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The oral health of homeless adolescents and young adults and determinants of oral health: preliminary findings

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Abstract

A survey was administered to 55 homeless adolescents and young adults aged 14 to 28 years who presented for care at a community health center in Seattle, Washington in 2005. Forty-five valid surveys were analyzed. The aim of the study was to identify factors associated with self-reported oral health. The most common self-reported dental problem was sensitive teeth (52.6%), followed by discolored teeth (48.6%), toothache (38.5%), or a broken tooth (37.8%). Dental problems were associated with lower self-reported oral health, while non-high school graduates, mixed race youths, and methamphetamine users had significantly higher self-reported oral health. Among homeless youths, addressing dental problems with direct dental care may improve self-perceived oral health. The relationships between methamphetamine use and education level, on the one hand, and self-reported oral health, on the other, are complex and may be modified by age.

Keywords

homeless youth; oral health; health service accessibility; healthcare disparities; community dentistry

Introduction

While researchers have devoted some attention to the general health of homeless youths,^{1–4} few studies have focused on oral health. In fact, a review of the health services literature found no North America-based studies published in the past 10 years that specifically address the oral health of homeless adolescents and young adults (HAYA).^{3,5–7} In 1989, researchers in California surveyed sheltered homeless families and found that nearly 70% of children from these families had a need for dental care services.⁶ A Canadian study from 1994 found that only 22.4% of surveyed homeless youths in Toronto reported seeing a dentist in the last year.⁷ Over 40% of youths experienced masticatory pain, 44.8% reported bleeding gums, 11.5% presented with periodontal inflammation, and 74.1% expressed a need for immediate dental treatment or advice.⁷

In terms of the overall prevalence of youth homelessness in the U.S., a 1998 study estimated that 8% of surveyed youths of ages 12 to 17 years experienced homelessness at least once during a 12-month period.⁸ Another publication from 2001 reported that 12% of the homeless population in the U.S. consisted of young adults under the age of 25 years.⁹ On a

regional level, the Seattle-King County Coalition for the Homeless conducted a one-night count in October 2001 and found that one-fifth of the 4,700 individuals accessing shelters and transitional programs in Seattle, Washington were between ages 13 and 25 years.¹⁰ A 1991 publication estimated that there were about 2,000 homeless youths per year living in Seattle.¹¹ Taken together, these estimates suggest that adolescents and young adults comprise a noteworthy proportion of the homeless population, both nationally and regionally.

Patrick's model on reducing oral health disparities, which focuses on sociocultural determinants of health, formed the conceptual framework of this study.¹² In this model, oral health is described as "a dynamic process in which a variety of forces operate both to perpetuate and to reduce disparities in oral health."¹² The study variables were drawn from the following conceptual domains: (a) demographic factors (e.g., age, race, gender, education, and occupation), (b) distal factors (e.g., organization and delivery of services), (c) intermediate factors (e.g., availability of care), and (d) proximal factors (e.g., health behaviors).

In this article, we present descriptive data derived from an exploratory, cross-sectional survey of HAYA seeking general health services at a community health center in Seattle, Washington. The goal of the study was to conduct a preliminary assessment of the self-reported oral health of surveyed HAYA, to identify potential factors associated with self-reported oral health, and to develop hypotheses for future studies.

Methods

Subjects

The study population consisted of HAYA ages 14 to 28 years seeking general healthcare services at the 45th Street evening clinic, part of the Puget Sound Neighborhood Health Centers. All study participants under age 18 were emancipated and capable of giving verbal consent. Written consent was not requested to ensure confidentiality. As a small incentive, participants were given a \$5 gift certificate to a supermarket upon survey completion. The study was approved by the institutional review board of the University of Washington.

Survey instrument

An 11-page, 86-item survey instrument was designed by the authors and pretested with one nonhomeless high school student based on methods outlined in Salant and Dillman.¹³ Participants were asked to identify with one or more of the following nonmutually exclusive homeless subgroup descriptors: street youth, couch surfer, runaway, shelter user, foster care youth, and transitional housing user. The instrument also included questions on demographic characteristics and potential determinants of oral health.

Research protocol

The surveys were distributed to the first 55 HAYA presenting for care on three evenings from 6:00 to 9:30 pm in February and March 2006. The clinic serves approximately 20 homeless youths per evening session. Our goal was to obtain a convenience sample representing about one-third of the clients expected to visit the clinic during these two months. Front office staff approached, recruited, and enrolled subjects. Subjects were verbally consented to protect their identities. Completed surveys were collected by the researcher (DC).

Study variables

The independent variables we examined in this study were drawn from four conceptual domains outlined in Patrick's model. Ascribed and achieved demographic factors included age (continuous and <21 years or ≥ 21 years), gender, race (indicator variables created for white, black, or mixed race), education (high school graduated or nongraduated), and employment status. Distal factors included whether the survey participant reported having medical insurance or dental insurance. Intermediate factors included whether the individual had a dental home (having a place to go to for regular dental care), time to practice proper oral hygiene, a place to practice proper hygiene, and armamentarium to practice proper hygiene such as clean water, a toothbrush, or toothpaste. Proximal factors included substance use three or more times per week (indicator variables created for any substance use and for specific use of alcohol, cigarettes, marijuana, or methamphetamine), dental fears (e.g., considers a visit to the dentist as reasonably enjoyable or would not care versus a little uneasy, afraid, or terrified), and self-reported dental problems (e.g., toothache, broken tooth/filling, sore/bleeding gums, tooth abscess, loose tooth, discolored teeth, sensitive teeth, pain while chewing, and crown/partial/bridge that does not fit).

The main outcome variable was self-reported oral health (e.g., very bad, bad, okay, good, or very good). Each response was recoded into a numerical value (very bad = 1, bad = 2, okay = 3, good = 4, and very good = 5) so that subgroup means could be calculated and compared.

Data analysis

The data set was created and analyzed using SPSS version 12.0 (SSPS, Chicago, IL). First, we generated univariate statistics. Next, we used the independent samples *t*-test (equal variances assumed) to assess for differences in the means between subgroups and test for associations between independent variables and self-reported oral health. Because this was an exploratory study, we relaxed the rigidity of statistical testing by establishing alpha at 0.10 instead of the traditional 0.05. A multivariable logistic regression model was not developed due to our small study population.

Response rate

Of the 55 distributed surveys, 49 surveys were returned, corresponding to a response rate of 89.1%. Forty-five valid surveys (81.8% of the original sample) remained after illegible or incomplete surveys were removed.

Results

Demographic data

The median age of those surveyed was 20 years (range: 14 to 28 years; standard deviation: 2.5 years). Forty-two percent were female. About 46.7% identified as white, 26.7% as mixed race, and 11.1% as black. The remaining 15.5% identified as American Indian, Alaskan Native, Asian, or Hispanic. The majority (64.3%) had a high school diploma or equivalent. Seventy-one percent were unemployed. Of those surveyed, 32 of 45 identified with one descriptor, the most common being couch surfer (24.4%), followed by transitional housing user (20%) and street youth (13.3%). Eleven of 45 youths identified with two or more descriptors. Two individuals did not select a descriptor.

Univariate statistics

While 68.3% of HAYA reported having no medical insurance, 85% reported having no dental insurance. About 47.1% of those surveyed had no dental home. When asked about

reasons for not being able to brush regularly, 45% responded that they do not always have time, 35% do not always have toothpaste, 33.3% do not always have a toothbrush, 17.9% stated that it was hard to find a place to brush, and 10.3% stated that it was hard to find clean water. In terms of dental fears, most (61.3%) would consider a potential dental visit as a “reasonably enjoyable experience” or “wouldn’t care one way or the other,” while 15.9% would be “a little uneasy” and 22.7% would be “afraid” or “very frightened.” In terms of regular substance use, 64.3% reported any use, 48.9% reported cigarette use, 37.8% reported alcohol use, 31.1% reported marijuana use, and 11.1% reported methamphetamine use.

The most common self-reported dental problem was sensitive teeth (52.6%), followed by discolored teeth (48.6%), toothache (38.5%), a broken filling or broken tooth (37.8%), sore or bleeding gums (27%), pain while chewing (26.8%), a loose tooth (11.1%), a bridge/crown/partial that does not fit (5.7%), and a tooth abscess (2.9%).

Self-reported oral health

Almost one-third of those surveyed rated their oral health as “very bad” (15.6%) or “bad” (13.3%). About 36% reported their oral health as “okay,” while the remaining one-third characterized their oral health as “good” (31.1%) or “very good” (4.4%).

Factors associated with self-reported oral health

The independent associations between 30 variables and self-reported oral health were evaluated and selected findings are summarized in Table 1. Our results suggest that non-high school graduates, mixed race youths, and methamphetamine users had significantly higher self-reported oral health. Furthermore, those with self-reported dental problems such as a toothache, a broken tooth or filling, sore or bleeding gums, a dental abscess, discolored teeth, or sensitive teeth had significantly lower self-reported oral health than those without these dental problems.

Discussion

The results of this exploratory study provide preliminary data on the oral health of HAYA seeking healthcare services in a metropolitan setting. That we found significant associations between having dental problems and lower self-reported oral health is not surprising. Although we recognize that health is not merely the absence of disease, this finding suggests that the provision of direct dental care services to HAYA has the potential to ameliorate self-perceived oral health. Improved oral health may, in turn, have beneficial effects on an individual’s general health perceptions.¹⁴

We also found that non-high school-graduated HAYA had significantly higher average self-reported oral health than high school-graduated HAYA. This finding is inconsistent with previous findings that individuals with less than 12 years of schooling had poorer self-perceived oral health than individuals with more than 12 years of schooling.¹⁵ A possible explanation for our finding is that homeless youths with fewer years of education may have limited dental knowledge and low oral health literacy, which could result in distorted self-perceptions of health. Furthermore, the mean age of non-high school graduates in our study was lower than the mean age of high school graduates (19.1 and 20.5 years, respectively, $p < 0.08$), which suggests that age may modify the relationship between education and self-reported oral health. Another explanation is that non-high school-graduated HAYA in our study may actually have had better oral health than high school-graduated HAYA. A smaller proportion of non-high school-graduated HAYA reported having a toothache (15.4% vs 54.2%), discolored teeth (35.7% vs 57.1%), sore gums (7.7% vs 33.3%), a loose tooth (7.1% vs 15%), or sensitive teeth (30.8% vs 60.9%). What we do not know is whether the

deleterious effects of poor oral health accumulate as HAYA get older, which might explain why larger proportions of high school graduates had dental problems than non-high school graduates.

Another unexpected finding was the significant association between methamphetamine use and higher self-reported oral health. One explanation for this finding is that these HAYA may have inaccurate self-perceptions of oral health, which could be attributed to their significantly lower mean age (16.6 and 19.9 years, respectively, $p < 0.001$) compared to non-methamphetamine-using HAYA. Furthermore, a higher proportion of methamphetamine-using HAYA also used alcohol, cigarettes, or marijuana—an indication that these HAYA may be at an increased risk of poor oral health despite their positive oral health perceptions. That smaller proportions of these HAYA reported dental problems also suggests that these methamphetamine users may be relatively “new users,” which could mean that the short-term consequences of drug use, such as rampant dental caries and tooth fracture, and long-term effects, such as poor overall health, have not yet manifested in these youths.^{16,17} This situation presents a unique opportunity for dental professionals to be able to identify patients with a history of methamphetamine use and intervene with proper referrals to substance abuse counselors and mental health specialists.^{18–20}

We also found that mixed race HAYA had significantly higher average self-reported oral health than non-mixed race HAYA. However, we could not find a plausible explanation for this finding. In fact, there were no significant differences in the proportion of mixed race HAYA reporting dental problems compared to non-mixed race HAYA. Future studies might explore potential subgroup differences among mixed race HAYA in the relationship between dental problems and self-reported oral health.

Our study population was demographically similar to street youths from the Toronto study in terms of gender distribution, age, and the median number of years as homeless.⁷ However, there was a notable difference in regard to race. Although whites represented the single largest group by race in both studies, a relatively large proportion of individuals identified as mixed race (27%) in our study, which is inconsistent with other study populations.^{1,2,6} This difference could be the result of differential reporting by youths surveyed in this study or reflective of Seattle’s diverse population. Based on these findings, we present a preliminary hypothesis that mixed race youths in the U.S. may be at an increased risk of becoming homeless than non-mixed race youths—a phenomenon that has been described previously in Latin America.²¹ For instance, mixed race HAYA may face conflicting cultures at home or marginalization at school, which might leave them without proper family or social connections. This hypothesis might be developed in a future study, the results of which could guide policymakers in developing health interventions that focus on the needs of the homeless.

Our findings are also consistent with previous studies that report the prevalence of unmet dental problems.^{2,6,7} While clinical data would have made it possible to assess the validity of self-reported dental problems, 52.6% of surveyed youths reported sensitive teeth, 48.6% reported discolored teeth, 38.5% reported a toothache, and 27% reported sore or bleeding gums. On the other hand, only 2.9% of surveyed youths reported having a dental abscess. One explanation for these findings is that surveyed youths had relatively adequate access to episodic dental treatments (e.g., tooth extractions) via community health centers or hospital emergency rooms and limited access to periodic, prevention-oriented dental care. This hypothesis might be tested in a future study. Ensuring access to consistent, quality care might address the dental problems of these at-risk youths while laying down the framework for overall improvements in oral health.

Social barriers to oral health are important factors to consider when assessing ways to address unmet dental treatment needs. We found that nearly 50% of those surveyed fail to brush their teeth regularly because of time limitations, one-third are unable to brush because they do not have a toothbrush or dentifrice, and one-fifth do not brush because they do not have a place to brush. These results suggest that the lack of basic oral hygiene armamentaria may prevent HAYA from practicing daily home care. In addition, oral health may not be a top priority among homeless youths because of more urgent life stressors and difficulties these youths encounter on the street such as substance use, which may act as an indirect barrier to care by interfering with their ability to schedule and keep dental appointments. Furthermore, with 40% of those surveyed exhibiting some level of dental phobia, some youths may avoid visiting the dentist due to treatment-related fears.

Other factors from the oral health disparities model that we had initially expected to predict higher self-reported oral health, such as having dental insurance, was not independently associated with improved self-reported oral health. This finding is not surprising. The fact that similar proportions of youths with dental insurance reported having a toothache, a broken tooth, discolored teeth, or sore gums than those without dental insurance suggests that simply providing homeless youths with dental insurance may not result in utilization of care or improved oral health outcomes. This finding may also explain why having dental insurance was not found to be associated with higher average self-reported oral health. On the other hand, a smaller proportion of youths with a dental home reported having a toothache, a broken tooth, sore gums, or sensitive teeth than those with no dental home. While this variable was not associated with significantly higher self-reported oral health, the differences in reported dental problems may be clinically relevant. These findings suggest that homeless youths with a dental home may have fewer perceived dental problems. Future studies should attempt to identify the relationship between having a dental home and self-reported oral health among HAYA.

This study brought attention to an important methodologic issue that may warrant further development. Over a quarter of study subjects identified with two of more homeless subgroup descriptors, which supports previous findings that the homeless population is heterogeneous.⁶ Standardized definitions describing homeless population subgroups could provide consistency across studies in the literature upon which subgroup-specific policy recommendations could be made. In addition to homeless subgroup affiliation, measuring housing stability may be an important factor in assessing the unmet dental care needs of homeless youths. Those youths with less stable housing arrangements may have different unmet needs and may require different care delivery mechanisms than those with more stable housing.

Given the exploratory nature of this study, there are several limitations that should be noted. First, the size of our study population is small and the data were collected cross-sectionally at one community health center on three evenings—factors that limit our ability to draw definitive conclusions about the HAYA population. Furthermore, because study subjects were recruited among individuals seeking healthcare services, they may represent a healthier subgroup among the homeless population, which introduces the possibility of selection bias. Although we had a relatively high survey response rate of 81.8%, illiteracy could be a reason why some youths were nonresponders. In a previous study, lower literacy levels were associated with lower self-reported health.²² If nonresponders in our study had poorer self-reported oral health than responders, our study results may be biased toward the null. While administering our instrument in person might have addressed problems associated with various literacy levels, face-to-face interviews may have compromised the accuracy of responses to sensitive questions such as previous substance use. Another limitation is that we based our main outcome variable (self-reported oral health) on one item from our survey,

which may have resulted in measurement error. In the future, a brief oral health screening would be a way to validate survey data, particularly in regard to self-reported dental problems. And finally, this survey was administered in the winter, a time of the year when homeless youths from Seattle may migrate to warmer, drier climates or move back home. This factor could have impacted the make-up of our study population by excluding seasonally homeless individuals.

Conclusion

Although our results are exploratory, this study is an important first step in understanding the oral health of HAYA. Our overall findings suggest that a large proportion of study participants had self-reported dental problems such as sensitive or discolored teeth, a toothache, or a broken tooth or filling—all of which were significantly associated with lower self-reported oral health. In addition, non-high school graduates, mixed race youths, or methamphetamine users had significantly higher self-reported oral health than high school graduates, non-mixed race youths, or non-methamphetamine users. Based on our survey results, we found that most homeless youths did not have medical or dental insurance, the resources to practice regular tooth-brushing, and used at least one substance regularly—factors that might negatively impact dental utilization, oral health, and general health. Increasing dental health provider awareness of the potential needs of this vulnerable population and enacting policies that increase the access to periodic, prevention-oriented oral health care may alleviate some of the health problems these youths face. Targeted clinical interventions should focus on training dentists and auxiliary personnel, including front office staff, on the vulnerability of this population, delivering care in settings that make homeless youths feel comfortable, and focusing on preventive oral healthcare measures and patient education.

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Table 1

Comparisons of self-reported oral health of different subgroups of respondents.^a

Variable	Mean self-reported oral health \pm SD (n) among yes respondents	Mean self-reported oral health \pm SD (n) among no respondents	Significance
Distal factors			
Medical insurance	3.00 \pm 1.16 (13)	2.93 \pm 1.12 (28)	$p = 0.85$
Dental insurance	3.50 \pm 0.55 (6)	3.03 \pm 1.11 (34)	$p = 0.32$
Intermediate factors			
Dental home	2.78 \pm 1.00 (18)	2.75 \pm 1.24 (16)	$p = 0.94$
Time to brush teeth	2.72 \pm 1.02 (18)	3.14 \pm 1.21 (22)	$p = 0.26$
Not hard to find clean water	2.94 \pm 1.08 (35)	3.50 \pm 1.29 (4)	$p = 0.34$
Always have a toothbrush	2.85 \pm 1.28 (13)	2.96 \pm 1.08 (26)	$p = 0.77$
Always have toothpaste	2.79 \pm 1.19 (14)	3.00 \pm 1.10 (26)	$p = 0.57$
Proximal factors			
Any substance use	2.81 \pm 1.15 (27)	3.17 \pm 1.10 (18)	$p = 0.31$
Alcohol use	2.88 \pm 1.05 (17)	2.71 \pm 1.19 (21)	$p = 0.65$
Cigarette use	2.91 \pm 1.15 (22)	2.71 \pm 1.11 (17)	$p = 0.58$
Marijuana use	2.93 \pm 1.14 (14)	2.70 \pm 1.13 (20)	$p = 0.57$
Methamphetamine use	3.60 \pm 0.55 (5)	2.67 \pm 1.12 (30)	$p = 0.08^b$
Dental fears	2.94 \pm 1.00 (16)	2.97 \pm 1.21 (29)	$p = 0.94$
Have a toothache	2.40 \pm 0.99 (15)	3.38 \pm 1.01 (24)	$p = 0.005^b$
Have a broken tooth or filling	2.29 \pm 1.07 (14)	3.43 \pm 0.95 (23)	$p = 0.002^b$
Have sore or bleeding gums	2.20 \pm 0.92 (10)	3.33 \pm 1.04 (27)	$p = 0.005^b$
Have discolored teeth	2.56 \pm 1.15 (18)	3.53 \pm 0.91 (19)	$p = 0.007^b$
Have a tooth abscess	1.00 \pm 0.00 (1) ^c	3.15 \pm 1.05 (34)	$p = 0.05^b$
Have a loose tooth	1.00 \pm 0.00 (4)	3.28 \pm 0.92 (32)	$p < 0.001^b$
Have sensitive teeth	2.55 \pm 0.99 (20)	3.44 \pm 1.15 (18)	$p = 0.02^b$
Have a crown, bridge, or partial that does not fit	4.00 \pm 0.00 (2)	3.09 \pm 1.04 (33)	$p = 0.23$
Have pain while chewing	2.55 \pm 1.29 (11)	3.13 \pm 1.04 (30)	$p = 0.14$

^aSelf-reported oral health was measured on a five-point Likert-type scale, with 1 representing very bad oral health and 5 representing very good oral health.

^bStatistically significant difference at $\alpha = 0.10$ level.

^cNo mean or standard deviation (SD) could be calculated because only one youth reported having a tooth abscess.