Cover Page

Full Title:

Oral Health Profile of Individuals Seeking Services at a Midtown Assistance Center for the Homeless

Abbreviated Title:

Dental Profile of Kansas City Indigent Population

Key Words:

Homeless, DMFT, CPITN, Dental Hygiene Students

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ABSTRACT

A dental profile of individuals seeking services at an assistance center in the mid-town Kansas City area was conducted. The DMFT scores showed a lesser number of teeth lost to dental decay (M score of the DMFT=5.02) and a greater number of teeth restored (F score of the DMFT=4.36) than was reported in other studies with similar populations. This indicates a lesser degree of past dental disease. However, a greater amount of current decay (D score of the DMFT=5.97) was noted in this population as compared to other studies in the literature. Periodontal disease, oral debris and home care habits were also documented.

ORAL HEALTH PROFILE OF INDIVIDUALS SEEKING SERVICES AT A MIDTOWN ASSISTANCE CENTER FOR THE HOMELESS

Introduction

The issue of homelessness is deeply rooted in chronic social, economic, and political problems. Individuals in this situation face many challenges to everyday living and can be found in all types of communities. Seventy-one percent of those who are homeless are in central cities, twenty-one percent in suburbs and urban fringe areas and nine percent can be found in rural areas. It is estimated that 842,000 adults and children are homeless in a given week. Forty-four percent of the homeless people work at least part-time, however, their average monthly income is only $367.00. This is in startling contrast to the median monthly income for U.S. households of $2,480.00.[1]

Overcoming severe poverty is hampered by the health issues of those who are homeless. Thirty-eight percent report problems with alcohol use, twenty-six percent report illegal drug use and thirty-nine percent report some form of mental health problems.[2] HIV/AIDS, tuberculosis, sexually transmitted disease, diabetes and hypertension are also common among those who are homeless.[3, 4] Eighty-two percent of the homeless are reported to use tobacco. Access to treatment for health problems and provision of dental care

is limited. [5, 6]

In 1996, the National Survey of Homeless Assistance Providers and Clients (NSHAPC), published a report describing homelessness in America. In this report, 2,938 homeless individuals responded to the question "What are the three things you need the most now?" Top on the list were 1) assistance finding a job (42%), 2) locating affordable housing (38%), 3) utilities assistance (30%), 4) transportation (19%), 5) clothing (18%) 6) food (17%), 7) medical care(13%) and dental care (11%).[1]

In a similar report, fifteen percent of 1,482 homeless mentally ill clients indicated dental services as among one of their three most important needs.[7] Three-hundred and one homeless individuals in Buffalo, New York ranked medical and dental care as their fifth greatest need. Only housing, safety, transportation and education came before medical/dental needs.[8] Allukian reports that ninety-seven percent of the homeless in Boston needed some form of dental treatment with eighteen percent of those neediig emergency care for pain and/or infection.[9]

Social Services Agencies Assisting the Homeless

Various social service agencies and service centers strive to meet the needs of the homeless population. The NSHAPC survey reports that there are 40,000 assistance

programs operating in the United States at an estimated 21,000 service locations. These programs have been developed using a variety of models which target specific needs of the homeless population. Food pantries are the most numerous type of program. It is estimated that 9,000 food pantries operate in the United States. Emergency shelters are next in number with approximately 5,700 programs. Other programs include transitional housing projects, soup kitchens, outreach and voucher distribution programs.

These assistance centers are operated by both non-profit and governmental agencies. Nonprofit agencies operate 85 percent of all homeless assistance programs. Government agencies operate only 14 percent of programs. Fifty-one percent of the non-profit agencies operating programs are secular and 34 percent are offered through religious organizations.

Some programs for the homeless are targeted at meeting health care needs. As a rule, homeless assistance programs with a health focus are the least numerous. The NSHAPC survey reports an estimated 2300 homeless programs with a health care emphasis. Primarily, the health problems that are targeted in these programs are mental health, alcohol and drug addiction and HIV/AIDS. Programs for general

physical health care needs number approximately 700 nationwide. [1]

An accurate dental health profile of the homeless is needed. [10] This profile should describe the oral health status of individuals by examining a variety of parameters. For example, examination of missing teeth and the presence of restored or filled teeth will provide an indicator of past disease. Current disease of both the hard and soft tissues is exhibited by the presence of dental caries and various periodontal diseases. The ability of the individual to care for his/her own mouth is examined by evaluating the amount of oral debris; plaque and calculus. An assessment of the functional status of the dentition or replacement appliances is important to determine whether speaking and chewing are affected by the oral conditions.

Several nationally recognized indices are readily available to make the assessments discussed above. The Decayed Missing and Filled Teeth Index (DMFT) is ideal for the assessment of past and present disease of the hard tissue.[11] The Community Index of Periodontal Treatment Needs (CPITN) is internationally recognized for the assessment of periodontal conditions.[12] Other indices can be created and built into a study to assess appliance use and condition; plaque and calculus; and gingival conditions.

The literature was reviewed to determine past documentation of the oral health status of homeless individuals. Published articles on studies of this type are limited. One of the most comprehensive studies examined 104 homeless men in Leeds, England.[13] This study reported on tooth loss and restored teeth (representing past disease), decay and periodontal conditions (representing current disease). Detail of the data from this study is described below.

Tooth loss was a significant finding in the Leeds study. Thirty-one percent of the subjects were edentulous. Fifty-nine percent of those with teeth exhibited a loss of twelve or more missing teeth. In terms of the DMFT, an average M score (missing teeth due to dental decay) of 13.2 was reported. Past disease can also be examined by assessing the restored or filled teeth in a person's mouth. In the Leeds study, an F score (filled teeth) of 2.6 was reported. The presence of current disease was reported using the D score (decayed teeth). The sixty-nine dentate men had a D score of 5.0, which explains that in those individuals, each person had an average of 5 decayed teeth.

The periodontal disease represents current disease in soft tissues. Periodontally, fifty-eight percent of the men in this study exhibited pocket depths of 3-6 millimeters and

pockets greater than 6 millimeters in forty-two percent.

Other studies incorporating the DMFT, in parts or as a whole, include a study of a group of seventy homeless men and women with mental problems in a Birmingham hostel.[14] Forty-eight of the seventy were dentate. Average scores were as follows; D score-3.58; M score-9.58, F score-2.74. A study conducted in two beach communities of Los Angeles reported a D score of 2.3 among the 456 dentate individuals assessed.[15] Three-hundred and twenty-three individuals were examined in a Cinncinati Clinic in 1991. Average scores were as follows; D score-3.6; M score-5.6; F score-4.1.[16]

The plaque control habits of homeless were mentioned in several studies. One study of 169 individuals reported various frequencies of toothbrushing ranging from twice daily brushing (42%)to twice a week brushing (7%). This study also reported that 76% of the individuals did not use dental floss.[17] Another study examined Toronto Youth ages 14-25 reported that 71.8% of the youth brushed at least one time per day and 5.7% used floss daily.[18]

Purpose of the Study

This study assessed the oral health status of homeless and impoverished clients seeking living assistance at a community social services center. Research questions included: 1) What level of past disease is evidenced by missing and restored teeth?

2) What level of current disease is evidenced by dental caries, gingivitis and periodontal disease? 3) To what degree is oral debris removed from the mouth as evidenced by plaque and calculus conditions and 4) What dental appliances are used by the clients and in what condition are these appliances? The dental profile provided in this study is useful for financial decision-making such as setting budget priorities and applying for grant opportunities.

Methods

The data were collected at the Redemptorist Social Services Center. This agency, located in mid-town Kansas City, Missouri, provides financial, medical, housing, food and clothing assistance for homeless and impoverished individuals. The income for these clients is less than $7000.00 per year. In the past year the agency has made fourteen-hundred contacts with individuals in need. Data were collected over a period of three years, between February of 1999 and April of 2002. Dental hygiene students from the University of Missouri Kansas City School of Dentistry provided the dental exams and collected data. All students attended an hour-long calibration session prior to collecting the data. The calibration session included information on how to implement the various indices and the use of forms for recording data.

Data collection included demographics and information on

current health status, medications, oral care habits, intra- and extra-oral conditions and use of dental appliances (partials and dentures). Indices included scores for plaque, gingival conditions, amounts of calculus, Decayed Missing and Filled Teeth (DMFT) and a rating for the Community Periodontal Index of Treatment Needs (CPITN).

Individuals involved in this study were recruited from the Redemptorist Social Services Center or a companion agency with similar clientele. The companion agencies included the Salvation Army and various midtown drug and alcohol treatment facilities. The subjects were asked if they would like to participate in a dental screening and dental education session.

Upon written consent from the clients, an interviewer (dental hygiene student) collected health history information and asked questions regarding oral care habits. This information was collected in a quiet and private area away from other participants. The health history asked basic questions to 1) screen out the need for antibiotic pre-medication prior to use of the dental probe, 2) alert examiners to latex allergies and 3) to determine major health concerns should a medical emergency arise.

Clients were then escorted to an examination area and seated in a portable dental chair. At this time an extra-oral exam was completed by the dental hygiene student examiner. Following the extra-oral exam, an intra-oral exam was conducted using portable

dental lighting and a mirror and explorer. At this time the data for the plaque, gingival, calculus and DMFT scores were collected. A periodontal probe was then used (health history permitting) to collect data for the CPITN. The examiner was assisted by a second dental hygiene student who served as data recorder. Copies of the patient health and habit questionnaire as well as the data collection form can be found as figures 1 and 2.

Each client was provided with dental hygiene instructions and oral home care products. These products included a toothbrush, toothpaste and floss. Clients were then given a written referral to a local community health center for dental care. The Center provided bus tokens free of charge in order to make dental care more accessible. The Social Services Center also assumed the charges for dental care of clients willing to seek and complete dental services.

Data were collated and entered into the SPSS software system for statistical analysis. Descriptive analyses were performed on various categories of the data.

Results

One-hundred and seventy-six individuals were seen over the three year period of this study. Of those, one-hundred and twenty-one were considered to be currently homeless or having been homeless within the past twelve months. The fifty-five individuals not included for this study were considered to be

outside the category of homeless, working poor or severely low-income.

The Results Section of this paper will be divided into several categories to ease the review of data. These categories correspond to the research questions posed for the study and include: 1) Level of past disease as evidenced by missing and restored teeth, 2) Level of current disease as evidenced by dental caries, gingivitis and periodontal disease, 3) Degree of oral debris removed from the mouth as evidenced by plaque and calculus conditions and 4) Presence and condition of dental appliances used by the clients. Additionally, the Results Section will describe demographics and general health conditions of the subjects.

Demographics and Health of the Population

Fifty-eight percent of the population was male (n=70) and the remaining forty-two percent female (n=51). The age range of females was from fourteen years through age eighty-eight. The age of males ranged from twenty-four years through age ninety-two. The average ages were forty-six and forty-five for females and males respectively. Health conditions included; high blood pressure, mental and emotional disorders, asthma, diabetes, arthritis, cancer and HIV. Fifty-six percent of the clients were being treated with medications, some on multiple medications. Twenty-two percent were on one medication. Fifteen percent

reported two medications, twelve percent reported three and four percent reported the use of four medications on a daily basis. One individual was being treated with five medications, one with six medications and another with ten medications. Eighteen individuals or sixteen percent presented with a blood pressure outside the normal ranges for both diastolic and systolic measurements. The range of eighty to ninety was used as a standard for normal diastolic pressure and a range of one-hundred and twenty to one-hundred and forty-five as a standard for normal systolic pressure. Seventy-eight percent (n=14) of those clients whose blood pressure measured outside normal ranges were not on blood pressure medication. Female clients of child-bearing age (forty-five years or less) were asked if they use a medication for birth control. None reported using a birth control medication.

Level of Past Dental Disease of the Population

Ninety-six percent (n=116) reported a history of past dental treatment. Thirteen percent (n=16) explained that past dental work had caused significant pain or adverse reactions. Sixty-two percent (n=75) were experiencing current dental pain. All of these individuals were eligible for financial assistance for dental services, if willing to seek care. It is unknown how many actually sought care following the screening. Table 1 reflects data indicating past dental treatment and current dental pain.

Table 1. Reports of Past Dental Care and Current Dental Problems. (n=121)

CONDITION	NUMBER OF CLIENTS	PERCENT
History of past dental treatment	116	96%
Past treatment caused significant pain or adverse reactions	16	13%
Experiencing current dental pain	75	62%

The clients examined presented with an average of twenty-two teeth intact. Seven individuals, or 0.57%, were edentulous. In terms of the DMFT, an average M score (missing teeth due to dental decay) of 5.02 was reported. The M score explains that in those individuals with teeth present, each person had an average of five missing teeth. Past disease can also be examined by assessing the restored or filled teeth in a person's mouth. In this study, an F score (filled teeth) of 4.36 was reported. Table 2 displays data which reflect past disease as noted by the M and F scores from the DMFT Index.

Table 2. Past Dental Disease as Noted by the Dental Exam (n=121).

CONDTION	SCORE
Missing teeth-reflects past disease (M Score from the DMFT)	5.02
Filled teeth-reflects past disease (F Score from the DMFT)	4.36

Level of Current Dental Disease of the Population

The presence of current disease in the tooth structure was reported by using the D score (decayed teeth) from the DMFT index. The 116 dentate clients had a D score of 5.97, which explains that in those individuals, each person had an average of six decayed teeth.

The periodontal conditions can also describe present disease in soft tissues. Periodontally, the clients in this study exhibited pocket depths of 3.5-5.5 millimeters in 47.5% percent of those examined and pockets greater than 5.5 millimeters in 39.3% percent.

The gingival conditions also describe present disease in soft tissues. Gingival characteristics of these clients ranged from healthy (no inflammation) to severely inflamed. Thirty-seven percent presented with gingivitis that could be described as mildly inflamed (localized redness and edema). Forty-three percent presented with gingival tissues that were diffusely red with bulbous papillae and/or rolled margins. Table 3 displays data describing current disease of the hard and soft tissues as demonstrated by the D Score of the DMFT Index, the CPITN and the Gingival Index.

Table 3. Current Dental Disease as Noted by the Dental Exam (n=121).

CONDITION	INDEX USED	SCORE	PERCENT
Decayed teeth-reflects current disease (D Score from the DMFT)	D Score from the DMFT	5.97	
Pocket depths of 3.5-5.5 mm	CPITN		47.5%
Pocket depths greater than 5.5 mm	CPITN		39.3%
Presented with no inflammation	Gingival Index		14%
Presented with localized redness and edema	Gingival Index		37%
Presented with gingival tissues that were diffusely red with bulbous papillae and/or rolled margins.	Gingival Index		43%
Presented with gingival tissues that were blunted, cratered, exhibiting exudates and/or NUG	Gingival Index		6%

Degree of Oral Debris of the Population

Oral debris can be removed by regular mechanical cleansing with a toothbrush and floss. Clients made a self-report of oral care habits. The most reported response to the questions regarding frequency of brushing was "one time per day"(42.7%). Thirty-three percent reported brushing twice per week. Four percent (3.6%) reported brushing two times or less per week. Thirty-five percent (35.2%) reported using floss on occasion.

The existence of hard and soft deposits was measured using a Plaque Index and Calculus Index created for this study. The criteria for these indices can be found in Figure 2-Sample Data Collection Form. Fifty-two percent of the clients presented with moderate calculus conditions and forty-six percent presented with material alba that is detectable with an explorer. Ten percent

of the clients presented with no detectable plaque and six percent exhibited plaque that covered a large portion of the tooth and was detected by visual exam rather than by explorer. Table 4 displays the data which reflect the current oral debris and home care habits.

Table 4. Home Care Habits and Oral Debris.

CONDITION	PERCENT
Brushes one time per day	42.&%
Brushes twice a week	33%
Brushes less than twice per week	3.6%
Uses floss on occasion	35.2%
No visible calculus	8%
Light calculus-localized visible areas	28%
Moderate calculus-consistent areas visible	52%
Heavy calculus-bridges visible	12%
No materia alba visible	10%
Materia alba detectable with an explorer	46%
Materia alba visibly detectable cervically and interproximally	38%
Materia alba visibly detectable over the entire facial surface	6%

Presence and Condition of Dental Appliances Used by the Population

The use of dental appliances, (partial or full dentures) can be vital to the nutritional status of the individual. Seventeen clients (7.1%) reported having some form of dental appliance. Seven had full dentures and ten had partial dentures. Six clients reported that the appliance was not functional. Twelve

appliances were examined for cleanliness. Seventy-five percent of those appliances examined were clean or had only light debris.

Discussion

This study revealed the level of past dental disease experienced by this population. The M score and F scores were 5.02 and 4.36 respectively. This indicates that an average of five teeth per person were lost to dental decay and four teeth per person had been restored. These scores compare favorably to the scores reported in the Leeds study which had an M score of 13.2 and an F score of 2.6.[13] Other studies revealed M scores of 9.58[14] and 5.6 [16]and F scores of 2.74 [14] and 4.1 [16]. All of the scores in this study showed a lesser number of teeth lost to dental decay and a greater number of teeth restored.

Current disease of soft and hard tissues among this population was revealed through the use of the D score of the DMFT and the CPITN and the Gingival Index. The D score in this study was 5.97 which indicates that an average of six teeth in each person's dentition were currently decayed. This D score is greater than the D score in the Leeds study (5.0)[13]. The same holds true for other D scores reported in the literature; 3.58 [14], 2.3 [15] and 3.6 [16]. The higher D score may indicate that there is lesser access to care for current dental decay in this population than was experienced with other homeless populations.

Periodontally, thirty-nine percent of this population

exhibited pocket depths greater than 5.5 millimeters. In the Leeds study, the 42% of the population had pocket depths of greater than 6 millimeters [13]. This suggests that advancing periodontal disease is a problem among both populations. Other studies were limited in reporting periodontal conditions.

Moderate calculus and plaque were visible in the subjects. Questions regarding home care revealed some information but not to the detail that was later desired by the researchers. Oral health quality of life issues were raised only on a limited basis with the subjects and documentation in area was not kept. The study was further limited in that the information gathered was for "one point in time" and did not provide follow-up data on the clients.

This study is of value in that it provides a dental health profile of the homeless population in mid-town Kansas City. This profile will be useful for comparison with other communities, demonstrating a need for dental care, funding sources and may serve as a basis for evaluation of future program effectiveness.

The clients serving as subjects for this study benefited by receipt of a dental exam, referral and oral health education. Dental hygiene students gained valuable experience in the use of public health indices and exposure to a population group not usually treated in the private practice setting.

Conclusion

A dental profile of the homeless population in the mid-town Kansas City area was conducted. The DMFT scores in this study showed a lesser number of teeth lost to dental decay and a greater number of teeth restored than in other studies with similar populations. This indicates a lesser degree of past dental disease.

However, a greater amount of current decay was noted in this population as compared to other studies reported in the literature. The authors suggest that this local population, although not exhibiting comparable past dental disease, is experiencing high levels of current dental decay and periodontal disease. This may indicate that the population studied has held an indigent status for less time than those in other studies.

Suggestions for future studies include greater detail when questioning about oral health related quality of life issues [19] and follow-up on individuals referred for dental care. It is further suggested that the program continue to involve dental hygiene students in the collection of data.

Figure 1. Patient health and habit questionnaire.

PATIENT HEALTH AND HABIT QUESTIONNAIRE

Patient Name: _____ **Date:** _____

Address: _____ **Phone:** _____

_____

Patient Gender: **Patient Age:** _____

☐ Male
☐ Female

Patient Source: **Blood Pressure:** _____

☐ Redemptorist Client
☐ Client from another community center (specify _____)
☐ Member of the Senior Club
☐ Redemptorist Volunteer
☐ Other

Health Information: (To be gathered by interviewer)

1. How would you describe your health at this time?

2. Are you taking any medications? YES NO PATIENT DOES NOT KNOW

Name of Medication	Reason for the Medication	Physician Prescribed? Yes/No

3. Do you have a heart murmur or have you ever had rheumatic fever?

YES NO PATIENT DOES NOT KNOW

Figure 1. Continued.

4. Have you ever had any dental work before?

   YES NO (If yes, answer question #5)

5. Have you had any unusual pain or bad reactions to past dental work? (If yes, please summarize)

   YES NO PATIENT DOES NOT KNOW

6. Are you experiencing any dental pain/problems today?

   YES NO (If yes, please summarize)

7. Are you allergic to latex?

   YES NO PATIENT DOES NOT KNOW

8. How often do you brush your teeth?

9. Do you use dental floss or any other device (other than a brush) to clean your teeth?

10. Do your gums bleed?

    YES NO If yes, ask the follow-up questions below

    Do your gums bleed when you brush? YES NO
    Do your gums bleed when you floss? YES NO
    Do your gums bleed when you eat? YES NO
    Do your gums bleed when you sleep? YES NO

_____ _____

Patient Signature **Interviewer**

Figure 2. Data collection form.

DATA COLLECTION FORM

Patient Name: _____ Date: _____

Head and Neck Assessment

Head and Neck WNL Other _____

Lips, Cheeks, Vestibule, Palate WNL Other _____

Gingival Assessment

_____ No inflammation present (health)

_____ Mildly inflamed (localized redness, edema)

_____ Moderately inflamed (red, bulbous papillae, some blunting or rolled margins)

_____ Severely inflamed (blunted, cratered papillae, exudate, NUG)

Plaque Assessment

_____ No materia alba detectable with the explorer

_____ Materia alba present, requires an explorer to detect

_____ Materia alba clearly present, detected at the gingival margins & interproximally by visual exam

_____ Materia alba covering a large portion of the tooth, detected by visual exam

Calculus Assessment

_____ No calculus visually evident

_____ Light (isolated areas of visible deposits)

_____ Moderate (consistent areas of visible deposits)

_____ Heavy (bridges of calculus consistently visible)

Figure 2. Continued.

Assessment of Decayed, Missing and Filled Teeth

DMFT Index

2___ 3____ 4 ____ 5 ____ 6____ 7____ 8 ____ 9____ 10____ 11____ 12____ 13____ 14____ 15____

31___ 30____ 29 ____ 28 ____ 27____ 26____ 25 ____ 24____ 23____ 22____ 21____ 20____ 19____ 18____

Total of Missing Teeth: _____ (This number should reflect the number missing from 28 teeth)
Total of Decayed Teeth: _____
Total of Filled Teeth: _____
Total of Unaffected Teeth: _____
Total Teeth Present: _____ (This number should reflect the total of decayed, filled, unaffected)

\\\\

Community Periodontal Index of Treatment Needs

PSR CODE				
Tooth #17____	Tooth #16____	Tooth #11____	Tooth #26____	Tooth #27____
Tooth #47____	Tooth #46____	Tooth #31____	Tooth #36____	Tooth #37____

CPITN Treatment Needs Determination: _____

Patients are classified (0, I, II, III) into treatment needs according to the highest coded PSR score recorded during the examination.

0= No need for treatment (PSR Code 0)
I= Oral hygiene instruction (PSR Code 1)
II= Oral hygiene instruction plus scaling and root planing, including elimination of plaque retentive margins of fillings and crowns (PSR Codes 2 and 3)
III= Complex periodontal therapy that may include surgical intervention and/or deep scaling and root planing with local anesthesia (PSR Code 4)

Figure 2. Continued.

Appliance Assessment

1.	Patient has an appliance?	YES NO
2.	What type of appliance does the patient have?	_____
3.	How often does the patient wear the appliance?	Daytime Only Day and Night Rarely Only for chewing
4.	Does the patient feel that the appliance is functional?	YES NO
5.	Condition of the appliance:	Clean-light debris Heavy debris Intact Broken

_____

Examiner Signature

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