A National Survey of the Oral Health Status of Homeless Veterans

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Abstract

Objectives: This study reports results from a survey designed to (1) assess the oral health needs of a national sample of homeless veterans and (2) compare the dental needs of homeless veterans participating in VA-sponsored rehabilitation programs with domiciled veterans in VA substance addiction programs. *Methods: Homeless veterans enrolled in a nationwide rehabilitation program (n=1,152) completed a survey including questions concerning patients' perceptions of their oral health, dental service needs and use, and alcohol and tobacco use. A sample of these veterans (n=281) subsequently received dental exams. A comparison group of domiciled veterans enrolled in VA substance abuse programs (n=339) completed a similar survey. A sample of these veterans (n=150) also received dental exams.* *Results: Sociodemographic variables, patient-reported oral health information and risk behaviors, and findings from dental exams described two remarkably similar populations.* *Conclusions: As expected, the homeless veterans exhibited poor oral health, but it was not different from domiciled veterans enrolled in substance addiction programs. Lifestyle choices, such as heavy drinking and smoking, may contribute more to poor oral health than living conditions. [J Public Health Dent 2003;63(1):30-37]*

Key Words: homeless persons, dental caries, substance-related disorders, veterans, smoking, alcohol drinking, social class.

Studies of homeless persons in shelters, clinics, domiciliaries, and the community have noted high rates of dental disease and low dental service utilization (1-4). Research documents high prevalence of untreated tooth decay, missing teeth, periodontal disease, poor masticatory function, and oral pathology (2-9). However, this research usually was conducted in one geographical location, often focusing on a single subgroup of the population. One product of these community-based studies is difficulty extrapolating resulting data and conclusions to a heterogeneous population.

An older white man with a history of heavy alcohol use was yesterday's stereotype of the homeless (10-13).

More women with families, younger persons of color, and individuals with substance abuse problems have resulted in declining median age, overrepresentation of nonwhite ethnic groups, and increasing percentages of women in recent studies of homeless populations (1,11-17). The nature of homelessness makes accurate information about its constituents difficult to obtain. Studies reporting the homeless population's size and its diverse needs have been inconsistent (18).

The Homeless Veterans Dental Program and Northeast Program Evaluation Center, with cooperation from 27 VA Medical Centers (VAMC) with Domiciliary Care for Homeless Veterans (DCHV) programs, conducted a

national survey to investigate clinical and self-reported oral health among homeless veterans. Sociodemographic characteristics, health status data, and self-reported dental health needs were collected by survey. A sample of the surveyed veterans also received clinical dental examinations by VAMC dentists, designed to identify the unmet dental needs of homeless veterans and barriers to adequate oral health care.

Methods

Sample. At the time of this study (1994), the Department of Veterans Affairs operated 31 DCHV programs throughout the United States. All 31 sites provided surveys from homeless veterans participating in their program (n=1,152).These surveys included standardized questions concerning patients' perceptions of their past and current oral health, dental service use, and dental service needs, along with alcohol and tobacco use questions and demographic data. Staffing issues eliminated three hospitals from participating in the dental examination phase, leaving 28 participating DCHV sites within VAMC system, as noted in Table 1 and Figure 1. Up to 10 participating veterans from each site were asked to undergo a clinical dental exam from a local VAMC staff dentist. Two hundred eighty-one homeless veterans received dental exams.

Data-gathering Procedures. All 28 VAMCs designated a single dental examiner. The project's senior dentist provided detailed written instructions for standardizing the procedures and

protocol for the dental examinations. A teleconference call reviewing all clinical dental procedures and definitions also was included as part of the standardization of the examiners.

Missing teeth were recorded during the oral exam. Patients provided a verbal history of anterior teeth missing or injured as a result of trauma. Caries were assessed through visual examination with a light, explorer, and dental probe, as well as a panoramic radiograph. Hopeless teeth, defined in the context of a long-term prognosis, were marked as needing extraction. Patients described any current oral complaints, and the chief complaint was documented. Oral hygiene was rated subjectively by the examining dentist as:

(4) Excellent: No plaque, calculus, tooth stain, debris, or food particles; no halitosis.

(3) Good: Minimal plaque or calculus is visible above the gingival margins; minimal tooth stain noted on natural and or denture teeth; no debris and/or food particles noted in the oral cavity, including the denture base (if applicable); no halitosis.

(2) Fair: Moderate plaque or calculus is easily visible from the gingival margin to up to one-third of the tooth structure; moderate stain noted on natural teeth; debris and/or food particles noted in oral cavity, including the denture base (if applicable); may or may not have halitosis.

(1) Poor: Abundant plaque and calculus is easily visible, covering more than one-third of the tooth structure; marked stain noted on natural and/or denture teeth; debris and/or food particles noted in the oral cavity including the denture base (if applicable); has halitosis.

Periodontal status was evaluated using a panoramic radiograph, tooth mobility, and an intraoral examination. Classifications, labeled I–IV, were defined as:

• Class IV: Advanced Periodontitis: Further progression of periodontitis with major loss of alveolar bone support accompanied by increased tooth mobility. Furcation involvement in multirooted teeth is likely.

• Class III: A more advanced stage of Class II, with increased destruction of the periodontal structures and noticeable loss of bone support, possibly accompanied by an increase in tooth mobility. There may be furcation in-

volvement in multirooted teeth.

• Class II: Generalized progression of the gingival inflammation into the deeper periodontal structures and alveolar bone crest, with slight bone loss. There is usually slight loss of connective tissue attachment and alveolar bone.
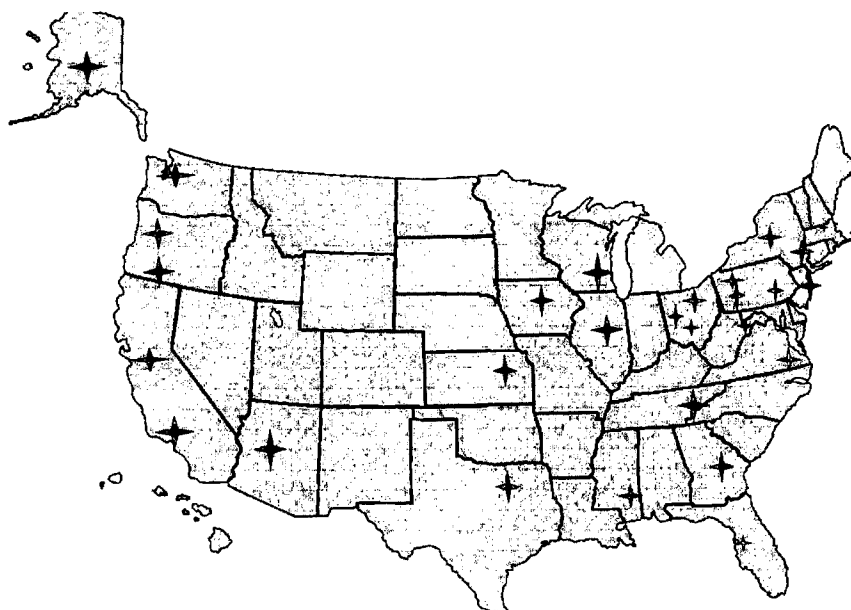
• Class I: Gingival disease with no generalized bone loss. Inflammation of the gingiva characterized clinically by changes in color, gingival form, position, surface appearance, and presence of bleeding and/or exudate. Class I classification also was checked

if, in the opinion of the examiner, there was no gingival disease.

Teeth replaced by a current prosthesis were identified. Nonfunctional prostheses were defined as those that couldn't be used due to poor fit, severely worn teeth, or poor vertical dimension. Prostheses that could be utilized but required a reline were considered functional. Soft tissue lesions were also noted upon examination, along with any hard tissue lesions identified on the radiograph.

Comparison Populations. Three hundred thirty-nine (339) domiciled

TABLE 1
Geographic Distribution of DCHV Programs

Site	Homeless Veterans in DCHV		Nonhomeless Veterans in Substance Abuse Program	
	Who Completed Surveys	Who Received Dental Exam	Who Completed Surveys	Who Received Dental Exam
Anchorage, AK	11	10	7	0
American Lake, WA	44	10	12	10
Bay Pines, FL	30	10	11	4
Bedford, MA	37	13	4	0
Biloxi, MS	36	10	10	6
Brooklyn, NY	25	0	0	0
Butler, PA	25	10	21	10
Canandaiqua, NY	25	10	12	8
Cincinnati, OH	55	10	10	6
Cleveland, OH	79	9	31	1
Coatesville, PA	40	10	20	8
Dallas, TX	37	10	20	10
Dayton, OH	11	10	10	7
Des Moines, IA	18	10	5	3
Dublin, GA	19	11	10	6
Hampton, VA	25	10	5	3
Hot Springs, SD	35	0	2	0
Leavenworth, KS	24	10	13	10
Little Rock, AR	57	0	17	0
Lyons, NJ	55	10	10	4
Martinsburg, WV	30	10	5	5
Milwaukee, WI	30	10	29	5
Montrose, NY	56	10	4	2
Mountain Home, TN	31	11	7	7
North Chicago, IL	57	11	22	6
Palo Alto, CA	46	10	6	3
Pittsburgh, PA	43	8	9	0
Portland, OR	37	8	9	9
Prescott, AZ	39	10	1	1
West Los Angeles, CA	61	10	7	7
White City, OR	34	10	10	9
Total	1152	281	339	150

FIGURE 1
Participating Site Locations

veterans enrolled in substance abuse rehabilitation programs at 30 of the participating VAMCs served as the comparison population for the survey portion of the protocol. Those veterans, who met the criteria of having never been homeless, completed a VA Dental Health Survey—Control Form during early 1994. Up to 10 veterans at each site were asked to undergo a dental examination. One hundred-fifty (150) of these veterans agreed to participate and received dental exams.

A second data set was identified for additional comparisons where applicable. Data from the Third National Health and Nutrition Examination Survey (NHANES III) were included to allow comparison with the general population of the United States. The objectives of NHANES III included estimating the national prevalence of selected diseases and risk factors, as well as reporting numerous data points on oral health. Data collection protocol for the oral health component of NHANES III has been previously described in the literature (19). Because all subjects in the homeless and substance addiction groups were male, only NHANES III data from males aged 20–70 years were used to represent general population information. For reporting purposes, NHANES III data will be referred to as the general male population.

Data Analysis. All data from the veteran groups were entered in the SAS 8.1 software package (SAS Institute, Inc., Cary, NC) for analysis, and .05 level of significance was used in hypothesis testing. In all statistical analyses involving NHANES III, weighting was used to adjust for the complex sampling design. Descriptive and chi-square tests were used to describe the two VA groups according to sociodemographic characteristics, patient-reported oral health, and oral health measurements, and to compare the homeless and nonhomeless VA samples. Weighted frequencies were found for comparable data obtained from NHANES III wherever possible. Chi-square tests of independence were used to compare these weighted frequencies from NHANES III to frequencies obtained from the homeless VA group. Weighted GEE analysis was used to compare differences in unadjusted means among groups. Mann-Whitney tests were used to compare the two VA groups. To adjust for potential confounders, a weighted GEE analysis was used to compare mean DMFT, number of decayed teeth, number of missing teeth, and number of filled teeth while adjusting for age, smoking status, marital status, and ethnicity. Weights used in the analysis were based on the weighting factor given in NHANES III with no weighting necessary for the two VA groups.

Results

Sociodemographic characteristics are presented in Table 2. The mean age of the homeless veteran sample was 42.5 years, ranging from 24 years to 79 years. Although the same age groups were evaluated in the general male population and the study population, the age distribution within the 20–70 year range varied significantly. Compared to the general male population, the study population had a higher proportion of 30–49-year-olds, and fewer 20–29-year-olds and 60-year and older subjects. The age distribution of the homeless group was also significantly different from the age distribution of the substance abuse group. However, 85–90 percent of the participants in both groups were within the 30–60-year-old age range, and the mean ages were within 1 year (homeless=42.5 years and substance abuse=43.8 years). In particular, the substance abuse group had a larger proportion of older individuals.

The study population also differed significantly in race and ethnicity when compared to NHANES III. There were fewer Hispanic Americans and "others" in the study population when compared to NHANES III. The homeless population did differ significantly in race and ethnicity from the substance abuse population, with the substance abuse group having a greater proportion of Hispanic Americans compared to the homeless group. When race was dichotomized into Caucasian and non-Caucasian, there was no significant difference between the homeless population and the substance abuse population. Homeless veterans were more likely to be without a spouse when compared to both the general male population and the substance abuse population.

Table 3 reports risk behavior data, perceived oral health, and dental needs. Oversampling in the NHANES III data was taken into consideration in calculating the results of risk factor and oral health data by obtaining weighted frequencies. Two known risk factors for oral diseases—smoking and alcohol consumption—were compared among the three populations. Over twice as many homeless veterans smoked (80%) than did the general male population (36%). In addition, fewer in the general population smoked a pipe or used smokeless tobacco when compared to the homeless

TABLE 2
Sociodemographic Characteristics

Measurement	NHANES III Population* (n=6,259)	Homeless Population (n=1,152)	Substance Abuse Population (n=339)	P-values[†]	
Age (years)					
20–29	25.5% (1,598)	2.9% (32/1,113)	5.1% (17)		
30–39	26.8% (1,675)	32.9% (366/1,113)	26.9% (90)		
40–49	21.2% (1,326)	45.4% (505/1,113)	43.9% (147)		
50–59	13.8% (866)	15.2% (169/1,113)	14.9% (50)		
60–70	12.7% (794)	3.7% (41/1,113)	9.3% (31)	<.001	<.001
Ethnicity					
Caucasian	75.5% (4,724)	51.1% (503/985)	50.0% (169)		
African American	10.4% (650)	45.7% (450/985)	42.3% (143)		
Hispanic American	6% (375)	1.8% (18/985)	5.6%(19)		
Others	8.2% (510)	1.4% (14/985)	2.1% (7)	<.001	.003[‡]
Marital status					
Married	70.2 (4,393)	2.9% (29/985)	20.3% (68)		
Divorced	6.5% (406)	47.7% (470/985)	41.2% (138)		
Widowed	1.2% (77)	1.4% (14/985)	2.7% (9)		
Separated	1.8% (111)	17.9% (176/985)	12.5% (42)		
Never maried	20.3% (1,268)	30.1% (296/985)	23.3% (78)	<.001	<.001

*Frequencies are weightedby using weighting factor in NHANES III.
†P-values are based on chi-squared test of independence.
‡The distribution of Caucasians versus non-Caucasians for the homeless population is not significantly different from that for the substance abuse population (P=.735).

TABLE 3
Patient Reported Oral Health Information

Measurement	NHANES III Population* (n=6,259)	Population (n=1,152)	Substance Abuse Population (n=339)	P-values[†]	
				Homeless	Substance Abuse
% smoke cigarettes	36.0% (2,250/6,259)	79.8% (915/1,146)	82.5% (278/337)	<.001	.281
% chew tobacco	5.5% (347)	10.8% (123/1,134)	14.4% (48/333)	<.001	.075
% smoke a pipe	1.5% (95)	10.4% (118/1,138)	15.0% (50/334)	<.001	.020
Heavy alcohol use	16.0% (671/4,195)	33.8% (381/1,129)	32.9% (109/331)	<.001	.782
% with oral pain	1.7% (106/6,180)	45.9% (322/702)	47.3% (95/201)	<.001	.727
% needing new denture	6.4% (393/6,180)	22.1% (254/1,148)	15.4% (52/338)	<.001	.007
Perceived oral health					
Excellent/very good	29.9% (1,740/5,813)	10.9% (124/1,141)	8.1% (27/335)		
Good	35.9% (1,334/5,813)	29.4% (335/1,141)	35.2% (118/335)		
Fair	23.0% (2,087/5,813)	34.1% (389/1,141)	31.9% (107/335)		
Poor	11.2% (652/5,813)	25.7% (293/1,141)	24.8% (83/335)	<.001	.149
% needing dental care	56.1% (3,465/6,180)	68.1% (782/1,148)	69.8% (236/338)	<.001	.553

*Proportions are weighted by using weighting factor in NHANES III.
†P-values are based on chi-squared test of independence.

veterans. There were no differences in the prevalence of cigarette and cigar smoking or use of smokeless tobacco between the homeless and substance abuse populations. However, there were significantly more pipe smokers in the substance abuse group than in the homeless group.

Both the homeless and substance abuse veteran groups were asked to report a history of heavy alcohol use. NHANES III subjects reported an av-erage number of alcoholic drinks consumed per week. Using the criteria discussed by Sanchez-Craig et al. (20), male subjects who reported consuming more than 16 drinks per week were included in this study as heavy alcohol

users. Over twice as many homeless veterans (33.8%) reported a history of heavy alcohol use than the general male population (16.0%). There was no difference between the homeless and substance abuse populations in the proportion of heavy alcohol users.

Homeless veterans present an overall picture of depressed perception of oral health when compared to the general male population. The homeless were more likely to perceive a need for new dental prostheses, report needing dental care, and report higher rates of recent oral pain. When compared to the general male population, fewer homeless veterans ranked their oral health as excellent or very good, while more of the homeless rated their oral health as poor. The homeless veterans and substance abuse populations did not differ in their perceived need for dental care, their reporting of oral pain, or in their perception of oral health. Over 50 percent of each group felt their oral health was only fair to poor. A significantly greater number of homeless veterans reported that they perceived a need for a new prostheses compared to the substance abuse population.

Table 4 shows adjusted means with corresponding confidence intervals for DMFT (decayed, missing, or filled teeth) by group, while adjusting for confounding by age, ethnicity, marital status, and smoking status. Heavy alcohol intake, use of smokeless tobacco, and pipe smoking also were considered for inclusion, but did not add significantly to the model and thus were excluded. Table 4 also presents unadjusted means for comparison purposes. Weighting for the dental examination of NHANES III was included in the ANOVA model to adjust for the complex sampling of NHANES III. There were no significant differences in the DMFT, the decayed (D) component, the filled (F) component, or the missing (M) component between the homeless group and the substance abuse group. However, the general population had significantly lower DMFT, significantly lower number of decayed teeth, and significantly more filled teeth than either the homeless population or the substance abuse population. In the adjusted model, the general population did not differ significantly from either the homeless population or the substance abuse population in the number of

missing teeth. Overall, 64 percent of homeless veterans examined had decayed teeth present, and 71 percent had missing teeth that had not been replaced.

Table 5 summarizes other oral health measures collected for the homeless population and the substance abuse population. Anterior tooth trauma was comparatively similar in all populations. There were no significant differences in rates of anterior tooth trauma, edentulousness, head and neck pathology, or diagnosed nonfunctional dental prostheses between the homeless population and the substance abuse population. The general population had a significantly lower rate of edentulism and of head and neck pathology compared to the homeless population.

Both the homeless (mean=2.36) and substance abuse (mean=2.30) groups showed only fair oral hygiene at the time of the dental evaluation. Both groups in this study averaged Class III periodontal status, defined as moderate bone loss, some mobility, and furcation involvement. This data could not be compared to NHANES III data due to collection and reporting differences.

Discussion

This paper reports data on the oral health status of a national sample of homeless veterans enrolled in a rehabilitation program and compares this sample with a domiciled substance abuse control group, who had never been homeless, and the general male population of the United States. The average age and ethnic composition of this homeless population is comparable to other demographic descriptions of homeless veterans in the literature (21,22). Homeless veterans in this study were generally similar in their sociodemographic profile with the substance abuse veterans, but there were some specific differences. There were significantly more older patients who were in the substance abuse program, but had never been homeless. This difference may be viewed in light of the fact that the homeless population is getting younger, and among the homeless the life span is reduced compared to the general population. The numbers of Caucasians and African Americans were similar in both groups, which comprised over 90 percent of the populations, but there were more Hispanics and others in the sub-

TABLE 4
DMFT and Components by Group, Unadjusted and Adjusted for Confounding

	Unadjusted Mean	Adjusted Mean	95% CI	P-value
DMFT				
Homeless	15.99	15.21	(14.28, 16.14)	
Substance abuse	15.95	15.25	(14.16, 16.35)	.947*
NHANES III	12.62	14.12	(13.63, 14.61)	.014†
Decayed teeth				
Homeless	3.67	3.50	(3.17, 3.82)	
Substance abuse	3.23	3.11	(2.73, 3.49)	.091*
NHANES III	0.85	1.13	(0.96, 1.30)	<.001†
Missing teeth				
Homeless	7.99	9.06	(8.04, 10.09)	
Substance abuse	7.61	8.71	(7.51, 9.91)	.626*
NHANES III	4.87	8.62	(8.08, 9.16)	.685†
Filled teeth				
Homeless	4.32	2.65	(1.84, 3.46)	
Substance abuse	5.11	3.43	(2.49, 4.38)	.169*
NHANES III	6.90	4.37	(3.94, 4.79)	<.001†

*P-values obtained from weighted GEE comparison of the homeless group to the substance abuse group while adjusting for age, smoking status, marital status, and ethnicity.

†P-values obtained from weighted GEE comparison of all three groups while adjusting for age, smoking status, marital status, and ethnicity. Weights for NHANES III were utilized to adjust for the complex sampling scheme of NHANES III.

TABLE 5
Oral Health Measurements

Measurement	NHANES III Population* (n=6,259)	Homeless Population (n=281)	P-value†	Homeless Population (n=281)	Substance Abuse Population (n=150)	P-value†
Oral hygiene						
Poor				30.4% (83/273)	30.1% (43/143)	
Fair				34.4% (94/273)	36.4% (52/143)	
Good				30.4% (83/273)	24.5% (35/143)	
Excellent				4.8% (13/273)	9.1 (13/143)	.253
Periodontal status						
Class I				13.1% (32/245)	16.5% (22/133)	
Class II				30.6% (75/245)	25.6% (34/133)	
Class III				33.1% (81/245)	28.6% (38/133)	
Class IV				23.3% (57/245)	29.3% (39/133)	.349
% edentulous	6.7% (418/6,259)	10.0% (28/281)	.033	10.0% (28/281)	7.4% (11/149)	.375
% anterior tooth trauma	20.4% (1,078/5,273)	21.4% (60/281)	.712	21.4% (60/281)	20.1% (30/149)	.768
Head and neck pathology	3.3% (206/6,259)	9.6% (27/280)	<.001	9.6% (27/280)	11.4% (17/149)	.566
% nonfunctional prosthesis	27.6% (267/967)	28.1% (18/64)	0.926	28.1% (18/64)	38.2% (13/21)	.306

*Frequencies are weighted frequencies obtained by using suggested weighting factor in NHANES III.
†P-values are based on chi-squared test of independence.

stance abuse population, though these numbers were very small. Both groups differ from the general male population in age and ethnicity. The higher number of married men in the substance abuse population is also significantly different between the two veteran populations. This difference suggests a lack of social support in the homeless population not found in the substance abuse veterans or the general male population.

Tobacco use and heavy alcohol use are distinct issues to consider within risk behavior data. Tobacco use is a critical contributor to poor oral health. Smoking has been studied extensively as a putative risk factor for periodontal disease. The association between smoking and periodontal destruction has been shown, along with a dose-related response (23). Researchers report a 20 percent increase in periodontitis among younger adults who smoke (24). When comparing smoking prevalence rates, approximately 80 percent of both veteran populations describe themselves as smokers. An age-adjusted comparison of the periodontal health between the smokers and nonsmokers in the homeless group showed that those who smoked were significantly (P=.006) more likely to have Classification III or IV periodontal disease. This same finding was also true for subjects in the veteran non-homeless comparison group (P=.018).

Although not as well documented, several studies show that smokers had higher caries rates than nonsmokers (25-27). Greater gross decay has been associated with increased cigarette consumption and more frequent alcohol use (4). Thus, we might expect higher percentages of decayed and filled teeth among smokers in both the homeless and substance abuse populations. However, homeless veterans and substance abusers who smoked did not have a significantly higher percentage of decayed and filled teeth when compared to nonsmokers.

Caries rates for the homeless and substance abuse populations were statistically higher than those in the general population. Several community-based studies have evaluated the oral health status of the homeless in different ways. Boston dentists examined 73 homeless patients utilizing caries identification protocols similar to this study and found a mean of 5.9 decayed teeth (DT) (7). Medical students in Los Angeles examined 529 homeless patients using a pen light and tongue blade and reported a mean DT of 2.3 (4). DT rates outside the United States ranged from 4.1 to 5.0 (5,6). Although only one measure of oral disease, DT statistics demonstrate the variability

of study protocols and study populations. The overall rate of disease represented by DMFT is statistically higher in the homeless and substance abuse populations compared to the general male population.

What is clear is that the homeless and substance abuse populations remain very similar regardless of adjusting for age, smoking status, marital status, and ethnicity. The number of missing teeth in the general population was no longer significantly lower after adjustment for confounding variables. This may be due to the significantly higher percentage of older adults in the NHANES III population. A higher level of filled teeth in this homeless veteran population is expected when compared to a group of homeless veteran men who have not utilized the VA's domiciliary services since dental treatment was received by 43 percent of the homeless study population during their participation in rehabilitation programs. In unpublished national VAMC data reported from 1988–92, the most common dental treatments provided for homeless domiciliary patients were dental exams, prophylaxis, restorations, and extractions. These treatments also would lead to an underestimation of untreated dental caries among the homeless population that may have

been identified and treated at a VA dental clinic prior to this study.

Substance abuse is a significant factor affecting the health of the homeless. Oral trauma and enamel erosion from prolonged contact with gastric acids are both found at much higher rates in chronic alcoholics (28,29). There was a slightly higher rate, though not significant, of trauma to anterior teeth in the homeless sample compared to the general population, with a similar trauma rate in the substance abuse group. However, over 2,000 subjects in the NHANES III study were not assessed for anterior trauma. If those subjects were coded and the majority reported no anterior trauma, the prevalence would be greatly reduced. Enamel erosion was not specifically identified in this study.

Both the homeless and substance abuse populations are at increased risk for oral carcinoma because the two primary risk factors for this disease are chronic alcohol abuse and smoking. Eighty-one percent of the homeless veterans housed in VAMC domiciliary facilities in 1998 were diagnosed with alcohol dependency and 67 percent with drug dependency (9). Our study confirms heavy alcohol use at a significantly higher rate in both the homeless and substance abuse populations than the general male population. The rate of recent alcohol abuse is similar to rates found in both a generalized survey of homeless in Los Angeles (28%) and a group of veterans surveyed by VA outreach workers (33.4%) (21,22).

Long-term substance abuse has been shown to be associated with poor oral health. Findings include high caries rates, decreased oral care, and decreased salivary flow in heroin addicts (30-32). These patients are also more likely to consume sweets in their diet and seek care only when in pain. Psychoactive drugs often mask the pain of a toothache, and patients will have a more heightened awareness of chronic oral disease during withdrawal (31). Many homeless and most substance abuse patients had undergone drug withdrawal within the past year, and 46–47 percent reported oral pain. Both homeless and substance abuse patients will often present to dental clinics with systemic diseases such as endocarditis, hepatitis, and HIV, complicating their dental care (33,34). These issues are all relevant when viewing

the oral health status of both veteran populations in this study, as noted by the high DMFT, moderate periodontal status, and fair to poor oral hygiene diagnosed. Although there is no single cause for poor oral health, Hede et al. (28) found that poor oral health among alcoholics could be attributed more to social situations and dental behavior than to the consumption of alcohol.

Several weaknesses of this study require acknowledgment. The sample, based on cross-sectional rather than prospective design, included only homeless veterans enrolled in DCHV programs. The self-selected nature of the study population, veterans participating in rehabilitation programs, almost certainly resulted in underestimates of oral disease when compared to homeless persons living on the streets or in shelters. Twenty-eight examiners provided oral examinations with only written and verbal standardization, leading to possible discrepancies in definitions of caries, periodontal disease, and oral hygiene. Interrater reliability in this study was not as well established as in NHANES III. Although the plaque and periodontal definitions employed were not standardized indexes more appropriate for national comparisons, these definitions were chosen to be similar to the screening data collection tool utilized in many VAMCs at the time, increasing cooperation of large numbers of VAMC dentists. The study sample is not representative of all homeless, or even all homeless veterans; however, it represents the first oral health data collected from a national sample of homeless persons. Veterans currently comprise 41 percent of the homeless population (35).

In summary, other studies suggested that this homeless population would exhibit poor oral health. In fiscal year 1998, 38 percent of Department of Veterans Affairs patients admitted to VAMC domiciliaries for homeless veterans had a diagnosis of oral/dental pathology (9). Results confirmed more dental disease among the study population than the general male population. The study group was more likely to report oral pain, a perceived need for dental care and new dental prostheses, and to view their oral health as fair or poor when compared to the general male population. The homeless population also had a higher rate of DMFT. However, the

findings describe a substance abuse comparison group remarkably similar to the homeless population in oral health measures. In fact, half of the participating sites were unable to identify even 10 patients in their substance abuse programs who did not meet the criteria of never being homeless.

Instead of examining the differences in these two populations, consider what the similarities of these findings might imply. Life-style choices, such as heavy drinking and smoking, may contribute more to poor oral health than living accommodations. An unstable life-style also leads to poor medical follow-up. Oral disease is chronic in nature and requires an ongoing commitment to good self-care, as well as access and utilization of professional care. The results of this study lead us to question whether the more important determinant of good oral health is not where a patient lives, but how one lives. It also highlights the importance for oral care as part of the rehabilitation process, within both VAMC and community programs.

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