

Research Article

# Assessment of Oral Hygiene Practices, Dentition Status and Treatment Needs of Institutionalized Elderly Living in Geriatric Homes of Dakshina Kannada District, Karnataka, India

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Citation: Pandya SR, et al. Assessment of Oral Hygiene Practices, Dentition Status and Treatment Needs of Institutionalized Elderly Living in Geriatric Homes of Dakshina Kannada District, Karnataka, India. J Dental Health Oral Res. 2023;4(2):1-6.

<https://doi.org/10.46889/JDHOR.2023.4205>

Received Date: 30-06-2023

Accepted Date: 23-07-2023

Published Date: 30-07-2023



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## Abstract

**Background:** With the changing trends of preference for nuclear families in India, the population living in old age home is on rise. Many oral health surveys of elderly have shown the higher proportion of oral health problems among the individuals residing in geriatric homes.

**Aim:** To assess the oral hygiene practices, dentition status and treatment needs of institutionalized elderly living in geriatric homes of Dakshina Kannada District, Karnataka, India.

**Methods:** A cross sectional survey was conducted geriatric homes of Dakshina Kannada District. Pilot study was carried out to check the feasibility of the methodology and to estimate the sample size. The intra-examiner kappa coefficient values were calculated to be 0.79 reflecting a high degree of agreement. The clinical data was collected using Type III examination (ADA). Descriptive analysis of data was done.

**Results:** The study population consisted of 384 Institutionalized elderly aged 60 years and above 39.8% and 60.2% of study subjects were using tooth brush and finger to clean their teeth respectively. Mean number of teeth present with sound crown were 17.5. Mean number of decayed and filled teeth were 2.5 and 0.36 respectively. Mean number of teeth needed root filling were 1.

**Conclusion:** The present study concludes that dentition status was poor among study participants and treatment need was found to be relatively high among the institutionalized elderly living in geriatric homes of Dakshina Kannada District.

**Keywords:** Homes for the Aged, Oral Hygiene, Dentition

## Introduction

The present-day population of India is undergoing demographic transition. The contribution of geriatric people to the demographic profile is increasing every day. According to 1991 census the geriatric population constituted 6.3% of total Indian population, whereas according to 2011 census it is 8.0% of total population. This possesses tremendous challenge to health and social policy planner and health professionals [1-3].

With the changing trends of preference for nuclear families in India, the population living in old age home is on rise [4]. Many oral health surveys of elderly have shown the higher proportion of oral health problems, mucosal diseases, denture problems among the individuals residing in geriatric homes [1,3,5,6]. Major barriers to dental care for institutionalized elderly are unawareness about importance of oral health and expensive dental care services [5,6].

In Dakshina Kannada, a southern district of state of Karnataka, there are many old age homes run by various social organizations. But there are no recognized oral health care services for elderly living in this institution. The only published oral health survey involving elderly was conducted in the year 2011 and it assesses only prosthetic status and prosthetic need of institutionalized elderly of Mangalore Taluka [1]. Hence, the present study was conducted with the aim to investigate the oral hygiene practices, dentition status and treatment needs of institutionalized elderly living in geriatric homes of Dakshina Kannada District, Karnataka, India.

### Material and Methods

A cross sectional study was performed to assess the oral hygiene practices, dentition status and treatment needs of institutionalized elderly living in geriatric homes of Dakshina Kannada District, Karnataka, India. The study population consisted of the inmates aged 60 years and above. The study was carried out for a period of one year and six months from September 2014 to March 2016.

Ethical clearance was sought from the ethical committee of "AJ Institute of Medical Science and Research Centre, Mangalore" explaining the aim and importance of the study. Permission was obtained from the concerned authorities of the selected geriatric homes and informed consent was obtained before the examination from each participant. All the old age homes listed by the district headquarter and social organizations were obtained. A total of 17 old age homes were listed. Of 17 old age homes that were functional, permission to carry out the survey was obtained from only 12 of them. The study participants were selected based on the following criteria.

#### *Inclusion Criteria:*

1. Subjects consenting to participate in the study
2. Subjects who are present on the day of study

#### *Exclusion Criteria*

1. Subjects with oral diseases or any other systemic conditions that limit them from oral examination
2. Physically challenged and mentally compromised elderly people and those with cognitive impairment
3. Elderly people with terminal illness

The clinical examination of all the participants was carried out by a single examiner who was trained under the guidance of teaching staff to limit the intra-examiner variability. The intra-examiner variability was checked by carrying out repeat examination on 20% randomly selected participants and intra-examiner kappa coefficient values were calculated to be 0.79 reflecting a high degree of agreement.

Pilot study was carried out to check the feasibility of the methodology and to estimate the sample size. The sample size was estimated to be 384. The power of the study was 80% with confidence interval 95%. The study proforma consisted of two parts. The first part was a structured questionnaire to record the following information on age, sex and oral hygiene practices. The second part was to record the dentition status and treatment need of the study subject using WHO oral health assessment proforma (1997). The clinical data was collected using Type III examination (ADA).

### Statistical Analysis

The data obtained was coded and fed into the SPSS (Statistical Package for Social Sciences, Chicago, IL, USA) version 16.0 for analysis. Descriptive analysis of data was done.

### Results

The study population consisted of 384 Institutionalized elderly aged 60 years and above with their mean age being 70.1 years. Out of 384 study subjects, 57.03% of them were males and 42.97% of them were females. The analysis of oral hygiene practices revealed that 37% of males and 43.6% of females were using tooth brush to clean their teeth, whereas 63% of males and 56.4% of females were using finger to clean their teeth. Total, 39.8% and 60.2% of study subjects were using tooth brush and finger to clean

their teeth respectively (Table 1). Furthermore, 76.7% of males and 61.2% of females had habit of cleaning their teeth once a day, whereas 23.3% of male and 38.8% of females had habit of cleaning their teeth twice a day. In total, 70.1% and 29.9% of study subjects had habit of cleaning the teeth once and two times a day respectively (Table 1).

In the present study, 35.2% of males and 37% of females changed their toothbrush once in 3 months, whereas 64.8% of males and 63% of females changed their tooth brush once in 6 months. In total 35.9% and 64.1% of study subjects changed their toothbrush once in 3 and 6 months respectively. Other oral hygiene aids like mouth rinse were utilized by all the subjects (Table 1).

The analysis of dentition status revealed that mean number of teeth with sound crown were 18 and 17 among male and female study subjects respectively. Mean number of decayed teeth were 2.7 in males and 2.3 in female study subjects. Present study results show that, mean number filled teeth were 0.32 and 0.4 among male and female study subjects respectively. Mean number of teeth missing due to caries were 7.1 in males and 7.3 in female study subjects. Mean number of teeth with root caries were 1 and 0.9 among male and female study subjects respectively (Table 2).

In total, mean number of teeth present with sound crown were 17.5. Mean number of decayed and filled teeth were 2.5 and 0.36 respectively. In total, mean number of teeth missing due to caries were 7.2. Mean number of teeth with root caries were 0.95 (Table 2).

The investigation of dental treatment need revealed that mean number of teeth needed one or more surface of filling were 1 and 1.1 among male and female study subjects respectively. Mean number of teeth needed pulp care were 0.1 in males and 0.9 in female study subjects. Present study results shows that mean number teeth needed crown and veneer were 0.2 and 0.5 among male and female study subjects respectively. Mean number of teeth required extraction were 2.3 in males and 3 in females. Mean number of teeth needed root filling were 1 among male and female study subjects (Table 3).

In total, mean number of teeth needed one or more surface filling were 1.05. Mean number of teeth needed pulp care and extraction were 0.5 and 2.7 respectively. In total, mean number of teeth required crown and veneers were 0.35. Mean number of teeth needed root filling were 1 (Table 3).

Oral Hygiene Practice		Males n(%)	Females n(%)	Total n(%)
Clean teeth with	Tooth brush	81 (37%)	72(43.6%)	153(39.8%)
	Finger	138 (63%)	93(56.4%)	231(60.2%)
Frequency of cleaning teeth	Once a day	168(76.7%)	101(61.2%)	269(70.1%)
	Twice a day	51(23.3%)	64(38.8%)	115(29.9%)
Change of tooth brush	1-3 months	77(35.2%)	61(37%)	138(35.9%)
	4-6 months	142(64.8%)	104(63%)	246(64.1%)
Rinses mouth after eating	Sometimes	219 (100%)	165 (100%)	384 (100%)
	Always	0	0	0

**Table 1:** Oral hygiene practices among study participants.

Dentition Status	Male [Mean±SD]	Female [Mean±SD]	Total [Mean±SD]
Sound crown	18± 5.2	17± 4.5	17.5± 4.4
Decayed Teeth	2.7± 1	2.3± 1	2.5± 1
Filled Teeth	0.32± 1.8	0.4± 1.2	0.36± 1.5
Missing Teeth due to caries	7.1± 3.1	7.3± 4.5	7.2± 5.1
Missing due to any other reason	0	0	0
Root Caries	1± 1	0.9±1.2	0.95±1

**Table 2:** Mean number of decayed, missing, filled teeth.

Treatment Needs	Male [Mean±SD]	Female [Mean±SD]	Total [Mean±SD]
One or more surface filling	1± 1.5	1.1±1.8	1.05± 1.1
Pulp care	0.1± 1	0.9± 1.2	0.5± 1.3
Crown and veneer	0.2± 1.4	0.5± 1.1	0.35± 1
Extraction	2.3± 1.5	3± 2.1	2.7± 1.9
Root filling	1±1.1	1±1.3	1±1.2
Need for other care (Prosthetic rehabilitation)	10± 3.1	12±5.4	11± 4.3

**Table 3:** Mean number of teeth with treatment needs.

## Discussion

The study participants belonged to the age range of 66-80 years, where the mean age was 70.1 years. This is similar to a study conducted by Bansal V, et al., and Sinor MZ where the mean age of the study participants was 70.49 years and 71.2 years respectively [7,8]. However, a study conducted by Gaszynska, et al., the mean age was 75.5 years [5].

In the present study, 57.03% and 42.97% of the study participants were males and females respectively. This is similar to a study conducted by Pavan TP, et al., where 60% and 40% of the study participants were males and females respectively [12]. But study conducted by Mary AV, et al., where 37.2% and 62.8% of the study participants were male and female respectively [3].

Present study results show that, 39.8% of study subjects were using tooth brush whereas 60.2% of study subjects were using finger to clean their teeth. But the study conducted by Agrawal R, et al., where 17.7% of inmates were using tooth brush and 47.6% of inmates were using finger to clean their teeth [9]. This could be due to lack of knowledge and awareness of inmates regarding the use of good oral hygiene measures [5].

In the present study, 70.1% of study subjects cleaned their teeth once a day and 29.9% of study subjects cleaned their teeth twice a day. According to Karnataka Oral Health Survey 94.5% and 4.9% of study participants in the age group of 65-74 years had habit of cleaning their teeth once a day and twice a day respectively [10]. Studies indicate majority of subjects clean their teeth once a day. This may be due to lack of awareness towards oral health.

In the present study, 35.9% and 64.1% of study subjects changed their toothbrush once in 3 months and once in 4-6 months respectively. But according to Karnataka Oral Health Survey 44.1% and 35.9% of participants in the age group of 65-74 years changed their tooth brush once in 3 months and once in 4-6 months respectively [10]. The reason may be due to financial constraints and fewer aids from old age homes.

Present study results shows that all the study subjects had habit of rinsing the mouth sometimes. But according to Karnataka Oral Health Survey 41.1% of participants in the age group of 65-74 years had habit of rinsing the mouth sometimes [10]. Dental caries is the localized destruction of susceptible dental hard tissues by acidic by-products from bacterial fermentation of dietary carbohydrates. It is a common problem worldwide and it can affect individuals throughout their life. Globally, high prevalence rates of coronal dental caries and root surface caries are found among old age populations. This also affects an individual's general health and quality of life.

Present study results show that, mean number of decayed teeth were 2.5. This is similar to the study conducted by Mary AV, et al., where mean number of decayed teeth were 2.94 [3]. The reason may be due to use of medications that can result in dry mouth and cognitive and manual dexterity problems which impair oral hygiene [11]. But studies conducted by Agrawal R, et al., Shaheen SS, et al., and Karnataka Oral Health Survey showed that mean number of decayed teeth were 1.51, 1.17 and 1.4 respectively [9,10,12]. The reason may be due to intake of more cariogenic diet or taking medication which contain great amount of sugar [11].

Present study results show that, mean number of filled teeth were 0.36. The reason was dental caries. But studies conducted by Mary AV, et al., by Agrawal R, et al., and Shaheen SS, et al., showed that mean number of filled teeth were 0.013, 0.05 and 0.06

respectively [3,9,12]. According to Karnataka Oral Health Survey none of the study subjects in the age group 65-74 years had filled teeth [10].

Present study results show that, mean number of teeth missing due to caries were 7.2. The reason was dental decay. This is similar to the study conducted by Agrawal R, et al., where mean number of teeth missing due to caries were 6.70 [9]. But studies conducted by Mary AV, et al., Shaheen SS, et al., and Karnataka Oral Health Survey showed that mean number of teeth missing due to caries were 5, 1.57 and 9.6 respectively [3,12,10]. The reason may be due to extraction of carious and mobile teeth.

Present study results show that, mean number of teeth present with root caries were 0.95. Similar results were found in the Karnataka Oral Health Survey in which mean number of teeth with root caries were 0.7 [10]. The possible reason could be gingival recession which is a common condition among older patients. Due to which, the enamel cementum junction becomes exposed. This is a very irregular site which can be susceptible to bacterial retention and root caries can develop. Also, the root is more susceptible to dental caries because of less mineralized dentin and cementum [11].

Elderly institutionalized patients often have a higher prevalence of oral diseases than those living at home. Hence there is a high demand of treatment need among institutionalized elderly. In the present study, mean number of teeth which needed one or more surface filling were 1.05. But according to the Karnataka oral health survey where mean number of teeth which needed one or more surface filling were 0.7 in the age group of 65-74 years [10]. Mean number of teeth which needed pulp care in the present study were 0.5. But according to the Karnataka oral health survey where mean number of teeth which needed pulp care were 0.1 in the age group of 65-74 years [10].

Study results found that, mean number of teeth needed crown and veneer were 0.35. But according to the Karnataka Oral Health survey where mean number of teeth needed crown and veneer were 0.1 in the age group of 65-74 years [10]. The findings of the current study shows that mean number of teeth needed extraction were 2.7. But according to the Karnataka Oral Health survey where mean number of teeth needed extraction were 5.7 in the age group of 65-74 years [10].

The analysis of study results found that, mean number of teeth needed root fillings were 1. But according to the Karnataka Oral Health survey where none of the study subjects required root filling in the age group of 65-74 years [10].

Though present study investigates the oral hygiene practices, dentition status and treatment need of institutionalized elderly, it has limitations. In the present study, comparison could have been done between gender, urban and rural institutionalized elderly population.

## Conclusion

The present study concludes that dentition status was poor among study participants and treatment need was found to be relatively high among the institutionalized elderly. The use of tooth brush among the study participants was low whereas, majority of the respondents had cleaned their teeth once a day. Further research required to assess the impact of dentition status on the quality of life of geriatric people.

## Conflict of Interest

The authors have no conflict of interest to declare.

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