BRIEF COMMUNICATION

Dental visits among adult Hispanics – BRFSS 1999 and 2006

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Introduction

Ethnic and racial minority population groups, such as Hispanics, are less likely to use dental services yet bear a disproportionate burden of oral disease and disability (1-3). For example, Hispanic adults are more likely to experience untreated dental decay and periodontal disease and less likely to use dental services compared with non-Hispanic whites (1,3). The 2000 Surgeon General's Report on Oral Health in America states the majority of oral diseases and conditions are still more prevalent in certain subpopulations such as Hispanics (4). The last report of dental visits among Hispanic adults and children in the United States comparing National Health Interview Survey data for 1987 through 1999 reported some increase in utilization of dental services during that period, although the level was still below the national average (3). The Behavioral Risk Factor Surveillance System (BRFSS)

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Abstract

Objectives: This study examined and compared utilization of dental services by adult US Hispanics 18 years and older in the years 1999 and 2006.

Methods: Dental utilization data collected by telephone interviews by the statebased Behavioral Risk Factor Surveillance System (BRFSS) were analyzed.

Results: In 2006, the state mean and median prevalence of adult Hispanics with dental visits during the past year were 56.2 percent and 62.1 percent, respectively, and had not changed significantly since 1999. In 40 states, utilization was well below the national prevalence of 70.3 percent. Frequency of dental visits was significantly higher among females and those with higher income (>\$50,000), higher education, nonsmokers, and persons having medical health insurance.

Conclusions: Findings from this study suggest that barriers to utilization of dental services among Hispanic adults exist in most states and may contribute to existing oral health disparities. The magnitude of this problem may increase in the future with the expansion of the US Hispanic population.

is a state-based telephone survey of major health risk behaviors, use of preventive health practices, and access to health care. BRFSS is conducted among a representative, random sample of all non-institutionalized adults 18 years and older living in the United States and its territories (5). Recently, it was reported from analyses of BRFSS 2008 data that onethird of the population without medical insurance was Hispanic and that Hispanics were over four times more likely to be uninsured than non-Hispanic whites (6).

The purpose of this study was to present and compare utilization rates – by state and by various demographic and behavioral factors – for dental visits by Hispanic adults in 1999 and 2006 via analyzing BRFSS data sets. The aim was to assess whether any change in Hispanics' dental care utilization rates had occurred between both years.

Methods

In both BRFSS surveys, 1 of 3 oral health-related questions asked of all participants was: "How long has it been since you

last visited a dentist or a dental clinic for any reason?" Responses were categorized by respondents as: 1-12 months, 1-2 years, 2-5 years, more than 5 years, and never. Individuals who responded "1-12 months" were regarded as having been to the dentist in the last year, and the remaining categories were collapsed for the purpose of analysis. In both years, Hispanics were identified as persons who reported Spanish or Hispanic heritage. In 1999 and 2006, totals of 13,372 and 19,520 Hispanics responded to the surveys, but approximately 3 percent and 1 percent, respectively, provided no information on the dental visits. To allow direct comparison among states (Table 1), all state estimates were agestandardized to the 2000 US adult population (7). However, actual non-standardized sample sizes were used in all calculations pertaining to examining predictors of dental visits (Table 2). Multivariable logistic analyses were conducted and odds ratios (OR) were reported along with their 95% confidence intervals (CI). Statistically significant differences in utilization rates between 1999 and 2006 were assessed by there being no overlap in the 95% CI when comparing the 2 years. The statistical software package SAS-callable SUDAAN (Version 9.1, SAS Insitute, Inc. Cary, NC) was used to analyze these BRFSS data while accounting for the complex sampling design. In the 1999 and 2006 BRFSS, the median cooperation rates were 56.7 percent and 74.5 percent, and Council of American Survey Research Organization (CASRO) rates were 56.2 percent and 51.4 percent, respectively.

Results

Table 1 displays the age-standardized findings by state in 1999 and 2006. In 2006, mean prevalence of Hispanic adults with dental visits during the preceding year for all states was 56.2 percent (95% CI = 54.6-57.7) and the median 62.1 percent with a range from 40.7 percent in Arkansas to 78.6 percent in West Virginia. Seven years earlier, the corresponding mean among all states and Puerto Rico was 58.4 percent (95% CI = 56.8-60.1) and the median 62.2 percent with a range from 44.6 percent in Ohio to 78.4 percent in Nebraska. Significant increases from 1999 to 2006 in dental care utilization among Hispanics were seen only in West Virginia (+33.0 percent) and Ohio (+24.7 percent), and significant decreases in North Carolina (-26.1 percent), Nebraska (-22.3 percent), Illinois (-18.9 percent), and Washington State (-16 percent).

The actual (unadjusted) numbers of respondents in the different categories are displayed in the first column of Table 2, followed by the percentages of respondents in the various groups in the next two columns, illustrating the distributions of respondents regarding the demographic factors age, sex, marital status, education, annual household income, smoking, and medical insurance coverage. For instance, 54.4 percent of those lacking dental visits the last year were men, and 44.1 percent had not completed high school level educa-

tion. The rightmost four columns display the ORs with their corresponding 95% CI, namely crude ORs and ORs adjusted for all remaining variables in the table, respectively. People with annual household incomes of less than \$25,000 were only about one-third as likely to have seen a dentist the last year as those living in households with incomes of \$50,000 or more. People with medical insurance coverage were 2.8 times more likely to have had a dental visit the last year than those without such insurance.

Discussion

Overall, the BRFSS estimate in 2006 for Hispanic adults having had dental visits in the preceding 12-month period had not changed significantly from 1999. The 2006 median for dental visits among Hispanic adults for all states was still well below the median of 70.3 percent for dental visits in the preceding year for the total US population (5). Only seven states had higher prevalence among Hispanics than this national median. Also, prevalence in Hispanic dental visits had not changed significantly during the 7-year period from 1999 to 2006 in most states, with the exception of increases in two states and decreases in four states.

About half of Hispanics without a dental visit the last 12 months had medical health insurance. It is common for individuals with medical insurance not to have dental insurance, as American adults are more likely to have medical insurance than dental insurance. However, the likelihood of obtaining a dental visit is not only influenced by having medical or dental health insurance coverage (8) and by the type of service sought/needed (preventive, restorative, or urgent/emergency dental services) but could also be related to having access to dental services. Whereas this descriptive study was not designed to further explore potential reasons for lack of utilization of dental care services among US Hispanics, a workshop was convened in 2004 by the Hispanic Dental Association and the University of Puerto Rico School of Dentistry to discuss oral health care among Hispanics. The workshop participants recommended further studies being conducted to examine the current state of Hispanic-focused oral health research and to identify and understand factors that may influence oral health status and dental care utilization among this population group (9).

The findings of this study are subject to several *limitations*. First, this study did not stratify Hispanic populations by ethnic subgroups, and therefore does not reflect possible differences in their cultural, behavioral, and social characteristics relevant to healthcare attitude and behavior. Second, the BRFSS sample was drawn from the non-institutionalized population, which excludes Hispanic populations not residing in households. Third, the survey excluded persons without residential telephone services, such as the illegal migrant population and populations with very low incomes,

 Table 1
 Proportion of US Hispanic Adults Having Had at Least One Dental Visit in the Preceding 12 Months in 1999 and 2006 by State/Territory – Behavioral Risk Factor Surveillance System (BRFSS)

| | 1999 | | | | 2006 | | | | Changelin |
|----------------------|-----------------------------|------|------------|------------------------|----------------|--------------|------------|------------------------|---------------------------------|
| State/territory | Sample size (<i>n</i>) | %* | SE† | 95% Cl‡ (%) | Sample Size | % | SE | 95% CI (%) | estimates from 1999 to 2006§ |
| Alabama | 40 | 71 3 | 6.8 | 57 9-84 6 | 59 | 64 5 | 6.8 | 51 1-77 8 | -6.7 |
| Alaska | 71 | 62.3 | 73 | 47 9-76 7 | 75 | 70.9 | 63 | 58 4-83 3 | 8.5 |
| Arizona | 304 | 48.4 | 4.0 | 40 5-56 3 | 1 073 | 54.7 | 3.1 | 48 6-60 9 | 63 |
| Arkansas | 69 | 50.4 | 6.8 | 37 1-63 8 | 172 | 40.7 | 4 1 | 32 6-48 7 | -9.7 |
| California | 1 049 | 57.4 | 19 | 53 5-61 2 | 1 320 | 55 1 | 1.8 | 51 6-58 6 | -2.2 |
| Colorado | 339 | 47.9 | 3.4 | 41 1-54 7 | 734 | 52.5 | 2.1 | 48 3-56 6 | 4.6 |
| Connecticut | 305 | 60.3 | 4.0 | 52 4-68 2 | 692 | 66.2 | 2.1 | 61 5-70 9 | 5.9 |
| Delaware | 78 | 62.3 | 6.5 | 49 5-75 1 | 87 | 61.0 | 6.5 | 48 2-73 8 | _1 2 |
| District of Columbia | /0 | 74.0 | 5.0 | 6/ 2-83 9 | 1/1/ | 65.7 | 12 | 57 3-74 1 | _83 |
| Florida | 702 | 61.0 | 2.0 | 56 6-65 5 | 1357 | 59.1 | 17 | 55 6-62 5 | _1 9 |
| Georgia | 55 | 70.6 | 63 | 58 1-83 1 | 120 | 66.3 | 1.7 | 58 1-74 5 | _1.5 _1.3 |
| Намаіі | 215 | 74.8 | 3.8 | 67 3-82 3 | 105 | 62.9 | 33 | 56 3-69 5 | _11 9 |
| Idaho | 215 | 58.0 | 5.8 | 50.2-67.5 | 42J 205 | 18 / | 2.2 | 10 8 55 0 | 10.5 |
| Illinois | 121 | 71 7 | 4.4 5.4 | 61 0.82 / | 295 | 40.4 52.8 | 3.0 | 40.8-55.5 | -10.5 18 0 |
| Indiana | 52 | 60.2 | 7.0 | 46 4-74 0 | 227 | 51 7 | 10 | 43.0-39.7 | -10.5 |
| | 55 | 66.9 | 7.0 | 40.4-74.0 E1 0 70 0 | 121 | 51.7 | 4.0 E 2 | 45.7-59.0 | -0.5 |
| lowd | 196 | 62.1 | 0.1 | 54.0-70.0 E2.0.71.2 | 151 | 50.2 | D.Z | 45.9-00.4 47 E E E | -70.0 |
| Kantucku | 100 | 67.0 | 4.0 | 55.0-71.Z | 410 | 55.0 | 2.0 6.7 | 47.5-56.5 | -9.1 E 1 |
| Kentucky | 07 ح | 67.8 | 0.Z | 55.0-80.0 | 59 | 62.7 | 0.7 | 49.5-75.9 | -5.1 |
| Louisiana | /3 | 69.3 | 5.5 | 58.9-79.7 | 210 | 00.8 | 3.8 0.1 | 59.3-74.2 | -2.5 |
| Maine | 42 | 62.5 | 7.3 | 48.0-77.0 | 28 | 74.2 | 8.1 | 58.3-90.1 | 11.7 |
| Maryland | 122 | 67.5 | 5.9 | 55.8-79.2 | 185 | /1.9 | 3.9 | 64.2-79.5 | 4.3 |
| Massachusetts | 426 | 65.8 | 3.4 | 59.1-72.5 | 1181 | 63.5 | 2.3 | 58.9-68.0 | -2.3 |
| Michigan | /3 | /6./ | 5.0 | 66.9-86.5 | 110 | /5.4 | 4.1 | 67.3-83.5 | -1.2 |
| Minnesota | 123 | /6.3 | 3.8 | 68.7-83.9 | /2 | //.0 | 5.1 | 66.9-87.1 | 0.7 |
| Mississippi | 43 | 55.5 | 7.7 | 40.3-70.8 | 88 | 61.6 | 5.6 | 50.5-72.8 | 6.1 |
| Missouri | 92 | 46.1 | 6.1 | 34.0-58.2 | 94 | 40.7 | 6.7 | 27.5-53.9 | -5.3 |
| Montana | 42 | 52.5 | 9.0 | 34.7-70.3 | 109 | 56.0 | 5.7 | 44.8-67.2 | 3.5 |
| Nebraska | 90 | 78.4 | 4.5 | 69.4-87.4 | 348 | 56.1 | 3.7 | 48.8-63.4 | -22.3 |
| Nevada | 251 | 51.9 | 4.6 | 42.8-61.0 | 482 | 53.8 | 3.1 | 47.7-60.0 | 1.9 |
| New Hampshire | 41 | 48.2 | 7.0 | 34.3-62.0 | 55 | 64.6 | 6.5 | 51.7-77.4 | 16.4 |
| New Jersey | 299 | 59.9 | 3.6 | 52.8-67.0 | 1,248 | 61.5 | 1.8 | 57.8-65.1 | 1.5 |
| New Mexico | 1,289 | 56.9 | 1.5 | 53.9-60.0 | 2,160 | 56.7 | 1.4 | 54.0-59.5 | -0.2 |
| New York | 318 | 65.7 | 3.5 | 58.8-72.5 | 488 | 61.3 | 2.6 | 56.2-66.5 | -4.3 |
| North Carolina | 56 | 71.3 | 6.9 | 57.6-85.0 | 800 | 45.2 | 2.6 | 40.1-50.4 | -26.1 |
| North Dakota | 22 | 58.9 | 11.7 | 35.8-82.0 | 53 | 76.2 | 6.6 | 63.2-89.3 | 17.3 |
| Ohio | 30 | 44.6 | 4.8 | 35.2-54.0 | 128 | 69.3 | 5.2 | 59.0-79.7 | 24.7 |
| Oklahoma | 119 | 59.8 | 6.1 | 47.8-71.8 | 344 | 49.7 | 3.4 | 43.0-56.5 | -10.1 |
| Oregon | 108 | 55.3 | 5.8 | 43.8-66.8 | 203 | 57.2 | 4.1 | 49.0-65.4 | 1.9 |
| Pennsylvania | 74 | 74.6 | 5.9 | 62.9-83.6 | 252 | 74.6 | 4.3 | 66.0-83.2 | 0.1 |
| Rhode Island | 235 | 67.7 | 4.0 | 59.8-75.5 | 342 | 65.0 | 3.1 | 58.8-71.2 | -2.6 |
| South Carolina | 92 | 55.9 | 6.6 | 42.9-68.9 | 176 | 59.0 | 4.4 | 50.2-67.8 | 3.1 |
| South Dakota | 61 | 59.6 | 5.9 | 48.0-71.2 | 65 | 73.1 | 5.4 | 62.5-83.7 | 13.5 |
| Tennessee | 44 | 52.8 | 6.8 | 39.5-66.2 | 56 | 66.5 | 7.3 | 52.1-80.8 | 13.6 |
| Texas | 1,188 | 45.0 | 2.0 | 41.0-48.9 | 1,649 | 49.7 | 1.9 | 45.9-53.6 | 4.7 |
| Utah | 159 | 62.9 | 5.0 | 53.0-72.7 | 375 | 54.2 | 3.5 | 47.2-61.3 | -8.6 |
| Vermont | 52 | 70.8 | 6.7 | 57.6-84.1 | 89 | 67.1 | 5.3 | 56.6-77.5 | -3.7 |
| Virginia | 117 | 71.1 | 5.2 | 60.8-81.5 | 152 | 68.7 | 4.4 | 60.1-77.3 | -2.4 |
| Washington | 169 | 70.4 | 4.0 | 62.3-78.4 | 1.315 | 54.3 | 1.9 | 50.5-58.2 | -16.1 |
| West Virginia | 42 | 45.6 | 7.7 | 30,5-60.8 | 41 | 78.6 | 5.9 | 67.0-90.2 | 33.0 |
| Wisconsin | 45 | 72 1 | 77 | 56.9-87 2 | 82 | 65.6 | 6.8 | 52.1-79.0 | -6.4 |
| Wyoming | 134 | 61.8 | 45 | 52 8-70 8 | 241 | 62.5 | 35 | 55 5-69 4 | 0.6 |
| Puerto Rico | 2 877 | 68.7 | 0.9 | 66 7-70 6 | 4 546 | 70.7 | 0.8 | 69 2-72 3 | 2.0 |
| Total | 12 939 | 58.4 | 0.8 | 56 8-60 1 | 25 530 | 56.2 | 0.7 | 54 6-57 7 | -2.2 |
| Median | .2,000 | 62.2 | 0.0 | 50.0 00.1 | 20,000 | 62.1 | 0.7 | 5 5 | |

Interpret cell sample sizes with n < 40 with caution.

* Age-standardized to the 2000 US standard adult population (8).

† SE, standard error.

‡ 95% CI, 95% confidence interval.

§ Bold figures represent significant changes from 1999 to 2006; regular font figures are increases, and italicized figures with a preceding minus indicate decreases.

 Table 2
 Associations of US Hispanic Adults by Dental Visits During the Last 12 Months and Selected Demographic Characteristics for All of Which the Multivariable Logistic Analyses were Controlled – BRFSS 2006

| | | With | Without | | | | |
|---|-----------|------------|------------|------------------|---------|------------------|----------|
| | Sample | dental | dental | Crude OR | | Adjusted‡ | |
| | size (n*) | visits (%) | visits (%) | (95% CI†) | P-value | OR (95% CI) | P-value§ |
| Age group (<i>n</i> = 19,391) | | | | | | | |
| 18-24 | 1,891 | 19.2 | 21.2 | 0.99 (0.88-1.11) | 0.86 | 0.94 (0.68-1.38) | 0.26 |
| 25-34 | 4,420 | 25.4 | 28.3 | 0.98 (0.88-1.10) | 0.72 | 0.88 (0.66-1.16) | |
| 35-44 | 4,530 | 23.1 | 20.1 | 1.26 (1.12-1.41) | <0.001 | 1.10 (0.83-1.45) | |
| 45-64 | 5,987 | 24.4 | 21.9 | 1.22 (1.09-1.36) | <0.001 | 1.00 (0.77-1.30) | |
| 65+ | 2,563 | 7.9 | 8.7 | Referent group | | | |
| Sex $(n = 19,520)$ | | | | | | | |
| Male | 7,231 | 46.8 | 54.4 | 0.74 (0.70-0.78) | <0.001 | 0.75 (0.65-0.87) | <0.001¶ |
| Female | 12,289 | 53.2 | 45.6 | Referent group | | | |
| Marital status ($n = 19,447$) | | | | | | | |
| Married | 10,217 | 56.4 | 50.6 | 1.72 (1.56-1.89) | <0.001 | 1.15 (0.88-1.52) | 0.65 |
| Divorced | 2,359 | 7.1 | 6.6 | 0.56 (0.55-0.58) | <0.001 | 1.13 (0.81-1.56) | |
| Widowed | 1,342 | 3.2 | 3.8 | 1.27 (1.06-1.51) | 0.007 | 0.89 (0.59-1.34) | |
| Separated | 1,069 | 4.0 | 5.5 | 1.12 (0.96-1.31) | 0.15 | 1.09 (0.71-1.69) | |
| Never married | 3,068 | 21.2 | 20.9 | 1.57 (1.41-1.74) | <0.001 | 1.15 (0.83-1.58) | |
| Unmarried couple | 1,392 | 8.2 | 12.6 | Referent group | | | |
| Education $(n = 19,416)$ | | | | | | | |
| Less than high school | 6,160 | 26.4 | 44.1 | 0.37 (0.35-0.40) | <0.001 | 0.62 (0.49-0.80) | <0.001¶ |
| High school | 5,832 | 29.5 | 28.5 | 0.64 (0.60-0.69) | <0.001 | 0.81 (0.64-1.02) | |
| More than high school | 7,424 | 44.1 | 27.4 | Referent group | | | |
| Annual household income ($n = 16,531$) | | | | | | | |
| <\$15,000 | 3,510 | 19.0 | 28.5 | 0.29 (0.26-0.32) | <0.001 | 0.44 (0.33-0.57) | <0.001¶ |
| ≥\$15,000 to <\$25,000 | 4,725 | 24.8 | 33.7 | 0.32 (0.29-0.35) | <0.001 | 0.47 (0.37-0.59) | |
| ≥\$25,000 to <\$35,000 | 2,424 | 14.2 | 15.0 | 0.41 (0.37-0.46) | <0.001 | 0.57 (0.44-0.75) | |
| ≥\$35,000 to <\$50,000 | 2,108 | 13.4 | 10.4 | 0.56 (0.51-0.63) | <0.001 | 0.63 (0.50-0.81) | |
| ≥\$50,000 | 3,764 | 28.5 | 12.4 | Referent group | | | |
| Smoking status ($n = 19,422$) | | | | | | | |
| Current (everyday) | 2,122 | 7.9 | 10.0 | 0.74 (0.67-0.82) | <0.001 | 0.54 (0.66-1.08) | 0.32 |
| Current (some days) | 1,327 | 7.1 | 8.6 | 0.77 (0.69-0.86) | <0.001 | 0.91 (0.67-1.24) | |
| Former smoker | 3,731 | 16.9 | 17.3 | 0.92 (0.85-0.99) | <0.001 | 0.86 (0.71-1.04) | |
| Never smoker | 12,242 | 68.2 | 64.1 | Referent group | | | |
| Medical health insurance ($n = 19,434$) | | | | | | | |
| Yes | 13,284 | 74.6 | 51.5 | 2.77 (2.61-2.95) | <0.001 | 2.12 (1.79-2.51) | <0.001¶ |
| No | 6,150 | 25.4 | 48.5 | Referent group | | | |

* Actual sample size, not age-standardized.

† 95% CI = 95% confidence interval.

‡ Adjusted for all other variables displayed in Table 2.

§ "¶" Indicate significant changes from 1999 to 2006.

OR, odds ratio.

or those residing in households exclusively using cellular phones. Fourth, the accuracy of participant self-report of dental visit in the last 12 months was not validated against dental records, so responses may be subject to recall bias or the tendency to give socially desirable responses during interviews. Finally, the BRFSS consists of a one-time interview without any follow-up and is thus dependent on self-report without verification of any responses. Consequently, estimates from this report cannot be compared directly with the Healthy People 2010 objective (10) because that was set to baseline data from the 1996 Medical Expenditure Panel Survey, which queries study participants several times during the year and may confirm self-reported care services utilization with bills or records.

In conclusion, the results from this study support existing evidence of oral health disparities to suggest a need for initiatives to reduce barriers to dental care utilization among Hispanic adults in the United States. Provision of dental services for Hispanics presents a major public health issue that will increase in the future, as 133 million Hispanics are projected to encompass 30 percent of the US population by the year 2050 (11) versus 45 million (15 percent) in 2006 (12). In light of the mounting evidence for associations between oral and general health, it is more important than ever before to provide dental services to the rapidly growing US subpopulation of Hispanic ethnicity to attain good health.

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