

Dental screening of older adults living in residential aged care facilities in Perth

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Abstract

Background: This study aimed to estimate the dental treatment needs and oral health status of a sample of older adults in residential aged care facilities in Perth.

Methods: The 348 participants (≥ 65 years) were interviewed and screened in 25 facilities. The screenings were carried out by one examiner using a mirror and a portable light.

Results: Over half (52 per cent) of the participants were edentulous and 45 per cent of those edentulous participants for whom a recording was made ($n=174$) had oral mucosal conditions. The 164 dentate participants had a mean of 12 disease-free standing teeth, a mean decayed, missing or filled teeth (DMFT) of 24.7 (mean DT 0.8, mean FT 5.3) and half of them required the removal of supragingival calculus. Of those with root caries experience ($n=127$), a mean of 1.3 untreated decayed roots and a mean of 1.9 roots covered in plaque were recorded. The majority of the participants (83 per cent) were pensioners eligible for government subsidized dental care and 47 per cent were reported by the Directors of Nursing to have dementia.

Conclusions: The data collected here demonstrate poor oral health conditions and a substantial treatment need in a neglected population. More people in nursing homes and hostels are keeping their natural teeth compared with a similar population studied 13 years ago.

Key words: Dental health surveys, geriatric dentistry, screening, treatment need.

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later, in the 1995 National Dental Telephone Survey, 38.1 per cent of those who were 65 years or older in Western Australia reported being edentulous and the dentate had lost an average of 12.7 teeth.² The national data collected in the 1999 National Telephone Survey reported that 33.4 per cent of the 65 years and older group in Australia were without any natural teeth and the mean number of missing teeth for the dentate was 11.6.³ The oral health status of older adults in Australia would thus seem to be improving.

The increasing pool of retained natural teeth in the elderly reflects a lifetime of dental disease and treatment and is likely to be compromised by large restorations and crowns. Teeth restored with complex restorations require more maintenance than natural teeth. The oral health of the elderly may be further compromised by the side effects of medications and medical conditions.⁴ These factors, together with the physiological ageing of the mouth, make it likely that the elderly will require a high standard of home care and regular professional dental maintenance.

Stockwell conducted the last oral health survey of elderly residents in nursing homes, hostels and a large geriatric hospital in Western Australia in 1987.⁵ The purpose of that survey was to determine the dental treatment need and was not to measure the oral health status of the elderly residents. Two dentists examined 1144 elderly people aged over 50, (mean age of 80.2 years) in 26 residential aged care facilities in metropolitan Perth. A pilot study was used to test the recording forms and to standardize the two examiners. He did not describe how the sample of 26 facilities was chosen and thus its representativeness is unclear.

Stockwell further reported that 74 per cent of the study participants were edentulous and 70 per cent needed some form of denture care. Of the survey participants with teeth, 56 per cent were assessed using the Community Periodontal Index of Treatment Needs (CPITN), as needing scaling. Forty-seven per cent were assessed subjectively by the two examiners, as needing some form of restorative treatment and 29 per cent were assessed as requiring the extraction of one or more teeth. Stockwell compared the treatment needs of the totally dependent residents and the partially

INTRODUCTION

In the 1988 National Oral Health Survey of Australia, it was reported that 52 per cent of 65 and older persons in Perth were edentulous and that nationally those with teeth in this age group had lost a mean number of 24.5 permanent teeth.¹ Seven years

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dependent patients and found that the latter had significantly higher need for prosthetic work. He also reported that the converse was true for extraction needs but that in all other aspects the needs of the two categories of patient did not differ significantly. He commented that because of the poor co-operation of those individuals with advanced dementia, the data for the totally dependent residents should be treated with caution.

In a 1998 study of the oral health status of nursing homes residents, two dentists examined 224 people in seven nursing homes in South Australia. Most of the participants were functionally very dependent, medically compromised, cognitively impaired and behaviourally difficult.⁶ Two-thirds (66 per cent) of the participants in the study were edentulous and the dentate participants had an average of 11.9 retained teeth. When compared with community-dwelling older adults in Adelaide, the nursing home residents had more retained roots, more decayed and missing teeth, and fewer filled teeth than the people who lived in the community.

In 1998 Saub and Evans examined 175 subjects aged over 65 years old in Melbourne. About 35 per cent of the sample was dentate and the treatment need was high. They concluded that most requirements involved simple technologies.⁷

Since 1999 the Australian Federal Government has granted accreditation and funding to residential aged care facilities (RACFs). There are about 12 112 places in 275 such residential aged care facilities in Western Australia and the majority of these are in the Perth metropolitan area (URL: <http://www.gov.au:80/acc/facility/certify/wa1.htm>). Accessed April 2001). Residential aged care is provided for older adults who cannot live independently and who have been assessed as needing such care. The care received is either hostel care (low level) or nursing home care (high level) and some residential aged care facilities provide care across a range of dependency levels.

In general, access to dental care is haphazard for these people. Some facilities in Perth have a contract with a dentist to examine residents, but most institutionalized older adults either get care at their own initiative or not at all.

The purpose of this study was to use a screening exam to estimate the dental treatment needs and oral health status of older adults living in accredited residential aged care facilities in Perth, in order to quantify the need for care and to provide an information base for possible future dental care provision.

MATERIALS AND METHODS

Ethical committee approval was obtained from the Perth Dental Hospital and Community Dental Services' Ethics Committee, convened in accordance with the Australian National Health and Medical Research Council guidelines.

Table 1. A selection of questions from the questionnaire

1. Do you have any problems with your teeth/dentures at the moment?
5. Have you had your mouth/teeth/dentures checked in the last 12 months?
6. By whom were they checked?
7. In the last six months, have you had a toothache?
8. In the last six months, have you avoided eating some foods because of problems with your dentures?
9. Do you think that you need dental treatment at the moment?
10. What dental treatment do you think you need to have done?
11. Have you had dental treatment in the last 12 months?
12. By whom were you seen?
13. Did the dentist come to see you here at the nursing home or did you travel to the dental clinic?
14. Do you have a Health Care Card or a Pensioner Concession card?
15. Do you have private insurance that covers dental treatment?
16. Do you need help with brushing your denture/s or teeth?

Sampling procedure

The sample of residential aged care facilities was selected from a list of certified aged care facilities listed on the webpage of the Department of Health and Aged Care (URL: 'www.health.gov.au/acc/'). Accessed September 2000). The residential aged care facilities in the Perth metropolitan area (first digits of the postcode begin with 61/60) were stratified by size into three groups and four of the nine largest (>100 places), 19 of the 39 medium sized (50–100 places) and eight of the 16 smallest were systematically chosen from the alphabetical list. This provided an estimated sample of 1806 persons in 31 facilities.

Participation

Letters inviting participation in the survey were sent to the Director of Nursing (DoN) in each institution. A week later the DoNs were contacted by telephone. At this stage, four facilities declined to participate (one had a contract with a dentist to screen residents, the residents from another refused to take part, a third was being audited and one was closing down).

Consent forms were then sent to the 27 DoNs that had agreed to take part. The consent form clearly stated the purpose and nature of the survey and invited people to participate in the study. The letters were to be distributed to all residents over the age of 65 and their guardians. Informed written consent was sought from the residents themselves or a legally appointed guardian. It took a period of 11 weeks to obtain the consents and to arrange the survey visits.

Questionnaire and screening examination

The questionnaire was based on questions taken from the 1995 National Dental Telephone Interview Survey.² The questions concerned perceived need for dental treatment, information about their last dental visit, and concession status and health insurance status. The results of the questionnaire are not presented in this report. A selection of the questions is presented in Table 1.

Table 2. Participants by sex, residential location and dentate status (n=348)

	Dentate (n=164)		Edentulous (n=184)	
	Female %	Male %	Female %	Male %
Nursing home	18	9	20	4
Hostel/lodge	18	3	23	5

The findings of the screening examination were recorded on a specially prepared sheet, which was based on the WHO Health Assessment Form 1997.⁸ The time taken to conduct a brief interview and clinical screening examination was typically about 15 minutes. Each participant was given a written report of the findings of the oral screening, adapted from the letter used in a similar study conducted in Adelaide in 1998.⁶ The letter clearly stated that the survey examination was not a dental check-up and advised all participants to seek professional dental care on a regular basis.

The screening examinations were carried out in various locations in the residential facilities, including the hairdresser's room, the physiotherapist's treatment room and the residents' own rooms. The screenings were conducted using a mirror and blunt probe and a portable light or hand held torch. The level of co-operation varied from individual to individual. Dental caries was diagnosed at the cavitation level without radiographs. Caries of the crown and root were recorded separately. The crown of the tooth was recorded as sound, decayed, filled or missing (MT). The root was recorded as sound, decayed, filled or covered in plaque. The MT was included in the decayed, missing or filled teeth (DMFT) caries experience calculation. A simple visual periodontal assessment of the presence or absence of gingival inflammation, supragingival calculus and gingival recession was made. Probing of periodontal pockets was not attempted. The oral mucosa was assessed visually and the dentures were assessed for function and cleanliness. No formal protocols were used to collect denture data or oral mucosal data.

Health card holders and those with pensioner concession cards are eligible for government subsidized dental care in Western Australia. Each participant's eligibility status was assessed on this basis.

Each participant's dementia status was determined by asking the DoN whether the person had dementia or short-term memory loss. No attempt was made to categorize the severity of the dementia or confirm the diagnosis from clinical notes.

Table 3. Denture status by dentate status – maxilla (n=348)

	Denture status (%)			
	Full denture	Partial denture	No denture	Edentulous (no denture)
Dentate status				
Dentate (n=164)	31	18	49	2
Edentulous (n=184)	94	NA	NA	6

Table 4. Dentate status by denture status – mandible (n=348)

	Denture status (%)			
	Full denture	Partial denture	No denture	Edentulous (no denture)
Dentate status				
Dentate (n=164)	1	15	80	3
Edentulous (n=184)	85	NA	NA	15

The data were transferred to a computer for analysis using StatView[®] (1992-98 SAS Institute Inc.) and reported as descriptive statistics. The DMFT was calculated and the chi-square test applied to the data on sex and residency (nursing home or hostel).

RESULTS

Of the 27 facilities that agreed to participate in the survey, one was used as a pilot site in order to test the survey sheet. The data collected for this residential aged care facility are not reported. One hostel was unable to obtain consent for any of its residents. Informed written consent for the screening examination and interview was obtained for 409 individuals, 29.5 per cent of the original estimated sample. Of those that consented, 48 were not available on the screening day and data for 13 individuals screened were excluded from the analysis because of poor co-operation. As a result, the analysis is based on data from 348 people (25.1 per cent of the target number).

Descriptive data are reported for 348 individuals who were examined and interviewed by one examiner in 25 accredited residential aged care facilities over a period of nine weeks. The mean age of the 348 participants examined was 84.8 years (age range 65-101 years) of whom 79 per cent were female and 184 (53 per cent) were edentulous. There were 164 (47.1 per cent) dentate participants. The data for sex, residential location and dentate status are presented in Table 2. There was a larger proportion of dentate male participants resident in nursing homes when compared

Table 5. Prosthetic treatment need by dentate status (n=348)

	Dentate status (%)	
	Dentate (n=164)	Edentulous (n=184)
Upper denture		
Cleaning	21.93	31.01
Reline	4.10	4.09
Replace	5.48	3.50
Satisfactory	49.31	58.48
Repair	13.70	2.92
Not worn	5.48	
Lower denture		
Cleaning	15.41	35.50
Reline	3.84	9.03
Replace	15.38	5.16
Satisfactory	50.00	45.80
Repair	3.84	2.58
Not worn	11.53	1.93

Table 6. Oral health status and caries experience of dentate participants (n=164)

	Mean	Std dev	n
Teeth lower arch	7.35	3.95	164
Teeth upper arch	4.73	4.51	164
D root surface	1.34	2.18	127
F root surface	1.06	2.10	127
Plaque root surface	1.86	3.24	127
D-DMFT	0.76	1.26	164
F-DMFT	5.33	4.79	164
M-DMFT	0.84	2.04	164
Number of teeth missing	17.92	7.13	164
DMFT	24.67	5.24	164

with those in hostels and this difference was significant ($\chi^2=8.51$ on 1 df).

The denture status of the participants is presented by dentate status and by arch in Table 3 and 4. Ninety-four per cent of edentulous participants wore a full upper denture and 85 per cent wore a full lower denture. The majority of the dentate, 80 per cent, were partially dentate with no denture in the lower arch and half, 49 per cent, were partially dentate with no denture in the upper arch. A very small proportion of the dentate (2 per cent in the maxilla and 3 per cent in the mandible) was edentulous in one arch and wore no denture.

Table 5 presents data on the prosthetic need by dentate status. For the edentulous participants, 41.5 per cent of the maxillary dentures and 54.2 per cent of the mandibular dentures were assessed as needing to be repaired, relined, replaced or professionally cleaned. Fifty per cent of the lower dentures and 49.3 per cent of the upper dentures worn by the dentate participants were assessed as satisfactory.

The descriptive statistics for caries experience and treatment need of the dentate participants are presented in Table 6. The mean DMFT was 24.7, with a mean of 0.8 decayed untreated teeth (DT) per person, a mean of 5.3 filled teeth (FT) and a mean of 0.8 crowns missing for caries (MT) and 17.9 teeth missing. Of those for whom root caries experience was noted, (n=127), there was a mean of 1.3 roots with untreated decay and a mean of 1.9 roots covered in plaque. The mean number of teeth free from disease and without extreme mobility in the upper arch was 4.7 and 7.3 in the lower arch, an estimated mean of 12 standing teeth.

Gingival status of the dentate (n=164) is presented in Table 7. Of those for whom a recording was made, 92.68 per cent had visible plaque, 50.6 per cent had visible supragingival calculus, 56.1 per cent had gingival inflammation and 79.9 per cent had gingival recession.

Of the 174 edentulous participants for whom oral mucosal status was recorded, 44.7 per cent had recognizable intra-oral pathological conditions such as candidiasis, denture hyperplasia, leukoplakia, ulceration, angular cheilitis and other soft tissue anomalies. Of those 149 dentate participants for whom

Table 7. Gingival status of the dentate residents (n=164)

	Gingival inflammation %	Loss of attachment %	Supragingival calculus %	Plaque visible %
Present	56.10	79.88	50.60	92.68
Absent	37.80	15.85	45.73	3.05
Not recorded	6.10	4.27	3.67	4.27

a recording was made, 32.9 per cent had obvious oral mucosal pathology.

Most of the participants were eligible for subsidized dental care in Western Australia. Of the 290 individuals that were eligible, 136 (46.9 per cent) were dentate and 154 (53.1 per cent) edentulous.

Dementia was reported by the Directors of Nursing to be present in 47.8 per cent of the edentulous individuals and 46.3 per cent of the dentate participants. Ten per cent of the dentate and 5 per cent of the edentulous participants were reluctant to co-operate for the screening examination. A third, 30.7 per cent of the original sample of 361 were recorded as being dependent for brushing (this included the 13 residents who were not examined because of poor co-operation).

DISCUSSION

The methods used in this study may have underestimated the extent of dental disease. The treatment need assessment adopted was a simple visual one, without the aid of radiographs or probing of periodontal pockets. The dental treatment needed in most cases was not complex. Assessments were based on clinical judgement. Neither examiner calibration nor measures of intra-examiner reliability were done. Examinations were carried out in field conditions and in different examination locations. There were varying degrees of co-operation from the participants. Studies on this sort of participant involve compromises.

The level of participation in the present study was low compared with Stockwell's study.⁵ This was because written consent had to be obtained for participation in this survey. The mechanism for obtaining consent in this study was unsatisfactory: allowing institution managers to arrange the distribution of letters to potential participants gave them control of participation, and those in the larger facilities were less than enthusiastic about distributing information on the study. For example, one of the larger facilities displayed the letter in the lift, another put the letter in the newsletter and a third included it with a satisfaction survey.

The numbers of people that did not reply or declined to take part were not recorded in this study and therefore non-participation could not be calculated. Telephone calls were made to the survey organizer from some non-pensioners who saw no reason to participate in a government study and there were calls from guardians who felt that their relatives were not well enough to participate.

In a similar study of the oral health status of 175 residents in 20 hostels conducted in Melbourne, which did not include residents with dementia or those who did not speak English, the participation rate was reported to be 30.6 per cent.⁷ Chalmers *et al.* recorded a greater participation rate of 60 per cent and examined 224 residents, but these researchers retained control of the mailout of consent forms after obtaining details from the nursing homes.⁶ These studies give an indication of the participation rates and the number of people examined in current surveys in Australia for this group of the population.

The proportion of female participants in this study sample was 79.3 per cent. The Australian Institute of Health and Welfare reported that the overall proportion of female residents in the same age group in residential aged care facilities in Western Australia was 96.8 per cent.⁹ Thus the study sample, which was limited to Perth, may not be representative of the Western Australian population.

The proportion (52.9 per cent) of edentulous participants was less than the 74 per cent recorded in Stockwell's 1987 survey of nursing homes in Western Australia.⁵ This suggests that a larger proportion of people in this group now retain more teeth. However, when compared with data reported in the 1995 National Dental Telephone Survey for the 65 years and older age group in Western Australia, the present participants had lost more teeth and a higher proportion was edentulous.²

The prevalence of the mucosal findings is not reported as the diagnoses could not be confirmed. Oral cancer occurs in the elderly. The occurrence of oral cancer increases with age in all countries¹⁰ and cancer of the mouth and pharynx accounted for 66 deaths in Western Australia in 1998.¹¹ A dental examination on a regular basis is important for this age group in order to screen for oral cancer.

Most of the survey participants (83.5 per cent) were social security recipients and thus eligible for government-subsidized dental care. This is comparable with the 89 per cent of those who received the Age Pension in Australia who were over the age of 65 in the year 1998/1999, (information obtained from the Department of Health and Aged Care).

The proportion of participants reported to have dementia in this study, 47 per cent, was a measure of the numbers of residents that would require staff supervision of daily oral hygiene. The findings demonstrate the lack of day to day oral care: a third of the dentures worn by the edentulous participants and 19 per cent of dentures belonging to the dentate required professional cleaning and a mean of 1.9 plaque covered roots was calculated for those dentate participants with root caries experience. A third, 30.7 per cent of the original sample of 361, was recorded as being dependent for brushing. (This included the 13 residents who were not examined because of poor co-operation.)

Chalmers *et al.* reported that 61.8 per cent (n=76) of the dentate and 65.5 per cent (n=148) of the edentulous participants in Adelaide had been diagnosed with dementia.⁶ This is a higher proportion than the present study but the Chalmers *et al.* study was confined to nursing homes where residents received high levels of care, whereas the present study was conducted in nursing homes and hostels.

These dependent individuals in residential aged care facilities may be more at risk of dental disease because staff have difficulty maintaining daily oral care. Chalmers *et al.* investigated the factors influencing how nurses' aides provided oral care for residents of nursing facilities.¹² They identified that the aides' attitudes towards oral care, lack of time and lack of staff, and behavioural and physical difficulties may have affected the time spent by these aides in providing oral care.

Despite its limitations, this study demonstrates that screening can be effective in identifying the dental needs and oral health status of elderly in facilities. Screening for dental diseases can be done on site using simple visual tests and without sophisticated equipment. Annual screening in residential homes for the elderly would identify those in need of dental care, particularly those more dependent residents who may not be able to describe their symptoms.

There is little organized dental care for this group of the population and poor information on what is available to the residents and their families. The provision of dental care for institutionalized elderly is either an individual responsibility or the responsibility of institution managers or guardians. Since many residents are incapable of taking responsibility for their own dental care, the obligation reverts to the facilities. Each participating institution had different means of accessing dental care for its residents: one of the facilities had a contract with a private dentist to screen each new resident while other facilities sought dental care only if a problem arose. In most of the homes, the residents and their families arranged their own dental care and oral infections were likely to be managed by a general medical practitioner. In the case of some of the more dependent residents that developed oral symptoms, either Perth Dental Hospital and Community Dental Services' Domiciliary Service or a private dentist were contacted for a home visit.

The data collected here demonstrates poor oral health conditions and substantial treatment needs in a neglected population. More people in nursing homes and hostels are keeping their natural teeth compared with a similar population studied 13 years ago.⁵ Screening for dental diseases by a dental professional is recommended for this group and facilities should be made available in the nursing homes for dental professionals to carry out simple treatment. More information should be made available to the administrators of residential aged care facilities about the dental services available. The regular monitoring of the oral health of residents and automatic provision of

necessary care should be conditions for continued licensing of residential aged care facilities.

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