ROOT CARIES EXPERIENCE AMONG GERIATRIC POPULATION RESIDING IN OLD AGE HOMES IN CHENNAI CITY

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The purpose of this study was to investigate the prevalence and distribution of root caries in a selected elderly population in old age homes in Chennai. .

Subjects both male and female above 60 years of age group were included in the study. Completely edentulous seniors were not included in the study. Kartz Root caries index (1980) was used for assessing root caries. Root caries was recorded on tooth with exposed root surface. Radiographs were not used in this study. The data collected was analyzed using the statistical package for social sciences (SPSS) version 10.0. p value of <0.05 was considered as statistically significant.

200 older individuals with mean age of 70 years actively participated in this study, of which 56.5 % were males (113) and 43.5% (87) were females. 61-70 years age group of the study population had mean root caries score of 0.5 ± 2.0. Whereas 71-80 years had mean root caries score of 1.0 ± 6.8. 81-90 years showed mean root caries score of 3.4 ± 12.05.These observations were not statistically significant.A mean root caries score of 0.4 ± 2.0 was found in Chennai and females had a mean root caries score of 1.5±7.5.

Root caries was once considered a disease for which the elderly population had their teeth extracted and replaced with removable prostheses. At present, root caries is becoming a new area of focused research in dentistry, as more people are living to an advanced age and retaining their natural teeth. Today, demographic predictors view root caries as an emerging significant patient management issue of the next decade as more elderly population retain their natural teeth [1]. With advanced age, there is more gingival recession, which leaves the root surface exposed to the oral environment and leads to an increase in the root caries rate. Ettinger[1], has reviewed many studies, related to incidence and prevalence with increase of age.

Root caries can occur in areas of abrasion, erosion, and abfraction, or as primary root caries and recurrent decay. Root surface caries is a soft, irregular, progressive lesion occurring at or apical to the CEJ. It is caused by the presence of bacterial plaque and the repeated.

The diagnosis of root caries is also difficult as it is not easy clinically to distinguish clinically the sound area from carious lesion. Additional lesions often extend to the approximal surfaces and sometimes subgingivally. The clinical management of such lesion is also complex with difficulty in adequate removal of caries and moisture control during restoration placement. Therefore prevention of root caries poses is an important hurdle to promote oral health for elderly people.

The prevalence of root caries is difficult to assess.[2] Interpretation of data from prevalence and incidence studies is complicated due to the differences in diagnostic criteria, treatment decisions, and lack of homogeneity of the observed population.

Owing to the twin decline in mortality and morbidity, many countries in the world have witnessed a demographic transition leading to increase in the elderly population. India is no exception in this regard and current demographic predictions suggest that the percentage of persons over 60 years of age will reach 12% by 2011 and 24.1% by 2031[2].

The increase in the life expectancy with improvement in oral health status will ensure that many individuals will retain some or all their teeth

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into old age. (Peterson and Yamamoto 2005)[3]. Several incidence and prevalence studies on root surface caries indicate that it is increasingly becoming an important public health problem in older adults. Therefore assessment of the condition of root surfaces have been considered in many national oral health surveys in recent times.

The mean number of decayed and filled root surfaces in older people lies between 2.2 and 5.3 in developed countries. The Root Caries Index score was 5.4 in a study of older people in China[3].

In India, there are several published studies including National Oral Health Survey reports that provide valuable information pertaining to oral health status of the population. However till date only few studies have been reported about the problem of root surface caries in Indian population.

The purpose of this study was to investigate the prevalence and distribution of root caries in a selected elderly population in old age homes in Chennai.

AIMS AND OBJECTIVES

1. To assess the prevalence of root caries among the geriatric population residing in the old age homes in Chennai city.
2. To plan and provide treatment modalities for geriatric population.

MATERIALS AND METHODS

Chennai is one of the four metropolitican cities of India. It is the capital of Tamil Nadu state. There are around 108 old age homes in Chennai. Out of which 40 are free and 68 are paid old age homes. 5236 elderly adults are residing in these old age homes. 3150 are males and 2086 are females. (Source: Help age India, a Non – Governmental institution for the welfare of the old people.)

Subjects both male and female above 60 years of age group were included in the study. Completely edentulous seniors were not included in the study.

A specially designed proforma was used to record root caries among 25 subjects who were above 60 years of age to check the reliability, validity and the feasibility of the study. Difficulties encountered during the pilot study were overcome by redesigning the proforma and finalizing the diagnostic criteria. In the pilot study 10 out of 25 subjects had root caries .This data was used for estimating the final sample size by using statistical methods. These 25 patients were not included in the main study.

Based on the pilot study prevalence, the final sample size was calculated using the formula, $N = Z\alpha^2 P. Q / L2$ Where $Z\alpha^2 = 3.54$. $P = 40\% = 0.4$, $Q = 1\text{-}P = 0.6$, $L = 20\ \%$ of $P = 0.08$. It was found that 5 old age homes were sufficient to obtain the required sample size. These 5 old age homes were selected by Simple random technique using random numbers table method.

Before conducting the study, approval was taken from the Head of the institution, College of Dental Surgery, Saveetha University, Chennai and the Institutional Ethical Committee, Saveetha University. Permission to conduct the study was obtained from the specific authorities of the old age home and a convenient day for examination was fixed. The study was done during the period of 2 months from August to September 2009. Prior to the study, the details of examination procedures were explained to the study subjects and written informed consent was obtained from each participant.

Intra oral examinations were carried out on the study subjects in a comfortable chair available in the old age home. Mouth mirror and Explorer No. 5 were used for examination. The examination was carried out under uniform lighting throughout the procedure and artificial illumination was used wherever necessary. Kartz Root caries index (1980) was used for assessing root caries. Root caries was recorded on tooth with exposed root surface. Radiographs were not used in this study .A trained assistant was used to enter the scores in the proforma.

Root caries index (R.V. Katz .1980):[9,10]

Dental caries lesions on the roots of teeth are diagnosed as being in one of the following categories.1) Lesions exhibiting gross cavitations. Any root surface area which exhibits a frank cavitation and either.

a) A darkened, discoloured appearance, or

b) A tracky or leathery feel upon probing with mod-

erate pressure.

2) Lesions without gross-cavitations:

Any root surfaces which provide a darkened, discoloured appearance, either;

a) With a tracky or leathery feel upon probing with moderate pressure (assumed to be active lesions) or

b) Without any tactile evidence (assumed to be inactive lesions)

Proforma:

A specially prepared and pretested questionnaire was exclusively designed for recording all the required and relevant information. The proforma used consisted of questions that included demographic back ground and oral hygiene practice.

Oral health education for the patients:

Before the interview, the importance of this study was explained to the study subjects and the respective authorities. Oral health education was given to the study subjects on tooth brushing and oral hygiene.

Statistical analysis:

The data collected was analyzed using the statistical package for social sciences (SPSS) version 10.0. p value of <0.05 was considered as statistically significant.

RESULTS

Figure- 1 shows distribution of study population according to age and sex. 55.4% were males and 44.6 % were females in 61-70 years age group. 60.4% were males and 39.6 % were females in 71-80 years age group. 52.9% were males and 47.1% were females in 81-90 years age group.

Figure-2 shows distribution of study subjects according to oral hygiene aids used. 49% of the study subjects in the age group of 61-70 years used tooth brush to clean their teeth. 40% of the study subjects in the age group of 61-70 years used tooth paste to clean their teeth.

Figure- 3 shows sex-wise distribution of study subjects according to oral hygiene aids used. 42% of males and 38% of females used tooth brush to clean their teeth. 34% of males and 21% of females used tooth paste to clean their teeth.

Table 4 shows age-wise distribution of root caries index values. 61-70 years age group of the study population had mean root caries score of 0.5 ± 2.0. Whereas 71-80 years had mean root caries score of 1.0 ± 6.8. 81-90 years showed mean root caries score of 3.4 ± 12.05.These observations were not statistically significant.

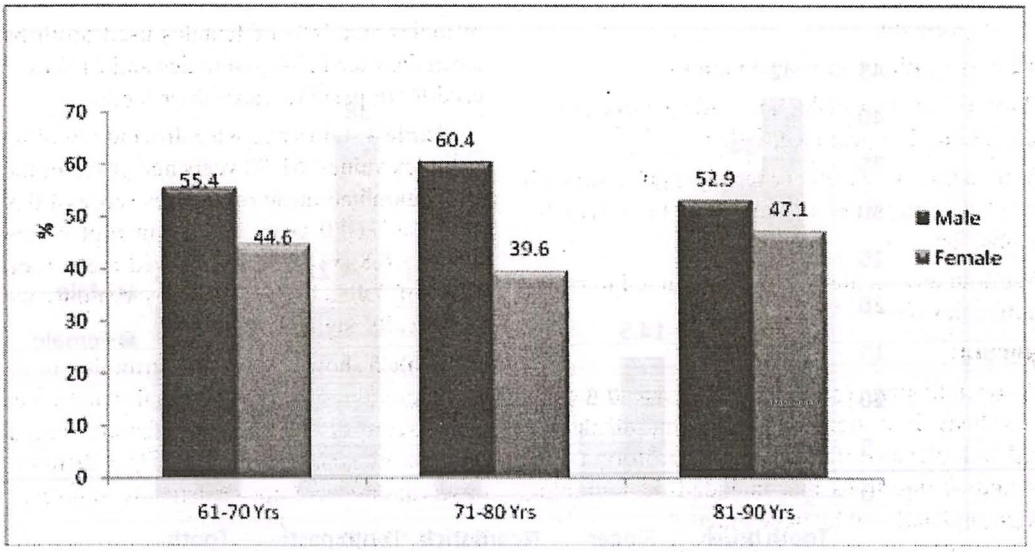
Table 5 shows sex-wise distribution of root caries index values. In this study males had a mean root caries score of 0.4 ± 2.0 and females had a mean root caries score of 1.5±7.5. The differences in observations were not statistically significant.

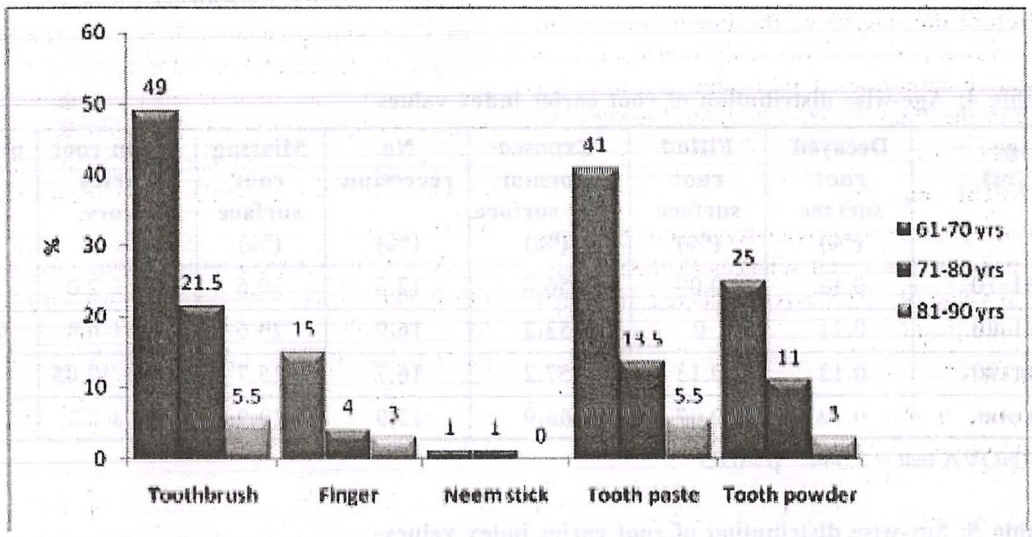
DISCUSSION

In India, epidemiological data on root surface caries for adult population is scarce. The present study provides much needed data on root surface caries for the older individuals residing in old age homes in Chennai. 200 older individuals with mean age of 70 years actively participated in this study, of which 56.5 % were males (113) and 43.5% (87) were females.

About 76% of the study population used tooth brush and only 2 % used neem stick for cleaning their teeth. 59 % of the study population used tooth paste and 41.5% used tooth powder as materials of choice. This shows that most of the adult populations were following appropriate oral hygiene practices.

The mean root caries score was found to be 0.9 in the study population. In contrast China[5] our neighbouring country shows a mean root caries index value of 5.4 and Sri Lanka[8], another neighboring country shows a mean root caries index value of 25.0 and countries such as United States[11], South Australia[12], and Brazil[4] showed a higher mean root caries index values. The low mean root caries score in the present study may be attributed to the fact that 29.9% of the root surfaces in the present study were missing (i.e. there was tooth loss) and only 55.9% of the root surfaces were exposed (i.e.gingival recession present). On the other hand





the high mean root caries index values in the other studies were due to the higher percentage of surfaces with gingival recession contributing to high mean root caries values. Hence in the present study a low mean root caries index value was observed. In this study the decayed root surfaces was 0.12%, which means that on an average 0.12 surfaces of exposed root surfaces were at risk of developing root caries.

With regard to age, older individuals who were above 80 years showed higher root caries index values compared to other age groups. This could be due to the longer duration of root surface exposure to the oral environment in older age groups. In this study, there were no statistically significant differences between ages with respect to root caries index values. Similarly in a study by S.Imazato et al (2006)[7] among people over 60 years in Japan, oc-

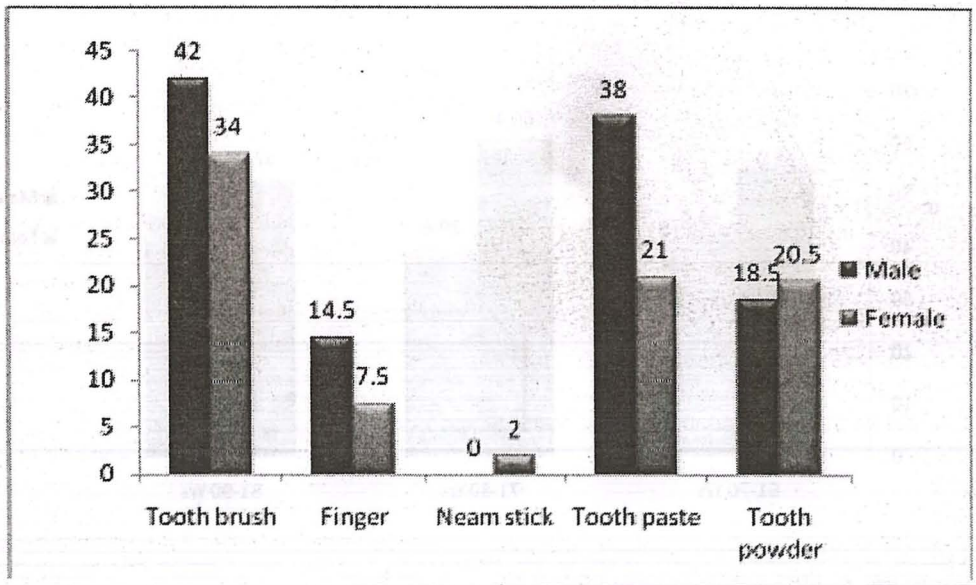


Table 4: Age-wise distribution of root caries index values

Age (yrs)	Decayed root surface (%)	Filled root surface (%)	Exposed normal root surface (%)	No recession (%)	Missing root surface (%)	Mean root caries score	p-value
61-70	0.12	0.09	56.8	12.3	30.6	0.5 ± 2.0	
71-80	0.11	0	53.2	16.9	29.6	1.0 ± 6.8	0.09
81-90	0.13	0.13	57.2	16.7	25.7	3.4 ± 12.05	
Total	0.12	0.07	55.9	13.9	29.9	0.9 ± 5.2	

ANOVA test = 2.344 p >0.05

Table 5: Sex-wise distribution of root caries index values

Sex	Decayed root surface (%)	Filled root surface (%)	Exposed normal root surface (%)	No recession (%)	Missing root surface (%)	Mean root caries score	p-value
Male	0.1	0.05	51.5	17.9	30.4	0.4±2.0	
Female	0.1	0.09	61.6	8.7	29.3	1.5±7.5	0.1
Total	0.12	0.07	55.9	13.9	29.9	0.9 ± 5.2	

t test = 1.446, p > 0.05

currence of root caries were not significantly associated with age. But in contrast, a study by Kularatne and Ekanayeke (2007)[8] among the older individuals in Sri Lanka, age emerged as a risk predictor for root caries. The reason could be due to, more number of teeth retained with gingival recession as age increases.

In this study there was no statistically significant differences between gender with respect to root caries index values. Similarly observations were made by S.Imazato et al (2006)[7] among Japanese adults. Whereas in a study by Marlavia G.C watanabe (2003)[4], among 50-59 years older individuals in Brazil the root caries index score was statistically significant with respect to gender.

CONCLUSION

The present study was done to assess the root caries experience in older individuals residing in old age homes in Chennai, It revealed that root caries experience and the percentage of gingival recession was found to be lower as compared to other countries, proper preventive measures of plaque control procedures should be emphasized so as to prevent and arrest progression of root caries.

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APPEAL

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