Cost As A Barrier To Dental Care Among People With Disabilities: A Report From The Florida Behavioral Risk Factor Surveillance System

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Abstract

Many individuals who have disabilities or complex health conditions do not have adequate access to comprehensive oral health care. An examination of the literature indicates a variety of contributing factors. This study reports on cost of care as a barrier to oral health care. Data from the 2007 Florida Behavioral Risk Factor Surveillance System (BRFSS) were used (n=33,777). Respondents who reported activity limitation or the use of special equipment were considered to have a disability. Lack of access to dental care due to cost during the past year was assessed. More individuals with a disability reported not seeing a dentist due to cost versus people without disabilities (30% vs. 16%). After adjusting for confounding variables, Floridians with disabilities were 60% more likely to report cost as a barrier to dental care (OR=1.60, 95% CI 1.32–1.94). Cost of dental care is an access to oral health barrier for Floridians with disabilities. Improving access to dental care for this population will require consideration of financial issues.

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ABSTRACT

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KEY WORDS: dental, access to care, disability, health disparities, surveillance, epidemiology, BRFSS

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Introduction

Data about the oral health needs and service utilization among people with disabilities are particularly sparse. In 2000, Dr. David Satcher, the 16th U.S. Surgeon General, commissioned the first Surgeon General's Report on Oral Health in America (SGROH).[1] The report revealed a paucity of state and national data about people with disabilities; identified the need for additional data regarding oral health care delivery, costs, and outcomes; and concluded that further study was warranted to investigate the differences among various disability groups. Prompted by the findings of the SGROH, Dr. Richard H. Carmona, the 17th Surgeon General, issued a national Call-To-Action to Promote Oral Health in 2003.[2] One of the major goals of the call-to-action was to eliminate oral health disparities. The call-to-action noted that obtaining accurate data on disease and disabilities for a given population was critical. In 2005, Dr. Carmona also issued "The Surgeon General's Call to Action to Improve the Health and Wellness of Persons with Disabilities."[3] This report called for the development and implementation of surveys to assess the full range of health needs of people with disabilities, including whether and how those needs were being met by providers and facilities in communities nationwide. According to *Healthy People 2010*, the call for data about people with disabilities is longstanding and increasing.[4] Various Federal agencies have attempted to collect the data in several research areas. Two separate issues exist regarding data collection: (1) using different operational definitions of disability and (2) not collecting information from people with disabilities during surveys.

Dental care is perhaps the most difficult service to access for Florida's citizens with disabilities.[5] It is estimated that one out of two persons with a severe disability cannot find proper and necessary dental care.[6] Poor oral health can cause low self-esteem, affect a person's appearance, alter speech, and adversely affect the ability to consume healthy foods and beverages.[7] Access has been defined as the use of services relative to actual need for care; lack of access occurs when there is a need for services but those services are not utilized.[8] Barriers to access are those factors that prevent a person from utilizing a service when needed.

It is estimated that 75% of people with developmental disabilities rely on government funding for dental and medical services.[9] Only about 15% of Florida dentists register as Medicaid providers;[7] therefore, people with disabilities covered by Medicaid may have difficulty locating a dentist. A study of group homes for people with disabilities in Florida found that 40% of caretakers had trouble locating dentists who would provide comprehensive dental services for their residents.[10] Barriers to oral health care access for people with disabilities extend beyond insurance coverage. Other barriers include transportation to a dentist's office, prioritizing dental health among other medical issues, overcoming financial barriers, and navigating governmental assistance programs.[11,12] In addition, some people with severe disabilities may need access to special equipment or individualized instructions for oral hygiene. Finally, dentists may lack training in caring for people with disabilities and therefore may be reluctant to treat them.[12,13,14]

The purpose of this study was to determine whether there is a disparity in access to dental care due to cost among adults with disabilities compared to adults without disabilities in the state of Florida. Since many people with disabilities are unable to access the oral care they need, research on this topic can help bridge the gap between dental providers and people with disabilities to better serve this population.

Methods

The Behavioral Risk Factor Surveillance System (BRFSS) is a random-digit dial telephone survey conducted annually by states and territories that is supported by the Centers for Disease Control and Prevention (CDC).[15] This telephone surveillance system is designed to collect data on health conditions, behaviors, and emerging health issues among noninstitutionalized adults aged 18 years and older in the United States.[16]

The BRFSS includes two questions to identify persons with disabilities: (1) "Are you limited in any way in any activities because of physical, mental or emotional problems?" and (2) "Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?"[16] Respondents who reported "yes" to either question were classified as having a disability.[17] To assess access to oral health care, the following question was added in Florida: "Was there a time in the past 12 months when you needed to see a dentist but could not because of cost?"[16]

Sociodemographic characteristics used in this study were gender, education level, employment, age, marital status, race/ethnicity, and income. We reclassified marital status into married, divorced/widowed/separated, and never married. Employment was categorized as employed, out of work, retired, unable to work, and other (homemaker or student). Health care access was assessed through two questions: current health insurance coverage and inability to see a doctor in the past 12 months because of cost. Health-related quality of life was measured based on the reported number of unhealthy days during the last 30 days for physical health (including illness and injury); mental health (stress, depression, and emotional problems); and activity limitation due to poor physical or mental health.[15] With the exception of income, respondents with missing or invalid responses for any of the variables listed above were excluded from our analysis. People who did not answer or responded "Don't Know/Not Sure" for annual household income were included in a separate category to reduce item nonresponse, retain a larger sample of people with disabilities, and reduce bias.[18] In the sample, people with a disability were less likely to provide income information than were people without a disability, as were people who reported they could not access dental care in the past year due to cost. Excluding individuals with missing income information would have reduced the statistical power and could have introduced a differential bias since reporting income was related to both the exposure (disability status) and the outcome (lack of access to dental care due to cost).

Statistical analysis

All analyses were performed using SAS version 9.1 for Windows (Release 9.1, SAS Institute Inc., Cary, NC, USA). The Florida BRFSS data were weighted by density status, geographic region, number of residential telephone numbers, number of adults, age, gender, and race/ethnicity to assure the sample was representative of all adult Floridians.[16] Weighted data were used to adjust for assumptions that each record had an equal probability of being selected and that noncoverage and nonresponse were the same among all segments of the population.[19] The prevalence and standard errors (SE) for each variable were derived using SAS Proc Surveymeans. Logistic regression analyses were performed on two separate models using SAS Proc Surveylogistic to compute adjusted odds ratios (OR) and 95% confidence intervals (95% CI) for lack of access to dental care due to cost in the past 12 months. Models were constructed to include variables that had been reported to have a relationship to exposure and outcome or that were hypothesized as potential confounders and changed the OR estimate by approximately 10%. Model 1 included demographic, disability, and health care access variables. Model 2 contained all variables in Model 1 plus three health-related quality-of-life variables (physically unhealthy days, mentally unhealthy days, and limited activity days). All three measures of healthy days have strong overlap with disability; therefore, Model 2 may provide an overadjusted estimate. Interaction terms for disability with other variables, such as gender, age, income, employment, and not visiting a doctor due to cost were tested; however, none of the interaction terms was found to be statistically significant at the $p = .05$ level. This research was reviewed as exempt by the University of Florida Institutional Review Board.

Results

In 2007, a total of 39,549 persons participated in the Florida BRFSS. The total sample size for this study was 33,777

adults. Among these, 27,276 respondents were classified as having access to oral health care and 6,501 were classified as not having access to oral health care due to cost in the past 12 months. The overall prevalence of disability in the sample was 19.6% (weighted). Table 1 shows the weighted characteristics of Floridians with and without disability. The proportion of respondents with a disability who reported not having dental care access due to cost was higher than respondents without a disability (30.1% vs. 16.4%).

People with disabilities tended to be older (55.7% above 55 years old) and have lower annual household income (33.7% below $25,000) compared to people without disabilities (31.2% and 16.9%, respectively; Table 1). Similarly, unemployment was higher among people with disabilities (19.5% vs. .9%) and educational attainment was lower for people with disabilities compared to people without disabilities (12.7% and 8.1%, respectively, did not graduate from high school). Compared to people without disabilities, a higher proportion of people with disabilities reported having more than 14 days in the last 30 days that were physically unhealthy (39.1% vs. 4.3%), mentally unhealthy (25.0% vs. 5.9%), and limited activity (27.4% vs. 1.7%). The descriptive results also show that the proportion of people who could not visit a doctor due to cost in the past year differed between people with disabilities and people without a disability (23.2% vs. 12.9%). The proportion of respondents who reported having a health care plan did not differ by disability status (85.1% vs. 81.3%).

OR and 95% CI were calculated for the association between disability and lack of access to dental care due to cost (Table 2). In both models, people with disabilities were statistically significantly more likely to report a lack of access to dental care due to cost compared to people without disabilities [OR = 1.96 (1.64–2.34) in Model 1 and OR = 1.60 (1.32–1.94) in Model 2]. Women were more likely to report lack of oral health care access than men (OR = 1.33, 95% CI 1.13–1.56). Compared to respondents with annual household incomes greater

Table 1. Weighted characteristics of adults in Florida by disability status from the 2007 behavioral risk factor surveillance system (BRFSS).

Characteristics	People with a disability % (SE) N=8,845; weighted N=2,290,485	People without disability % (SE) N=24,932; weighted N=9,864,135	*p* value
Gender			
Women	52.8 (1.3)	50.9 (.8)	.21
Education			
Did not graduate HS	12.7 (.8)	8.1 (.4)	<.001
Graduated HS	29.5 (1.2)	26.9 (.7)	.04
Attended college	30.8 (1.1)	28.1 (.7)	.05
College graduate	27.0 (1.1)	36.9 (.7)	<.001
Employment			
Employed	35.7 (1.3)	67.9 (.7)	<.001
Out of work	6.6 (.6)	3.5 (.3)	<.001
Retired	32.0 (1.0)	17.9 (.4)	<.001
Unable to work	19.5 (1.0)	.9 (.1)	<.001
Other	6.2 (.6)	9.8 (.5)	.03
Age			
18–34	12.9 (1.1)	30.0 (.8)	<.001
35–44	13.6 (1.0)	20.5 (.6)	<.001
45–54	17.8 (.9)	18.3 (.5)	.64
55–64	20.7 (.9)	13.2 (.4)	<.001
65–74	17.1 (.9)	10.0 (.3)	<.001
75–84	13.8 (.7)	6.7 (.3)	<.001
≥85	4.1 (.4)	1.3 (.1)	<.001
Marital status			
Married	52.2 (1.2)	62.2 (.8)	<.001
Divorced/widowed/separated	32.3 (1.1)	18.2 (.5)	<.001
Never married	15.5 (1.1)	19.6 (.7)	.003
Race/ethnicity			
White, non-Hispanic	73.3 (1.3)	66.7 (.8)	<.001
Black, non-Hispanic	8.9 (.8)	8.9 (.4)	.97
Other, non-Hispanic	5.6 (.6)	4.1 (.3)	.03
Hispanic	12.3 (1.1)	20.3 (.7)	<.001
Annual household income			
<15,000	14.8 (.9)	4.3 (.3)	<.001
15,000 – <25,000	18.9 (.9)	12.6 (.5)	<.001
25,000 – <35,000	11.6 (.7)	11.1 (.4)	.54
35,000 – <50,000	14.1 (.9)	14.6 (.5)	.61
≤50,000	26.6 (1.1)	46.5 (.8)	<.001
Don't know/not sure/missing	14.0 (.8)	10.9 (.5)	<.001

Continued

Table 1. Continued.

Characteristics	People with a disability % (SE) N=8,845; weighted N=2,290,485	People without disability % (SE) N=24,932; weighted N=9,864,135	*p* value
Physically unhealthy days in the last 30			
Greater than 14 days	39.1 (1.2)	4.3 (.3)	<.0001
Mentally unhealthy days in the last 30			
Greater than 14 days	25.0 (1.1)	5.9 (.3)	<.0001
Limited activity days in the last 30			
Greater than 14 days	27.4 (1.1)	1.7 (.1)	<.0001
Has health plan	85.1 (1.0)	81.3 (.7)	.002
Could not visit a doctor due to cost in past year	23.2 (1.1)	12.9 (.5)	<.0001
Could not visit a dentist due to cost in past year	30.1 (1.2)	16.4 (.6)	<.0001

SE = standard error.

than $50,000, respondents with lower household income or respondents who did not report income were statistically significantly more likely to report a lack of access to dental care due to cost [<$15,000 OR = 4.46 (3.16–6.31), $15,000–24,999 OR = 2.56 (1.96–3.35), $25,000–34,999 OR = 2.20 (1.67–2.59), $35,000–49,999 OR = 1.58 (1.21–2.07), no income reported OR = 1.79 (1.35–2.37)]. Respondents who lacked a health care plan were also statistically significantly more likely to report cost as a barrier to dental care (OR = 1.71, 95% CI 1.38–2.12). Respondents reporting more than 14 mentally unhealthy days in the past 30 days were more likely to report lack of access to dental care due to cost compared to respondents who reported 14 or fewer days of poor mental health (OR = 1.50, 95% CI 1.15–1.95). Compared to the youngest age group (18–34), respondents in older age groups tended to report lack of access to dental care due to cost less often, though this difference was not statistically significant for the 35–44 or 45–54 age groups (OR = .63 for age 55–64; OR = .53 for age 65–74; OR = .29 for age 75–84; OR = .20 for age 85+). Compared to college graduates, respondents who had not graduated from high school were more likely to report lacking access to dental care due to cost (OR = 1.43, 95% CI). There were no statistically significant differences in access to dental care due to cost based on marital status, race/ethnicity, physically unhealthy days, or limited activity days.

Discussion

An evaluation of the results of this study suggests that Floridians with disabilities are more likely to lack access to dental care due to cost compared to Floridians without disabilities. The finding that people with disabilities have less access to dental care is confirmed by prior research.[20,21,22,23] Despite a slightly higher proportion of people with disabilities having a health care plan, significantly more people with a disability reported lack of access to dental care due to cost. This may be due, in part, to the fact that people with disabilities were more likely to use publicly funded programs, however, Medicaid reimbursement fees are low, and only about 15% of Florida dentists register as Medicaid providers.[7]

Factors other than disability status were related to not having access to dental care in the past 12 months due to cost. The strongest risk factor was not visiting a doctor in the past year due to cost. Similarly, lacking health insurance and having lower levels of household income increased the risk of not having access to dental care due to cost. It is plausible that income-related factors create cost-related barriers in accessing dental care. Younger respondents reported cost as a barrier to dental care more frequently than older adults, which may be due in part to a lack of employer-sponsored or other health insurance coverage. However, although dental insurance was not assessed in this study, other reports[24,25] indicate older adults are less likely to have private dental insurance than younger adults or children[24] and older adults pay a higher percentage of dental expenses out of pocket than other age groups.[25] Therefore, an alternative explanation for the age difference in cost as a barrier to dental care is that older adults were less likely to perceive a need for dental care.[25,26] In one study, this lack of perceived need was the most commonly reported reason for not visiting a dentist among adults age 55 and older, even when cost was an option.[26] It has also been suggested that this difference may be a cohort effect.[26] Having more than 14 days of poor mental health in the past 30 days (frequent mental distress) increased the likelihood that a respondent would report cost as a barrier to dental care. As mentioned previously, this measure overlaps substantially with disability and thus may represent a similar mechanism. There is evidence that people identified through the BRFSS as having frequent mental distress are more likely to have poor health behaviors and less likely to have health insurance.[27] It is possible that health-seeking behaviors are different among people with frequent mental distress, but more research is needed to validate the relationship between mental health and lack of access to dental care due to cost. Finally, women were more likely than men to report lacking access to dental care due to cost. In general, women are more likely to visit a dentist and more likely to have private dental insurance,[24,28,29] so this result is surprising. One possible explanation is that women are more likely than men to perceive a need for dental care and thus

Table 2. Odds ratios (OR) and 95% confidence intervals (95% CI) for lack of access to dental care due to cost (weighted analyses) from 2007 Florida behavioral risk factor surveillance system (BRFSS).

Characteristics	Model 1[a]	*p* value	Model 2[a]	*p*-value
	OR (95% CI)	OR (95% CI)		
Reported a disability*†	1.96 (1.64–2.34)	<.001	1.60 (1.32–1.94)	< .001
Gender*†				
Women vs. men	1.34 (1.14–1.57)	.001	1.33 (1.13–1.56)	.001
Education				
Did not graduate HS*†	1.43 (1.05–1.95)	.01	1.47 (1.08–1.99)	.02
Graduated HS	1.15 (.93–1.43)	.14	1.17 (.95–1.45)	.18
Attended college	1.20 (.97–1.49)	.07	1.22 (.98–1.51)	.09
Graduated college (reference)	1.00		1.00	
Age				
18–34 (reference)	1.00		1.00	
35–44	1.02 (.79–1.31)	.87	1.00 (.78–1.29)	.98
45–54	.95 (.75–1.21)	.68	.95 (.75–1.20)	.70
55–64*†	.64 (.49–.83)	.001	.63 (.48–.83)	.001
65–74*†	.50 (.37–.68	<.001	.53 (.39–.72)	<.001
75–84*†	.28 (.20–.40)	<.001	.29 (.21–.41)	<.001
≥85*†	.19 (.10–.35)	<.001	.20 (.11–.38)	<.001
Marital status				
Never married (reference)	1.00		1.00	
Married	.91 (.72–1.15)	.41	.90 (.71–1.14)	.37
Divorced/widowed/separated	1.08 (.83–1.41)	.56	1.05 (.81–1.37)	.69
Race/ethnicity				
White (reference)	1.00		1.00	
Black, non-Hispanic	.93 (.71–1.23)	.63	.93 (.70–1.23)	.61
Other, non-Hispanic	1.28 (.84–1.95)	.26	1.28 (.83–1.96)	.26
Hispanic	1.14 (.90–1.43)	.28	1.14 (.90–1.43)	.28
Annual household income				
<15,000*†	4.74 (3.38–6.63)	<.001	4.46 (3.16–6.31)	<.001
15,000 – <25,000*†	2.63 (2.02–3.44)	<.001	2.56 (1.96–3.35)	<.001
25,000 – <35,000*†	2.26 (1.71–2.97)	<.001	2.20 (1.67–2.89)	<.001
35,000 – <50,000*†	1.61 (1.23–2.10)	.001	1.58 (1.21–2.07)	.001
≥50,000 (reference)	1.00		1.00	
Don't know/not sure/missing*†	1.83 (1.38–2.41)	<.001	1.79 (1.35–2.37)	<.001
No health care plan*†	1.67 (1.34–2.06)	<.001	1.71 (1.38–2.12)	<.001
Could not visit a doctor due to cost*†	7.06 (5.83–8.55)	<.001	6.81 (5.60–8.27)	<.001
Physically unhealthy days in the last 30				
Greater than 14 days	Not included		1.20 (.89–1.62)	.25
Mentally unhealthy days in the last 30†				
Greater than 14 days	Not included		1.50 (1.15–1.95)	.002
Limited activity days in the last 30				
Greater than 14 days	Not included		1.15 (.82–1.62)	.42

[a]Model 2 includes health-related quality-of-life variables, while Model 1 excludes these variables.
*Significantly associated with lacking dental care, relative to reference category at $p = .05$ level in Model 1. †Significantly associated with lacking dental care, relative to reference category at $p = .05$ level in Model 2.

report cost as a barrier to dental care more frequently. However, more research is needed on the full spectrum of barriers to dental care and to this attitude-behavior link.

The disparity in access to dental care is a public health concern. Measures of disability are not consistent throughout the literature, but the results are consistent: people with disabilities have poorer access to dental care than people without disabilities. This is despite people with disabilities being at high risk for poor oral health outcomes.[23] For example, the Special Olympics' noninvasive health screenings of athletes (mean age = 24.0 years) in 2002 revealed 40.1% had gingivitis, 28.2% had caries, 8.4% needed urgent treatment (defined as pain, possible pulpal involvement, or broken or missing restorations with caries), and 26.5% needed nonurgent treatment.[12] Based on 2004 data, Floridians with a disability were less likely to have seen a dentist or visited a dental clinic in the past year than were Floridians without a disability (57.8% vs. 67.7%).[23] Similarly, Floridians with a disability were more likely to have had at least one permanent tooth removed (48.7%) or all their permanent teeth removed (8.1%) than were Floridians without a disability (40.4% one or more teeth, 4.7% all teeth).[23]

Some limitations of the study should be considered. The BRFSS is a cross-sectional, self-reported measure of disability status, health behaviors, and clinical service utilization.[15] It is not possible to confirm whether a characteristic such as inability to visit a doctor due to cost is a result of disability or if the lack of access due to cost leads to disability. Furthermore, the BRFSS sample does not include persons under 18 years of age, persons who do not have landline telephones, or persons who are unable to complete a telephone survey (for example, individuals with cognitive disabilities). Additionally, persons who reside in group homes, congregate care settings, or other institutional facilities are not included and as such, these findings are limited to noninstitutionalized adults in Florida. Since dental care access may vary by state, the results also may not be generalizable to other areas of the United States. For example, adults on Medicaid have a reduced range of covered dental services, which are determined by each state and are subject to state budget fluctuations.[13] In addition, there is a potential for misclassification of some variables, particularly medical insurance status. It is estimated that about 44 million Americans do not have medical insurance, and about 108 million lack dental insurance.[13] Dental insurance was not assessed in this study but understanding its relationship to cost-related barriers to dental care would be useful. Others have reported that having dental insurance increases utilization.[24,26] Finally, only a single question was used to assess access to dental care due to cost. The BRFSS did not include questions about other factors that may limit a person's access to these services.

In this study, Floridians with disabilities were more likely to be women, be older, have lower incomes, be unemployed, and have lower educational attainment compared to people without disabilities. These results are consistent with the literature. [13,20,21] The finding that people with disabilities have less access to dental care also is confirmed by prior research.[12,20,21,22,23]

The proportion of people with disabilities who lacked dental care in this study (30%) is lower than another study in which one out of two persons with a severe disability could not find proper and necessary dental care.[6] This difference may be a result of the broader classification of disability used in the BRFSS. Alternatively, the difference may have resulted from the specific focus on lack of access due to cost in this study. The proportion of people with disabilities in this study (19.6%) is consistent with the U.S. average (20%) of people with disabilities.[30]

Despite its limitations, the results of this study suggest that cost is a barrier to dental care for people with disabilities. Other studies[5,10,12,20–23] have demonstrated an overall lack of access to oral health care for people with disabilities, and together, these findings suggest that programs or policies are needed to reduce barriers to care among this population. Further research is needed to identify barriers other than cost. Factors such as perceived need for dental care, distance to dental providers, and the availability of dental professionals trained to work with patients with disabilities may also be barriers. Researchers agree that the opinions of people with a disability need to be considered when making decisions about policy changes.[31,32] Similarly, more in-depth information about dental care access barriers and facilitators from people with disabilities would be helpful in addressing this disparity.

Conclusion

The definition of disability has not been standardized and data about oral health care are not routinely collected on national surveillance studies in the United States. This study provides the results of an analysis using data from the BRFSS in one state (Florida). Based on these data, Floridians with disabilities are more likely to report lacking access to dental care due to cost compared to Floridians without disabilities. One of the overarching goals of Healthy People 2010 is to eliminate health disparities in the United States; thus, this difference in access to oral health care represents an issue of public health importance. Future research should seek to identify other barriers to dental care for people with disabilities and should evaluate the need for and effectiveness of policies and programs that target cost and other barriers to care.

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