Oral health status and treatment needs of geriatric population of old age homes of Chennai city, India

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Abstract
Aim: To assess oral health status and treatment needs of geriatric population residing at old age homes in Chennai city, India. Methods: A descriptive (cross-sectional) study was carried out on 156 geriatric people residing in four old age homes in Chennai city using cluster sampling methodology. The clinical findings were recorded using World Health Organization (WHO) (1997) Oral Health Assessment Form. Results: It was observed that 51.3% had shallow pockets and 16.5% had deep pockets as their highest score and this difference was statistically significant (p<0.05). Among the dentate population of ≥80 years, the highest prevalence of loss of attachment was code 2 (loss of attachment 6-8 mm). The overall prevalence of caries was 67.3% and mean caries experience was 7.95±9.67. One way ANOVA revealed significant differences between the age groups for caries experience and its components. Requirement for one surface and two surface restorations decreased with increase in age group. Requirement for pulp therapy was more among 60-69 years age group. Conclusions: The oral health status of institutionalized elderly people was found to be poor.

Key words: Periodontal status; Dental caries; Geriatric; Old age homes; Edentulism.

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Introduction
Throughout the world, a demographic revolution is underway. The proportion of older people is growing faster than any other group. A growth spurt in the number of elderly persons has resulted from improvements in both social living conditions and medical care. Approximately 600 million people are aged 60 years and over, and this number will double by 2025. This poses tremendous challenges to health and social policy planners, particularly because disease patterns will shift concurrently (1).

Globally, poor oral health among older people has particularly been seen in a high level of tooth loss, dental caries experience, and high prevalence rates of periodontal disease, xerostomia, and oral precancer/cancer (1). Since there is scarce information about the oral health status of geriatric population in old age homes in Chennai, this study was conducted with the following objectives: (i) to measure the indicators of periodontal status which include bleeding, calculus, shallow pockets, deep pockets and loss of attachment. (ii) to assess the level of caries experience and treatment needs and (iii) to detect the prevalence of edentulism.

Material and methods
An epidemiological study was conducted to assess the oral health status and treatment needs of geriatric population in old age homes in Chennai city. A list of old age homes in Chennai city was obtained from Ministry of Social Justice and Empowerment. Cluster sampling methodology was used for selection of the study subjects. Each old age home formed a cluster. Four old age homes were randomly selected from various parts of the city. The subjects who were more than 60 years were included and those who were less than 60 years were excluded from the study. They were examined using WHO Oral Health Assessment form (2) in the old age homes. An introduction was given to the authorities regarding the purpose of the study and prior permission was taken from the concerned authorities. Furthermore, ethical approval was obtained from the institutional ethical committee and informed consent was taken from each participant. Each person was examined by a single examiner. Each subject was assessed according to WHO criteria for basic oral health surveys, periodontal status was evaluated using community periodontal index and loss of attachment while dental caries in the form of decayed, missing and filled teeth (DMFT) index was extracted from dentition status and treatment needs. In addition, prosthetic status was assessed (2).

The total sample collected was 207. Out of this 51 were less than 60 years of age and thus were excluded from the study, with the study population of 156.

Statistical analysis
The data was subjected to statistical analysis using Statistical Package for Social Sciences (SPSS) software. Distribution of subjects according to various criteria and age groups was done and then subjected to tests of significance. For comparing percentages, Pearson’s chi square test was used. For comparison of means between more than two groups, analysis of variance (ANOVA) was used.

Results
The In the total study population of 156, 63 (40.4%), 52 (33.3%) and 41(26.3%) were of the age group 60-69, 70-79 and >80 years, respectively. Males constituted a minor proportion (37.2%) than females 98(62.8%). In the study group, 0.6 % had ulcerations in commissures, 1.9% had ulcerations in vermillion border and 0.6% had enlarged lymph nodes in head and neck region. The overall prevalence of oral
mucosal lesions was 7.1% and 10.3% had symptoms of clicking while opening or closing the mouth, clicking was noticed in 37.2% of total population and tenderness was palpated in 5.8% (not presented in tables).

In the dentate population, 0.91% had healthy periodontal tissue, 0.91% had bleeding, and 30.2% had calculus, 51.3% had shallow pockets and 16.5% had deep pockets as their highest score and this difference was statistically significant (p<0.05). Approximately half (43.1%) the population had excluded sextants (Table 1).

It is evident from table 2 that nearly half (2.73) the dentate sextants assessed had calculus. This was followed by excluded sextants (1.50), shallow pockets (1.49), deep pockets (0.20), healthy (0.04) and bleeding (0.03).

Table 3 demonstrates that that among the dentate population, 3.7% had 0-3 mm of loss of attachment, 26.6% had 4-5 mm of loss of attachment, 24.8% had 6-8 mm loss of attachment, 33.0% had 9-11 mm loss of attachment and 11.9% had ≥12 mm loss of attachment as their highest score.

Among the younger age groups (60-69 years and 70-79 years) an attachment loss of 9-11mm was significantly more prevalent than the oldest age group. Surprisingly among the dentate population of ≥80 years, the highest prevalence of loss of attachment was code 2 (loss of attachment 6-8 mm).

The overall prevalence of caries was 67.3% and mean caries experience was 7.95±9.67 which is demonstrated in table 4 while the caries prevalence among dentate subjects was 96.3%. One way ANOVA revealed significant differences between the age groups for caries experience and its components. Mean MT (missing teeth) was higher, 5.00 ±8.87 than mean DT (decayed...
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teeth), 2.94±3.90 followed by mean FT (filled teeth) that was almost negligible, 0.013±0.11. It was seen that with increase in age caries prevalence decreased. Mean DMFT and mean DT was highest among age group 60-69 years while mean MT was highest among subjects ≥80 years being 5.41. Mean FT was 0.03 among 60-69 years age group and nil among the rest of the groups.

Table 4: Age wise caries experience among the subjects

<table>
<thead>
<tr>
<th>Age group</th>
<th>Prevalence n (%)</th>
<th>DT Mean (SD)</th>
<th>MT Mean (SD)</th>
<th>FT Mean (SD)</th>
<th>DMFT Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-69</td>
<td>50 (79.4%)</td>
<td>3.76 (4.14)</td>
<td>4.41 (8.34)</td>
<td>0.03 (0.18)</td>
<td>8.20</td>
</tr>
<tr>
<td>70-79</td>
<td>31 (59.6%)</td>
<td>2.09 (2.67)</td>
<td>4.15 (9.11)</td>
<td>0</td>
<td>6.24</td>
</tr>
<tr>
<td>≥80</td>
<td>24 (58.5%)</td>
<td>2.76 (4.62)</td>
<td>5.41 (9.46)</td>
<td>0</td>
<td>8.17</td>
</tr>
<tr>
<td>Total</td>
<td>105 (67.3%)</td>
<td>2.94 (3.90)</td>
<td>5.00 (8.87)</td>
<td>0.013 (0.11)</td>
<td>7.95</td>
</tr>
</tbody>
</table>

One way ANOVA, p<0.05.

Table 5: Distribution of subjects requiring treatment according to age group

<table>
<thead>
<tr>
<th>Age group</th>
<th>1 surface restoration</th>
<th>≥2 surface restoration</th>
<th>Pulp therapy</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-69</td>
<td>39.7%</td>
<td>60.3%</td>
<td>23.8%</td>
<td>57.1%</td>
</tr>
<tr>
<td>70-79</td>
<td>23.1%</td>
<td>36.5%</td>
<td>15.4%</td>
<td>40.4%</td>
</tr>
<tr>
<td>≥80</td>
<td>17.1%</td>
<td>31.7%</td>
<td>22.0%</td>
<td>48.8%</td>
</tr>
<tr>
<td>Total</td>
<td>28.2%</td>
<td>44.9%</td>
<td>20.5%</td>
<td>49.4%</td>
</tr>
</tbody>
</table>

Chi square test, p<0.05.

Table 5 reveals that 28.2% of the study population required one surface restoration, 44.9% required two or more surface restoration, and 20.5% required pulp therapy and majority (49.4%) required extraction of one or more teeth. Requirement for one surface and two surface restorations decreased with increase in age group. Requirement for pulp therapy was more among 60-69 years age group.

In the study population, mean number of teeth present per person was 14.91±12.01. There was a decline in the mean number of permanent teeth per person with increase in age being 20.13±10.43, 13.00±12.30 and 9.31±10.86 for age groups 60-69, 70-79 and ≥80, respectively. This finding was statistically significant (p<0.05). In the study population, 62.2% required removable partial dentures and 36.5% required complete dentures. There was decrease in removable partial denture (RPD) requirement and increase in complete denture requirement will increase in age (not presented in tables).

Discussion

In a previous study (3) on Japanese population, only 17% had clicking. In the present study, 37.2% had clicking, 5.8% had tenderness. This may be due to long standing edentulism without replacement of teeth. In the present study, prevalence of oral mucosal lesion was 7.1% which was almost similar to the non denture related lesions in a study conducted by Hand and Whitehill (4) among United States elderly population, being 8.3%.

The overall prevalence of periodontal disease in the present study was 99.09% had which is in accordance with 99.4% among institutionalized elderly in Hong Kong (5). It was surprising to observe that among the dentate population of oldest age group, loss of periodontal attachment of 6-8 mm was most prevalent. It can be anticipated that with increase in age the teeth were lost due to dental caries or periodontitis, and hence a large proportion of sextants were coded as excluded.

In the present study, the caries prevalence among dentate subjects was 96.3% and caries experience accounted to 7.95±9.67 which is concordance with Indian elderly population who has caries prevalence and experience of 100% and 9.56±7.53 respectively (6). However, in another study on elderly population of South Delhi, India (7) 54.5% had caries. The reason for caries prevalence in the past study could be because of geriatric health
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program operational in urban area of South Delhi and its adjoining villages. In a study by Mattin and Smith (8) on Asians in Southampton, 44.9% had experienced caries.

In the present study, 48.7% required extraction of teeth while in a study done by while among elderly population of the US, only 29.6% required extractions (9). This may be due to the insurance schemes, awareness and ease of accessibility to dentist by that population. They might have undergone restorative and preventive treatment at an early age. In a study conducted by Weintraub (10), 38% were edentulous. This was similar to the findings of the present study.

Conclusions

The results of this study showed that institutionalized geriatric population has extensive dental diseases, dental caries being the most common. And many of them require complex treatment for the same. To improve the oral health status of the geriatric population in old age homes, education to care givers and periodic screening should be done at community level. While, fluoridated dentifrices, mouth rinses and chlorhexidine solution can be used at personal level.

References