F4 Dental Age Estimation in a Puerto Rican Population Using Demirjian's Method for Age Assessment

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After attending this presentation, attendees will have seen results and heard the explanation of research for dental age estimation on a Puerto Rican population aged 12 to 20 years.

This presentation will impact the forensic science community by adding data concerning age estimation in a racially varied population where this topic has not been researched before.

Age estimation is an important part in forensic science. It aids in the identification process if unknown remains are found by narrowing search parameters for possible victims, aids in providing age estimate information relating to illegal immigrants that come into the country without the proper identification documents, and helping the legal system determine if a person in question is considered a minor or not. It is also helpful in identifying the victims of mass fatality incidents that can occur anywhere in the world.

The island of Puerto Rico is located in the Caribbean and is a commonwealth of the United States of America. Puerto Ricans are a mixture of three different races: Spanish settlers, African slaves, and Taino Indians (the original inhabitants of the island), resulting in a vast variety of physical and anthropological characteristics. This mixture has yielded what Puerto Ricans usually identify as three different races: white, black, and "mulato" (the offspring of a white and black or Taino couple).

To date, few studies concerning age estimation in Hispanics have been completed in the United States.[1,2,3] "Hispanic" is a term that defines "a person of Mexican, Puerto Rican, Cuban, Central, South American or other Spanish culture or origin, regardless of race" (Directive 15: Race and Ethnic Standards for Federal Statistics and Administrative Reporting; May, 1977). As noted, the terms "Hispanic" or "Latino" do not refer to a race, and therefore, more population- specific studies are needed.

Regarding race, comparison studies have been done using Demirjian's age estimation method on different populations, and has been generally accepted among the scientific community. Some investigators have shown that this method is applicable to their population due to its high accuracy. Others have reported confirmed age overestimates or that the method has not been applicable.

For this study, panoramic radiographs from subjects aged 12 to 20 years old, all patients of the Pediatric Dentistry and Orthodontics Departments from the School of Dental Medicine in Puerto Rico were examined. This population consists mainly of subjects living in cities close to and in the island's capital, San Juan. The radiographic sample consists of approximately equal number of radiographs separated into male and female groups, and further divided into same age groups. Dental age from each subject was calculated by scoring teeth on the left mandibular quadrant according to Demirjian's stages. If any subject was missing a target tooth (except the third molars), the corresponding tooth on the right side was scored.

The age estimated from scoring the radiographs will be compared with the chronologic age of the subjects at the time the panoramic film was taken. This study investigates whether Demirjian's method provides accurate results that can be used for age estimation in the Puerto Rican population or if population-specific standards may be needed.

References:

1 Solari A, Abramovitch K, "The accuracy and precision of third molar development as an indicator of chronological age in Hispanics". *J Forensic Sci* vol. 47, no.3. (2002):531-535.

2 Kasper, K, et al, "Reliability of third molar development for age estimation in a Texas Hispanic population: a comparison study". *J Forensic Sci* vol. 54, no.3. (2009):651-656.

3 Demirjian A, and Goldstein H, "New systems for dental maturity based on seven and four teeth". *Annals of Human Biology* vol. 3, no. 5 (1976):411-421.

Age Estimation, Forensic Odontology, Puerto Rican Population

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