Oral health impacts and quality of life in an urban homeless population

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ABSTRACT

Background: Homeless people experience a much higher burden of general health conditions and have much poorer oral health than the rest of the population. The aim of this study was to determine the oral health impacts and general quality of life of an urban homeless population.

Methods: A convenience sample of 58 adults (dentate n = 56) experiencing homelessness were assessed using a survey which included the 14-item Oral Health Impact Profile and the 26-item World Health Organization’s Quality of Life – short version. A subset (n = 34) also underwent a dental examination.

Results: The study participants were younger, more likely to be Indigenous, smoked daily and avoided dental care because of cost than the rest of the population. Dentate homeless adults reported significantly greater oral health impacts when compared with the Australian dentate population. General quality of life was significantly poorer than for the rest of the population. Treatment need was associated with greater oral health impacts.

Conclusions: Poor oral health is prevalent and adversely impacts quality of life for homeless people, but it is only one of a range of complex social and health challenges being faced by these individuals. Dental care should be better integrated within homeless support services.

Keywords: Dental care, dentistry, homelessness, oral health, quality of life.

Abbreviations and acronyms: OHIP-14 = Oral Health Impact Profile; WHOQOL-BREF = World Health Organization Quality of Life – short version.

(Accepted for publication 18 September 2013.)

INTRODUCTION

Homeless people represent one of the most disadvantaged groups in society. In 2006 there were an estimated 105 000 homeless individuals in Australia (53 per 10 000 of the population).1 Clearly there are logistic and methodological problems in undertaking a census for homeless people, and so it is likely that the statistics are an under-representation. Previously, there was a perception that those who were homeless were mostly older males. The age profile of this group is now very different, with the majority being aged 34 years or less and 44% of the homeless being female.1 An estimated 60–70% are long-term homeless.1 The overall number of homeless people in Australia is increasing.1

The rate of homelessness, especially primary homelessness (improved homes or squats, tents and sleeping rough) is significantly higher in Queensland and Western Australia than in the rest of Australia, except for the Northern Territory where the rate is the highest in Australia.1 Queensland’s homeless population of approximately 27 000 consists of those in boarding houses (20%, tertiary homelessness); Supported Accommodation Assistance Program and staying temporarily with friends and relatives (12% and 49% respectively, secondary homelessness); and improvised dwellings/sleeping rough (19%, primary homelessness).1,2 Indigenous Australians are over-represented in this group and comprise 2.5% of the Australian population but 9.1% of those who are homeless.1 Inner Brisbane has 9% of Brisbane’s population but 38% of its homeless people.2

Homelessness is more insidious than just a lack of safe and secure housing. It isolates people from their families, friends and communities and leaves people vulnerable to risky health behaviours and multiple chronic health problems.3 Poverty, lack of family support, social isolation, mental illness and substance addiction are common reasons for becoming homeless...
and staying homeless. The health problems of those who are homeless are often unidentified or poorly managed, with individuals experiencing a range of barriers to accessing care. Oral health and perceived oral health have been shown to be significantly poorer for homeless populations. Oral inflammation and pain, poor oral function and embarrassment of the mouth’s appearance can have adverse social, psychological and general health impacts.

The aim of the current study was to describe adverse impacts of oral health problems and general quality of life for a homeless population in Brisbane. Little data currently exists on this topic, particularly in the Australian context, and so this research is needed to support requests from the sector for enhanced access to appropriate dental care for this population.

METHODS

Study population
A convenience sample of adults experiencing homelessness in an urban area of an Australian capital city (Brisbane) was utilized for this study. All individuals accessing a central Brisbane homeless service (Roma House, Mission Australia) over a 15-month period during 2012–2013 were invited to participate in the study. This homeless service is located in inner Brisbane and targets the state’s most high needs homeless people. It provides accommodation and support services for up to 39 long-term homeless people at any one time. Residents have the opportunity to stay for up to three months to regain their stability and health. Recruitment occurred at the initial health assessment that all residents undergo on entry to the service and was undertaken by the clinical nurse coordinator of the service. All residents of the service were adults and only those people who were deemed by the clinical nurse coordinator to be able to provide informed consent were invited to participate. The purpose of the study and the nature of participation were explained verbally and in writing, and those wishing to participate gave signed informed consent. Participants completed a self-report survey which consisted of three components and this was done with the assistance of the participating resident’s case manager. Oral health products were offered to each participant. Reasons for non-participation were not recorded. All participants were invited to attend The University of Queensland, School of Dentistry clinics for assessment and treatment free of charge. Ethical approval for the study was obtained from the Medical Research Ethics Committee of the University of Queensland.

Instruments
The survey consisted of three components which collected data on three areas: demographics and health behaviours; oral health impacts; and general quality of life.

Demographics and health behaviours
Demographic information (age, gender, Indigenous status, Australian born, eligibility for public dental care), health behaviours (smoking, dental visiting) and dentate status data were collected in a survey designed for this study. The questions were structured to enable comparison with previously published data.

Oral health impacts
Subjective oral health was measured using the previously validated 14-item Oral Health Impact Profile survey (OHIP-14). Oral impacts are measured within seven dimensions: functional limitation; physical pain; psychological discomfort; physical disability; psychological disability; social disability; and handicap.

Quality of life
The World Health Organization’s Quality of Life – short version (WHOQOL-BREF) was used to measure quality of life across four domains: physical health; psychological health; social relationships; and environmental factors. This instrument has previously been validated in a range of populations and has also been used to collect data from a homeless group.

Oral health status and treatment need
Oral health data were extracted from the dental clinic patient management system subsequent to the participants’ appointments. The number of teeth present and the number of decayed teeth were recorded for each participant. An assessment of treatment type(s) required was made from the clinical notes. Treatment categories were: periodontal therapy (if a Periodontal Screening and Recording Index of 2 or greater was recorded for any sextant); restorative treatment (including endodontics); tooth extraction; and prosthetic replacement of teeth (if this was indicated in the notes as required and desired by the patient).

Population data
Variables of interest within the study population were compared with available population data. For demographic variables (age, gender, Indigenous status, born
in Australia), these were compared with the 2011 Australian Bureau of Statistics Census data for Greater Brisbane. Current daily smoking data for the Australian population were drawn from the 2010 National Drug Strategy Household Survey, which is a self-report survey conducted on a three-yearly basis collecting information on drug use and attitudes for Australians 12 years and over. The 2004–06 National Survey of Adult Oral Health was used to compare oral health data relating to edentulism and dental visiting with that of the study population. The NSAOH is the largest available oral health survey of Australians 15 years and over, with sampling from all states and territories. The sample size for the telephone interview of this survey was 14 123 people, 5505 of whom also underwent an oral examination. Australian population data for oral health impacts was taken from the 1999 National Dental Telephone Interview Survey (n = 3973), reported in Slade et al. General quality of life data for the Australian population (n = 211) was derived from an international field trial of the WHOQOL-BREF instrument.

**Data analysis**

For each proportion (demographics, health behaviours) or mean score (WHOQOL-BREF and OHIP-14) reported, the 95% confidence intervals (95% CI) were determined. Non-overlapping 95% CIs for a parameter by different groups were assumed to indicate a statistically significant difference. For variables where a normal distribution was not demonstrated, medians and interquartile ranges were reported. Associations between oral health status or treatment need and oral health related quality of life or general quality of life were determined by calculating the Spearman correlation coefficient.

**RESULTS**

The sampling frame for the study consisted of the 166 people who had attended the homeless service over the study period. Fifty-eight people participated in the study, resulting in a response rate of 34.9%. The study sample did not differ significantly from the sampling frame on age, gender, Indigenous status or being Australian born (data not shown). Dental examinations were undertaken on 34 of the participants who had completed the survey. The remaining 24 participants did not attend the dental clinic appointment (reasons not recorded).

**Demographics and health behaviours**

The age range of the participants was 23 to 61 years. Participants were significantly younger than the general Brisbane population, with almost three-quarters of the participants aged under 45 years (Table 1). Gender and being born in Australia did not differ significantly from the general population. A much higher proportion of participants identified as Indigenous (16% vs 1.6%) and were current daily smokers (86% vs 16%) when compared with available comparison population data.

While the proportion of those who were edentate was similar for the study sample and the general population, participants were significantly more likely to be eligible for public dental care, and less likely to have visited a dentist within the previous 12 months, visited a private dentist or visited for a check-up. The proportion of participants who avoided or delayed dental care due to cost was more than twice that of the general population (Table 1).

**Oral health impacts**

Among dentate participants (n = 56), oral health impacts were significantly greater across all measures when compared with an Australian population (Table 2). Prevalence (the proportion of people reporting one or more impacts fairly or very often), extent (the mean number of impacts reported fairly or very often), and severity (the impact of individual problems experienced) were significantly greater. The most commonly reported impacts were related to cost (avoided or delayed care due to cost), pain (dental treatments), and functional limitations (unrelated to occlusal problems).

**Table 1. Demographics and health behaviours of homeless adults in Brisbane (n = 58) and available population data**

<table>
<thead>
<tr>
<th></th>
<th>Homeless% (95% CI)</th>
<th>Comparison population data% (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15–44 years</td>
<td>74.1 (62.3–85.9)</td>
<td>56.3 (56.3–56.3)</td>
</tr>
<tr>
<td>45+ years</td>
<td>25.9 (14.1–37.7)</td>
<td>45.7 (43.7–45.7)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>53.4 (40.0–66.9)</td>
<td>49.8 (49.8–49.8)</td>
</tr>
<tr>
<td>Female</td>
<td>46.6 (33.1–60.0)</td>
<td>52.2 (52.2–52.2)</td>
</tr>
<tr>
<td><strong>Indigenous</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify as Indigenous</td>
<td>15.5 (5.8–25.3)</td>
<td>1.6 (1.6–1.6)</td>
</tr>
<tr>
<td>Born in Australia</td>
<td>81.0 (70.5–91.6)</td>
<td>70.3 (70.3–70.3)</td>
</tr>
<tr>
<td>Current daily smoker</td>
<td>86.2 (76.9–95.5)</td>
<td>16.2 (15.2–17.2)</td>
</tr>
<tr>
<td>Edentate</td>
<td>3.4 (0.0–8.4)</td>
<td>3.9 (3.1–4.9)</td>
</tr>
<tr>
<td>Eligible for public dental care</td>
<td>91.4 (83.8–98.9)</td>
<td>31.2 (29.2–33.2)</td>
</tr>
<tr>
<td>Last dental visit within previous 12 months</td>
<td>24.1 (12.6–35.7)</td>
<td>62.7 (58.6–66.7)</td>
</tr>
<tr>
<td>Last dental visit to private dentist</td>
<td>29.3 (17.1–41.6)</td>
<td>82.5 (79.0–85.5)</td>
</tr>
<tr>
<td>Usual reason to visit dentist is for check up</td>
<td>15.5 (5.8–25.3)</td>
<td>59.3 (54.3–64.1)</td>
</tr>
<tr>
<td>Avoided or delayed dental care due to cost</td>
<td>67.2 (54.6–79.9)</td>
<td>29.9 (25.8–34.5)</td>
</tr>
</tbody>
</table>

*Non-overlapping confidence intervals, indicating statistical significance.

(a)2011 ABS (Brisbane, 15+ years, n = 1 619 207).

(b)2010 NDSHS (Qld, 12+ years, n = 5551).

(c)2004–06 NSAOH (Qld, 15+ years, n = 2052).

(d)2004–06 NSAOH (Brisbane, 15+ years, n = 910).
Table 2. Prevalence, extent and severity of oral health impacts for dentate homeless Brisbane adults (n = 56) and the dentate Australian population (n = 3902)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Prevalence (% people reporting one or more items fairly/very often)</th>
<th>Extent (mean number of items reported fairly/very often)</th>
<th>Severity (mean score)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mean (95% CI))</td>
<td>(mean (95% CI))</td>
<td>(c)</td>
</tr>
<tr>
<td>Physical pain/disability</td>
<td>80.4 (73.8–86.9)*</td>
<td>6.0 (1.0–10.3)*</td>
<td>28.6 (24.6–32.7)*</td>
</tr>
</tbody>
</table>

*Non-overlapping confidence intervals, indicating statistical significance.

Table 3. Severity of individual oral health impacts for dentate homeless Brisbane adults (n = 56) and the dentate Australian population (n = 3902)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Number of Items</th>
<th>Homeless (mean (95% CI))</th>
<th>Australia% (mean (95% CI))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical pain/disability</td>
<td>4</td>
<td>9.2 (7.9–10.5)</td>
<td>3.4 (3.3–3.6)*</td>
</tr>
<tr>
<td>Psychological discomfort/disability</td>
<td>4</td>
<td>3.3 (2.6–3.9)</td>
<td>2.3(c)</td>
</tr>
<tr>
<td>Functional limitation</td>
<td>2</td>
<td>9.2 (7.9–10.5)</td>
<td>0.73(c)</td>
</tr>
<tr>
<td>Social disability</td>
<td>2</td>
<td>3.5 (2.8–4.1)</td>
<td>0.54(c)</td>
</tr>
<tr>
<td>Handicap</td>
<td>2</td>
<td>3.4 (2.8–4.1)</td>
<td>0.46(c)</td>
</tr>
</tbody>
</table>

*Non-overlapping confidence intervals, indicating statistical significance.

Oral health impacts and homelessness

or very often) and severity (the mean total score) were all at least three times greater in the study population compared with the general Australian population. The physical, functional, social and handicap domains demonstrated the greatest difference between participants and the general population. The psychological domain was the dimension where there was the least difference between the two populations (Table 3).

Quality of life

General quality of life was significantly poorer across all four domains (physical, psychological, social and environment) for the participants than for a comparison Australian population (Table 4). This was especially so for the social relationships dimension of quality of life.

Table 4. WHOQOL-BREF scores for homeless adults in Brisbane (n = 58) and the general Australian population (n = 211)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Homeless (mean (95% CI))</th>
<th>Australia% (mean (95% CI))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Physical</td>
<td>9.0 (8.2–9.8)</td>
<td>15.7 (15.3–16.1)*</td>
</tr>
<tr>
<td>2. Psychological</td>
<td>8.9 (7.7–10.1)</td>
<td>15.6 (15.2–16.0)*</td>
</tr>
<tr>
<td>3. Social</td>
<td>7.9 (6.6–9.3)</td>
<td>15.3 (14.8–15.8)*</td>
</tr>
<tr>
<td>4. Environment</td>
<td>8.9 (8.2–9.6)</td>
<td>13.1 (12.8–13.4)*</td>
</tr>
</tbody>
</table>

*Non-overlapping confidence intervals, indicating statistical significance.

Oral health status and treatment need

For the 34 participants for whom a dental examination was undertaken, the median number of teeth missing was 6 (interquartile range 2–9). This is comparable with estimates from the Australian population (mean number of missing teeth = 6.1 (5.9–6.3)). However, the median number of decayed teeth was 6 (interquartile range 4–12) and this was much greater than that reported for the Australian population (mean number of decayed tooth surfaces = 0.8 (0.7–0.9)). All participants had at least one treatment type required (Table 5), with the most prevalent need being for restorative treatment (91%). Treatment of periodontal disease was also commonly required (71%) and 62% of participants needed at least one tooth extracted. A lower proportion of participants (35%) were recorded as requiring prosthetic replacement of teeth.

No association was demonstrated between oral status and oral health related quality of life (OHIP-14 total score) or general quality of life (WHOQOL-BREF Item 1). However, the number of dental treatment types required for an individual was significantly associated with their oral health related quality of life (Spearman’s rho = 0.379, p = 0.03).

Table 5. Proportion and frequency(a) of dental treatment type required by homeless adults in Brisbane (n = 34)

<table>
<thead>
<tr>
<th>Dental treatment type</th>
<th>n</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodontal therapy</td>
<td>24</td>
<td>71</td>
</tr>
<tr>
<td>Restorative (including endodontic) treatment</td>
<td>31</td>
<td>91</td>
</tr>
<tr>
<td>Extraction of teeth</td>
<td>21</td>
<td>62</td>
</tr>
<tr>
<td>Prosthetic replacement of teeth</td>
<td>12</td>
<td>35</td>
</tr>
</tbody>
</table>

(a) More than one treatment type per person was possible.
DISCUSSION

Given the substantial and complex financial, social, psychological and medical challenges being experienced by the residents of the homeless service, the response rate of 35% was reasonable. While it could be expected that higher functioning residents and those with oral health concerns as a priority would have been more likely to participate, the comparison of the sample with the sampling frame demonstrated no significant bias in terms of major demographic variables. The sample was younger and had a greater representation of people identifying as Indigenous than the general population and this is in line with available population data on homeless populations in Australia.1

Tobacco smoking rates of the sample, i.e. current daily smoking being almost ubiquitous, were comparable with rates reported for other homeless groups.6,7 It is similarly prevalent when compared with other disadvantaged subpopulations, such as those who are Indigenous19 or have severe mental illness.20 High smoking rates are a contributor to the increased burden of general and oral disease observed in homeless populations.

Eligibility for public dental care and dental attendance behaviours of the study sample were very similar to those reported for an Adelaide homeless population,7 and markedly different to the general Australian population.17 While almost all participants were eligible for free dental treatment at a Queensland public clinic, less than a quarter had attended a dentist within the previous 12 months, compared with 63% of the Australian population. A minority of the participants (16% vs 59% for the general population) reported dental visiting for preventive purposes and two-thirds had delayed or avoided dental care due to the cost, compared with 30% of the general population. However, cost is clearly not the only barrier to dental visiting for this group as only 34 of the 58 participants (59%) attended the free dental appointment arranged for them. This non-attendance rate is similar to that reported by a UK programme.21 Dental anxiety, having a generally chaotic life, mental illness and substance use were anecdotally reported by Roma House staff as being barriers to participants attending dental appointments.

The oral health impacts reported by the study participants were much greater than those reported by the general Australian population, demonstrating the significant effect on the lives of these individuals due to untreated oral disease. The severity of the impacts (total score) was similar to that reported for a homeless population in the UK.8 The psychological domain of the OHIP-14 instrument was the dimension where there was the least difference between the study sample and the general population. This may mean that the homeless group was more accepting of greater levels of oral pain and dysfunction, possibly due to having no other choice than to live with it.

It is known that the prevalence of mental illness in homeless populations is high.3 Oral health and oral health related quality of life have been shown to be significantly poorer for people with mental illness when compared with the general population.20,22 Antipsychotic medications commonly cause dry mouth.23 Smoking, diabetes and poor dietary and oral hygiene practices can further compound the oral disease risk. Competing priorities due to other health conditions, deterioration in self-care and barriers to accessing dental care (e.g. cost, anxiety, lack of information) may result in oral health care needs being delayed or ignored by the individual and possibly by the treating health practitioner. Barriers to accessing appropriate dental care may also arise due to practitioner factors such as lack of understanding of mental illness, and lack of confidence and experience with treating these patients.

The WHOQOL-BREF instrument demonstrated significantly poorer quality of life for the participants in each of the four domains – physical, psychological, social and environment – compared with a general Australian population.12 While oral health status was not shown to be associated with general quality of life scores, this is likely because this group is living with a number of highly complex challenges and oral health is only one of these. However, quality of life adverse impacts of this scope and extent would undoubtedly contribute to creating barriers for individuals to implementing healthy behaviours and accessing health care including oral health care.

The dental status of the sample was similar in terms of decayed and missing teeth when compared with other available reports of homeless populations.24,25 The study sample had similar numbers of missing teeth when compared with the Australian population. However, the presence of untreated decay was many times higher than that experienced by the general Australian population, reflecting greater untreated disease experience. There was a very high treatment need observed, with a similar profile to that previously reported in a UK homeless population,21 and oral health related quality of life was found to be negatively correlated with treatment need. These findings emphasize the importance of addressing oral health needs in this extremely disadvantaged group. Since the underlying problems are so complex, it is likely that simple solutions do not exist. Enhancing awareness for at risk individuals and for homeless sector staff of oral health, health behaviours that support oral health and facilitating
ACKNOWLEDGEMENTS

The authors wish to acknowledge the invaluable assistance of Kelly Sciacca and all Roma House staff in the recruitment of participants and survey data collection. We would also like to express our sincere thanks to the residents of Roma House for participating in this project. The financial support of the Australian Dental Association Foundation and the Wm Wrigley Jr Company Foundation is gratefully acknowledged.

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