Dental care access and unmet dental care needs among U.S. workers

The National Health Interview Survey, 1997 to 2003

Alberto J. Caban-Martinez, MPH; David J. Lee, PhD; Lora E. Fleming, MD, PhD; Kristopher L. Arheart, EdD; William G. LeBlanc, PhD; Katherine Chung-Bridges, MD, MPH; Sharon Christ, MS; Terry Pitman, BA

Millions of Americans suffer from periodontal diseases and other oral health conditions, and more than 17 million Americans (including 10 million Americans 65 years or older) have lost all of their teeth.[1] The impact of poor oral health can have a profound effect on quality of life.[2-4] In his 2000 report on oral health, the U.S. surgeon general acknowledged the significant disparities in the oral health of Americans.[2] The oral health care objectives of Healthy People 2010 indicate a need to increase the proportion of adults who use the oral health care system annually.[1] Given the dependence of the U.S. population on employer-provided medical and dental care, it is important to evaluate by occupation the access to dental care and the extent of unmet dental care needs of U.S. workers and their families. Therefore, we undertook such an evaluation using

ABSTRACT

Background. Healthy People 2010 oral health objectives call for an increase in the proportion of adults who use the oral health care system annually. To assess progress toward this goal, the authors evaluated dental care utilization and the extent of unmet dental care needs of U.S. workers and their families.

Methods. The authors conducted sex-specific analyses by occupation of 135,004 U.S. worker participants in the nationally representative National Health Interview Surveys (NHIS) conducted from 1997 to 2003.

Results. The reported lack of oral health care within the preceding year ranged from 18.9 to 57.8 percent among male workers and from 17.6 to 50.0 percent among female workers. Sex-specific occupational groups with the highest rates of reported unmet dental care needs included male health service occupations (17.1 percent) and female construction and extractive trade workers (26.8 percent).

Conclusion. There are significant oral health care underutilization and high rates of unmet dental care needs among many U.S. worker groups. Strategies to increase regular dental visits for U.S. worker groups reporting low dental care access and high dental need are paramount.

Clinical Implications. Targeting strategic dental care access programs to identified U.S. worker groups reporting dental care access deficits can improve oral health.

Key Words. Oral health; surveillance; occupation; dental care access; unmet dental care need.

JADA 2007;138(2):227-30.

Mr. Caban-Martinez is a research associate in the Department of Epidemiology & Public Health, Miller School of Medicine, University of Miami; an osteopathic medical student/OPP fellow, College of Osteopathic Medicine, Nova Southeastern University, Fort Lauderdale, Fla.; and a doctoral epidemiology student, Stempel School of Public Health, Florida International University, Miami.

Dr. Lee is an associate professor, Department of Epidemiology & Public Health, Miller School of Medicine, University of Miami, 1801 N.W. 9th Ave., Highland Professional Building, Room 208-B, Miami, Fla. 33136, e-mail "dlee@med.miami.edu". Address reprint requests to Dr. Lee.

Dr. Fleming is a professor, Department of Epidemiology & Public Health, Miller School of Medicine, University of Miami.

Dr. Arheart is an associate professor, Department of Epidemiology & Public Health, Miller School of Medicine, University of Miami.

Dr. LeBlanc is a consultant, Department of Epidemiology & Public Health, Miller School of Medicine, University of Miami.

Dr. Chung-Bridges is an assistant professor, Departments of Epidemiology & Public Health and Family Medicine, Miller School of Medicine, University of Miami.

Ms. Christ is a consultant, Department of Epidemiology & Public Health, Miller School of Medicine, University of Miami, and a doctoral sociology student, Department of Sociology, University of North Carolina at Chapel Hill.

Mr. Pitman is a consultant, Department of Epidemiology & Public Health, Miller School of Medicine, University of Miami.

TABLE

Access to dental care and unmet dental care needs among U.S. workers with greatest unmet dental care needs: pooled data from the 1997–2003 National Health Interview Survey (NHIS).*

WORKERS' OCCUPATION, BY SEX	ESTIMATED NO. OF U.S. PEOPLE IN THE OCCUPATION	NO. OF PEOPLE IN NHIS SAMPLE IN THE OCCUPATION	DENTAL CARE DATA FOR NHIS SAMPLE (%)		
			Had a Dental Visit More Than One Year Ago†	Never Had Had a Dental Visit†	Had Unmet Dental Care Needs†
Female					
Private household occupations	629,011	864	48.9	1.5	17.1
Protective service occupations‡	258,249	313	40.0	0.0	18.2
Food service	3,155,358	3,627	44.3	1.6	19.8
Construction and extractive trades	154,020	167	37.7	1.2	26.8
Construction labor	23,874	32	50.0	0.0	24.2
Male					
Writing, art, entertainment, sports	1,202,309	1,264	35.4	0.7	12.4
Food service	2,170,707	2,162	51.1	4.0	14.8
Health service	257,423	283	45.2	1.8	17.1
Forestry and fishing occupations	142,152	135	57.8	1.5	13.8
Construction labor	971,231	1,049	57.8	6.8	12.4

* Source: Fowler.[5]
† These prevalence measures are calculated from the NHIS data and weighted to provide national dental care access and unmet dental care need estimates.
‡ Other than law enforcement and firefighting.

nationally representative data of the U.S. work force.

SUBJECTS AND METHODS

The National Health Interview Survey (NHIS) is an annual, continuous, multipurpose and multistage area probability cross-sectional survey of the U.S. civilian noninstitutionalized population living at addressed dwellings conducted by the National Center for Health Statistics (NCHS).[5] For our study, we drew data from interviews conducted between 1997 and 2003 with 135,004 adults, 18 years and older. Survey response rates ranged from 70 to 80 percent (as described by Caban and colleagues[6]).

The NHIS collects employment information on all subjects 18 years or older who reported working (paid and unpaid) during the week before the NHIS survey (see Caban and colleagues[6]). The NHIS does not permit classification of workers into part- and full-time status. Forty-one standardized occupational codes derived from more detailed U.S. Census occupational codes were tabulated from the NHIS database from 1997 to 2003.

Subjects were asked, "About how long has it been since you last saw or talked to a dentist? Include all types of dentists such as orthodontists, oral surgeons, and all other dental specialists as well as dental hygienists." The possible responses were "Never," "Six months or less," "More than six months, but not more than one year ago," "More than one year, but not more than two years ago," "More than two years, but not more than five years ago" and "More than five years ago." For our study, we combined three categories of subjects—those who responded "More than one year, but not more than two years ago," "More than two years, but not more than five years ago" and "More than five years ago"—into one variable labeled "Had a dental visit more than one year ago." We classified subjects who responded "Never" into a variable labeled "Never had had a dental visit." Subjects also were asked, "During the past 12 months, was there any time when you needed dental care (including check-ups) but didn't get it because you couldn't afford it?" We tabulated these responses for all workers and for 41 occupational subcategories; some of the results appear in the table. **(Editor's note:** Readers may

ABBREVIATION KEY. NCHS: National Center for Health Statistics. **NHIS:** National Health Interview Survey.

access a more complete form of the table via the "Supplemental Data" link in the online version of this article on the JADA Web site ["http://jada.ada.org"].)

We used the statistical software SUDAAN to apply appropriate weights and adjustments for the complex sampling scheme.[7,8] The dental care access and unmet dental care need measures we calculated from NHIS data are weighted to provide national estimates. We assigned the sample adult weights (final annual) according to NHIS methodology (as described by Caban and colleagues[6]). We used SAS statistical software[9] to compute a regression of dental care access and unmet dental care need prevalence by year weighted by the inverse of the standard error of the prevalence.[6] Because there were data for only seven observation years for each regression, the 0.10 probability level determined statistical significance. We did not include in the analyses any prevalence based on fewer than 25 observations in a particular year.[10]

RESULTS

Among the 66,616 male and 68,388 female NHIS worker subjects (representing 68,293,862 and 58,676,455 U.S. workers, respectively), male workers were more likely to report having had no dental visit within the previous 12 months than were female workers (38.5 percent versus 29.6 percent, respectively). The percentage of subjects who had received no oral health care in the preceding 12 months ranged from 18.9 to 57.8 percent (male workers) and 17.6 to 50.0 percent (female workers) (as seen in the complete version of the table available via the "Supplemental Data" link in the online version of this article at "http://jada.ada.org"). Occupations in which the majority of male workers had not seen a dentist in the preceding 12 months included forestry and fishing occupations and construction labor (57.8 percent), farm and other agricultural work (55.2 percent), food service (51.1 percent) and freight and stock material handling (50.4 percent). One-half of the female construction laborers reported having had no dental visit in the preceding 12 months.

The overall percentage of male and female workers who reported never having visited a dentist was 1.8 percent and 0.6 percent, respectively. However, nearly 10 percent of male and 3.6 percent of female farm workers reported never having seen a dentist.

Even though male workers were less likely than their female counterparts to report having seen a dentist in the preceding 12 months, the average report of unmet dental care needs was higher in female than in male workers (11.5 versus 8.0 percent). Among male workers, those in health and food service (17.1 and 14.8 percent, respectively) reported the highest rate of unmet dental care needs (Table). The female workers with high rates of unmet dental care needs included those in construction and extractive trades (26.8 percent), construction labor (24.2 percent) and food service (19.8 percent) (Table).

In the seven-year period from 1997 to 2003, we noted no statistically significant trends in annual dental care access or unmet dental care needs of U.S. worker subgroups classified by sex, race and ethnicity.

DISCUSSION

The NHIS is designed to be representative of the U.S. population, including the worker population. As such, it is particularly well-suited for the surveillance and identification of worker groups that may have suboptimal access to dental health care.

We should note some study limitations, including that the NHIS did not assess whether subjects were covered under a dental insurance plan, a factor that would have helped to explain the variations noted across the 41 occupational categories (as seen in the complete version of the table available via the "Supplemental Data" link in the online version of this article at "http://jada.ada.org"). For example, it is well-documented that people lacking health insurance are less likely to have a regular source of care, are less likely to receive preventive services and are more likely to delay seeking needed medical care than are insured people. Uninsured people also are less likely to access needed dental care than are their insured counterparts.[11] Fear of the dentist, long waiting times for dental appointments, transportation difficulties, language barriers and lack of available facilities have been identified as barriers to dental care.[12] In addition, using a one-week reference period before the NHIS interview to characterize occupational status also might have led to misclassification of participants with respect to their usual occupation. However, studies by the same investigators have shown a high concordance with current and previously held jobs among the NHIS participants.[13]

According to the U.S. Bureau of Labor Statistics, the poverty rate for employed people 16 years and older was 5.6 percent in 2004.[14] The highest poverty rates were found in those employed in service occupations (11.2 percent) and those employed in farming, fishing and forestry occupations (14.6 percent). In our analysis, these same occupational groups typically had the lowest oral health care utilization rates and the highest rates of unmet dental care needs among U.S. workers.

In March 2004, the American Dental Association published a series of policy briefs highlighting specific innovative programs that states had established to address key barriers associated with dental care access within the Medicaid program.[15] These policy briefs indicated that increasing access through collaborative partnerships (such as with dental professionals, local government agency personnel, administrative and professional staff at hospitals, community health and recreation centers, and caregivers) and using incentives for states to adopt Medicaid models that mirror programs with which dental providers work in the private sector (as well as improving Medicaid program administration) would vastly improve the fulfillment of unmet dental care needs in this country. They concluded that implementation would capitalize on the inherent strengths of the American dental care system, making it possible for all Americans—regardless of their financial, geographic, physical or other special circumstances—to receive optimal oral health care.[16]

Therefore, the results provided in the table could be used to identify worker groups that should be targeted specifically for the delivery of dental case management programs that use Medicaid funds to capitalize on oral disease management (for example, for construction laborers, forestry, fishing and farm and food service workers). Because they are work site–based, these programs also could be used to provide education and reduce anxiety surrounding preventive dental visits, leading to greater compliance with oral health screening that is crucial for the prevention of oral diseases for vulnerable U.S. worker groups and their families.

CONCLUSION

The dental community should be sensitive to patients' occupations as a marker for limited dental care access and unmet dental care needs. Steps to meeting Healthy People 2010 goals in the oral health care domain require the deployment of innovative approaches to the provision of oral health care services. Federal and state funding should be earmarked for the development of oral health care services targeting worker groups (and their families) reporting the highest levels of unmet dental care needs and significant barriers to receiving dental care. ■

The study described in this article was funded in part through the National Institute of Occupational Safety and Health (grant R01 OH03915).

This article is based in part on a poster presented at the 134th American Public Health Association Annual Meeting, Nov. 4-8, 2006, Boston.

The data used in this article were made available in part by the Inter-University Consortium for Political and Social Research, University of Michigan Institute for Social Research, Ann Arbor. Data for the National Health Interview Survey were collected and prepared by the U.S. Department of Health and Human Services and the National Center for Health Statistics. Neither the collector of the original data nor the Consortium bears any responsibility for the analyses or interpretations presented in this publication.

1. U.S. Department of Health and Human Services. Healthy people 2010: Understanding and improving health. 2nd ed. Washington: U.S. Department of Health and Human Services; 2000.
2. Evans CA, Kleinman DV. The surgeon general's report on America's oral health: opportunities for the dental profession. JADA 2000;131(12):1721-8.
3. Nitschke I, Muller F. The impact of oral health on the quality of life in the elderly. Oral Health Prev Dent 2004;2(supplement 1):271-5.
4. Siriphant P, Drury TF. Healthy practices, social relationships and dental perceptions among US dentate adults. J Public Health Dent 2005;65(1):36-42.
5. Fowler FJ. The redesign of the National Health Interview Survey. Public Health Rep 1996;111(6):508-11.
6. Caban AJ, Lee DJ, Fleming LE, Gomez-Marin O, LeBlanc W, Pitman T. Obesity in US workers: the National Health Interview Survey, 1986 to 2002. Am J Public Health 2005;95(9):1614-22.
7. Botman SL, Jack SS. Combining National Health Interview Survey datasets: issues and approaches. Stat Med 1995;14(5-7):669-77.
8. Research Triangle Institute. Software for survey data analysis (SUDAAN) release 8.0.0. Research Triangle Park, N.C.: Research Triangle Institute; 2001.
9. SAS Institute. SAS version 9.1.3. Cary, N.C.: SAS Institute; 2004.
10. Adams PF, Hendershot GE, Marano MA. Current estimates from the National Health Interview Survey, 1996. Vital Health Stat 10 1999 Oct(200):1-203.
11. Yu S, Bellamy H, Kogan M, Dunbar J, Schwalberg R, Schuster M. Factors that influence receipt of recommended preventive pediatric health and dental care. Pediatrics 2005;110(6):e73.
12. Entwistle N. Occupational health services for dental practices. Br Dent J 2002;193(11):608.
13. Gomez-Marin O, Fleming LE, Caban A, Leblanc WG, Lee DJ, Pitman T. Longest held job in U.S. occupational groups: the National Health Interview Survey. J Occup Environ Med 2005;47(1):79-90.
14. U.S. Department of Labor, U.S. Bureau of Labor Statistics. A profile of the working poor, 2004. U.S. Department of Labor, U.S. Bureau of Labor Statistics report 994. Available at: "www.bls.gov/cps/cpswp2004.pdf". Accessed July 29, 2006.
15. American Dental Association. State and community models for improving access to dental care for the underserved: A white paper by the American Dental Association, October 2004. Chicago: American Dental Association. Available at: "www.ada.org/prof/resources/topics/access.asp#white". Accessed Nov. 20, 2006.
16. U.S. General Accounting Office. Oral health: Dental disease is a chronic problem among low-income populations, April 2000. GAO/HEHS-00-72. Available at: "www.gao.gov/new.items/he00072.pdf". Accessed Nov. 20, 2006.