

AN EPIDEMIOLOGICAL SURVEY OF DENTURE-RELATED LESIONS IN A GERIATRIC POPULATION IN MALAYSIA

Taiyeb Ali TB, Zain RB, Latifah RJ, Razak IA. *An Epidemiological Survey of Denture-Related Lesions in a Geriatric Population in Malaysia, Annals Dent Univ Malaya* 1998; 5: 57-59

The prevalence of tooth loss amongst the elderly is generally very high. Hence mastication and subsequently nutrition is greatly affected leading to the impairment of their general health. Therefore denture construction is an important aspect in the rehabilitation of the oral and general health in most elderly. However, poorly constructed dentures and lack of maintenance coupled with various other health and health-related problems of the elderly, for instance poor general health especially with immunocompromised states, multiple medication intake, xerostomia, reduced mobility, economic status, mental state and ignorance may all lead to discomfort and denture associated lesions in these elderly patients.

No regional studies or data on denture-related lesions in the general population have been reported. Previous epidemiological studies of adults in Malaysia (1,2) and other local studies have not investigated lesions of the oral tissues associated with geriatric denture wearers although studies in developed countries, where prevalence of denture usage is high, have noted that denture-related lesions to be the most common group of oral mucosal lesions in the elderly (3-7).

As has been reported in most developing countries, the proportion of elderly in Malaysia is also increasing. It has also been noted that the mean number of teeth present decreases as age increases; in those between 15 to 19 years, all 28 teeth are present, 35 to 44 years-old have 23 teeth whereas those above 65 years retain only 12 teeth. Edentulousness increases from 0% to 7.3% to 56.6% in these age groups respectively (2). It is anticipated that with the increasing population of the elderly in Malaysia and the improving economy, the proportion of denture wearers in the population will increase.

In view of the lack of investigations in Malaysia focusing exclusively on this group of lesions, it is therefore the aim of this pilot investigation to highlight the prevalence of denture-related lesions in a representative population of the elderly living in the community, both in the urban and rural areas. It may also form a basis against which future studies can be compared.

Keywords: epidemiology, geriatric, denture-related lesions

MATERIAL AND METHODS

This investigation was carried out on the elderly in Klang District, one of the largest and most populous districts in Malaysia, and was part of a larger oral health survey conducted. The subjects were the elderly residing in the community and comprised of those from both rural and urban areas. A house to house survey was undertaken in the randomly selected Enumeration Blocks (E.B.) as defined under the National Census. Enumeration Blocks are geographical-

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ly contiguous areas of land with identifiable boundaries within local authority areas.

All elderly individuals aged 60 years and above residing in the randomly selected E.B. were interviewed and examined. A total of 486 respondents, which formed 3.9% of the elderly population of Klang District participated in the whole research. Of these, 187 were denture wearers. Intraoral examination was carried out at the respondent's homes utilising mouth mirrors and white light.

Interexaminer agreement among the 3 examiners (TBTA, LRJ, IAR) intraexaminer consistency has been reported in a previous publication(8).

RESULTS AND DISCUSSION

The ages of the subjects examined ranged from 60 to 105 years with a mean age of 69.1 ± 7.3 . Of the 187 denture wearers which formed 38.5% of the study population, 64.5% were females and 50.8% resided in the urban areas. The ethnic proportions among the denture wearers for the Malays, Chinese and Indians were 44%, 42% and 14% respectively.

The denture status of these elderly denture wearers is shown in Table 1. The majority used both upper and lower full dentures. This may be expected as tooth loss will be high in the elderly population. The dental epidemiological survey of adults in Malaysia has shown that about 31% and 57% of those age 55-64 years and those 65 years and above respectively were edentulous in 1990. The mean age of the last set of dentures worn for this sample was 10.2 ± 8.9 years.

Table 1. Denture status of the denture wearing elderly population

Type of Denture	n	%	Lesions
1. PartialUpper(P)/or/P	34	18.2	-
2. P/P, FullUpper(F)/, /F	49	26.2	3 (2 persons)
3. P/F or F/P	22	11.8	-
4. F/F	82	43.9	9 (8 persons)
Total	187	100	12 (10 persons)

The prevalence of denture-related lesions in relation to the whole of the elderly population was 2.5% and amongst denture wearers was 6.4% (Table 2). This is very low compared to that in developed countries where the prevalence ranges from 25-60% among the denture wearers (3-7). The difference in prevalence observed may be due to differences in the criteria of recording lesions and usage of the prosthesis being confined to social contacts only in this elderly population. A total of twelve lesions were found of which nine lesions were among eight individuals with full upper and lower dentures (Table 1). The remaining three lesions were detected in two respondents using partial dentures.

Denture-related stomatitis was the most common lesion detected (Table 2). This condition can be associated to candidal infection (9), usually due to poor denture hygiene (10,11). It could also be the result of ignorance of denture hygiene, poor neuromuscular co-ordination and possibly to immunocompromised status, xerostomia, medication intake, smoking (6,11) or even apathy on the part of the elderly. Angular cheilitis, detected in five individuals was not included as a denture-related lesion, as direct relationship to denture wearing cannot be ascertained. It could possibly be due to loss of vertical dimension due to wear of the denture teeth and natural dentition in addition to candidal infection.

The next most frequent lesion observed was denture hyperplasia, arising from irritation possibly due to overextension of denture margins as a result of alveolar ridge atrophy. Again apathy, low economic status, reduced mobility and possibly neuromuscular adaptation to the dentures resulted in non-replacement or adjustment of the old set of dentures.

Denture suction area erosions, associated with upper complete dentures on the posterior half of the palate were observed, although the prevalence was very low affecting only two individuals. Circular rubber suction retention devices were utilised. This method was commonly utilised by the registered dentists (who are unqualified dentists and referred to as Division II Dentists under the Dental Act of Malaysia 1971) in the construction of upper complete dentures particularly among those with poor ridges. However, over time these devices resulted in erythema and deep erosions in the palate which could also penetrate the palate through and through to the nasal cavity. As the register for such dentist has been closed since 1948; it is anticipated that such practice will no longer be encountered in the near future.

Denture-related petechiae were detected in only one patient, related to friction from the denture probably in a susceptible patient. Ecchymosis and petechiae to trauma and friction are common in the elderly, due to fragility of the blood vessels.

Most of the lesions detected, which constitute a heterogeneous chronic group with regard to pathogenesis, indicate the poor quality of the dentures (12). Non-maintenance and also failure to upgrade the dentures possibly may also contribute to the problem.

According to the Malaysian statistics, the number of elderly people in its population was 1.2 million or 5.9% of the total population in 1995 and this number is expected to

Table 2. Prevalence of denture-related lesions among the elderly subjects of Klang District (N=187)

Lesions	Distribution	
	n	%
i) Denture stomatitis	5	2.7
ii) Denture irritation hyperplasia	4	2.1
iii) Denture suction erosions	2	1.1
iv) Denture-related petechiae	1	0.5
Total	12	6.4

There were 5 cases of denture wearers with angular cheilitis

reach 3.2 million or 11.3% by the year 2020 (Straits Times, Sat. 22/31/97). This increasing trend is also observed in the developed countries (13). With increased affluence in the society, it can be postulated that denture usage will also increase particularly in the geriatric. Hence professional training, patient education, services and facilities, even possibly domiciliary dental care for homebound elderly will be required. Difficulty in mastication in either partially dentate or edentulous patients without satisfactory dentures can cause discomfort. Other problems such as the development of denture-related lesions may also occur. In order to treat or minimise or prevent the occurrence and extent of these lesions, regular recalls for oral examinations and maintenance of satisfactory denture state is advocated. In addition oral health is closely associated with general health and vice versa. It is therefore important that the dental therapist who cares for the elderly has adequate medical knowledge as well ability to accurately diagnose and effectively care for the elderly.

REFERENCES

1. Dental Division, Ministry of Health, Malaysia. Dental epidemiological survey of adults in West Malaysia. September 1974 - May 1975. Kuala Lumpur: Government Printer, 1977.
2. Dental Division, Ministry of Health, Malaysia. Dental epidemiological survey of adults in Malaysia 1990. Kuala Lumpur: Government Printer, 1993.
3. Smith JM, Sheiham A. How dental conditions handicap the elderly? *Comm Dent Oral Epidemiol* 1979;7: 305-310.
4. Brauer L, Bassermann M, Frijs-Madsen B et al. Oral health status and needs for dental treatment in geriatric patients in a Danish district hospital. *Comm Dent Oral Epidemiol* 1986, 14: 132-13S.
5. Hand J S, Whitehill J M. The prevalence of oral mucosal lesions in an elderly population. *J Am Dent Assoc* 1986;112:73-76.
6. Vigild M. Oral mucosal lesions among institutionalised elderly in Denmark. *Comm Dent Oral Epidemiol* 1987,15:309-13.
7. Diu S, Gelbier S. Oral health screening of elderly

- people attending a Community care centre. *Comm Dent Oral Epidemiol* 1989;17: 212-15.
8. Taiyeb Ali TB, Razak IA, Raja Latifah RJ, Zain RB. An epidemiological survey of oral mucosal lesions among elderly Malaysians. *Gerodontology* 1995, 12(1): 3740.
 9. Budtz-Jorgensen E. Denture Stomatitis IV. An experimental model in monkeys. *Acta odontologica Scandinavica* 1971; 29:513-526.
 10. Moskona D, Kaplan I. Oral lesions in elderly denture wearers. *Clin Prev Dent* 1992; 14(5): 11-4.
 11. Lucas VS. Association of psychotropic drugs-prevalence of denture-related stomatitis and oral candidosis. *Comm Dent Oral Epidemiol* 1993; 21(5): 313-6.
 12. Budtz-Jorgensen E. Oral mucosal lesions associated with the wearing of removable dentures-Review article. *J Oral Pathol* 1981;10: 65-80.
 13. Locker D. Changing pattern of disease. In: *An Introduction to behavioural science and dentistry*. London: Routledge 1989; 1-90.