A117 Examining Differences in Presumed Migrants From Texas and Arizona Using Cranial and Dental Data

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Learning Overview: After attending this presentation, attendees will understand the variation in cranial morphoscopic and dental morphological traits in samples of presumed migrants from Texas and Arizona, as well as how this relates to potential differences in region of origin between the two samples.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by exploring the effect of geography on the expression of traits commonly used in the estimation of ancestry in a forensic context. Additionally, it will contribute to the understanding of skeletal variation in the migrant populations increasingly encountered in forensic casework.

Immigration to the United States from Mexico and other Latin American countries has increased over the past several decades.[1,2] As the result of immigration policies enacted in the 1990s, migrants have been forced to more dangerous routes into the country.[3,4] In particular, routes through the Sonoran Desert into Arizona and through south Texas have become increasingly well-traveled.[5-7] The higher volume of migrants on these inhospitable routes has led to an increased appearance of presumed migrant remains in the work of forensic anthropologists.[6,8] These anthropologists are then faced with the task of identifying the deceased.

The system of racial and ethnic classification typically employed in the United States classifies these migrant individuals under the umbrella term "Hispanic."[8,9] However, recent research suggests that migrants coming through the Arizona corridor are predominantly from northern and western Mexico, while those entering the United States through Texas originate in central and eastern Mexico and other Latin American countries.[5,7,10-12] Several studies have demonstrated craniometric differences between Mexican and "non-Mexican Hispanics", as well as genetic and craniometric differences between western and eastern Mexico.[7,13-16] It is unknown to what degree these differences affect other features used in ancestry estimation, such as cranial morphoscopic traits and dental morphology.

This project is based on a sample of presumed and known migrant deaths from both the Pima County Office of the Medical Examiner (PCOME) in Arizona and as part of Operation Identification (OpID) in Texas (n=238). Although many of these individuals have not been positively identified, their status as presumed migrant deaths is typically ascertained from the context of the recovery and the condition of the remains, as well as skeletal evidence of the biological profile.[5-8,17] Cranial morphoscopic traits and dental morphology were recorded following published standards.[18-22] Individual trait frequencies were examined for significant differences between the two samples using chi-square tests. Additionally, dichotomized dental morphology data were used to evaluate differences between the two samples using the Mean Measure of Divergence (MMD).

Nasal bone contour and zygomaticomaxillary suture shape are the only morphoscopic traits that are significantly different between groups. Individuals from OpID tend toward higher scores, between 3 and 4, for nasal bone contour, while those from the PCOME have more moderate scores for this trait. A score of 0 is more common among OpID individuals for zygomaticomaxillary suture shape, whereas individuals from the PCOME more frequently exhibit a score of 2 for this trait.

Of the individual dental traits examined, only premolar accessory cusps and the protostylid are significantly different between groups. When dichotomized, six dental morphological traits are significantly different between samples and used in the MMD analysis (premolar accessory cusps, hypocone, maxillary enamel extensions, cusp 6, and mandibular molar crenulations). Based on these traits, the MMD indicates that the two groups are significantly different. Several of the significantly different traits (e.g., protostylid, enamel extensions, cusp 6) are more common in Native American populations and are found at higher frequencies in the sample from OpID.[23] This may indicate that individuals in that sample have a greater contribution of Native American ancestry than those from PCOME.

Although the individuals represented by these two samples are jointly classified as "Hispanic" in the United States, there are differences between them in cranial morphoscopic trait frequencies and dental morphology. While these differences are of a smaller magnitude than is observed between other groups, the results support the reconsideration of utilizing an umbrella term for "Hispanics." Genetic and craniometric data have also found significant differences between similar samples as those used in this study, providing further evidence for applying regional classifiers to "Hispanic" populations.

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