The New York State Minority Health Survey: Determinants of Oral Health Care Utilization

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Abstract

Objectives: To determine the factors associated with visits to a dentist and more specifically the role of dental insurance coverage and to explore the reasons for not visiting a dentist among minorities in New York State. Methods: The Minority Health Survey was a one-time, statewide, random digit-dialed telephone survey. We drew a directed acyclic graph (DAG) of the potential determinants of oral health care utilization for our population of interest and modeled the independent variables as determinants of oral health care utilization. The data for this study were analyzed in SUDAAN using appropriate weights and variance adjustments that accounted for the complex sampling design. Hence, this report is generalizable to the New York State adult "minority" population. Results: About 63 percent respondents had visited a dentist in the past one year. Having dental insurance (adjusted odds ratio [adj OR]=2.5), having more than high school education (adj OR=1.9), being younger (adj OR=2.3 for 18-25 years vs age 40 years or older), being married (adj OR=1.7), being dentate (adj OR=0.3 for edentulousness), and having higher income (adj OR=0.5 for middle vs high income) were significantly associated with having visited a dentist in the past year. Cost and awareness-related factors were the most common reasons for not visiting a dentist. Most of the year 2000 oral health objectives measurable in this survey were not met. Conclusion: Increasing dental insurance coverage and increasing awareness about oral health care would be the two biggest factors in meeting the goals of year 2010. [J Public Health Dent 2003;63(3):158-65]

Key Words: minority health, dental care utilization, dental insurance, New York State, logistic regression.

Health care-seeking behavior may be modified by cultural practices. The need to evaluate the risk factors separately among racial/ethnic minorities came from the realization that minorities were not adequately represented in the Behavioral Risk Factor Surveillance System (BRFSS) (1) and that there probably were different attributes of their health status (2-7). For a state such as New York, where there are sizable numbers of nonwhites often referred to as "minorities" (8,9), it is imperative to gain adequate knowledge of their health-related behaviors to devise effective programs.

Previous research with ethnic minorities in the United States has shown that culture, age, language, and economic limitations are barriers to obtaining dental care (10). A telephone survey among Hispanics revealed low health care utilization because of economic and behavioral barriers. Hayward et al. (11) concluded that poor ethnic minorities and those with less education continued to have much lower rates of dental care utilization than the general population. Persons with low SES characteristics were more likely to report tooth pain and to endure their pain without the benefit of dental care (12). Tomar et al. (13) reported substantial variation in the use of dental services among California's adults and suggested expanded dental insurance coverage as serious efforts in oral health promotion to

achieve equity in access. Other studies have shown similar findings (14-20).

Dental service utilization may be a function of many factors (21-24). People's patterns of dental service utilization may be similar to those of other chronic illnesses (21) and intrinsic motivation may account for dental health behavior (22). This concept was strengthened by the finding that the more educated the participants were, the fewer barriers they had in relation to the appreciation of oral health and of usefulness of daily brushing (23).

Inequities in dental health have remained over the decades. It is possible that the minorities in the US, many of whom are first or second generation immigrants, may have distinct behavioral attributes (25,26). In recent years immigration to the United States has increased (9), mostly in major financial centers such as New York. Discrepancies in dental utilization analysis also can occur as a result of variable confounding (27). Therefore, it is important to have a clear understanding of attributes of oral health of the minority population so that appropriate policies can be made to deliver optimal oral health care.

The BRFSS is designed to provide information on behaviors and risk factors for chronic and infectious diseases and other health conditions among the population surveyed. Because of concerns regarding the small number of minorities in the BRFSS, the New York State Department of Health conducted the Minority Health Survey (MHS) as a one-time survey in 1997 to collect information on health-related risk factors among a diverse group that included Hispanics, African Americans (blacks), Asians, American Indians, Latinos, and various other ethnic/cultural groups. For lack of a better word

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to define a group as diverse as this, we will use the term "minorities."

In conducting this analysis, our specific aims were threefold: (1) to estimate the proportions of minorities in New York State who visited dentists, who had tooth loss, and who possessed dental insurance; (2) to assesses whether the associations among determinants of access to oral health care among the minorities make them different from others in important ways; and (3) to determine whether the Healthy People Year 2000 oral health objectives have been met for the minorities in New York State.

Methods

The MHS was designed as a random digit-dialed telephone survey using the Mitofsky-Waksberg technique (28). The New York State population was divided into random digit dialing stratum and areas with high density of minority households were used for sampling. One hundred phone banks were selected from each stratum. Only one household was randomly selected from each phone bank and only one adult was randomly selected from each household, resulting in the number of respondents being equal to the number of households and number of phone banks. The MHS questionnaire was administered in English. A Spanish version was used for those who did not understand English. There were 1,836 respondents in

the MHS at a response rate of 58 percent. The MHS included a core set of six questions on oral health behaviors.

The MHS data were weighted to reflect the adult New York State population of minorities. SAS® and SUDAAN® statistical software were used for analyzing the data with appropriate nesting variable (STRATA). Selection of variables for our analyses was based on the Directed Acyclic Graph (DAG) (29) based on Figure 1, which in turn was an outcome of our conceptualization, postulations, and the published literature (30). The MHS had one question about race and another about Hispanic ethnicity. We combined these two variables to reclassify race/ethnicity into Hispanic, non-Hispanic blacks, and "others." American Indians, Asians, Pacific Islanders, and all others were included in a composite group "others." Income group was expressed relative to poverty threshold as low income [at or below the federal poverty level (FPL)], middle income (101–200% of FPL), and high income (above 200% of FPL). Those who reported being unemployed were categorized as unemployed, while students, homemakers, and retirees were considered as "dependent."

We created a dichotomous marital status variable grouping never married, single, divorced, or widowed as "unmarried" and those married or part of an unmarried couple as "mar-





ried." Henceforth, we will imply these conceptual relationships when discussing marital status.

Using a clean data set, univariate distributions were evaluated for the variables of dental visits, presence of dental insurance, sociodemographic variables, reason for not visiting a dentist, and available information on smoking status, among others. Bivariate distributions and relationships were evaluated between dental visits and each of the other variables. Multivariate analyses were conducted using unconditional logistic regression.

To examine the determinants for visiting a dentist, dental insurance status was considered as our main exposure variable (Figure 1). All other variables such as sex, education, employment status, income groups, age groups, marital status, edentulousness, and race/ethnicity were considered as covariates. Visit to a dentist in the past year was our outcome variable. Bivariate analyses were conducted to ascertain covariate-exposure and covariate-outcome relationships.

For the present analysis, we concentrated on the main effects model, assuming that the dental insurance-dental visit relationship was uniform across the different levels of the covariates adopting a backward elimination strategy using the difference in -2 log likelihood between models as the model selecting criteria. The DAG suggested that some of the factors like income and employment might act through dental insurance. Therefore, by adjusting for dental insurance (main exposure variable), it can be argued that the true effects of these factors were diluted. We therefore assessed another model that contained all the variables, but excluded dental insurance. The odds ratios of the variables were compared with those in the model having dental insurance. All associations were explored in SUDAAN using appropriate weights and variance adjustments that accounted for the complex sampling design.

Results

The New York State MHS consisted of 40 percent Hispanics and 44 percent non-Hispanic blacks; 62 percent of the adults were between 18 and 25 years of age (mean=41 years; SD=15). Approximately 73 percent of the sample was from New York City metropolitan

		(17111)									
		Sample Size		Visited Dentist		Cleaning Done		Insured			
Variable	Category	Nt	%‡	%	SE	%	SE	%	SE		
Insurance	Insured	1,149	59.5	71.2	2.8	69.4	2.9	100.0	0.0		
	Uninsured	687	40.5	48.1	4.3	45.3	4.3	0.0	0.0		
Income	≤100%	268	13.9	57.0	7.5	52.3	7.5	43.6	7.1		
(% of poverty	101-200%	1,173	62.9	61.6	3.0	60.9	3.0	66.4	2.9		
level)	>200%	395	23.2	65.4	5.1	60.5	5.4	50.2	5.7		
Employment	Employed	1,107	61.3	64.0	3.1	62.5	3.1	65.4	3.1		
1 /	Unemployed	224	10.7	67.3	6.8	67.4	6.8	58.4	7.2		
	Dependent	505	27.9	54.9	5.0	50.3	5.0	46.9	4.9		
	Unemployed + dependent	729	38.7	58.3	4.2	55.1	4.2	50.1	4.2		
Tooth loss*	1-5	742	41.0	69.6	3.6	66.6	3.7	64.6	3.9		
	≥6, not all	280	15.9	53.7	6.7	52.1	6.6	48.3	6.6		
	All	113	4.7	18.5	6.9	0.0	0.0	41.1	10.1		
	None	701	38.3	62.2	3.9	62.5	3.9	60.9	4.1		
Treatment	Yes	364	17.7	61.9	5.4	53.6	5.7	37.0	5.4		
needed, but cannot afford	No	1,472	82.3	61.8	2.8	60.9	2.8	64.3	2.8		
Ethnicity	Hispanic	682	39.9	62.5	3.9	62.5	3.9	52.9	4.1		
	Non-Hisp. black	939	43.2	65.0	3.6	59.5	3.7	72.0	3.5		
	Others	211	16.8	51.8	6.9	52.9	6.9	42.7	6.8		
Sex	Male	647	46.6	61.0	3.9	58.4	4.0	58.1	4.1		
	Female	1,189	53.4	62.5	3.1	60.6	3.1	60.7	3.2		
Marital	Married	667	47.8	67.8	3.6	66.2	3.6	61.1	3.8		
status	Unmarried	1,169	52.2	56.4	3.4	53.5	3.4	58.0	3.4		
Education	≤ High school	955	52.8	64.7	2.7	62.3	2.8	62.7	2.8		
	> High school	881	47.2	53.0	5.5	51.1	5.5	49.4	5.5		
Age groups	18-25	1,160	62.8	67.2	2.9	64.7	3.0	61.0	3.2		
(years)	25–39	499	27.0	58.6	4.8	55.0	4.8	60.9	4.8		
(y)	40+	177	10.2	37.4	7.8	40.5	8.0	45.9	8.0		
Smoking status	Smoker¶	658	32.4	58.9	4.1	57.9	4.1	60.6	4.1		
0	Nonsmoker	1,178	67.6	62.9	3.2	60.2	3.2	58.9	3.3		
Total		1,836	100.0	61.8	2.5	59.6	2.5	59.4	2.6		

TABLE 1 Percent of Minority Adults Who Visited a Dentist, Had Teeth Cleaned and Had Dental Insurance—Selected Characteristics (Minority Health Survey, New York, 1997)

*38 percent did not have any teeth removed; 40 percent had lost 1–5 teeth; 16 percent had lost six or more teeth, but not all; and 5 percent had lost all their teeth due to caries or periodontal disease.

†Unweighted sample size.

‡Weighted percent from SUDAAN.

The time smokers (those who smoked at least 100 cigarettes in their lifetime). 97 percent of these reported having a medical visit in the past one year. Only 63.6 percent reported having been talked to about smoking cessation.

area (downstate NY), the remainder being from upstate New York. Table 1 shows the sociodemographic characteristics of the MHS sample.

Access to Oral Health Care. Annual Dental Visit and Insurance. About 63 percent of the participants reported visiting a dentist in the past year (Table 1). Among those with dental insurance, 71.2 percent visited a dentist, compared to 48.1 percent of the uninsured (Table 2). Approximately 61 percent of the minority adults reported having dental insurance. Dental insurance coverage was an important determinant for visiting a dentist (odds ratio [OR]=2.5; 95% confidence interval [CI]=1.6, 3.6) (Tables 3 and 4). Among the uninsured, 35.1 percent cited cost as an important reason for not visiting a dentist, compared to 14.8 percent among the insured (Table 2). Having dental insurance, higher education, lower age, being married, higher income, and edentulousness were significantly associated with visiting a dentist (Table 3).

Dental visit was examined as an outcome, keeping dental insurance as the main exposure variable, and using other DAG suggested covariates. The final model consisted of the following variables: dental insurance, education

		Sample Size	Fe	ear	C	ost	No Reas	on to Go	Oth	ners
Variable	Category	N	%	SE	%	SE	%	SE	%	SE
Insurance	Insured	315	13.8	3.8	14.8	4.5	38.5	6.3	32.9	6.1
status	U ninsured	345	8.6	3.5	35.1	5.7	34.2	6.1	22.2	5.3
Incomet	≤100%	124	3.9	2.7	23.5	10.9	51.8	12.6	20.9	9.7
	101-200%	406	13.1	3.2	26.8	4.5	32.1	5.0	28.0	4.9
	>200%	130	9.5	7.5	25.9	8.6	35.5	9.5	29.1	9.8
Employment	Employed	389	11.7	3.1	31.0	5.2	34.9	5.4	22.5	4.7
Employment	Unemployed	75	19.2	13.8	8.6	5.8	37.5	13.5	34.8	12.4
	Dependent	196	7.3	3.8	21.4	6.2	37.9	8.5	33.4	8.2
Tooth loss	1-5 teeth	231	19.6	6.1	26.1	6.2	24.6	6.4	29.7	7.8
	6 or more, not all	116	2.2	2.1	26.9	10.6	52.9	11.6	18.1	7.8
	All	67	0.0	0.0	0.0	0.0	86.1	8.1	13.9	8.1
	None	246	10.8	3.6	32.3	6.3	24.5	6.2	32.5	6.5
Treatment needed	Yes	158	3.7	2.6	82.0	7.2	9.9	6.5	4.4	3.0
but could not afford	No	495	12.6	3.1	12.5	3.6	42.5	5.1	32.5	4.8
Ethnicity	Hispanic	263	7.3	2.8	30.6	6.2	30.8	6.1	31.2	6.1
	Non-Hisp. black	353	11.5	3.7	15.4	4.5	34.9	6.2	38.2	6.2
	Others	95	11.4	6.4	25.5	7.9	31.5	10.3	31.6	9.6
Sex	Male	262	5.7	2.7	23.8	5.7	40.6	6.7	29.9	6.4
	Female	398	15.7	4.1	28.1	5.1	31.9	5.8	24.3	4.9
Marital status	Married	234	10.6	3.9	31.6	6.5	30.0	6.6	27.8	6.7
	Unmarried	426	11.1	3.4	21.9	4.4	40.7	5.8	26.3	5.0
Education	High school or less	380	8.2	3.0	21.3	4.7	43.6	5.9	26.8	5.4
	> High school	280	15.2	4.5	33.6	6.3	24.0	6.1	27.2	5.9
Age groups (years)	18-25	394	13.8	3.9	28.3	5.0	30.0	5.4	28.0	5.2
	25–39	171	8.7	4.0	32.1	7.8	28.1	7.3	31.2	8.3
	40+	95	5.2	3.6	5.9	5.4	74.0	9.7	14.9	7.5
Total		660	10.9	2.6	26.0	3.8	36.1	4.4	27.0	4.0

 TABLE 2

 Percent Distribution for Reasons for Not Visiting Dentist in Past Year: New York State MHS, 1997*

*Sample sizes for categories of some variables may not add up to 660 due missing data.

[†]Household income as a percentage of federal poverty level.

level, age, income level, tooth loss, and marital status. Throughout the modeling procedure, the OR for insurance did not change significantly in either its absolute measure or its precision. After adjusting for education, age, race/ethnicity, marital status, income, and tooth loss, those with a dental insurance were 2.5 times more likely to have visited a dentist than those who did not have dental insurance (OR=2.5; 95% CI=1.6, 3.9) (Tables 3 and 4). Removing insurance from the model did not have any significant effect on the adjusted odds ratios for most of the other variables in the model, except for some increase among non-Hispanic blacks (Table 4).

Cost as a Barrier to Obtaining Health Care. The two most common reasons cited for not visiting a dentist were "no reason to go" (36%) and cost (26%) (Table 2). The response "no reason to go"occurred most frequently among the low-income group, those who had lost six or more teeth, those with unmet needs, males, unmarried people, those with lower education, and those who were in the higher age groups (Table 2).

Overall, 18 percent reported having unmet needs because they could not afford the care (Table 1). Eighty-two percent of these people cited cost as the main barrier. Among those with unmet needs, only 37 percent had any kind of dental insurance coverage (Table 1). Those with unmet needs were 0.3 times as likely as those without unmet needs to have dental insurance [OR (CI)= 0.3 (0.3, 0.4)]. Not having dental insurance remained the single significant determinant for unmet dental needs.

Low Educational Attainment. Those with high school or lesser education were 0.6 times as likely to have visited a dentist compared to those with more than high school education, after adjusting for other covariates (adj OR=0.6; 95% CI=0.4, 0.9) (Table 4).

Marital Status. Marriage was a significant factor associated with dental visits (adj OR=1.7; 95% CI=1.1, 2.6) (Tables 3 and 4). Among the married group, 67.8 percent reported a visit to the dentist, compared to 56.4 percent among the unmarried group. Furthermore, more married group. Furthermore, more married people reported having had dental cleanings (66.2% vs 53.5%) (Table 1).

Oral Health Status Indicators. Tooth Loss. Approximately 38 percent

TABLE 3

Determinants of Dental Visit: Step-by-step Model Building (Model selection strategy is explained with the decision rules, starting with the "full model." Model 3 was selected as the final model. NY State MHS, 1997[J5]) (Unweighted Sample Size=1,832)

	Full M	Iodel	Final Model		
Variable	Beta	SE	Beta	SE	
Intercept	-0.68	0.60	-0.73	0.60	
Insurance	0.91	0.24	0.91	0.24	
Education	-0.50	0.24	-0.48	0.23	
Age (years)*					
18–25	0.91	0.45	0.83	0.43	
25–39	0.55	0.45	0.48	0.43	
Race/ethnicity†					
Hispanic white	0.53	0.32	0.53	0.32	
Hispanic black	0.55	0.32	0.56	0.32	
Poverty status‡					
<100% of poverty level	-0.23	0.41	-0.21	0.41	
101–200% of poverty level	-0.68	0.31	-0.72	0.31	
Tooth loss¶					
Lost 5 or fewer teeth	0.44	0.26	0.45	0.25	
Lost 6 or more teeth, not all	0.04	0.26	0.05	0.36	
Lost all teeth	-1.37	0.52	-1.39	0.52	
Marital status	0.54	0.24	0.50	0.23	
Employment	-0.15	0.28		—	
Sex	-0.12	0.23			
_	Full N	/lodel	Final I	Model	
–2 LL	2,159.52		2,162.52		
df	1	4	12		
Comparison model	Intercept o	nly model	Model 2		
Crude OR for insurance=2.66	2.4	48	2.48		

*Ref=40+ years.

tRef=others.

tRef=>200% of poverty level.

IRef=no tooth loss (tooth loss due to caries/periodontal disease).

of the participants retained all their teeth, while 40 percent reported losing 1–5 teeth, 16 percent had lost six or more of their teeth, and 5 percent had lost all their teeth due to caries or periodontal disease (Table 1).

Dental Cleaning. Overall, 60 percent had had dental cleaning within the year. Furthermore, 69 percent of those insured, 61 percent of higher income groups, 66.2 percent of those married, and 62.3 percent of those with high school or lesser education reported dental cleaning. Only 50 percent of those who were financially dependent upon others reported having dental cleaning (Table 1).

Healthy People 2000 Objectives. Table 5 compares results from the MHS with the Healthy People 2000 Oral Health Objectives. Among the objectives that could be measured in this survey, only one was met for minorities in New York State, Objective #13.4a: Among those aged 65 years and older, no more than 25 percent of low-income people (annual family income <\$15,000) will have lost all of their natural teeth.

Discussion

An annual dental visit is a sentinel event and seems appropriate for effective preventive care, early detection of disease, and prompt treatment. Although there is no clear evidence to conclude that yearly dental visits are a must or that they lead to better oral health, it is intuitively appealing to consider that regular visits would result in better monitoring of oral health and would enable the optimal provision of preventive services. It can also be measured reasonably reliably in surveys collecting self-reported data. We therefore examined the self-reported visit to the dentist in the previous year as a proxy to measure oral health care utilization.

The findings from the MHS are generally consistent with those observed from the BRFSS surveys in New York and elsewhere (13,31,32). We have been able to verify that among the minorities, dental insurance coverage significantly improves dental service utilization. Compared to BRFSS reports, the dental visit and dental insurance coverage seen in the MHS were slightly different. According to the New York State BRFSS (31), 71 percent of New Yorkers visited dentists in the past year and 56 percent had dental insurance, whereas only 62 percent of the minorities (MHS) visited dentists and 59 percent had dental insurance. Employment status was not significantly associated with dental visits (Table 3).

In this study, dental insurance was an important determinant of dental care use. Although it can be argued that dental insurance is an intermediary in the relationship between other covariates such as employment, edentulousness, education level, income, marital status, and dental visit (i.e., employment leads to insurance, which in turn leads to utilization), there is enough evidence in this study to suggest that enhancing dental insurance would significantly improve dental visits. Therefore, there is a need for enhancing the benefits under insurance programs and increasing the coverage to include those currently uninsured to improve utilization of oral health care service (15). The importance of dental insurance can be assessed from the observation that those with insurance had significantly more dental visits, lesser tooth loss, and more self-reported dental cleanings within the previous year (Tables 1, 3, and 4). We therefore believe strategies aimed at increasing dental insurance coverage are vital to increase utilization of oral health care services. More specifically, it would be useful to examine the publicly financed programs such as Medicaid to explore opportunities for improving access to dental care.

		Final	Model w/o Insurance Variable			
Variable Intercept	Odds Ratio	LCI	UCI	CLR	Odds Ratio	 CI
Insurance						
Insured	2.5	1.6	3.9	2.6		
Uninsured	1					
Education						
High school or less	0.6	0.4	0.9	2.5	0.6	(0.4, 0.9)
More than high school	1				1	
Age groups (years) 18–25	2.3	0.9	5.3	5.4	2.3	(1.0, 5.0)
25–29	1.6	0.7	3.8		1.7	(0.8, 3.8)
40+	1				1	(
Ethnicity						
Hispanic	1.7	0.9	3.2	3.6	1.9	(0.9, 3.5)
Non-Hispanic blacks	1.8	0.9	3.3	3.5	2.2	(1.2, 4.2)
Others	1				1	
Marital status						
Married	1.7	1.1	2.6	2.5	1.6	(1.1, 2.5)
Unmarried	1				1	
Income group*						
≤100%	0.8	0.4	1.8	5.0	0.8	(0.4, 1.7)
101-200%	0.5	0.3	0.9	3.4	0.6	(0.3, 0.9)
>200%	1				1	
Tooth loss						
5 or fewer	1.6	0.9	2.6	2.7	1.6	(0.9, 2.5)
6 or more, but not all	1.1	0.5	2.2	4.1	0.9	(0.5, 1.9)
All	0.3	0.1	0.7	7.7	0.2	(0.1, 0.6)
None	1				1	

TABLE 4 Factors Determining Dental Visit: Role of Insurance and Covariates—Comparison of Two Models, With and Without Insurance Variable (Adjusted Odds Ratio Estimates for Having Visited Dentist in Past Year for Minority Adults, New York State MHS, 1997)

Odds ratios are adjusted for all the variables shown. Referent categories are represented by odds ratio=1.00. LCI: Lower 95 percent confidence limit; UCI: upper 95 percent confidence limit; CI: 95 percent confidence intervals; CLR: confidence limit ratio, a measure of precision=UCI/LCI]. *Household income as a percentage of the federal poverty level.

TABLE 5
Progress Toward Healthy People Year 2000 Objectives: New York State MHS,
1997

Objective Number	Objective	Target (%)	MHS (%)	Status
13.3	People w/ no tooth loss Aged 35-44 years	>45	33	Not met
13.4	People with complete tooth loss Aged 65+ years	<20	22	Not met
13.4a	Aged 65+ years and w/ income < \$15,000 pa	<25	10	Met
13.14	People with regular yearly dental visits	>70	59	Not met
	Number of people aged 35+ years			
13.14a	Number of edentulous people	>50	18	Not met
13.14b	Number of people aged 65+ years	>60	37	Not met

We found marital status was one of the independent factors that retained its association with better oral health, better health care-seeking behavior, and having dental insurance. In this study, those married were 1.7 times as likely as those unmarried to utilize oral health care services and obtain dental cleaning services. Although some oral health behavior differences between marital status groups were not statistically significant, it is possible that such relationships by their very nature act as an incentive for seeking oral health care out of partner encouragement and to please their partners. The MHS did not specifically ask whether insurance coverage of married people came from their spouses. Possibly, dental insurance coverage through the partner may affect utilization of dental services. More unmarried people compared to married (41% vs 30%) cited "no reason to go" as a reason for not seeking dental health care. More males than females cited the same reason (Table 2). This observation in dental care is similar to single marital status being associated with mental illness (33), general sickness, absence from work (34), and difficulties in payment of dental bills (35).

Almost 20 percent had some unmet dental care need and 82 percent of these people cited cost as the primary reason for not having been able to seek dental care despite recognizing a need (Tables 1 and 2). This group tended to be poorer and uninsured. Although they reported visiting a dentist at rates similar to those with no unmet needs, fewer reported dental cleaning in the past year. These people also had fewer numbers of retained teeth (data not shown). Apparently this group of people bears a larger burden of disease and unmet need compared to others. Considering that costs and cost-related factors appear to drive dental care utilization, this group will continue to bear a large burden of disease unless strategies are devised to improve access.

One of the common reasons for not visiting a dentist cited across all sociodemographic groups was "no reason to go" (36%). Other studies have reported similar results (13,31,32). Those people also had poorer oral health, lower income, and less education. Overall, among those who did not visit a dentist, there was little difference between those insured and uninsured for nonutilization of dental services. This may indicate that people view dentistry as a curative science remote from disease prevention, resulting in an attitude of needing to visit a dentist only for pain/symptom. Thus, lack of awareness regarding prevention in oral health may be an important barrier for access to oral health care.

Yet another barrier to accessing dental health care identified in this study was related to physically accessing the dentist's office. Twenty-seven percent of participants cited "no dentist nearby" or "dentist's office too far" for not visiting a dentist. Therefore, strategies are needed to address the manpower needs in neighborhoods where minorities live.

The MHS was limited to households with telephones. Though the sample is weighted to reflect the state population, exclusion of the nontelephone households introduced a selection bias. Households without a telephone belong to poorer sections of the society, mobile populations, and those living in remote areas. Because those groups have lower utilization of dental services, higher disease burden, and potentially lower rates of dental insurance, data obtained from the MHS may have overestimated visits to dentists. Although it is likely that the strength of association between dental insurance and dental service utilization may have been underestimated, the results of telephone surveys are usually reliable (36-38). Some other limitations of the study include that the real reasons for those visits were not obtained in the MHS. Although the MHS addresses ethnic minorities, several distinct and diverse ethnic groups are underrepresented. Since the demographic profile of the United States is changing rapidly, an assessment of the need to modify the sampling plan to include many diverse groups should be undertaken.

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