ADA CE Program **ARTICLE 1**

COVER STORY

The prevalence of caries and tooth loss among participants in the Hispanic Community Health Study/Study of Latinos

James D. Beck, PhD; Marston Youngblood Jr., MA, MPH; Jane C. Atkinson, DDS; Sally Mauriello, RDH, EdD; Linda M. Kaste, DDS, MS, PhD; Victor M. Badner, DMD, MPH; Shirley Beaver, RDH, PhD; Karen Becerra, DDS; Richard Singer, DMD, MS

Significant, persistent disparities in oral health have been noted in many health surveys conducted in the United States.[1-6] Disparities at all ages are most pronounced in selected minority groups with low education and income. In the most recent surveys of adults, non-Hispanic and non-Latino white participants had a lower prevalence of untreated tooth decay than did non-Hispanic and non-Latino African Americans and Mexicans who participated in the survey.[6] However, some measures of oral health are better in Hispanic and Latino groups than in other groups. Mexicans had lower rates of edentulism than did white and black non-Hispanic and non-Latino participants.[5] The reasons for this difference, which is most pronounced in those older than 60 years who did not live in areas with community water fluoridation as children, have not been explained. It does suggest, however, that early-life factors such as country of origin can influence a U.S. immigrant's adult oral health status and

ABSTRACT

Background. The Hispanic and Latino population is projected to increase from 16.7 percent to 30.0 percent by 2050. Previous U.S. national surveys had minimal representation of Hispanic and Latino participants other than Mexicans, despite evidence suggesting that Hispanic or Latino country of origin and degree of acculturation influence health outcomes in this population. In this article, the authors describe the prevalence and mean number of cavitated, decayed and filled surfaces, missing teeth and edentulism among Hispanics and Latinos of different national origins.

Methods. Investigators in the Hispanic Community Health Study/Study of Latinos (HCHS/SOL)—a multicenter epidemiologic study funded by the National Heart, Lung, and Blood Institute with funds transferred from six other institutes, including the National Institute of Dental and Craniofacial Research—conducted in-person examinations and interviews with more than 16,000 participants aged 18 to 74 years in four U.S. cities between March 2008 and June 2011. The investigators identified missing, filled and decayed teeth according to a modified version of methods used in the National Health and Nutrition Examination Survey. The authors computed prevalence estimates (weighted percentages), weighted means and standard errors for measures.

Results. The prevalence of decayed surfaces ranged from 20.2 percent to 35.5 percent, depending on Hispanic or Latino background, whereas the prevalence of decayed and filled surfaces ranged from 82.7 percent to 87.0 percent, indicating substantial amounts of dental treatment. The prevalence of missing teeth ranged from 49.8 percent to 63.8 percent and differed according to Hispanic or Latino background. Significant differences in the mean number of decayed surfaces, decayed or filled surfaces and missing teeth according to Hispanic and Latino background existed within each of the age groups and between women and men.

Conclusions. Oral health status differs according to Hispanic or Latino background, even with adjustment for age, sex and other characteristics.

Practical Implications. These data indicate that Hispanics and Latinos in the United States receive restorative dental treatment and that practitioners should consider the association between Hispanic or Latino origin and oral health status. This could mean that dental practices in areas dominated by patients from a single Hispanic or Latino background can anticipate a practice based on a specific pattern of treatment needs.

Key Words. Hispanic; Latino; caries; tooth loss.
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that risk factors affecting the oral health of Hispanic and Latino subgroups likely are multifaceted.

One large limitation of several previous health surveys is the minimal representation by Hispanic and Latino participants not identifying as Mexican.[6-8] The Hispanic and Latino population is the most rapidly growing segment of the U.S. population, projected to increase from 16.7 percent to 30 percent of the U.S. population by 2050.[9-11] Evidence suggests that Hispanics' and Latinos' country of origin and degree of acculturation influence their health outcomes. For example, individual cardiovascular risk factors vary considerably according to country of origin and to the number of years a person lives in the United States.[12]

After recognizing the complexities of the health status in U.S. Hispanic and Latino communities, the National Heart, Lung and Blood Institute—in partnership with the National Center on Minority Health and Health Disparities, the National Institute on Deafness and Other Communication Disorders, the National Institute of Dental and Craniofacial Research, the National Institute of Diabetes and Digestive and Kidney Diseases, the National Institute of Neurological Disorders and Stroke, and the National Institutes of Health Office of Dietary Supplements—initiated the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) in 2006.[13] According to the design of this prospective study, investigators were to interview and examine 16,000 people who were aged 18 to 74 years, who self-identified as Hispanic or Latino, and who were from four communities in the United States (approximately 4,000 participants per center). The study encompassed several facets of health such as cardiovascular disease, stroke, asthma, chronic obstructive lung disease, sleep disorders, hearing impairment and tinnitus, diabetes, kidney and liver disease, cognitive impairment, dental caries and periodontal disease. Study investigators selected the communities because they had a strong community structure and stable Hispanic and Latino populations with residents of Mexican, Cuban, Puerto Rican, Dominican, Central American and South American origin.[13]

Because all Americans, including those in minority populations, are retaining teeth throughout their lives, it is important to examine a much larger, older, more diverse segment of the U.S. Hispanic and Latino population. Investigators in many previous surveys have focused on the oral health status of U.S. Hispanic and Latino children. In addition to describing the oral health status of adult Hispanic and Latino subgroups with greater accuracy, the data from this study provide a better assessment of the oral health needs of Hispanic and Latino people living in the United States. This information should help communities target their dental public health programs to those with greatest need.

All of this article's authors were involved in the HCHS/SOL in some manner—planning, specifying data to be collected and indexes to be used, training examiners and recorders, evaluating how well the examiners' technique was calibrated each year of the study, supervising the examiners in data collection and actually collecting data. In this article, we provide results from the caries portion of the oral examination. Specifically, we describe the prevalence and mean number of decayed and filled surfaces, missing teeth and dentate status for evaluated Hispanic and Latino subgroups according to age group and sex. We will describe indexes of periodontal health of this cohort in other articles.

METHODS

Statement of ethics. The institutional review boards of all participating institutions approved this study, and all procedures followed were in accordance with respective institutional guidelines. Participants provided written informed consent to participate.

Study population and recruitment. Investigators in the HCHS/SOL conducted comprehensive in-person examinations and interviews and collected biological samples from 16,000 participants aged 18 to 74 years in four U.S. cities—Bronx, N.Y.; Chicago; Miami; and San Diego—between March 2008 and June 2011. Study investigators chose each field center according to the place of origin of its Hispanic and Latino residents and geographical distribution[14] on the basis of the results from the 2005-2007 American Community Survey.[15]

The study sample is a two-stage area household probability design composed of three waves of recruitment corresponding to a random probability sample of the target areas in each city. The investigators oversampled older adults (aged 45-74 years) at a higher rate than younger adults (aged 18-44 years) at a ratio of approximately 0.625:0.375, which is the reverse of the age distribution in the U.S. population.[14] Study personnel at the statistical coordinating center adjusted the sample weights for nonresponse (at both the household and person levels), trimmed them to truncate extreme outliers so that a few participants would not have undue influence, and calibrated them by means of a proportional standardized adjustment to the U.S. 2010 census overall areas from which investigators in the four HCHS/SOL centers screened household participants. The methods used to create the sample weights for the study make the collective group of randomly selected participants at any given center resemble more closely the composition of the census tracts in which participants live. The probability sample for HCHS/SOL enables inferences to census tracts in the four communities chosen for a diversity of Hispanic and Latino backgrounds rather than to the