Dental Health of Fiji Institutionalized Elderly (2003)

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Abstract:*This study provided comprehensive information concerning oral health status and prevalence of oral diseases in institutionalized elderly home residents. The oral health survey included questionnaire and oral examination. Oral examination was carried out by a calibrated examiner. A structured interview on socio- economic status, oral health habits and a clinical evaluation of oral health status and treatment needs were recorded. 37.2 % of the 125 residents from the six nursing homes were medically compromised, functionally dependent, cognitively impaired and behaviourally difficult older adults to caregivers and to dental practitioners. 43% of the study population was edentulous. Dentate residents had a mean DMF of 23 with severe periodontal diseases and treatment need. Oral hygiene was generally poor among the residents and periodontal disease was found to be present in all the dentate subjects examined. The prevalence and experience of coronal and root caries, gingival recession and plaque accumulation was very high in dentate residents especially, those who smoke and those who were severely handicapped. These elderly residents had more retained roots, root caries, missing teeth, mobile teeth, grossly carious teeth and fewer filled teeth when compared with data for community dwelling elderly patients.*
This study highlighted the poor oral health status of these institutionalized elderly home residents and the great impact of dementia on their high levels of oral diseases.
Key words: *Institutionalised Elderly, dentate, edentulous, oral hygiene care, Caries. (PHD 2004 Vol 11 No 1 Pages 38 - 43)*

Introduction

This is a follow-up of the pilot study carried out by School of Oral Health in 1997[1]. The main objective of the study was to asses the dental health, treatment needs and level of oral health awareness of the institutionalized elderly in Fiji old people's home. 125 adults (71 females and 54 males) were selected for the study from the six institutionalized elderly homes in three main divisions (East central, Western and Northern divisions) of Fiji. Three of these nursing homes namely Labasa, Lautoka and Samabula are government owned while the other three are private. It was observed that not all the residents of these old people's home are elderly; some came to live there because they were rejected by family members.

Advances in medicine and public health measures in the last half of 20th century has led to increase life expectancy worldwide[2, 3] resulting in increase in size and change of composition of older adult populations. The result of the pilot study[1] carried by the school of oral health in 1997 which involved elderly participants from elderly nursing homes in Suva, Fiji reported that the oral health of the elderly in Fiji has been largely ignored. Research in various centers all over the world[4-15] had reported that there is a decrease in prevalence of edentulism and that the increasing numbers of functionally dependent and disabled older adults are producing a population of dentate older populations with dental needs that are very different from those of older adults in past years.

The ability to maintain good oral health into old age is significant not only to allow adequate chewing and good aesthetics but also to support general health. Periodontal disease has been noted to be closely associated with severe systemic diseases such as brain abscess and coronary heart disease[16-18] However, in the Pacific, the perceived need and use of oral health services are heavily associated with relief of pain and discomfort only. This paper presents results from the baseline data collection of the study and, the aims were to:

- Determine the caries rate decayed, missing and filled tooth (DMFT) of elderly home residents
- Determine the dentate status of Fiji home residents and to identify characteristics associated with dentate status
- Determine the prevalence of oral diseases and conditions e. g. coronal caries, root caries, periodontal diseases, attrition, oral mucosa lesions and denture problems in residents.
- Determine the treatment needs of elderly home residents

Materials and methods

All residents of the six old people's nursing homes in Fiji were invited to participate. Ethical approval for the study was obtained from Research and ethical committee, Fiji School of Medicine. Approval was also sought from superintendent of each nursing home before contact with residents was initiated. Participants were informed about the purpose of the study before examination; all procedures were explained to them and written and or verbal consent was obtained from each participant.

A total of 147 participants were selected but only 125 residents participated in the interview and 5 subjects were excluded from dental examination for medical reasons. Non-probability convenience sampling method was used. A questionnaire was completed for each participant prior to dental examination using information obtained from the nursing home records and from interviews held with the nursing home staff and residents. The questionnaire contained dental and socio-demographic information which include age, sex, former occupation, resident's oral hygiene practices and assistance required with oral hygiene, problems encountered providing oral care for residents, reason for, and treatment provided at last dental visit, location of last dental visit, smoking and alcohol consumption, medical history, eating abilities and socio-economic status.

A calibrated examiner examined all subjects using periodontal probe, mouth mirror, probe under natural light condition and used visual and tactile criteria to assess tooth status, coronal and root caries, tooth attrition, accumulation of plague, oral mucosal lesions, presence of gingivitis, gingival recession, periodontal pocketing and dental treatment needs were recorded according to World Health Organization (WHO) [19] Oral Health survey; 'Basic methods' was used to assess oral mucosal lesions. Presence, condition and need for replacement of prosthetic appliances were assessed using Rise[20] criteria. Presence or absence of plaque was scored using Silness and Loe's Plaque index (PI) [21] criteria giving a score of 0 – 3 for plaque accumulation on the buccal surfaces of six key teeth. Periodontal status and treatment needs were assessed using the Community Periodontal Index of Treatment Needs (CPITN) [22] of index teeth.

Questionnaires and dental examination data were analyzed using Epi 6 info.

Table 1: **Characteristics of participants.**

Socio-demographics	Dental awareness
Sex: 56.7% females 43.3% males	**Frequency of cleaning teeth** Once/twice a day - 46.4 % >Twice a day - 1.6% Never - 32% Occasionally - 20%
Ethnicity: 33.3% Fijians 59.2% Indians 7.5% Others	**Form of cleaning agent used** Toothbrush - 64.8% Not recorded - 3.2% Not applicable - 32%
Age group: 30-49yrs - 18.3% 50-69yrs - 34.2% 70-89yrs - 37.2% 90+yrs - 10.0%	**Use of fluoride tooth paste** Yes - 58.4% No - 22.4% Do not know - 19.2%
Education level: Tertiary - 2.4% Secondary-l0.4% Primary - 52.8% None - 34.4%	**Snacks between meals** Once/twice a day - 40% > Twice a day - 8.8% Never - 4% Occasionally- 47.2%
Occupation: Manual- 53.6% Non manual - 8% No response - 48%	**Type of snack** Sugar - 77.6% Non sugar - 18.4% None - 5
Income: Government - 73.6% Social welfare - 11.2% Relatives/others - 15.2%	**Dental visits** 3-6 monthly - 0.8% Yearly- 0.8% Only when problem arises - 90.4% Never- 8%

Results

120 residents out of the 125 residents who participated in the interview, were examined, 68 (56.7%) were females and 52 (43.3%) were males. 40 (33.3%) were Fijians, 71(59.2%) were Indians and other races were 9(7.5%) as shown in Table 1. Number of participants from each of the nursing homes was as follows:

- Labasa= 24 (10males, 14 females; Fijian 1, Indofijian 22, others 1)
- Lautoka=30 (20males, 10 females; Fijian 8, indofijian 20, others 2)
- Samabula=33 (14males, 19 females; Fijian 13,indofijian 18, others 2)
- Pearce's home=4 (2males, 2females; Fijian 2, indofijian 1, others 1)
- Fatherlaw home=14 (4males, 10females; Fijian 8, indofijian 4, others 2)
- Tamavua=15 (2males, 13females; Fijian 8, indofijian 6, others 1)

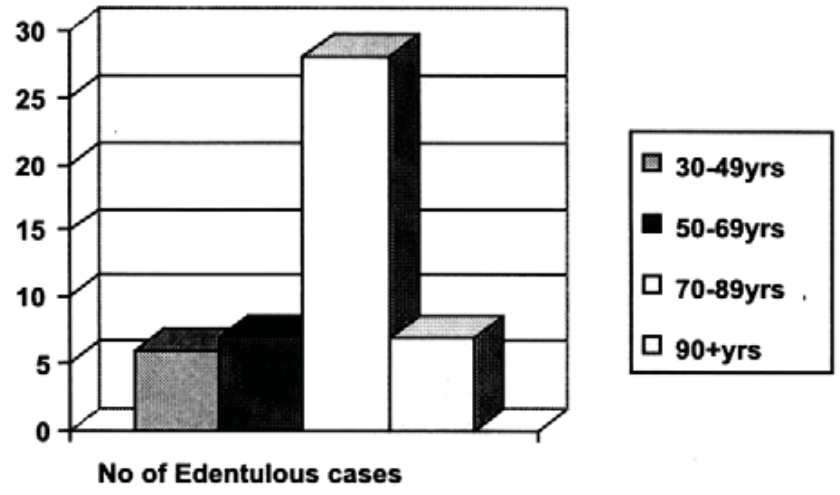
Participants were divided into four age groups: 30-49years (18.3%), 50-69year(34.2%),70-89year (37.5%) and 90year+ (10 %). The oral hygiene practices, behaviours and attitudes towards oral health tabulated in table 1 showed that most subjects (90.4%) visited the dentist only when they have problems; pain(70%) was the most common reason for the visit, whereas, 11.2% gave the reason of discomfort on eating and drinking as their main reason for visiting the dentist. 36.8% were satisfied with their present dental status even though they have many missing tooth, whereas, 63.2% were not satisfied with their oral health. The reasons given for dissatisfaction were broken denture, toothache, mobile tooth and problems with chewing because of missing teeth. This indicates that majority of residents need dental care but dental services seem to be inaccessible to them.

Characteristics of the sample

From a financial point of view, 73.6% were supported by the Fiji government, 11.2% by the social welfare and 15.2% from relatives or other sources. More than 80% had a low or very low educational level. Some of these adults were still capable of performing the activities of daily living with little or no assistance. However, majority of them would need assistance when visiting the dentist. The poor oral hygiene status observed was related to the level of education, and socio-economic status of the subjects. Those with very low educational level and poor socio-economic status were found to have a very poor oral hygiene. Most of the subjects interviewed frequently clean their teeth using toothbrush as the major cleaning agent and more than 50% of the subjects used fluoridated toothpaste. Only 32% of the subjects never clean their teeth.

50 residents (42per cent) were edentulous and had significant dental problems and treatment needs. Fig 1 shows the number of edentulous subjects in each age group. This includes those who have one edentulous arch either on the maxilla or mandible. Result of the study showed that edentulism increases as age increases. Edentulous residents appeared frail and could eat fewer types of food. Up to 18 per cent of residents owned dentures that were not worn. Denture related oral mucosal conditions were prevalent such as denture stomatitis (16.8per cent) and angular cheilitis (8.5per cent). Dentate residents had a mean of 11.9 teeth remaining, 18.9 missing teeth and 1.1 retained roots (0.8 decayed, 0.3 sound retained roots, a mean of 0.64 decayed teeth, 22.3 missing teeth and 1. 3 filled teeth (DMFT= 24.2). DMFT was lowest in the 30-49 years, increased in the 50-69 years and greatest in the 90 years and over group. The most prevalent condition recorded for the total sample was missing teeth. The least frequent condition was filled teeth (Table 2). Males had significantly more decayed crowns. Those residents with severe cognitive impairment tend to have more decayed teeth, fewer filled teeth and many more plaque / debris covered teeth.

Figure 1: showing number of edentulous residents in each age group



Coronal and root surface caries experience was high. The mean number of decayed coronal surfaces (1.7) was greater than the mean number of decayed teeth (1.1) for residents indicating that multiple surfaces were affected on some teeth. The mean number of filled coronal surfaces was 8.7, decayed root surfaces was 1.5, and filled root surfaces was 1.1. Males had significantly more decayed coronal surfaces; they also had more filled coronal surfaces and a significantly coronal caries attack. Males had significantly more decayed root surfaces, filled root surfaces and a higher root caries attack rate. Table 3 detailed the distribution of caries and periodontal treatment needs. It shows that greater number of teeth needs preventive care.

Table 3: Distribution of subjects' treatment needs by number of teeth requiring the treatment specified. Dentate subjects only.

Treatment need	No. Of teeth requiring treatment
Preventive care	891
1 surface filling	59
> 2 surface filling	6
Extraction (Caries/ periodontal diseases)	266

Plaque / calculus accumulation was high among residents and dentures. Over 25 per cent of dentate and edentulous residents who wore dentures had debris accumulation on more than one third of the denture surface. Mean plaque index (PI) scores for dentate residents was moderately high 1.75. Residents with significantly higher PI scores were those who could not eat many types of food and those who were functionally dependent.

With increasing severity of cognitive impairment, residents required significantly more assistance with oral hygiene care.

Oral mucosa lesions present in sample (n = 120)

Types of lesion	Number affected (%)
None	32 (26.7)
Leukoplakia	23 (19.2)
Coated tongue	6 (5.0)
Angular cheilitis	8(6.7)
Cheek biting	5(4.2)
Fibromatous lesion	18(15)
Other lesions	14(11.7)
Traumatic ulcer	3(2.5)
Obvious candidiasis	9(7.5)
Atrophic glossitis	2(1.7)

Less than half of the sample 26.7percent had healthy denture bearing area. Flabby ridges were found in 5 individuals. Other conditions such as denture stomatitis and irritative hyperplasia were also found. Figure 1 shows the type and treatment needed by the sample group

Discussion

There was extensive caries experience, with an average DMFT of 24.2. The DMFT increases as the age increased. This was consistent with the findings of other studies[1, 4-7, 9, 10]. There were additional retained roots and root surfaces which were decayed or filled. Caries experience varied among the different tooth categories. 20 percent of the coronal surfaces of the molars were decayed. A majority of subjects required simple restorative and periodontal care and very few subjects in this study required extractions. According to this survey, most of the tooth surfaces were covered with dental plaque. There was no subject classified as having a healthy mouth. The most frequent periodontal treatment requirement is improvement in oral hygiene and the removal of calculus. The need for oral hygiene instruction, scaling and cleaning was almost a universal requirement in this study. Therefore, it can be concluded that periodontal treatment of the elderly can most efficiently and effectively be managed by suitably qualified auxiliaries. This finding was similar to the periodontal treatment need of the elderly in Melbourne[11]. Decayed root surface was more prevalent than the decayed coronal surfaces, a finding that agrees with other studies 3-6 which reported that elderly individuals were prone to root caries as a result of gingival recession and that tooth decay in older adults appears most frequently around the teeth at the level of the gums. Most subjects in this study require one surface restorations rather than either two-surface restorations or more extensive restorations. This may be due to high frequency of cervical smooth surface carious lesions present in the elderly population.

Furthermore, the medical status of the elderly could have contributed to the poor oral health status observed as 37% are reported to be medically compromised and are on one form of medication or the other. This might have been a predisposing factor to xerostomia and hence encouraging accumulation of plaque. Diabetes and smoking[23-26], known predisposing factors to periodontal disease were found to be common among these institutionalized subjects. 41 % of the subjects

gave history of smoking. Studies23-26 have shown that prevalence of periodontal disease increases with age, poor oral hygiene, lower socio-economic status and tobacco smoking.

Conclusion

More than 30 percent of nursing home residents participating in this study were functionally dependent, medically compromised, cognitively impaired and behaviourally difficult older adults who presented with many complex challenges to caregivers and to dental professionals.

50 residents (42per cent) were edentulous and had significant dental problems and treatment needs. Many residents owned dentures that were not worn, and denture related oral mucosal lesions such denture stomatitis and angular cheilitis were prevalent. The experience of coronal and root caries and plaque accumulation was high in dentate residents, especially males and those who were severely cognitively impaired. This study of the Fiji institutionalized older adults highlighted that oral health of the institutionalized older adults have been largely ignored Dental services were utilized when there were pain and discomfort. Poor access to oral health care facilities, poor socio-economic status, and poor oral hygiene might have influenced the oral health status observed in these subjects. The treatment needs of the institutionalized elderly in Fiji requires low skilled oral health professional. Therefore, an integrated care approach, involving dental auxiliaries, to promote oral health among institutionalized elderly people should be developed. This approach should have as a primary aim the education of caregivers in the practices of effective oral hygiene assistance. Access to care could be enhanced using portable dental equipment to deliver treatment services at institutions.

More than 30 percent of nursing home residents participating in this study were functionally dependent, medically compromised, cognitively impaired and behaviourally difficult

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A medical revolution has extended the life of our older citizens without providing the dignity and security those later years deserve
(John F. Kernedy 1917-63)