Utilization of dental care services among low income HIV-positive persons receiving primary care in South Florida

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Abstract

Objectives—We investigated the use of dental care services among a population of low income persons living with HIV/AIDS who had not seen a dental care provider during the twelve months prior to study enrollment.

Methods—Five hundred and ninety-three participants were recruited from five HIV primary care clinics in two South Florida counties and interviewed regarding past utilization of dental care services, HIV primary care service utilization, and barriers to care. Multivariate logistic regression analysis was used to determine correlates of oral care utilization within the preceding two years.

Results—One-third of respondents reported seeing a dentist in the preceding two years. The odds of having seen a dentist were greater for respondents with stable housing, more than a high school education, and who had received help in getting dental care; black respondents (compared to Hispanics and non-Hispanic whites) were less likely to have seen a dentist in the preceding two years.

Conclusions—Despite the availability of dental services for low-income HIV-positive persons, utilization of dental care remains low. This study reinforces the need to provide assistance to HIV-positive persons in obtaining dental care. In particular, it indicates that such assistance should be targeted toward Black Americans, persons with low income and unstable housing situations, and those with limited help to navigate the health care system.

Keywords

Oral health; HIV; dental health services; primary health care

Introduction

Access to and utilization of dental care is important to HIV-positive persons because, according to some estimates, over 90% of HIV-positive persons will have at least one oral

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manifestation of HIV disease during the course of their infection (McCarthy, 1992; Weinert, Grimes, & Lynch, 1996). In addition, oral health problems of HIV-positive individuals are often more severe and difficult to treat than those of the general population (McCarthy, 1992; Weinert et al., 1996). Poor oral health can be a contributing factor to opportunistic infections in persons living with HIV/AIDS (Capilouto, Piette, White, & Fleishman, 1991). Oral pain or discomfort of the mouth can interfere with optimal adherence to prescribed nutrition and medication regimens essential to the management of HIV and associated conditions (New York State Department of Health AIDS Institute, 2001;US Department of Health and Human Services [USDHHS], 2002).

Dental care is one of the greatest unmet health care needs among HIV-infected individuals as demonstrated by data from the oral health component of the HIV Cost and Services Utilization Study (HCSUS) (Bonuck et al., 1996; Coulter et al., 2000; Dobalian et al., 2003; Heslin et al., 2001; Marcus et al., 2000; Marcus et al., 2005), the first nationally representative study of HIV-positive adults receiving care in the United States with baseline interviews conducted between 1996 – 1997. Specifically, HCSUS researchers showed that unmet dental needs were more than twice as prevalent as unmet medical needs and were associated with low income and lack of insurance (Heslin et al., 2001; Marcus et al., 2000). HCSUS researchers also found that among HIV-positive individuals, dental care use was greater for those with a usual source of care and greatest for those whose dental care was obtained at an HIV/AIDS clinic (Coulter et al., 2000; Dobalian et al., 2003). In addition to HCSUS data, several other studies conducted in the 1990s demonstrated unmet need for dental care among HIV-positive persons from diverse populations (Capilouto et al., 1991; Marx, Katz, Park, & Gurley, 1997; Patton, Strauss, McKaig, Porter, & Eron, 2003; Shiboski, Palacio, Neuhaus, & Greenblatt, 1999; Weissman et al., 1994).

Since these studies in the 1990s that demonstrated the unmet dental care needs of low income persons living with HIV, several national reports and initiatives have been developed that emphasized the importance of enhancing access and utilization of oral health care services for persons living with HIV (USDHHS, 2008, 2009a, 2009b). None of the earlier utilization studies were conducted during the era of highly active antiretroviral therapy (HAART) for HIV. HAART has dramatically improved the average life expectancy for persons living with HIV (Antiretroviral Therapy Cohort Collaboration, 2008) and has also reduced some of the oral manifestations of HIV infection such as oral thrush (Ferreira et al., 2007; Greenspan, Canchola, MacPhail, Cheikh, & Greenspan, 2001; Skolasky et al., 2001). At the same time, however, other conditions such as oral warts and HIV-associated salivary gland disease are increasing in prevalence with HAART (Ferreira et al., 2007; Hodgson, Greenspan, & Greenspan, 2006; King et al., 2002). HAART has also likely changed the implications of HIV infection for oral health such as oral health related quality of life and the need for and utilization of dental services. However, there have been few studies of the utilization patterns of oral health care among low income persons living with HIV after the widespread use of HAART (Patton et al., 2003; Shiboski et al., 2005). The present study focuses on utilization of dental care services by HIV-positive patients who were currently receiving primary HIV care in South Florida, and patient characteristics associated with utilization of dental care. We use Andersen's Behavioral Model of Health Services Use as an analytic framework (Andersen, 1968). This model was originally developed to explain health services use in terms of individual determinants; it has undergone several revisions since to include health system and societal factors (Aday & Andersen, 1974; Andersen, 1995; Gelberg, Andersen, & Leake, 2000). Its utility as a framework to study utilization of care has been demonstrated empirically by variety of studies (Coulter et al., 2000; Shiboski et al., 2005; Stein, Andersen, & Gelberg, 2007). As our study sample was recruited from primary care clinics and is homogenous in terms of access to primary care, the present study seeks to describe individual level characteristics

associated with recent utilization of oral health services (within the past 24 months) among a cohort of HIV-positive patients who have accessed HIV primary care.

Methods

The data were collected as part of a two-arm randomized experimental trial (Project SMILE) to evaluate the efficacy of a brief, client-centered, case management linkage intervention designed to increase the use of oral health services by low income HIV-positive persons. Respondents were recruited from five HIV primary care clinics in South Florida, two with on-site dental care and three without on-site dental care. The clinics were diverse with regard to location, race/ethnicity, gender, and HIV risk group, and are among the major providers of HIV care in the area. The inclusion criteria for the randomized trial were 1) HIV-positive individuals who had not received oral/dental health services in the preceding 12 months (HIV infection was documented through self-report and validated with printed report of most recent test results from recruitment clinic); 2) aged 18 years and older; 3) currently receiving HIV primary care as a new or continuing patient; 4) eligible for Ryan White Title I funding (a national program or "payor of last resort" that funds HIV-related services for those without access to care); 5) had plans to remain in South Florida for at least 24 months; and 6) could provide names of two verifiable contact persons. A total of 600 participants were recruited for the trial through flyers posted on bulletin boards designated for study advertisements within the clinics and through clinic staff members who were involved in patient care and who knew the patients' HIV-positive status soliciting participation and actively or passively referring interested patients to the study. Interested patients met with a research staff member in a private room to describe the study and obtain informed consent. The results reported here are based on 593 respondents who provided self-reported data on utilization of dental care at the baseline interview for the randomized trial. Face-to-face baseline interviews were conducted between April, 2005, and December, 2007, and were conducted in English or Spanish; the majority of questions were closed-ended yet specific responses were allowed where appropriate. A small monetary incentive was offered ($25) for completion of the baseline interview. The institutional review board from the University of Miami approved the study protocol prior to study commencement.

The dependent variable in the current analysis is self-reported utilization of dental care based on the response to the question, "When did you last visit a dentist?" Recent utilization of dental care was defined as having visited a dentist within the preceding 24 months.

Andersen's model of health services utilization was used to guide the selection of independent variables (Andersen, 1968; Andersen, 1995). The model suggests that individuals' health services utilization is a function of three components that result in use of services: predisposing, enabling, and need factors. In this model, need characteristics are hypothesized to be more important in the use of non-discretionary health services such as hospital use. In contrast, predisposing and enabling characteristics are hypothesized to be more important for the use of discretionary health services such as dental services. The characteristics considered in this analysis are listed in Tables 1 and 2.

Predisposing characteristics included sociodemographic variables, oral health knowledge and attitudes, and dental self-efficacy. Race/ethnicity was categorized into mutually exclusive groups (Hispanic, non-Hispanic White, non-Hispanic Black, and other) that reflect the racial and ethnic composition of South Florida. Four separate items described oral health knowledge and attitudes (Table 1). Dental self-efficacy was measured using 14 items describing the respondents' confidence in being able to obtain dental care and managing their dental health (alpha=0.98). The measure was adapted from Janicke et al. (Janicke & Finney, 2003) who described parents' self efficacy to obtain children's primary health care

services. The items were adapted to reflect use of dental services by the respondent. An example of the items included in this scale is "I am confident I can schedule an appointment with a dentist"; the four level response set consisted of "strongly disagree" to "strongly agree".

Enabling characteristics included dental and health care related variables, and social support. We asked participants if they had a usual source of dental care at the time of their HIV diagnosis, whether they had help in getting dental care since their diagnosis, whether or not they currently had a case manager, number of HIV primary care visits in the past year, and whether they had received a referral to a dentist in the preceding 12 months from any health care provider. We used the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) to measure social support. The distribution of the final score (ranging from 1 to 7) was highly skewed and subsequently dichotomized to denote a score of 6 or greater (corresponding to strongly or very strongly agreeing with the availability of social support) versus a score lower than six. Enabling characteristics also included variables to describe participants' socioeconomic status: whether or not they were currently employed, annual household income, and whether they had stable housing. The latter was defined as living mostly in their own home or apartment for the preceding three months. Unstable housing locations included someone else's home; temporary housing such as a hotel, boarding house, or shelter; on the street; jail or prison; or a health care facility.

Need characteristics included the Oral Health Impact Profile (OHIP-49) (Slade & Spencer, 1994). The OHIP-49 consists of 49 items designed to measure self-reported dysfunction, discomfort, and disability related to oral health. We asked how often in the preceding four weeks the respondent experienced the oral health impact (a symptom or problem) described in each of the items; the response set consisted of never, hardly ever, occasionally, fairly often, and very often. Two binary summary measures from the 49 items were created: 1) to denote the report of at least one impact at the "fairly" or "very often" threshold, and 2) to denote the report of at least one impact at the "very often" threshold. We also asked respondents if they felt that they were currently in need of dental care, whether they had ever lost any permanent teeth due to decay or gum disease, and whether they currently wore full or partial dentures. Participants were also asked to rate their overall general and oral health on a 5-point scale ranging from poor to excellent.

Statistical analysis consisted of examining bivariate associations between each independent variable and utilization of dental care in the preceding 24 months by using chi-square tests for categorical variables (Table 1) and unadjusted odds ratio estimates for continuous variables using logistic regression. Variables with p-values less than 0.20 in the bivariate analysis were included in a multiple logistic regression model (Hosmer & Lemeshow, 2000). The model was further reduced in a stepwise fashion to include only those variables with p- values less than 0.05, while retaining a set of demographic variables regardless of p-value (age, gender, and education). At each step, the model was examined for goodness-of-fit and covariates were examined for any changes that might indicate confounding by the removed variable. There were no multicollinearity problems detected. All possible interactions involving the significant covariates were examined and none were statistically significant.

Results

The sample (n=593) was approximately two-thirds male, 57% non-Hispanic Black, and 28.7% Hispanic (Table 1). The mean age was 43.8 years (median 45 years). One-third of respondents did not complete high school or a general educational development (GED)

program, half of the respondents had an annual income of less than $5,000, and only 23.1% were currently employed (Table 1).

The vast majority of respondents had a high dental self-efficacy score and agreed that oral health is important, oral health problems can cause other health problems for HIV patients, people with HIV are more likely to have oral health problems, and reported they were about as well or better informed about HIV and oral health than other HIV-positive persons (Table 1). Only about one-third of respondents reported having a usual source of dental care at the time of their HIV diagnosis and half reported having received help getting dental care from anyone since their diagnosis. Less than one-third of respondents had received a referral to a dentist in the preceding 12 months from any health care provider.

In terms of oral health symptoms or problems, 64.4% of respondents reported at least one dental health impact in the preceding four weeks at the "fairly" or "very often" threshold on the OHIP-49 (43% reported at least one impact at the "very often" thresh-hold). Overall, self-reported general health status was good while self-reported oral health status was slightly lower; 83.1% reported being in current need of dental care. Three-quarters of respondents had lost permanent teeth and 22.1% wore full or partial dentures.

Overall, 34.4% of respondents reported seeing a dentist less than two years before the interview. Table 2 presents a multiple logistic regression model of having seen a dentist in the preceding 24 months. After controlling for age, sex, education, and study recruitment site, two enabling characteristics were associated with utilization of dental care. The odds of having seen a dentist in the preceding two years were 1.7 times greater for respondents with stable housing than for those living in temporary situations or institutions (95% CI: 1.109, 2.567). The odds of having seen a dentist in the preceding two years were 1.8 times greater for respondents who reported having received help in getting dental care since their HIV diagnosis than for those who did not report receiving help (95% CI: 1.262, 2.553). In addition, the odds of Blacks reporting utilization of dental services were about two-thirds that for Hispanics and non-Hispanics Whites (OR=0.638; 95% CI: 0.435, 0.935); there was no significant difference between the latter two groups in reported utilization. Respondents with more than a high school education were also more likely to report utilization of dental services (OR=1.565; 95% CI: 1.045, 2.345).

Discussion

Our study findings suggest that among HIV-positive patients recruited from five clinics in South Florida who had not seen a dentist in the past year, approximately two-thirds reported no utilization of dental care services as far back as the preceding two years. This finding raises concern because of the documented oral health problems associated with HIV and the high likelihood that persons living with HIV will experience increased oral health problems compared with their non-HIV infected counterparts (McCarthy, 1992; Weinert et al., 1996). While there are no evidence based guidelines for frequency of utilization of dental care, it is generally regarded that oral health care should be an integral part of HIV primary care and it has been suggested that persons living with HIV should receive oral health care every four to six months (Steinhart et al., 2002; New York State Department of Health AIDS Institute, 2001). The lack of attention by HIV providers to issues of oral health should be viewed in conjunction with previous reports that have shown that low-income persons living with HIV have reported unmet dental care needs (Heslin et al., 2001; Marcus et al., 2000). Despite the availability of dental services in many communities that are specifically designated for low-income HIV-positive persons and are funded through the Ryan White Care Act (USDHHS, 2008), utilization of dental care remains low.

Two enabling characteristics were associated with utilization of dental care in this sample. Participants who reported stable housing were more likely to report utilization of dental care in the preceding 24 months. Stable housing may be serving as a proxy for general socioeconomic status in this very low income population and to some degree may be a measure of general well-being. Also, respondents who reported receiving help in getting dental care since testing positive were more likely to report utilization of dental care in the past two years. This highlights the need to have HIV case managers and other HIV medical personnel trained on the importance of addressing oral health care needs among their patient population in order to prevent the negative impact of oral health problems in this population.

Blacks were less likely than Hispanics or non-Hispanic Whites to have reported utilization of dental care in the past two years. Consistent with this, other researchers have found that among HIV-positive individuals, dental care use was lower among Black Americans (Coulter et al., 2000; Dobalian et al., 2003; Patton et al., 2003). An education beyond high school was also associated with more utilization, consistent with other studies (Coulter et al., 2000; Dobalian et al., 2003; Mascarenhas & Smith, 2000). Other predisposing characteristics related to oral health, were not associated with having seen a dentist in the preceding two years. This finding is in contrast to the hypothesized relationships in the model in which predisposing, along with enabling, characteristics are associated with utilization of discretionary services. However, the predisposing measures related to oral health (knowledge, attitudes, and self efficacy) were highly skewed in a positive direction, not allowing for observable variation in utilization rates. In contrast to other findings (Meng, Heft, Bradley, & Lang, 2007; Sohn & Ismail, 2005), it should also be noted that fear of dentists or dental procedures was not related to utilization of dental services among a subsample of participants who did not have a usual source of dental care or reported not getting needed dental care in the past 12 months.

Need characteristics, which are hypothesized to be associated with the use of non-discretionary services, were, as expected, not associated with utilization of dental care. Although predisposing characteristics were generally favorable towards oral health and dental care in the bivariate analysis, those characteristics were not associated with utilization of dental care in the final multivariable model. Despite those favorable measures and a reported perceived need for care, utilization of dental care was still low. Further research should more fully explore barriers to care, reasons for delaying care, and reasons for not seeking care in the context of highly valued oral health and available resources for care.

Several study limitations should be recognized. First, these data are from a convenience sample of HIV-positive patients recruited from HIV primary care clinics in one large urban area. Thus, generalizability of our findings to HIV-positive individuals in rural areas, other urban areas, or other countries may be limited. Nevertheless, while the sample is comprised of voluntary participants, there are similarities in setting and patients to other areas in the United States with high HIV prevalence. This analysis provides insights into the individual level correlates of oral health care utilization among a group of patients that are stressed by a chronic disease. Second, these data are based on self-reports. Social desirability may especially have played a role in the responses to the highly skewed predisposing items related to oral health knowledge, attitudes, and self efficacy. In addition, recall bias regarding whether a participant saw the dentist in the past 24 months may contribute to under or over reporting of dental visits. Finally, the sample was comprised of persons who had not seen a dentist in the preceding year; while the results reported here may not be generalizable to persons who receive dental care more frequently, they are relevant to those who have delayed or never accessed care.

In this era of HAART, a very large proportion of persons living with HIV continue to experience oral health problems and unmet needs for dental care. This study identifies individual level characteristics that facilitate and hinder the utilization of dental care among a sample of HIV-positive persons currently accessing primary care and eligible for Ryan White funding for dental care. The results suggest that providing assistance in obtaining dental care can facilitate utilization of care while at the same time suggesting that Black Americans and persons with low income and unstable housing situations still face barriers independent of receiving such assistance. Further research should include a focus on cultural and psychosocial issues, among others, that are not exclusively related to access to care.

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Table 1

Selected characteristics of study participants and proportion of respondents reporting dental care receipt within the preceding 24 months.

Characteristic	N	group %	% saw dentist < 24 months prior	p-value*
Predisposing characteristics:				
Age				0.376
19 to <35	90	15.2%	27.8%	
35 to <45	230	38.8%	37.4%	
45 to <55	217	36.6%	35.0%	
>=55	56	9.4%	30.4%	
Sex				0.633
Female	173	29.2%	32.9%	
Male	420	70.8%	35.0%	
Race/ethnicity				0.005
Hispanic	170	28.7%	41.8%	
White[a]	79	13.3%	40.5%	
Black[a]	338	57.0%	28.7%	
Other[a]	6	1.0%	66.7%	
Educational level				0.005
<High school	203	34.2%	31.0%	
High school graduate	227	38.3%	30.0%	
>High school	163	27.5%	44.8%	
Cares for children under 18 years of age				0.357
No	473	79.8%	35.3%	
Yes	120	20.2%	30.8%	
Oral Health Knowledge:				
How informed are you about how HIV affects your oral health compared to other HIV+ people?				0.185
Less informed	156	26.4%	30.1%	
As well or better informed	436	73.6%	36.0%	
Oral health problems cause other health problems for HIV patients				0.597
Disagree	20	3.4%	40.0%	
Agree	566	96.6%	34.3%	

Characteristic	N	group %	% saw dentist < 24 months prior	p-value[*]
People with HIV are more likely to have oral health problems				0.871
Disagree	57	9.7%	33.3%	
Agree	529	90.3%	34.4%	
Oral health is important				0.469
Disagree	1	0.2%	0%	
Agree	590	99.8%	34.4%	
Dental self-efficacy score (4-point scale)				0.824
low score (1–2)	36	6.1%	36.1%	
high score (3–4)	557	93.9%	34.3%	
Reported fear of dentists or dental procedures[b]				0.755
No	159	62.4	31.4	
Yes	96	37.6	33.3	
Enabling characteristics:				
Reported usual source of dental care when diagnosed HIV+				0.005
No	382	64.4%	30.4%	
Yes	211	35.6%	41.7%	
Has had help getting dental care since diagnosed HIV+				0.001
No	289	48.7%	28.0%	
Yes	304	51.3%	40.5%	
Currently has a case manager				0.38
No	13	2.2%	23.1%	
Yes	572	97.8%	34.8%	
Has had 5 or more HIV primary care visits in past 12 months				0.067
No	272	45.9%	30.5%	
Yes	321	54.1%	37.7%	
Received a referral to a dentist in past 12 months				0.226
No	369	72.8%	32.0%	
Yes	138	27.2%	37.7%	
Currently employed				0.015
No	456	76.9%	31.8%	
Yes	137	23.1%	43.1%	

Characteristic	N	group %	% saw dentist < 24 months prior	p-value[*]
Annual household income <=$5,000				0.083
No	297	50.5%	37.7%	
Yes	291	49.5%	30.9%	
Stable housing				0.005
No	164	27.7%	25.6%	
Yes	429	72.3%	37.8%	
Social support scale				0.181
less than strongly/very strongly agree	284	53.5%	31.3%	
strongly/very strongly agree	247	46.5%	36.8%	
Need characteristics:				
OHIP-49: Reported one or more impacts at "fairly" or "very often" threshold				0.517
No	222	37.4%	36.0%	
Yes	371	62.6%	33.4%	
OHIP-49: Reported one or more impacts at "very often" threshold				0.177
No	338	57.0%	36.7%	
Yes	255	43.0%	31.4%	
Currently in need of dental care				0.890
No	100	16.9%	35.0%	
Yes	493	83.1%	34.3%	
Has lost permanent teeth due to decay and/or gum disease				0.939
No	144	24.3%	34.0%	
Yes	448	75.7%	34.4%	
Wears full or partial dentures				0.707
No	415	77.9%	33.7%	
Yes	118	22.1%	35.6%	

[*]Chi-square test

[a]Not of Hispanic origin

[b]Among participants who did not have a usual source of dental care or did not get needed dental care in the past 12 months (n=255).

Table 2

Multiple logistic regression model of having seen a dentist within the preceding 24 months (n=593)

	Adjusted Odds Ratio	95% C.I.
Age (years)	1.007	(0.988, 1.027)
Male	0.975	(0.654, 1.454)
More than a high school education	1.565	(1.045, 2.345)
Recruited from clinic with on-site dental services	1.077	(0.754, 1.539)
Race/ethnicity:		
Hispanic/non-Hispanic White[*]	1.000	Reference
Black	0.638	(0.435, 0.935)
Stable Housing	1.687	(1.109, 2.567)
Had help getting dental care since testing positive	1.795	(1.262, 2.553)

[*] 6 participants self-identified as "other" race/ethnicity.