A5 The Glenoid Cavity in Sex Estimation Among Contemporary Filipinos: Preservation and Accuracy Rates

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The goal of this presentation is to demonstrate the utility of the scapula in determining sex among contemporary Filipino skeletons and to highlight the importance of population-specific methods for biological profile estimation.

This presentation will impact the forensic science community by presenting a method that can be applied to an underresearched yet important population. This presentation will also further validate the reliability of the scapula as a means for sex estimation.

Methods of biological profile estimation from skeletal remains are known to be population specific. The degree of sexual dimorphism, rate of senescence, and formulas for stature differ from population to population. Furthermore, the different components of the biological profile often rely on each other. Knowing the sex, for example, further calibrates later estimates of age and stature. Research into Filipino skeletal variation has been relatively scarce owing to the until-recent absence of appropriate reference collections.[1] Such a paucity of methods for estimating the Filipino biological profile is unfortunate, given the country's large population sizes, widespread diaspora, frequent exposure to natural disasters, and rampant violence.

The glenoid cavity of the scapula has previously been used to estimate the sex of unknown individuals.[2] In this study, the effectiveness of the glenoid cavity in estimating sex among contemporary Filipino skeletons was evaluated using metric measurements of the glenoid height and breadth. The performance of these measurements was then tested using discriminant functions developed from Thai, Greek, and Mexican populations.[3-5] Discriminant analysis was also conducted on the Filipino sample. The rate of preservation of the glenoid cavity was further qualified in order to assess the utility of this feature in forensic contexts.

The state of preservation of glenoid cavities from 124 individuals housed at the Archaeological Studies Program, University of the Philippines Diliman were observed. More than 71%-75% of glenoid cavities examined by sex and side were fully intact or had marginal erosion that did not affect measurement, often even when there was significant postmortem damage to the scapular body. From this larger sample, 70 adult individuals (35 males and 35 females) were selected and measured by three different observers. Statistically significant differences between Filipino males and females were found using a paired *t*-test at an alpha level of 0.05 (t=-5.44, p=0.00). Using multivariate discriminant functions from Mexican and Greek populations, correct classification of females was 100% and of males was 8.6%. Using the Thai discriminant function yielded classification success of 34.3% for females and 100% for males. Filipino-specific linear discriminant analysis produced a cross-validated overall correct classification rate of 82.9% (F=80.0%; M=85.7%).

These results indicate that the glenoid cavity is a robust skeletal feature that resists degradation. Further research into this feature is warranted, given the probability of its preservation within forensic contexts. Additionally, the degree of sexual dimorphism of the glenoid cavity is highly variable between populations. The poor success of Filipino males using Mexican and Greek formulas speaks to relatively reduced sexual dimorphism within this population. The Thai formula yielded better classification for Filipino males but not females; however, the successful performance of the Filipino discriminant analysis confirms the utility of the glenoid cavity in sex estimation, but is heavily population specific.

Reference(s):

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