H105 Mortality Structure and Age Estimation in Nigerian Populations

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The goal of this presentation is to analyze the morbidity and mortality structure of a modern Nigerian population to aid in the development of age estimation formula for the population. Further, population variation among Nigerian and American populations is discussed and the affects of nutritional disease and pathology on aging is explored.

This analysis reviewed the morphological changes of the pubic symphysis and sternal rib ends for more than 300 identified cases in Nigeria. This presentation will impact the forensic science community by presenting the outcome of a detailed analysis of the age at death distributions for males and females which will aid in the development of age estimation methods for West Africa and enable further study of human variation throughout the region.

The ability for authorities to identify unknown decedents in cases of homicide, human rights abuse, enforced disappearances, or extrajudicial executions is contingent in large part on a system for human identification that includes a protocol based on population specific standards. Nigeria's population is more than 150 million people, representing just over twenty-five percent of Africa's inhabitants. Nigeria also has a global population with a large number of international workers, refugees from neighboring countries, and migrant workers. The life expectancy for males and females are only 46 and 47 years, respectively. A high number of infectious diseases, deaths related to child birth, and a low prevalence of medical care contribute to the low life expectancy. Additionally, in the past several years, there have been over 10,000 extrajudicial killings of suspects, innocent civilians, multi- national oil workers, and politicians by the police, the military forces, vigilante groups, and armed militants in various parts of Nigeria. More recent sectarian violence has claimed more than 1000 lives in the past year.

Transitional justice initiatives in Nigeria are transforming the coroner laws which now require medico-legal death investigations. Currently, the College of Medicine at Lagos State University in Nigeria is one of the only forensic pathology programs in the country and performs about 3,000 autopsies each year. The facility also houses the Office of the Chief Medical Examiner for Lagos State. Basic biological information such as age and sex are the first parameters for establishing the identification process among unknown decedents. The assumption that one protocol is efficient across global populations is at times challenged because of both biological and social factors.

To study population variation and the applicability of applying American based aging methods to Nigerian populations, the mortality structure of the Nigerian population autopsied and contributing factors influencing this structure are investigated. Demographic data for n=2650 cases and biometric scores (n=300) for the pubic symphysis and fourth ribs, scored in the manners of Suchey-Brooks and Iscan and co- workers, were collected for identified individuals autopsied at the College of Medicine, Lagos State University in Nigeria. Additional comparative data for identified American males and females were collected for 2,078 pubic symphyses and 250 fourth ribs. American data comes from numerous American forensic and anatomical reference collections including The University of Tennessee Forensic Data Bank (FDB) and William M. Bass Donated Collection, Gilbert-McKern skeletal data, McKern-Stewart Korean War Dead data, Los Angeles County Medical Examiner's Office, and the Robert J. Terry Anatomical Skeletal Collection.

Hazard analysis is used to model mortality and survivorship among Nigerian and American samples. Age related changes of the pubic symphyses and sternal ribs are also compared for each population through an analysis of deviance calculated using an improvement chi- square to test for population variation. The outcome is a detailed analysis of the age at death distributions for males and females which will aid in the development of age estimation methods for Nigerian populations and enable further study of human variation throughout the region.

Age Estimation, Population Variation, Human Rights