

A80 Tracing Latinx Population History Through Odontometrics

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Learning Overview: After attending this presentation, attendees will better understand the utility of odontometric data to explore the population history of a modern Mexican Latinx sample.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating that odontometric data can augment the information gleaned from genetic, historical, and other skeletal data as it pertains to samples with complex population histories such as those of Latinx groups.

Latinx populations have been shaped through more than 500 years of genetic drift and gene flow events taking place since European colonization of the Americas. The genetic variation among the parental Native American, European American, and African American populations has led to phenotypic variation within modern Latinx populations that is minimally understood within a forensic anthropological context. Genetic studies of Latino populations within the United States show that they generally fall into either a dihybrid or trihybrid pattern of ancestral influence, with levels of parental ancestry varying regionally; regional genetic trends within the United States and Mexico are also known for Latinx populations.¹⁻⁴ Cranial studies have shown that the genetic variation within these populations is reflected phenotypically.⁵⁻⁸ The few dental morphological studies on Latinx variation have also demonstrated differences among these samples and those of their parental populations.⁹⁻¹¹ Odontometric studies examining Latinx variation, however, are scarce despite the moderate to high genetic control of tooth size.^{12,13} Given the rate at which people of Latinx descent are increasing within the United States, it is imperative that all available forensic anthropological methodologies be employed to understand the variation present within these populations.¹⁴ This preliminary study examines tooth size from pre- and post-contact, as well as forensically significant populations to explore how microevolutionary forces have affected Latinx dentition. The goals of this research are: (1) to examine the variation within and contributions to modern populations among Native American populations, historic European/American, African/American, Asian, and Latinx populations; and (2) to test whether a modern Mexican Latinx sample can be distinguished odontometrically from other modern populations.

Samples within this study include North, Central, and South Native American skeletal remains from the Tsunehiko Hanihara Dataset, individuals from the San Gregorio Atapulco site housed at the Escuela Nacional de Antropología e Historia (ENAH) in Mexico City, a New Mexico Native American sample from the Phoebe A. Hearst Museum of Anthropology; historic European, Sub-Saharan African, Asian, Chinese, Ainu, Aleutian, and “Eskimo” skeletal remains from the Hanihara Dataset, individuals from the Santa Paula cemetery housed at ENAH; historic European American and African American data from the Robert J. Terry Collection; modern European American individuals from the Texas State University Donated Skeletal Collection, Japanese individuals from Chiba University, and Mexican Latinx individuals housed at the Universidad Nacional Autónoma de México (UNAM) in Mexico City. Mesiodistal and buccolingual crown and cervical measurements were taken as the maximum dimensions of the tooth for each of those planes following the definitions of Moorrees and Reed and Hillson and colleagues.^{15,16} Following analyses for normality and sexual dimorphism, data were separated by sex. Measurements and data were narrowed to minimize missing data before imputation through *k*-nearest neighbor. Principal components analyses were utilized to reduce the imputed data; components with eigenvalues of 0.7 or higher were retained to capture more variation within the data.¹⁷ Multidimensional scaling was utilized to visualize Mahalanobis D^2 distances. Linear discriminant function analyses were run using odontometrics that met normality requirements and significantly differed among the modern samples in one-way analysis of variance tests with Tukey Honest Significant Differences corrections.

Results demonstrated similarities among the modern Latinx, historic Latinx, Native American, Asian/Asian-derived, and European/American samples for both the females and males. Modern female samples correctly classified with rates in excess of 54%, and male modern samples correctly classified with rates in excess of 60%. These preliminary results indicate that genetic drift and gene flow have shaped the tooth size of the Latinx samples under study, as anticipated by other forms of data but have also made them unique from other modern samples considered here. Additional research will seek to provide classificatory formulae for utilization by forensic practitioners.

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