



## RESEARCH ARTICLE

# Oral Health Status of the Institutionalized Elderly in Mangalore City, Karnataka, South India: Extents, Insights and Action

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## ABSTRACT

Oral diseases are progressive and cumulative across the life span and due to this reason, the oral health of the institutionalized elderly is of concern within the realm of geriatric care. An improvement in oral health among the institutionalized elderly will boost their social life, self-confidence, mastication and nutritional status, thereby bringing a positive outlook. To assess the periodontal status, dental caries experience, prosthetic status, and prosthetic need of institutionalized elderly in Mangalore. A cross-sectional study was conducted to assess the dental caries experience, periodontal status, prosthetic status, and prosthetic needs of 143 elderly individuals living in geriatric homes in Mangalore city. The demographic data, periodontal status, prosthetic status, and prosthetic need was obtained using the WHO Oral Health Assessment Form 1997. Dental caries experience was recorded according to the WHO modified DMFT Index. Descriptive statistics was obtained using SPSS version 16. The mean dental caries experience of the study subjects was 8.80. The presence of supra or sub gingival calculus was noted in 44.8 % of the subjects and the presence of a pathological pocket of 4 mm or more was seen in 32 %. About 33 of the subjects did not require any kind of prosthesis in the upper & lower arch. From this survey of the institutionalized elderly population, it was evident that, half of them had supra or subgingival calculus deposits and more than 76.9 % have one or the other need for a prosthesis.

**Keywords:** Edentulousness; Elderly inmates; Old age homes; Oral health

## 1 INTRODUCTION

Ages nearing or surpassing the average life span of human beings is considered as old age.<sup>(1)</sup> 600 million people globally are aged 60 years and above and this will double by 2025.<sup>(2)</sup> In India, the proportion of older people has crossed 100 million mark and the number is expected to increase to 323 million constituting 20% of the total population of 2050, posing the greatest challenge to provide affordable, accessible, and equitable health care to this population.<sup>(1)</sup> The increasing population of elderly individuals residing in long term care facilities and nursing homes has drawn attention to the complex issues of oral health in this demographic.

Homes for the older age people serve as an alternate to home care, to ensure social and financial stability and to

provide rehabilitation.<sup>(1)</sup> The residential home environment has several unique features ever since, as it serves frailer population who are at greater risk for illness and functional loss. Their vulnerability arising from their various physical, economic, financial, and emotional turmoil makes them the only demographic which remain relatively unchanged. Apart from this, limited access to dental care, varying medications, certain dietary restrictions, lack of awareness totals the scenario. A recent study conducted among 142 institutionalized elderlies in Mangalore showed a staggering 47.8% afflicted with depression<sup>(3)</sup>. Various sequelae of tooth loss like - difficulty in articulation and expression, which hampers communication and social interaction as well as the struggles in chewing and swallowing food resulting in malnourishment, markedly reduce their positive attitude towards life. Thus, to promote the oral as well as

overall health of the elderly, we need to know their dental caries experience, periodontal status, prosthetic status, and prosthetic need. The present study was therefore carried out with the aim of assessing the oral health status of the institutionalized elderly living in geriatric homes in Mangalore and to propose certain recommendations in this area of work.

## 2 METHODOLOGY

A cross sectional study was conducted during the period from June 2018- September 2019 to determine the dental caries experience, periodontal status, prosthetic status, and prosthetic needs of institutionalized elderly individuals living in geriatric homes in Mangalore city, Karnataka, South India.

Mangalore has a total of 10 old age homes, out of which 1 is acting as a day care recreational centre for the old, without any in-house facilities, and therefore was not included in the study. After obtaining the ethical approval from the Institutional Ethics Committee (AJEC/REV/23/2018) the investigators sought written approval for the conduction of the study from the old age home authorities. A total of 212 inmates were all together present in these homes.

The subjects who gave informed consent and who fulfilled the following inclusion and exclusion criteria were included for the study:

- **Inclusion criteria**
  - Subjects who were physically and mentally capable for oral examination.
  - Subjects above the age of 60 years.
- **Exclusion criteria**
  - Subjects whose systemic condition did not permit them for oral examination.

Total of 143 inmates from these homes were finally included in the study.

The information related to sociodemographic data, periodontal status, prosthetic status, and prosthetic need was obtained using the WHO Oral Health Assessment Form 1997. Dental caries experience was recorded according to the modified DMFT Index<sup>(4)</sup>. The investigators were trained and calibrated in recording the proforma and dental caries examinations at AJ Institute of Dental Sciences.

Descriptive statistics was obtained after the data was tabulated and analyzed using SPSS version 16 (SPSS Inc, Chicago, USA).

## 3 RESULTS

### 3.1 Sociodemographic details of study subjects

Study participants comprised of 143 individuals with a mean age of 62.01 years, about 11.9% of them were males and 87.4% of them were females. (Table 1)

**Table 1: Sociodemographic characteristics**

|                                       |               |             |
|---------------------------------------|---------------|-------------|
| <b>Total Number of study subjects</b> |               | 143         |
| <b>Mean age of the study subjects</b> |               | 62.01 years |
| <b>Gender</b>                         | <b>Male</b>   | 11.9 %      |
|                                       | <b>Female</b> | 87.4 %      |

### 3.2 Oral health related factors

#### • Dental Caries Experience

It can be found from Table 2 that the mean dental caries experience of 143 participants was 8.80. Gender comparison for mean decayed, missing, and filled teeth is not attempted here, as the proportions of the two included in the study are skewed. However, from the data it can be seen that the mean number of decayed teeth (mean = 6.69) exceeds that of missing and filled teeth in both males and females.

**Table 2: Mean Dental caries experience of the study subjects**

| <b>Sex</b>    | <b>D</b> | <b>M</b> | <b>F</b> | <b>DMFT</b> |
|---------------|----------|----------|----------|-------------|
| <b>Male</b>   | 4.64     | 1.41     | 0.05     | 6.11        |
| <b>Female</b> | 7.00     | 1.72     | 0.52     | 9.20        |
| <b>Mean</b>   | 6.69     | 1.69     | 0.48     | 8.80        |

#### • Periodontal Status

Table 3 shows the distribution of study participants according to their periodontal status. The presence of supra or sub gingival calculus (Code 2) was present in 44.8 % of the subjects and the presence of a pathological pocket of 4mm or more (Code 3 & Code 4) was seen in 32 % of the subjects.

**Table 3: Periodontal Status of the study subjects**

| <b>CPITN score</b> | <b>n (%)</b> |
|--------------------|--------------|
| Code 0             | 26 (18.2)    |
| Code 1             | 18 (12.6)    |
| Code 2             | 64 (44.8)    |
| Code 3             | 28 (19.4)    |
| Code 4             | 04 (4.9)     |

#### • Status of Prosthetic Need

The distribution of study population according to prosthetic need of upper and lower arches is shown in Table 4.

It can be inferred from the table that more than two thirds (76.9%) of the population, required a prosthesis - either a partial or full denture. Out of this, a half of them were in need of either a single/ multi/combination of prosthesis in the upper (48.2%) and lower (49.6%) arch respectively. A full prosthesis in the upper or lower arch was required for about 28% of the population. Table 4 also shows that 23.1 % and 22.4 % of the total subjects did not require any prostheses in upper and lower arches respectively.

### • Current Prosthetic Status

The distribution of study population according to their current prosthetic status of upper and lower arch is shown in Table 4.

**Table 4: Prosthetic Status of the study subjects in the upper and lower arches**

| Prosthetic status               | Upper arch (n, %) | Lower arch (n, %) |
|---------------------------------|-------------------|-------------------|
| No prosthesis                   | 126 (87.5)        | 127 (88.8)        |
| Bridge                          | 04 (2.8)          | 02 (1.4)          |
| More than one bridge            | 02 (1.4)          | 01 (0.7)          |
| Partial denture                 | 03 (2.8)          | 06 (4.2)          |
| Both bridge and partial denture | 07 (4.9)          | 06 (4.7)          |
| Full removable denture          | 01 (0.7)          | 01 (1.4)          |

It was found that, 87.5% and 88.5 % of the study subjects had no prosthesis in upper and lower arches respectively. The percentage of study population who had partial denture in upper and lower arches was 2.8 % and 4.2 %. The percentage of subjects with bridge and full removable denture were more in upper arch when compared to lower arch.

## 4 DISCUSSION

The present study aimed at understanding the prosthetic status, prosthetic needs, periodontal status, and dental caries experience among the institutionalized elderly people of Mangalore city. Lack of trained health workers, incapability of caretakers or patients to maintain good oral hygiene, deficit financial support and inefficient dental health-care delivery structure can be considered as the reason for a general lack of oral health among elderly.<sup>(5)</sup>

The periodontal conditions revealed that 44.8% of the study subjects had calculus, followed by 23.8 % with periodontal pockets, which was in accordance with a study conducted by Thakare V<sup>(6)</sup>. In the present study, the total number of participants who required complete dentures was 28.7%. These results are similar to the study done by Bansal et al.<sup>(7)</sup> in Haryana.

The present study revealed that 88% of the total population surveyed did not have any prosthesis and none of the subjects had partial dentures, which is in accordance with a study conducted by Shenoy RP<sup>(2)</sup>.

## 5 CONCLUSION AND RECOMMENDATIONS

Protecting the dignity of the elderly and stimulating a life with purpose is everyone's duty to those of the yester years. As dental professionals, the primary key to improving oral health status of the elderly in old age homes is to understand the need and working towards diligent analysis of the various factors that hamper proper oral hygiene in them.

From this survey of the population, it can be drawn that the need is alarming, and the resources are minimum.

Certain recommendations for ameliorating dental disease burden for further perusal maybe:

- To create personalized oral care plans for each resident based on their preference and needs.
- Promoting collaborative actions amongst private practitioners of the neighbourhood, dental institutions, and the care home authorities to develop and implement targeted oral health promotion programs.
- Implementing periodic oral health promotion programs like - nonalcoholic mouth rinse program, hydration-breaks program, lip & oral moisturization program, gentle brushing program, educational talks and video campaigns, training of care providers.
- Design and implement standard protocols of care at each level of patient entry.
- Facilitate and fund on site dental clinics/mobile dental van services - with once-a-week specialist visits.
- Initiate and encourage collaborations with dietitian & nutritionists in treatment planning.
- Explore the possibility of automated/ robotic designs/innovations in the area of adaptive oral care products, devices and services.
- Combine efforts with a mental health worker in eliminating the fear and resistance in adopting a new oral hygiene practice.
- Changes at the policy level in making dental insurance available to the elderly.
- Various governmental agencies could promote research in this area, considering the vulnerability and accumulated unmet needs of the institutionalized elderly.

A significant proportion of the population, who appears to be in foster care, suffers a plethora of oral diseases, which could be overcome by incorporating patient compliant, innovative, and comprehensive methods of care and services.

## 6 CONCLUDING REMARKS

In Mangalore, as a step towards achieving the higher aim of curbing the dental disease burden among this needy population, the authors devised a planned oral health promotion program for the institutionalized elderly, in all the 09 old age homes in Mangalore City during the period from June 2018 - May 2019.

In the initial phase one each session of awareness on various aspects of oral hygiene was given in the local language to the inmates and care takers by a trained dentist. It was succeeded by oral screening camps for all the inmates. We screened around a total of 212 inmates including those who are bedridden.

The phase 2 of the program was subsequently carried forwards with treatment camps at 5 of the old age homes. A

total of 48 inmates underwent various treatments for dental problems. Treatments including oral prophylaxis, GIC and Composite restorations, and minor extractions were carried out onsite with the help of portable dental chairs & units and those requiring complex treatment procedures were referred with transport facility to the dental college.

Phase 3 of the program included denture camps for those willing. A total of 08 patients received partial denture, while 01 complete denture was delivered.

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## 8 CONTRIBUTION DETAILS

Dr. Vijaya Hegde: Conceptualization, Methodology, Writing - Review & Editing, Supervision.

Dr. Teenu Thomas, Dr. Aparna M, Dr. Sharanya Sreeku-mar: Investigation, Formal analysis Writing - Original Draft, Visualization.

We, certify that the manuscript has been read and approved by all the authors, that the requirements for authorship as stated in this document have been met, and that each author believes that the manuscript represents honest work.

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