75 adults and 60 subadults. The remains were sent to Dr J. L. Angel of the Smithsonian Institution for skeletal analysis. The African American population in Philadelphia between 1820 and 1840 were predominately free. The skeletal material in the FABC cemetery was differentially affected by the subsequent use and conditions of the site over time. Because of this, the conditions of the skeletal remains vary. Of the one hundred and thirty five skeletal remains, 13 individuals exhibited a total of 21 traumatic injuries.

In 1982, seventy- nine individuals were disinterred from the Cedar Grove site, an African American cemetery, consisting of 104 individuals. The excavation was sponsored by the US Corps of Engineers who were sent in for a salvage excavation of the burials. This cemetery included both slaves and free men and women of both African ancestry and Native American ancestry. The mortuary pattern suggests that age and economic distinctions were made within the Cedar Grove Community. This assumption is based on the analysis of coffin hardware and the possession of personal goods. Paleopathological and demographic analysis report that at the turn of the century in rural Arkansas, African Americans sustained a poor quality of life. The Cedar Grove skeletal analysis supports the historical documentation indicating the presence of high morbidity and mortality rates and inadequate diets in the Cedar Grove community. Of the 79 individuals examined, 14 individuals exhibited signs of trauma with a total of 26 injuries found in the site.

In March 2003, while excavating for a new runway at the Memphis-Shelby County Airport, construction workers accidentally uncovered an unmarked grave. It soon became apparent that the existing runway covered an African American cemetery dating

from the late 1800s to early 1900s. The site became known as MSCA cemetery (40Sy619). With minimal delays to construction, Weaver & Associates worked to locate, record, and move 65 burials. The site was determined to be an old forgotten church cemetery. The individuals in this site, as well as most African American's in Memphis dating between 1899 and 1933 were predominately free. The remains were sent to the University of TN, Knoxville for skeletal analysis. Of the 65 individuals examined, 11 individuals exhibited trauma with a total of 19 injuries.

In 1983, in Memphis, TN a salvage archaeology project for a factory renovation uncovered 7 skeletons. Two adult males, three children, and two neonates were recovered. Even though the sample is small and unrepresentative of the community, there is a high rate of trauma and pathology. Of the seven individuals, one exhibited signs of trauma due to a violent encounter. A gunshot wound was found in the cranium of an adult male. While small and not representative, comparison to other historic African-American cemetery samples reveals a similar frequency interpersonal violence.

Table 4 presents the number and percent of traumatic injuries by bony element in the slave sites. Sixty-nine traumatic injuries were identified in forty African Americans in all four free sites.

The most frequently injured bones were the metacarpals (15.9%), and the ribs (13.0%) (Table 4, Figure 4). The next most frequent injuries to occur were in the radii (8.7%), and the fibula (8.7%) (Table 4, Figure 4). The mechanism of these injuries varied. Several injuries were documented as violent encounters, many were accidental, and a few were occupation related.

Table 4 Location of trauma in free sites

Bone	Frequency	Percent
Clavicle	2	2.9
Femur	4	5.8
Fibula	6	8.7
Frontal	5	7.2
Humerus	1	1.4
Mandible	1	1.4
Maxilla	1	1.4
Metacarpal	11	15.9
Metatarsal	4	5.8
Nasal	1	1.4
Parietal	1	1.4
Phalange (foot)	2	2.9
Phalange (hand)	1	1.4
Radius	6	8.7
Ribs	9	13.0
Talus	2	2.9
Tibia	3	4.3
Ulna	5	7.2
Unknown	2	2.9
Vertebrae	2	2.9
Total	69	100.0

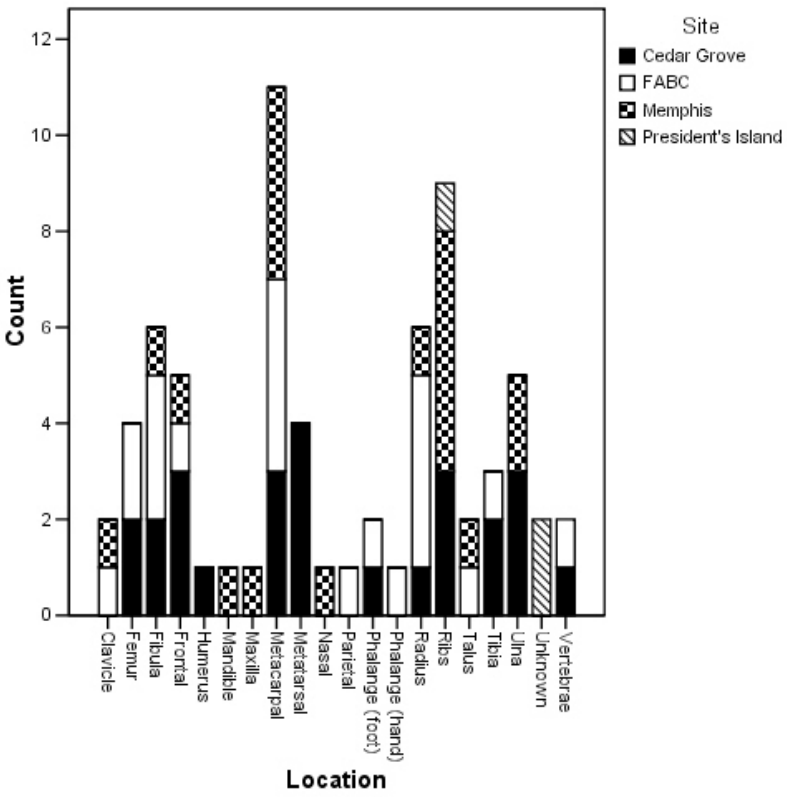

Figure 4 Location of injury by site

Similar to the slave sites, males dominated the number of injuries in the free sites (Figure 5). Unlike many of the slave sites, females were participants in traumatic encounters.

Many of the documented injuries were violent encounters (24.6%) followed by occupational related injuries (13.0%) (Table 5). This is significant because the mechanisms follow the same pattern as mechanism in the slave sites. In both slave and free sites, violence is the primary cause of injury.

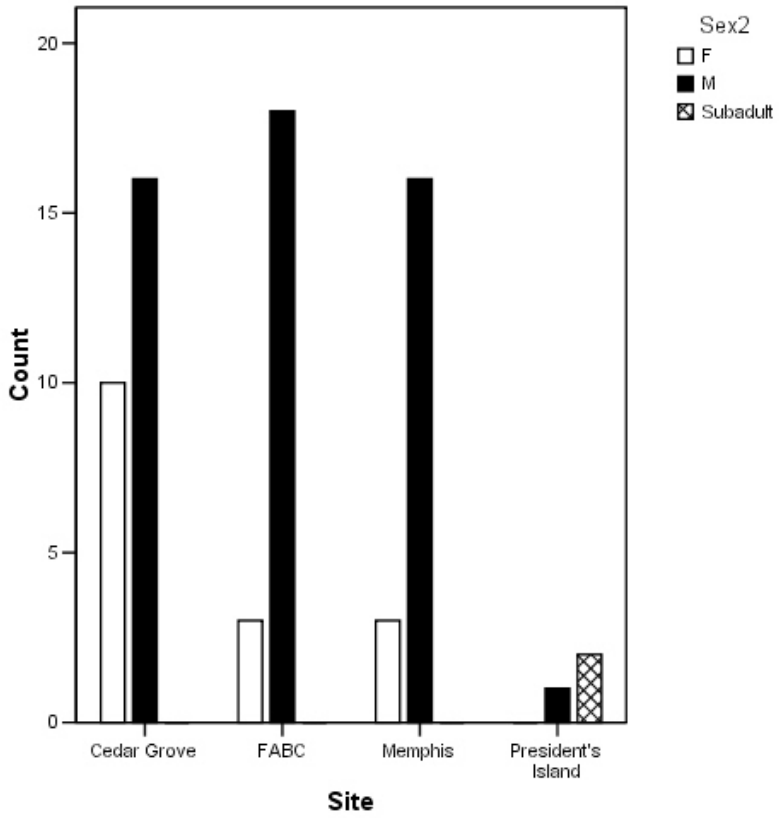

Figure 5 Sex of injured individual by site

Table 5 Location by mechanism in free sites

	Mechanism				Total
Bone		Accident	Occupation	Violence	
Clavicle	1	0	0	1	2
Femur	4	0	0	0	4
Fibula	6	0	0	0	6
Frontal	0	0	0	5	5
Humerus	0	0	0	1	1
Mandible	0	0	0	1	1
Maxilla	1	0	0	0	1
Metacarpal	7	0	2	2	11
Metatarsal	0	0	4	0	4
Nasal	0	0	0	1	1
Parietal	0	0	0	1	1
Phalange (foot)	0	0	2	0	2
Phalange (hand)	0	0	1	0	1
Radius	2	4	0	0	6
Ribs	6	0	0	3	9
Talus	2	0	0	0	2
Tibia	3	0	0	0	3
Ulna	3	1	0	1	5
Unknown	2	0	0	0	2
Vertebrae	1	0	0	1	2
Total	38	5	9	17	69

All Sites

Table 6 presents the number and percent of traumatic injuries by bony element in both slave and free sites. Table 6 also shows the rate in which traumatic injury was observed in each bone examined. The vertebrae had the highest percent of traumatic injuries, followed by the ribs and the radii. These rates were derived using only the bones present in the collection, rather than the total of theoretically possible observations. Thus, the fracture rate of 5.9% for trauma to the ulna was ascertained by dividing the total number of injured ulna (8) by the total number of traumatic injuries observed in the collections (134).

Table 7 shows the number of bony elements that exhibited traumatic injuries by slave and free sites. There was no individual bone or bones that exhibited trauma that was found in all of the sites (both slave and free). Table 8 shows the total number and percent of individuals exhibiting traumatic injury in each site. There are no significant differences in fracture frequency as determined by a Chi-Square test (chi-square= .273, df=1, p=.667) among the different culture groups; however, the sample sizes for some groups are small relative to the other groups and may not be a representative sample for the entire population.

In both slave and free sites, males exhibited more traumatic injuries than females (Table 9 and 10).

Males totaled 73.5% of the total fractures in all populations compared to females 26.5% of the total fractures in all sites (Table 11).

Table 6 Location of trauma from all sites
frequency by location

	Frequency	Percent
Clavicle	3	2.2
Femur	7	5.1
Fibula	7	5.1
Frontal	6	4.4
Humerus	2	1.5
Mandible	2	1.5
Maxilla	2	1.5
Metacarpal	12	8.8
Metatarsal	6	4.4
Nasal	1	.7
Occipital	7	5.1
Parietal	4	2.9
Phalange (foot)	2	1.5
Phalange (hand)	1	.7
Radius	10	7.4
Ribs	11	8.1
Scapula	1	.7
Talus	2	1.5
Tibia	4	2.9
Ulna	8	5.9
Unknown	5	3.7
Vertebrae	30	22
Zygomatic	1	.7
Total	134	100.0

Table 7 Injuries by bone and site

Bone Location	Catoctin	Cedar Grove	FABC	Jamestown	Memphis	NYBG	President's Island	Remley	St Peters
Clavicle	1	0	1	0	1	0	0	0	0
Femur	2	2	2	0	0	0	0	1	0
Fibula	0	2	3	0	1	1	0	0	0
Frontal	0	3	1	1	1	0	0	0	0
Humerus	1	1	0	0	0	0	0	0	0
Mandible	0	0	0	0	1	1	0	0	0
Maxilla	0	0	0	0	1	1	0	0	0
Metacarpal	1	3	4	0	4	0	0	0	0
Metatarsal	1	4	0	0	0	0	0	1	0
Nasal	0	0	0	0	1	0	0	0	0
Occipital	0	0	0	0	0	7	0	0	0
Parietal	1	0	1	0	0	0	0	0	2
Phalange(foot)	0	1	1	0	0	0	0	0	0
Phalange(hand)	0	0	1	0	0	0	0	0	0
Radius	1	1	4	0	1	3	0	0	0
Ribs	0	3	0	0	5	2	1	0	0
Scapula	0	0	0	0	0	1	0	0	0
Talus	0	0	1	0	1	0	0	0	0
Tibia	0	2	1	0	0	1	0	0	0
Ulna	1	3	0	0	2	0	0	0	2
Unknown	0	0	0	0	0	3	2	0	0
Vertebrae	1	1	1	0	0	26	0	1	0
Zygomatic	0	0	0	0	0	0	0	1	0
Total Fractures	10	26	21	1	19	46	3	4	4

Table 8 Percent of individuals with traumatic injuries in each site

Slave/Free	Site	Individuals with Fractures (n)	Total Individuals (N)	Percent % = (n/N)
Slave	Catoctin	6	31	19.4
Free	Cedar Grove	14	79	17.7
Free	FABC	13	140	9.3
Slave	Jamestown	1	5	20.0
Free	Memphis	10	65	15.4
Slave	NYBG	36	420	8.6
Free	President's Island	1	9	11.1
Slave	Remley	1	36	2.8
Slave	St Peters	2	29	6.9
Slave	Belleview	0	2	0

Table 9 Injuries by sex in slave sites

Table 9 Slave

Slave	Sex	
Site	F	M
Belleview	0	0
Cacotin	3	7
Jamestown	0	1
NYBG	15	31
Remley	0	4
St Peters	0	4

Table 10 Injuries by sex in free sites

Table 10 Free

Free	Sex	
Site	F	M
Cedar Grove	10	16
FABC	3	18
Memphis	3	16
President's Island	1	2

Table 11 Frequency of injuries by sex for all populations

	Number of injuries in injured individuals	Percent
F	35	26.2
M	99	73.8
Total	134	100.0

When the bones are considered separately, the occipital bone is the only bone that is injured significantly (Table 12) more often in the females then in males- 86% injury rate in females compared to 14% injury rate in males.

The harshness of existence for these different culture groups is reflected not only in the frequency of traumatic injuries, but also in the number of individuals with multiple traumatic injuries. In all, more than one fourth of all the individuals exhibiting traumatic injuries, 23 individuals, from the different sites show injury to more than one bone (26.7%), although in a few of these examples it can be noted that the multiple traumatic injuries were due to a single traumatic event.

Of the 134 traumatic injuries observed in all the populations, approximately 27 (19.9%) were violent incidences (Table 13). Twelve injuries (44.4%) were found in the slave sites and fifteen violent injuries (55.5%) were found in the free sites. This table only accounts for the injuries that were documented by the original researcher who analyzed the skeletal remains. Therefore, there could be more accidents, occupation-related injured or violent encounters in each population.

Table 14 summarizes the total number of traumatic injuries in both slave and free populations. There is a higher number of traumatic injuries in the free populations then the slave populations, however a higher number of slaves exhibit trauma then free persons. This indicates that of the free populations more individuals are prone to exhibit multiple traumatic events. Although slaves show a higher number of individuals exhibiting trauma it is very insignificant (53.5% compared to 46.5%) as demonstrated in table 14 and figure 6.

Table 12 Sex of injured individual by bony element

		Sex		Total
		Total injuries in Females	Total injuries in Males	
Location	Clavicle	0	3	3
	Femur	2	5	7
	Fibula	1	6	7
	Frontal	0	6	6
	Humerus	1	1	2
	Mandible	1	1	2
	Maxilla	1	1	2
	Metacarpal	2	10	12
	Metatarsal	1	5	6
	Nasal	0	1	1
	Occipital	6	1	7
	Parietal	1	3	4
	Phalange (foot)	0	2	2
	Phalange (hand)	0	1	1
	Radius	6	4	10
	Ribs	3	8	11
	Scapula	0	1	1
	Talus	0	2	2
	Tibia	1	3	4
	Ulna	3	5	8
	Unknown	4	1	5
	Vertebrae	2	28	30
	Zygomatic	0	1	1
Total		35	99	134

Table 13 Mechanism

	Frequency	Percent
Not documented	76	57.4
Accident	07	5.1
Occupation	24	17.6
Violence	27	19.9
Total	134	100.0

Table 14 Frequency of trauma in slave and free populations

	Total # of Injuries	Percent of Injuries	Total # of Individuals Exhibiting Trauma	Percent of Individuals
Free	69	51.5 (69/134)	40	46.5 (40/86)
Slave	65	48.5 (65/134)	46	53.5 (46/86)
Total	134	100	86	100

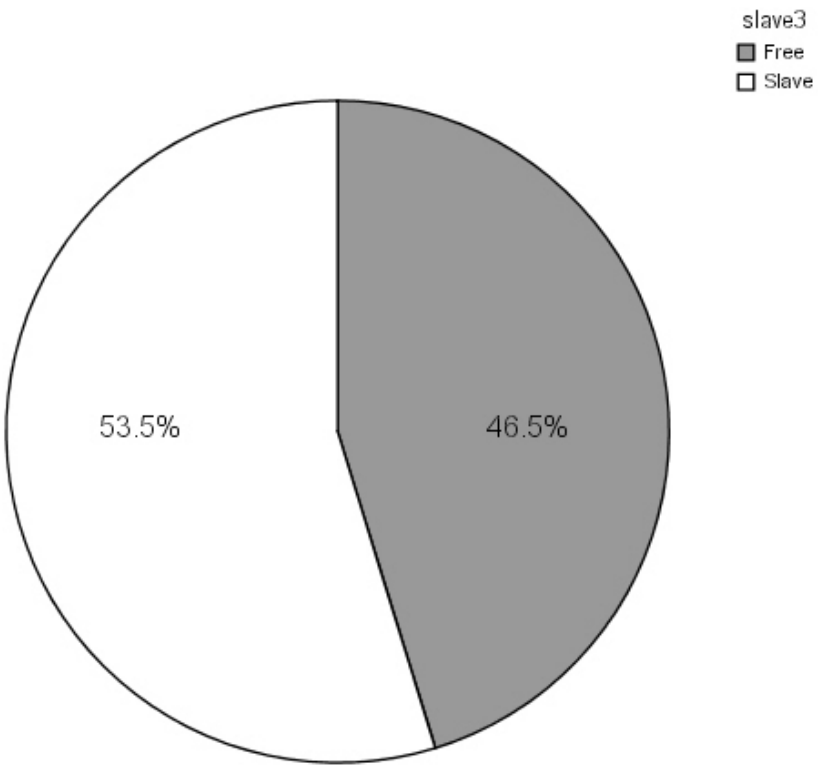

Figure 6 Frequency of trauma in slave and free populations

Of the 46 individuals (69.2%) who exhibited 65 injuries in the slave populations, Catoctin Furnace, Jamestown, New York Burial Ground, Remley Plantation and St Peters cemetery, the majority of these injuries were healed (Table 15) at the time of death. Only eight individuals (17.4%) did not show signs of healing with a total of 15 unhealed injuries (24.6%). Of the 16 peri mortem injuries, 10 were documented as having occurred from a violent encounter (66.7%).

The distribution of traumatic injuries through out the body in the slave populations varied (Table 16, Figure 7). Thirteen injuries (20%) occurred to the cranium in eleven individuals. The cranium is defined as consisting of the frontal, parietals, temporal, zygomatic, occipital, mandible and maxilla. Thirty-one injuries (47.7%) occurred in the trunk in twenty-five individuals. The trunk is defined as consisting of the ribs, scapula, clavicle, innominate and vertebra. Ten injuries (15.4%) occurred in the upper extremities in five individuals. The upper extremities are defined as consisting of the humerus, the radius, the ulna, and bones of the hand. Eight injuries (12.3%) occurred in the lower extremities in two individuals. The lower extremities are defined as consisting of the femur, tibia, fibula, and bones of the foot.

Table 15 Peri/ ante mortem

State

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ante	49	75.6	84.6	84.6
	Peri	16	24.6	15.4	100.0
	Total	65	100.0	100.0	

Table 16 Distribution of trauma in relation to body region in slave sites

	Frequency of total trauma	Percent	Number of individuals with injuries	Percent
Cranium	13	20.0	11	16.9
Lower	8	12.3	2	3.1
Trunk	31	47.7	25	38.5
Unknown	3	4.6	3	4.6
Upper	10	15.4	5	7.7
Total	65	100.0	46	100.0

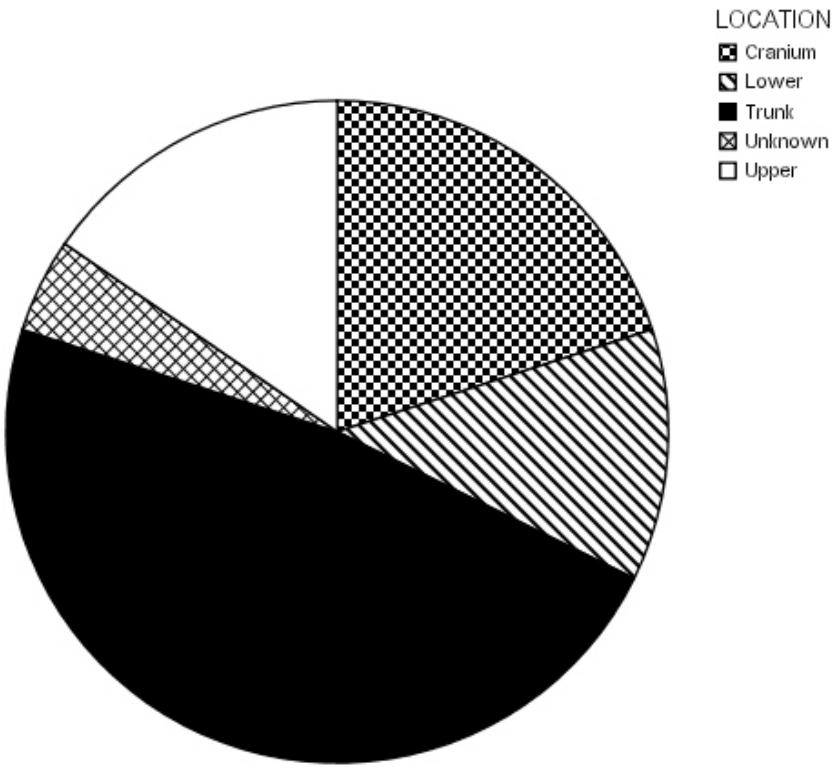

Figure 7 Distribution of trauma in relation to body region in slave sites

Chapter 6 Discussion

Slave Populations

Causes of Trauma

Violence appears to be the leading cause of trauma in slave populations, followed by occupation-related injuries (Table 17). Evidence suggests (Table 17) that trauma due to violent encounters occurred most frequently in southern plantation slave environments while occupation-relation injuries occurred most frequently in northern urban/industrial slave environments. Both plantation and non-plantation slaves had a low incidence of accidental trauma (i.e. falls).

While the New York Burial Ground showed the highest numbers of traumatic injuries due to violence, it actually has the lowest percentage of violent encounters (8.7%) (Table 18). Catoctin Furnace showed the next lowest percentage of violent encounters (10%), thereby hinting at the idea that violence occurred more frequently in southern plantation environments.

Social factors may have played a role in violence occurring more frequently in southern plantation slaves than in non-plantation slaves. One of these factors may include the region of the sites. All of the plantation sites occur in the southern United States, while the urban and industrial sites occur in the Northern United States (with the exception of St Peters, which exhibited a high rate of trauma due to violent encounters). It is well known that social and economical conditions in the south made slavery, Reconstruction, and post Reconstruction much harsher for slaves then in the north. These conditions included, but are not limited to white dependence on labor from the slaves, racism, oppression, and the invention of the cotton gin (Wood 1997).

Table 17 Mechanism in slave sites crosstabulation

	Frequency	Percent
Not Documented	36	55.4
Accident	2	3.1
Occupation	15	23.1
Violence	12	18.5
Total	65	100.0

Table 18 Mechanism by slave site crosstabulation

	Mechanism				Total Injuries
Site	Accident	Occupation	Violence	% violence	
Catoctin- Northern Industrial	1	1	1	10	10
Jamestown- Southern Plantation	0	0	1	100	1
NYBG- Northern Urban	1	16	4	8.7	46
Remley- Southern Plantation	0	0	1	25	4
St Peters- Southern Urban	0	0	4	100	4
Total	2	17	11		65

All Populations: Slave and Free

Of the 86 individuals who exhibited 134 injuries, the majority of these injuries were healed (Table 19) at the time of death. Only eleven individuals did not show signs of healing with a total of 16 fractures. The majority of these peri mortem fractures occurred in the cranium (10 injuries) and to the ribs (3 injuries). Of the 16-perimortem injuries, five were due to gunshots (31%).

The distribution of traumatic injuries in relation to body regions varied, but a definite pattern can be seen from the data (Table 20). Twenty-two injuries occurred to the cranium. Forty-three injuries occurred in the trunk. Thirty-three injuries occurred in the upper extremities. Twenty-nine injuries occurred in the lower extremities.

Table 19 Peri/ ante mortem (all sites)

		Frequency	Percent
Valid	Ante	118	87.9
	Peri	16	12.1
	Total	134	100.0

Table 20 Total number of injuries compared to region of body

		Frequency	Percent
Valid	Cranium	22	16.4
	Lower	29	21.6
	Trunk	44	32.8
	Unknown	5	3.7
	Upper	34	25.4
	Total	134	100.0

Trauma to the cranium

Seventeen individuals had trauma to the cranium (12.7%) (Table 21). While the cranium exhibited the least amount of overall injuries, it did exhibit the most injuries occurring at or around the time of death. The majority of the injuries occurred in the occipital region and can be attributed to being cranial base fractures, probably caused by heavy loads carried on individual's heads. The majority of these fractures were displayed in women, showing a division of labor in the African American communities.

Trauma to the upper extremities

Table 21 shows eighteen individuals exhibited injuries to their upper extremities (13.4%). The majority of these injuries occurred in the radius and were documented as being caused by falls (Colle's fractures).

Table 21 Total number of individuals exhibiting trauma compared to region of body

	Frequency	Percent
Cranium	17	12.7
Lower	12	9.0
Trunk	34	25.4
Unknown	3	3.7
Upper	18	13.4
Total	86	100.0

Theses falls can be attributed to either accidents or violence within the community.

Trauma to the lower extremities

The least amount of trauma was concentrated in the lower extremities. Table 21 shows twelve individuals exhibited injuries to their lower extremities (9%). The majority of these injuries occurred in the bones of the foot and were documented as crushing injuries occurring during occupational circumstances.

Trauma to the trunk

The majority of the overall trauma was concentrated in the trunk. Thirty-four individuals display injuries to their trunk (25.4%) (Table 21). The majority of injuries were found in the vertebrae followed by the ribs.

Trauma in slave vs. free communities

There is no significant difference in the number of injuries in free and slave communities (Table 22). 51.5 % of the injuries occurred in free populations, while the remaining 48.5% of the injuries occurred in the slave populations.

Table 22 Mechanism by population (slave and free) crosstabulation

Mechanism	Slave		Total
	Free	Slave	
Not Documented	40	36	76
Accident	5	2	7
Occupation	7	17	24
Violence	17	10	27
Total	69	65	134

Violence between the two groups occurred most frequently in the free populations with 24.6% (17/69) of the injuries being caused by violent encounters as documented by the original researcher. 15.4% (10/65) of injuries caused by violent interactions were displayed in the slave populations. The high percent of injuries due to violent encounters in free populations indicates the possibility that life for free African Americans did not become easier after Emancipation. Many free African Americans remained as workers on plantations and farms and continued similar roles carried out during slavery. The "master" and "slave" relationship nor the "black" and "white" relationship changed dramatically after the Civil War, making it easy to understand the high prevalence of violence in the free populations.

Causes of Trauma

Environmental and social factors have been suggested as variables affecting traumatic injury rates among slave and free populations. A number of the fractures in the slave population as well as the free populations may be due to social constraints (workload, violent encounters, survival) as well as the environment (average temperature, terrain, typical weather, etc.).

It is no secret that slaves and (Post) Reconstruction African Americans had strenuous workloads. Carrying heavy loads on top of heads accounts for many of the occipital fractures (cranial ring base fractures). Carrying loads on top of the head was primarily a female activity, which explains why 100% of the cranial base fractures observed were found in women.

Falls may account for a number of fractures of the radius. Of the nine fractured radii, six have been attributed to falls (Colle's fractures) (66.7%).

Violence also played a part in the African American experience. Of the four fractured ulnas found in the all the populations, three of them were reported to be Parry fractures (75%). These fractures are caused when an individual raises their arm in self-defense and receives a blow to the ulna. Of the eleven injuries to the skull, 6 were documented as blows to the head during a violent encounter (54.5%). And gunshot wounds account for 3.7% of all of the injuries. Overall, traumatic injuries from violent encounters accounts for 46.6% of the documented mechanisms of injury in both slave and free populations (see Table 18).

African American trauma vs. European American trauma

Overall, European American individuals exhibited a higher number of injuries (19%) then African American populations. A great majority of these injuries were accidental and a few were occupational related. There were no injuries reported that were due to violent encounters, compared to injuries due to violent encounters in the African American populations (20%).

Chapter 7 Conclusion

Studies of trauma distribution and frequency patterning in African American populations are essential for addressing questions about human adaptation to physical, environmental, and social constraints. All aspects should be considered when addressing possible causes of trauma, especially since the environment can have affects on social conditions.

Slave Sites

A pattern emerged when observing trauma in African slave populations. Violence appears to be the leading cause of trauma in slave populations with the highest incidence in southern plantation environments. Occupation-related injuries occurred most frequently in northern non-plantation slave environments such as urban and industrial environments (i.e. New York Burial Ground and Catoctin Furnace). One exception was the St Peters site. This site differed greatly from the other urban/industrial sites, in that the incidence of violence was high for slaves. Although St Peters was an urban site with a high incidence of trauma due to violent encounters, this site was located in the South (Louisiana) suggesting that southern slavery was harsher than northern slavery. Because of this, it could be assumed that the incidence of violence is greater in the southern sites compared to northern sites and not that violence is not necessarily based on urban/industrial environments versus plantation environments. Occupational-related injuries were greater in the New York Burial Ground and Catoctin Furnace sites. Based on the observation of violent encounters in southern sites, it could be assumed that occupational-related injuries occurred more frequently in the north with a low incidence

of violent encounters. Overall, this study suggests slaves in the south were more likely to be the victims of violent trauma than slaves working in the north.

Free Sites

The same pattern can be found in the free sites that occurred in the slave sites. Injuries due to violent encounters are more common in southern sites (Memphis, President's Island, and Cedar Grove) than in northern free sites (First African Baptist Church). Occupational related injuries were the next most frequent cause of injury in the free sites. Compared to the European American sites that did not exhibit any trauma due to violent encounters, this data supports the idea that life for African Americans in the south was harsher then that of northern African Americans. Unlike the slave sites, both males and females exhibited trauma. However, most of the documented injury mechanisms to females were due to violent encounters (31.3%), compared to occupation and accidents (both at 6.3%).

All Sites

Overall, males experienced a higher frequency of trauma (73.5%) compared to females (26.5%). A small group of individuals, 26.1% (23/88), experienced multiple injuries. Fractures occurred more often then muscle pulls or dislocations. Both males and females in both slave and free populations displayed a variety of healed fractures while displaying a low amount of fractures occurring at or around time of death. Some of these fractures may have been accidental, or due to occupation, while others may have been due to violent encounters. Whether males and females participated in similar forms

of violence or if females were subjected to violence directed at females by spouses or relatives is unknown.

There are no significant differences between the slave and free populations when considering traumatic injuries. Traumatic injuries occurred on average about the same rate. Males exhibited more trauma then females in both groups. In both groups, males also exhibited more traumatic injuries due to violent interaction, while females displayed more injuries due to workload. These injuries were primarily cranial base fractures experienced from carrying heavy loads on top of the head followed by injuries to the vertebrae caused by pushing or lifting heavy loads.

More work can be done to further this study. More trauma studies need to be done in African American populations. As more studies emerge, more comparisons can be made resulting in important questions being answered about the past. More African American skeletal series need to be made available or study. The lack of skeletal populations available for study makes it difficult to access information to answers questions about the past. Universal Research Methodologies for examining skeletal material need to be established. Because there are no universal research methods available for studying skeletal remains, studies such as this one are limited to the type of information obtained, making it difficult to understanding the nature and the extent of interpersonal violence with populations. It also makes it difficult to compare the results of these different studies. Finally, more effort should be made to consider the biological, environmental, and cultural stressors that affect populations studied. By doing so, researchers can consider the factors that may explain the occurrence (or lack of) trauma in African and African American populations.

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Vita

Christina Brooks was born on December 22, 1980 in Knoxville, TN. After graduating from Oak Ridge High School in Oak Ridge, TN in 1999, Christina was accepted on a full scholarship to Howard University in Washington, DC. While at Howard Christina took numerous anthropology courses and was fortunate enough to have gained valuable work experience anthropology and forensics that she developed a profound interest in physical anthropology with a concentration in forensics. Her love of physical anthropology and forensics led Christina to the University of Tennessee, Knoxville, where she received a fellowship for her education. Christina's love of physical anthropology and her interest in African American studies led her to Dr Murray Marks, whose interests are similar to hers. With his guidance, she pursued this thesis, which represents the culmination of her work at the University of Tennessee, Knoxville. She appreciates all of the opportunities she received while at the university.