

# ASSESSMENT OF ORAL HEALTH STATUS, SELF-PERCEIVED NEEDS, UNMET NEEDS, AND BARRIERS TO UTILIZATION OF DENTAL SERVICES AMONG INSTITUTIONALISED ELDERLY POPULATION IN CHENNAI, INDIA: A CROSS SECTIONAL STUDY

Evaluación del estado de salud bucal, necesidades autopercebidas, necesidades insatisfechas y barreras para la utilización de servicios dentales entre la población de edad avanzada institucionalizada en Chennai, India: Un estudio transversal

<sup>1</sup>Subhashree Mohapatra,<sup>2</sup>Rahul Mohandas,<sup>3</sup>Meignana Arumugham Indiran

1. Department of Public Health Dentistry, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, India.

2. Department of Oral Pathology and Microbiology, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, India

3. Department of Public Health Dentistry Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences Chennai, India.

## ABSTRACT

**Aim:** The aim of the study was to assess the oral health status and identify oral health perceived and unmet needs, and barriers in utilization of dental services among institutionalized elderly population in Chennai.

**Materials and Methods:** Across sectional study was conducted among institutionalized an elderly population aged 65-74 years. Oral health status was assessed using the WHO Oral Health Assessment Form (2013). Self-perceived oral health needs and barriers in the utilization of dental services were assessed using a pre-tested questionnaire. Descriptive statistics and Pearson Chi Square Test was done to analyse the data.

**Results:** There was a high frequency of periodontitis among the study participants. The unmet oral health needs were high. The self-perceived oral health condition was good among the study participants. The major barrier for utilization of dental services was the lack of information on oral health.

**Conclusions:** In India, which is a developing country, a low level of dental care results from low-level financing of the Indian health care system. This, however, does not mean that even in the current poor economic conditions, it is impossible to improve the dental awareness of the residents of care homes. The improvement is also possible through the inclusion of dental check-ups into the schedule of general dental examinations of the residents performed once in 6 months.

**Keywords:** Oral health; Needs assessment; Barriers to access of health services; Aged; Health of institutionalized elderly; Dental care for aged

## RESUMEN

**Objetivo:** El objetivo del estudio fue evaluar el estado de salud bucal e identificar las necesidades percibidas y no satisfechas de salud bucal, y las barreras en la utilización de los servicios dentales entre la población de ancianos institucionalizados en Chennai, India.

**Materiales y Métodos:** Se realizó un estudio transversal entre población adulta mayor institucionalizada de 65 a 74 años. El estado de salud bucal se evaluó mediante el formulario de evaluación de la salud bucal de la OMS (2013). Las necesidades de salud bucal autopercebidas y las barreras en la utilización de servicios dentales se evaluaron mediante un cuestionario probado previamente. Se realizó estadística descriptiva y prueba de Chi cuadrado de Pearson para analizar los datos.

**Resultados:** Hubo una alta frecuencia de periodontitis entre los sujetos del estudio. Las necesidades de salud bucal insatisfechas eran elevadas. La autopercepción del estado de salud bucal fue buena entre los sujetos del estudio. La principal barrera para la utilización de los servicios dentales fue la falta de información sobre la salud bucal.

**Conclusión:** En la India, que es un país en desarrollo, el bajo nivel de atención dental se debe a la baja financiación del sistema de atención de salud. Sin embargo, esto no significa que, incluso en las malas condiciones económicas actuales, sea imposible mejorar la concienciación dental de los residentes de las residencias. La mejora también es posible mediante la inclusión de controles dentales en el calendario de exámenes dentales generales de los residentes realizados una vez cada seis meses.

**Palabras Clave:** Salud bucal; Evaluación de necesidades; Barreras de acceso a los servicios de salud; Anciano; Salud del anciano institucionalizado; Cuidado dental para ancianos.

**CORRESPONDING AUTHOR:** Rahul Mohandas. Department of Oral Pathology and Microbiology, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Sant Tukaram Nagar, Pimpri, Pune, Maharashtra 411018, India  
E-mail: rahuldas1192@gmail.com

**CITE AS:** Mohapatra S, Mohandas R & Meignana Arumugham I. Assessment of Assessment of Oral Health Status, Self-perceived needs, unmet needs, and barriers to utilization of dental services among institutionalised elderly population in Chennai, India-A Cross Sectional Study. *J Oral Res.* 2023; 12(1):299-313.  
doi:10.17126/joralres.2023.026

**Received:** June 15, 2023

**Accepted:** October 30, 2023

**Published online:** December 30, 2023

ISSN Print 0719-2460

ISSN Online 0719-2479.

## INTRODUCTION

Over a period of time, the disease patterns in India have predominantly changed from infectious to non-communicable diseases which is known as Epidemiological Transition.<sup>1</sup>

This has led to a rise in morbidity and a fall in mortality causing a marked increase in the elderly population.<sup>2</sup> This poses tremendous challenges to health policy workers as the role of health professionals is not merely to increase lifespan but also to make the later years of life more productive and enjoyable.<sup>3</sup> Aging is a biological reality beyond human control that can be viewed as a biopsychosocial process.<sup>4</sup>

WHO Index age group has defined “senior citizen” or “older adults” as people belonging to the age group 65-74 years.<sup>5</sup> Sixty-five and older make up 8.5% of the world’s population (617 million).<sup>5</sup> With 142.86 crore people, India has surpassed China as the world’s most populous country, according to UN statistics.<sup>6</sup>

According to the Census (2011), India has around 104 million elderly and the number is expected to increase to 323 million by 2050, which will constitute 20% of the total population.<sup>7</sup> According to the National Health Profile (2019), the average life expectancy at birth of the Indian population is 68.7 years which is expected to increase to 72.7 years by 2031-2036.<sup>8</sup> This poses the greatest challenge for health professionals to provide affordable and equitable health care to this population.

The most significant issue of the twenty-first century throughout the world is the aging phenomenon.<sup>9</sup> The rapid greying of the population comes with several difficulties in terms of

general and oral health.<sup>10</sup> Due to this changing population, oral health professionals are facing unique challenges in treating the rapidly growing segment of the elderly.

The old age is compounded by chronic medical problems they are suffering from and the medications they are taking.<sup>11</sup> The phenomenon of aging is both a medical and sociological problem indicating greater demand for the health services of a community.

Although a majority of the aged live independently in the community, a growing number of elderly receiving institutional care has increased.<sup>12</sup> Elderly people who are financially deprived, mentally and physically disabled are abandoned by their families and are left with no one to live with and take care of them. Therefore, they have to look for an alternative home for security, companionship, care, and a life of dignity.<sup>13</sup> In such situations, old age homes serve as an alternative.<sup>14</sup>

However, studies have indicated that the dental status of institutionalized older people is generally poor.<sup>14</sup> In a study conducted in Secunderabad, India, the prevalence of dental caries was found to be 60%-90%, root caries prevalence was 15%-18%, and 60% of the population was completely edentulous.<sup>15</sup> In another study conducted in Nellore district, Andhra Pradesh, the DMFT score was found to be as high as 10.8.<sup>16</sup> The reason could be that the institutionalised elderly often rely on caregivers for their daily oral hygiene maintenance.

A very extensive and comprehensive National Oral Health Survey conducted in 2003 throughout India has shown that the most prevalent oral disease occurring in the elderly population

is dental caries (85%), followed by periodontal disease (79.9%), prosthetic need (67.2%), need of complete denture (30%), oral mucosal lesion (10.3%) and dental fluorosis (3.5%). Whereas, no temporomandibular joint disorders, malocclusion, and enamel defects were found among the elderly population.<sup>17</sup>

In the elderly phase, people pay more attention to medical services as compared to dental services. However, it is at this stage that oral problems get aggravated. This behavior may be due to a lack of perception of the need for oral care.<sup>18</sup> Perceptions of the need for dental care play a very important role since it decides whether people will seek dental care or whether lack of needs perception will act as a barrier to the utilization of oral health care services. It has been seen that dental treatment improves psychological and social well-being as we are relieved of discomfort.<sup>19</sup>

Dental care is a greater problem for the institutionalized elderly as compared to non-institutionalized elderly due to the high cost of dental treatments, lack of oral hygiene offered by homes, lack of transportation from the old age home, and fear of the participants themselves.<sup>20</sup> Added to this there is a lack of interest and competence in this field of dental science, the nonexistence of organised dental care for the institutionalised and the difficult psychological and social conditions prevailing in residential homes.

Elderly people in residential homes are frequently prevented from achieving good dental and denture hygiene due to a lack of awareness about oral health, poor eyesight, and impaired manual dexterity.<sup>21</sup>

According to the London National Health Service [NHS], utilization of dental services is highest amongst middle-aged adults and declines with increasing age.<sup>22</sup>

Some surveys<sup>23</sup> also indicate that elderly age group people utilize dental services less than any other age group. The reason could be that elderly people face a multitude of barriers to the utilization of oral health care. Financial issues, lack of awareness about oral health, ill health and belief that taking care of oral health is not important are a few of the barriers.<sup>24</sup>

A study conducted in the Guntur district, Andhra Pradesh, demonstrated that the most common barrier in the utilization of dental services is fear.<sup>25</sup> Also, utilization of dental services is predominantly affected by the patient's-perceived need for such treatment, and hence self-perceived need is considered as an accurate predictor of utilization of dental services.

Many studies have been conducted to assess the oral health status among institutionalized elderly populations separately in various parts of India. However, no study has been conducted yet all<sup>26,27</sup> together to assess the oral health status, self-perceived needs, unmet needs, and barriers to utilization of dental services of institutionalised elderly population in Chennai.

Hence, this study was conducted with the aim of assessing the oral health status, and identify self-perceived needs, unmet needs, and barriers to utilization of dental services among institutionalised elderly population in Chennai, India.

## MATERIALS AND METHODS

### Study Design: A Cross sectional study

#### Study Area

Old age homes in Chennai. Chennai is the capital of the Indian State, Tamil Nadu.

It is the 4<sup>th</sup> largest metropolitan city of India with a population of about 11,503,000 in the year 2022.<sup>28</sup>

#### Study Population

There are 124 old age homes in Chennai. 6285 elderly adults are residing in these homes among which 3862 are males and 2423 are females. Residents of old age homes aged 65 -74 years, which is the WHO set index age group for elderly people, constituted the study population. This age group has become more important with the increase in lifespan that is now occurring.

#### Inclusion Criteria

- Age of the residents being 65 -74 years
- Residents who were able to comprehend and communicate

#### Exclusion Criteria

- Terminally ill residents were excluded from the study
- Residents who were not willing to participate in the study were excluded

#### Ethical Approval and Informed Consent

Ethical approval was obtained from the Scientific Review Board, Saveetha Institute of Medical And Technical Sciences (SRB/SDM DS03/18/PHD/21). The aim and methodology were explained to the old age homes authorities and written informed consent was obtained from the participants prior to the study.

Written consent was taken from the caregivers

for the study participants with poor manual dexterity.

#### Sample Size Calculation

The sample size was calculated to be 334 based on a study done by Bommireddy *et al.*<sup>25</sup> in the Guntur district, Andhra Pradesh. The sample size was calculated manually with the use of the sample size calculation formula,  $N = \frac{Z^2 \alpha_2 P Q}{L^2}$  where  $Z \alpha=1.96$ ;  $P= 31.9\%$ ;  $Q=68.1\%$  ( $100-P$ )  $L=5\%$

#### Sampling Methodology

A list of old age homes in Chennai was obtained from HelpAge India-A Non-Governmental Organization for the welfare of old people. A stratified random sampling technique was employed. Chennai was divided into four zones based on geographical location: north, south, central and east. From each zone, two old age homes were chosen at random using the lottery method.

It was found that 8 old age homes were sufficient to obtain the required sample size. All the inmates of the selected old age homes were included in the study till we reached the required sample size.

#### Scheduling

Data collection was scheduled for the month of April-September 2022.

#### Evaluation Instruments Used

##### Oral Health Status and Treatment Needs

The WHO Oral Health Assessment Form for Adults (by tooth surface), 2013<sup>29</sup> was used to collect information about patients' demographic details, oral health status and treatment needs. The WHO Oral Health Assessment

Form assesses dentition status, periodontal status, dental fluorosis, dental trauma, dental erosion, oral mucosal lesions, prosthetic status, and treatment urgency. Under dentition status, The CPI probe should be used to confirm visual evidence of caries on the tooth surface(s). The WHO criteria are used for the identification of caries. The coding for recording the dentition status is as follows: 0=sound; 1=caries; 2=filled with caries; 3=filled with no caries; 4=missing due to caries; 5= missing due to periodontal disease, trauma, orthodontic treatment, or congenitally missing; 6=fissure sealant; 7=fixed denture prosthesis/ crown abutment/ implant/veneer; 8=unerupted; 9=not recorded.

The Community Periodontal Index (CPI) Modified Index is used to record the periodontal status using the WHO CPI probe, where, for gingival bleeding, score 0=absence of condition, 1=presence of condition, 9=tooth excluded, X=tooth not present, for periodontal pockets, score 0= absence of condition, 1=pocket 4-5mm, 2=pocket 6mm or more, X=tooth excluded, 9=tooth not present, for loss of attachment, score 0=0-3mm, 1=4-5mm, 2=6-8mm, 3=9-11mm, 4=12mm or more, X=excluded sextant, 9=not recorded.

Enamel fluoro-sis is recorded using the Modified Dean's Fluorosis Index, where, score: 0=normal, 1=questionable, 2=very mild, 3=mild, 4=moderate, 5=severe, 8=excluded, 9=not recorded.

Dental erosion is coded as follows: 0=no sign of erosion; 1=enamel erosion; 2=dentinal erosion; 3=pulp involvement. Dental trauma is coded as follows: 0=no signs of injury; 1=treated injury; 2=enamel fracture only; 3=enamel and dentin fracture; 4=pulp involvement; 5=missing due to

trauma; 6=other damage; X=excluded tooth.

Oral mucosal lesions are coded as follows:

0=no abnormal condition, 1=malignant tumor; 2=leukoplakia; 3=lichen planus; 4=ulceration; 5=Acute necrotising ulcerative gingivitis (ANUG); 6=candidiasis; 7=abscess; 8=other condition; 9=not recorded and

their location is coded as follows: 0=vermillion border, 1=commissures, 2=lips, 3=sulci, 4=buccal mucosa, 5=floor of the mouth, 6=tongue, 7=hard/soft palate, 8=alveolar ridge/ gingiva, 9=not recorded. Prosthetic status is coded as follows: 0=no denture, 1=partial denture, 2=complete denture, X=not recorded. Treatment needs are coded as follows: 0= no treatment needed, 1=preventive/routine treatment needed, 2=prompt treatment needed, 3=immediate treatment required, 4=referred for comprehensive evaluation.

### **Self-perceived oral health needs**

The Geriatric Oral Health Assessment Index (GOHAI)<sup>30</sup> was used to collect the data on self-perception regarding oral health. The GOHAI includes 12 questions that are divided into three categories: physical (chewing pattern), psychosocial (concern for oral health, satisfaction, dissatisfaction, appearance, self-awareness about oral health, and social contact), and pain/discomfort (use of medication), with answers scored as 1, 2, and 3 (always, occasionally, and never, respectively).

The 12 answers are added up to get the final score; comparatively high scores (answers in the category "always" or number

- 1) indicate improved self-perception and good oral health, whereas relatively low scores indicate deteriorated self-perception and bad oral health conditions.

### Barriers in utilization of dental services

Barriers in utilization of dental services were assessed using a pretested structured questionnaire that was adopted from a previous study done by Bommireddy *et al.*<sup>25</sup> A closed ended questionnaire consisting of 9 items was developed and tested among a convenience sample of 20 elderly people, who were interviewed to gain feedback on the overall acceptability of the questionnaire.

The questionnaire included questions on whether they have access to information on oral health, whether they are dependent on a care-taker, their opinion on whether dental diseases require immediate treatment, any previous unpleasant experiences, lack of transportation, whether they find dental treatment expensive, tiring, or frightening, and whether they find it difficult to communicate with the dentist. A 5-point Likert scale was used to record the responses for each item. The responses varied from strongly disagree, disagree, neutral, agree to strongly agree. The questionnaire did not require any corrections based on the feedback. The Cronbach alpha coefficient was found to be 0.627.

### Training and Calibration

Training and calibration exercises were carried out in the Department of Public Health Dentistry, Saveetha Dental College, Chennai on the outpatients, under the expert guidance. A pilot study was conducted on a sample of 25 participants to assess the consistency of intra-examiner reliability. The kappa value for the intra-examiner reliability was 0.918 (Standard error of kappa=0.080, 95% confidence interval=0.761 to 1.000)

### Survey Methodology

After a brief introduction on the purpose and intent of the study, informed consent from the residents who were willing to participate was obtained. The examination was conducted by a single examiner. Demographic information was collected followed by clinical examination. Only filled WHO Oral Health Assessment Forms and Questionnaires were considered for analysis. Following clinical examination, a face-to-face interview was conducted in the regional language (Tamil) to assess the self-perceived needs and the barriers in utilization of dental services among the study participants.

### Statistical Analysis

Data were entered in a Microsoft Excel spreadsheet and analyzed using statistical software packages, SPSS software for windows (version 23.0). Descriptive statistics were used to express the oral health status, self-perceived needs, unmet needs, and barriers to the utilization of dental services among the study participants. Pearson Chi-square test was used to analyse the data. For all the tests,  $p<0.05$  was considered statistically significant.

## RESULTS

Out of 334 study participants, 131 (39.3%) were males and 203 (60.7%) were females. The mean age of the participants was 68.61 years. Table 1 depicts the dentition status of study participants. A higher number of decayed crowns, missing teeth due to periodontal disease and filled teeth were found among females.

Table 2 depicts the mean DMFT score among the study participants. The mean number of

**Table 1.** Dentition status of study participants.

STATUS	MALE		FEMALE		TOTAL	
	n	%	n	%	n	%
Sound Teeth	2215	53.65	3106	48.28	5321	50.38
Coronal Caries	151	3.65	281	4.36	432	4.09
Root Caries	152	3.68	194	3.01	346	3.27
Root Stumps	132	3.19	207	3.21	339	3.21
Filled with caries	2	0.04	3	0.04	5	0.04
Filled without caries	3	0.07	16	0.24	19	0.17
Missing due to caries	217	5.25	338	5.25	555	5.25
Missing due to periodontal disease, trauma, orthodontic treatment, congenital disease	1145	27.73	2026	31.49	3171	30.02
Fissure sealant	0	0	0	0	0	0
Fixed Prosthesis	36	0.87	55	0.85	91	0.86
Unerupted teeth	227	5.49	400	6.21	627	5.93

**Table 2.** Mean Decayed Missing Filled Teeth (DMFT) score among study participants.

GENDER	DECAYED MISSING FILLED TEETH (DMFT)			MEAN + SD	P-VALUE
	Decayed teeth (DT)	Missing Teeth (MT)	Filled Teeth (FT)		
Male	1.01 + 1.53	2.61 + 5.12	0.02 + 0.15	3.64 + 6.80	0.247
Female	1.31 + 2.35	2.59 + 4.97	0.07 + 0.44	3.97 + 7.76	0.247

Pearson Chi Square:  $\chi^2$ : 21.666. df:18.

**Table 3.** Oral health status of the study participants.

CONDITION	STATUS	MALES		FEMALES		P- VALUE
		n	%	n	%	
Caries	Present	55	41.98	85	41.87	0.905
	Absent	76	58.01	118	58.12	
Periodontal disease (loss of attachment)	Present	53	40.45	116	57.14	0.0023*
	Absent	78	59.54	87	42.85	
Dental fluorosis	Present	31	23.66	58	28.57	0.3352
	Absent	100	76.33	145	71.42	
Dental erosion	Present	62	47.32	59	29.06	0.001*
	Absent	69	52.67	143	70.44	
Dental trauma	Present	23	17.55	26	12.08	0.985
	Absent	108	82.44	167	82.26	
Oral mucosal lesions	Present	30	22.90	12	5.91	<0.001*
	Absent	101	77.09	191	94.08	
Prosthetic status (upper arch)	Complete denture	12	9.30	9	4.47	0.880
	Partial denture	6	4.65	4	1.99	
Prosthetic status (lower arch)	Complete denture	12	9.30	9	4.47	0.122
	Partial denture	2	1.55	6	2.98	

\*: Statistically significant.

decayed teeth and filled teeth was found to be higher in females as compared to males. The findings were not statistically significant.

Table 3 depicts the oral health status of the study participants. The findings for loss of attachment, dental erosion, and oral mucosal lesions were statistically significant. Table 4 depicts the treatment needs among study participants. It was found that the majority of the study participants required treatment. Table 5 depicts the distribution of study participants based on self-perceived oral health and treatment required. It was found that the majority of the study participants who perceived their oral health to be good

required dental treatment. The difference in the responses to self-perceived oral health and dental treatment required was found to be statistically significant.

Table 6 depicts the responses on barriers to utilization of dental services among study participants. Maximum participants had no access to oral health information. Also, the majority felt that dental treatments were long and tiring and the difference in the findings between males and females was statistically significant. Around half of the female participants agreed that they were dependent on the caretaker.

**Table 4.** Treatment Needs among study participants.

TREATMENT REQUIRED	GENDER					
	MALE		FEMALE		TOTAL	
	n	%	n	%	n	%
No treatment	12	9.16	11	5.41	23	6.88
Preventive treatment	0	0	0	0	0	0
Prompt treatment	27	20.61	33	16.25	60	17.96
Immediate treatment	8	6.10	19	9.35	27	8.08
Referral for comprehensive evaluation due to systemic condition	84	64.12	140	68.96	224	67.06

**Table 5.** Distribution of study participants based on self-perceived oral health and treatment required.

TREATMENT REQUIRED	RESPONSES	SELF-PERCEIVED ORAL HEALTH		TOTAL	P-VALUE
		HIGH	LOW		
Yes	Yes	254	58	334	0.044*
No	No	20	0		

**Table 6.** Responses on barriers to utilization of dental services among study participants.

BARRIERS TO UTILIZATION OF DENTAL SERVICES	RESPONSES	GENDER		P-VALUE	
		MALE			
		N	%		
HAVE ACCESS TO INFORMATION ON ORAL HEALTH	Strongly Agree	0	0	0.000*	
	Agree	25	19.08		
	Neutral	2	1.52		
	Disagree	74	56.48		
	Strongly Disagree	30	22.90		
DEPENDENT ON CARETAKER	Strongly Agree	14	10.68	0.000*	
	Agree	43	32.82		
	Neutral	2	1.52		
	Disagree	57	43.51		
	Strongly Disagree	15	11.45		
OPINION ON WHETHER DENTAL DISEASES REQUIRE IMMEDIATE TREATMENT	Strongly Agree	2	1.52	0.010*	
	Agree	55	41.98		
	Neutral	7	5.34		
	Disagree	55	41.98		
	Strongly Disagree	12	9.16		
ANY PREVIOUS UNPLEASANT EXPERIENCES	Strongly Agree	7	5.34	0.005*	
	Agree	4	3.05		
	Neutral	72	54.96		
	Disagree	42	32.06		
	Strongly Disagree	6	4.58		
LACK OF TRANSPORTATION	Strongly Agree	3	2.29	0.000*	
	Agree	13	9.92		
	Neutral	5	3.81		
	Disagree	108	82.44		
	Strongly Disagree	2	1.52		
EXPENSIVE DENTAL TREATMENT	Strongly Agree	11	8.39	0.087	
	Agree	19	14.50		
	Neutral	11	8.39		
	Disagree	90	68.70		
	Strongly Disagree	0	0		
LONG AND TIRING DENTAL TREATMENT	Strongly Agree	9	6.87	0.000*	
	Agree	71	54.19		
	Neutral	9	6.87		
	Disagree	41	31.29		
	Strongly Disagree	1	0.76		
FRIGHTENING DENTAL TREATMENT	Strongly Agree	9	6.87	0.000*	
	Agree	26	19.87		
	Neutral	6	4.58		
	Disagree	86	6.56		
	Strongly Disagree	4	3.05		
DIFFICULT TO COMMUNICATE WITH DENTIST	Strongly Agree	0	0	70.608	
	Agree	1	0.76		
	Neutral	2	1.52		
	Disagree	105	80.15		
	Strongly Disagree	23	17.55		

## DISCUSSION

The world population has been experiencing significant aging, the process that results in rising proportions of older persons in the total population since the mid twentieth century. Thus, longer life spans will contribute to future aging in all major regions of the world.<sup>31</sup> This life expectancy raises elderly cohorts to carry more retained teeth into their old age due to advancements in the medical field for which proper dental care is needed.

Hence, the present study was intended to assess the oral health status, self-perceived needs, unmet needs, and barriers to the utilization of dental services among elderly people residing as in-mates in the old age homes of Chennai, Tamil Nadu, India. A total of 334 study participants comprising 131 males (39.3%) and 203 (60.7%) females with a mean age of  $68.61 \pm 3.12$  years were a part of the study. In the current study, females constituted a higher proportion as compared to males which was consistent with another study.

The mean MT score in DMFT was higher than DT and FT scores among the study participants. The frequency of dental caries was higher among female participants. Missing teeth due to dental caries and periodontal problems were found to be higher among females. Most of the study participants had deep pockets of 4-5 mm and the findings were similar to the study conducted by Shaheen *et al.*<sup>15</sup>

Loss of attachment was higher in females as compared to males which was in accordance with a study conducted by Shaheen *et al.*<sup>15</sup> In the current study, the majority of the teeth

were missing due to periodontal problems whereas in a study conducted by Shaheen *et al.*,<sup>33</sup> the majority of the teeth were missing due to caries. The most common oral mucosal lesion among males was ulceration (8.52%) and among females was leukoplakia (5.47%). The findings were similar to a study conducted by Khanal *et al.*<sup>32</sup>

The most frequent site of lesion occurrence among males and females was buccal mucosa which was similar to the findings of a study conducted by Shaheen *et al.*<sup>33</sup> Out of 334 participants, 62 study participants were completely edentulous out of which only 21 were wearing complete dentures.

It was seen that a higher number of female participants were completely edentulous as compared to males and the findings were similar to the study conducted by Khanal *et al.*,<sup>32</sup> and Gaszynska *et al.*<sup>33</sup> The low proportion of those who had prostheses could be because older people underuse dental facilities, due to a lack of awareness, financial constraints, reduced mobility, misconceptions regarding adjustments to dentures, or lack of interest in esthetics.

Some of the edentulous patients perceived their oral health to be good. Saintrain, de Lima Saintrain, and de Souza *et al.*<sup>34</sup> found that elderly persons identified two dimensions of their oral health: one with a negative impact when describing the difficulties after the loss of their teeth and the other with a positive impact in terms of pain relief, concluding, therefore, that clinically defined needs are not always the same as subjective needs.

Most of the participants had systemic diseases for which they required a medical fitness test

before proceeding with treatment and the findings were similar to a study conducted by Ana de Lourdes Sá de Lira *et al.*<sup>35</sup> The most prevalent systemic condition was diabetes which could be the reason for the high frequency of periodontitis and loss of teeth among study participants.

Most of the study participants had dental problems but still reported their oral health to be good which was similar to the findings of a study conducted by Naidu *et al.*<sup>36</sup> and Nogueira *et al.*<sup>37</sup> The reason could be that the study participants did not think that dental problems are very serious and require immediate treatment. It was found that the majority of the participants had never visited a dentist and utilized the dental services but still perceived their oral health to be good and the findings were similar to a study conducted by Nogueira *et al.*<sup>37</sup> The reason could be due to a lack of awareness about oral health and the availability of dental services.

It was observed that the majority of the study participants who perceived their oral health to be good had high unmet treatment needs. This disproportion between the subjective and objective needs could be due to low health awareness among the elderly people as well as ignoring the dental needs of them by care home personnel.

In the current study, the main reasons for not utilizing dental services were that the participants had no information on oral health and that they did not consider oral health to be important. Also, the majority of them found the dental treatments long and tiring.

Whereas in a study conducted by Gaszynska

*et al.*,<sup>33</sup> it was found that no information on oral health and lack of accessibility were the main reasons for not utilizing dental services. According to a study conducted by Bommireddy *et al.*,<sup>25</sup> the main reason for not utilizing dental services was that the study participants felt that oral health was not that important.

It was also seen that females showed higher dental fear which was also seen in a study by Lo *et al.*<sup>38</sup> This may be one of the reasons for dental visits being lower in females in the present study as compared to the male population. This in turn, would have been the reason for the frequency of high dental caries, the greater number of missing teeth among females in this study. This is because, in our population, females are largely dependent on other family members, and decisions regarding matters such as visits to dentists are made by others.

Results from the present study showed that there is a big discrepancy between self-ratings of satisfaction with oral health and clinically diagnosed treatment needs. These results are in accordance with the previous studies conducted by Gilbert *et al.*,<sup>39</sup> and Heft *et al.*,<sup>40</sup> and underline the limits of only clinical estimation of need.

This is mainly because clinical measures determine the extent of the disease and not its severity and, therefore, are not always associated with symptoms that the patient may or may not report. Subjective evaluation of oral health and oral disadvantage has a greater association with the reports of dental need compared with the presence of active disease. This underlines the perception that

disease is something that individuals feel and experience and not just a pathological procedure.<sup>41</sup>

### Limitations

The influence of systemic diseases on oral health was not considered in this study. Duration of stay in old age homes could have affected the oral health status of the study participants.

### Recommendations

Further studies need to be done with a larger population to check whether the findings can be generalized. It is necessary to reorient the services towards prevention and to deliver the appropriate oral health care to meet the diverse needs of the large and growing heterogeneous older population. We can open a geriatric department in dental hospitals to provide oral health care services to the elderly population.

Some people experience financial hardship following retirement, and the cost or perceived cost of dental treatment may stop them from visiting a dentist. Hence, we can recommend the government to include dental insurance in medical insurance.

Enhanced training of oral health professionals in dealing with the geriatric population is required. Since lack of transport to dental hospitals is one of the barriers, each post graduate student can adopt an old age home and provide dental services to the elderly population in the home itself.

## CONCLUSION

There was a high frequency of periodontitis among the institutionalized elderly included in this study and their unmet oral health needs were high. The self-perceived oral health condition was good among the study participants. The major barrier for utilization of dental services was the lack of information on oral health.

## CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest.

## ETHICS APPROVAL

Ethical approval was obtained from the Scientific Review Board, Saveetha Institute of Medical And Technical Sciences (SRB/SDMDS03/18/PHD/21). Informed consent was obtained from the participants prior to the study. Written consent was taken from the caregivers for the study participants with poor manual dexterity.

## FUNDING

Selffunded

## AUTHORS' CONTRIBUTIONS

**Mohapatra S:** Conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, software, writing-original draft

**Mohandas R:** C conceptualization, methodology, supervision, validation, writing-review and editing.

**Arumugham Indiran M:** Conceptualization, methodology, supervision, validation, writing- review and editing.

## ACKNOWLEDGEMENTS

We would like to thank HelpAge India, Chennai and Saveetha Dental College, Chennai for helping us conduct the study.

## ORCID

**Subhashree Mohapatra**

 0000-0003-2407-1244

**Rahul Mohandas**

 0000-0002-0609-8219

**Meignana Arumugham Indiran**

 0000-0002-7519-3877

## PUBLISHER'S NOTE

All statements expressed in this article are those of the authors alone and do not necessarily represent those of the publisher, editors, and reviewers.

## COPYRIGHT

This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY 4.0\)](#). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms. © 2023.



## PEER REVIEW

This manuscript was evaluated by the editors of the journal and reviewed by at least two peers in a double-blind process.

## PLAGIARISM SOFTWARE

This manuscript was analyzed by Turnitin's Original plagiarism detector software. Analysis report of document (ID.ceb7da12657b8496fbc328712d3266998f049c73)

ISSN Print 0719-2460 - ISSN Online 0719-2479.

<https://www.joralres.com/index.php/JOralRes/issue/archive>

## REFERENCES.

1. Lauritano D, Moreo G, Della Vella F, Di Stasio D, Carinci F, Lucchese A, Petrucci M. Oral Health Status and Need for Oral Care in an Aging Population: A Systematic Review. *Int J Environ Res Public Health*. 2019;16 (22):4558.
2. Yadav S, Arokiasamy P. Understanding Epidemiological Transition in India. *Global Health Action*. 2014;7: 23248.
3. Goel P, Singh K, Kaur A, Verma M. Oral Healthcare for Elderly: Identifying the Needs and Feasible Strategies for Service Provision. *Indian Journal of Dental Research: Official Publication of Indian Society for Dental Research*. 2006; 17 (1): 11–21.
4. Petersen PE, Yamamoto T. Improving the Oral Health of Older People: The Approach of the WHO Global Oral Health Programme. *Community Dentistry and Oral Epidemiology*. 2005; 33(2): 81–92.
5. Singh S, Bajorek B. Defining 'Elderly' in Clinical Practice Guidelines for Pharmacotherapy. *Pharmacy Practice*. 2014;12 (4): 489.
6. United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022: Summary of Results. UN DE-SA/POP/2022/TR/NO. 3.
7. Dey S, Nambiar D, Lakshmi JK, Sheikh K, Reddy KS. Health of the Elderly in India: Challenges of Access and Affordability. National Academies Press (US). 2012
8. Nanda A R, Haub C. The Future Population of India—a Long Range Demographic View. *Popul Res Bureau*. 2007
9. Gluck G, Warren M, Morganstein. 2002. Jong's Community Dental Health - E-Book. Elsevier Health Sciences.
10. Chandra, S. 2004. Text Book of Community Dentistry. Jaypee Brothers Medical Publishers.
11. Panchbhai AS. Oral Health Care Needs in the Dependant Elderly in India. *Indian Journal of Palliative Care*. 2012;18 (1): 19–26.
12. Saub R, Evans RW. Dental Needs of Elderly Hostel Residents in Inner Melbourne. *Australian Dental Journal*. 2001;46 (3): 198–202.
13. Agrawal R, Gautam R, Kumar MP, Kadhireasan R, Saxena V, Jain S. Assessment of Dental Caries and Periodontal Disease Status among Elderly Residing in Old Age Homes of Madhya Pradesh. *Journal of International Oral Health : JIOH*. 2015; (8): 57–64.
14. King T, Kapadia D. Oral Health Status and Treatment Needs of Institutionalized Elderly and Disadvantaged Population in Fiji. *Pacific Health Dialog*. 2003;10 (1): 35–40.
15. Shaheen SS, Kulkarni S, Doshi D, Reddy S, Reddy P. Oral Health Status and Treatment Need among Institutionalized Elderly in India. *Indian Journal of Dental Research*. 2015;26 (5): 493–99.
16. Raju HK, Nusrath F, Sudhir KM, Krishna Kumar RVS, Vandana K. Normative needs in relation to perceived oral health among institutionalised adults of South India: A cross sectional study. 2016; 14(3): 298–301.
17. Kothia NR, Bommireddy VS, Devaki T, Vinnakota NR, Ravoori S, Sanikommu S, Srinivas P. Assessment of the Status of National Oral Health Policy in India. *International Journal of Health Policy and Management*. 2015;4 (9): 575–81.
18. Roncalli AG. The SB Brasil 2010 Project: A Key Strategy for Developing an Oral Health Surveillance Model. *Cadernos de Saúde Pública*. 2010;26: 428–29.
19. Martins AM, Barreto SM, Pordeus IA. Factors Associated to Self-Perceived Need of Dental Care among Brazilian Elderly. *Revista de Saúde Pública*. 2008; 42(3): 487–96.
20. Mariño R, Giacaman RA. Patterns of Use of Oral Health Care Services and Barriers to Dental Care among Ambulatory Older Chilean. *BMC Oral Health*. 2017;17 (1): 38.
21. Aguirre Escobar G.A, de Quezada R.F, Escobar de González W.Y, Aguirre de Rodríguez KA, de Miguel ÁG, Rivas Cartagena FJ. Oral health profile status and treatment needs in the Salvadoran elderly population: a cross-sectional study. *BMC Oral Health*. 2022;22(1):247.
22. Borreani E, Wright D, Scambler S, Gallagher JE. Minimising Barriers to Dental Care in Older People. *BMC Oral Health*. 2008; 8:7.
23. Ramesh B, Chandra A, Tikku AP, Arya D, Gupta R. Oral Care Needs, Barriers and Challenges among Elderly in India. *Journal of Indian Prosthetic Society*. 2015;15(1): 17–22.
24. Kiyak HA, Reichmuth M. Barriers to and Enablers of Older Adults' Use of Dental Services. *Journal of Dental Education*. 2005;69(9): 975–86.
25. Bommireddy VS. Dental Service Utilization: Patterns and Barriers among Rural Elderly in Guntur District, Andhra Pradesh. *Journal Of Clinical And Diagnostic Research*. 2016;10(3):ZC43-7.
26. Ornstein KA, DeCherrie L, Gluzman R, Scott ES, Kansal J, Shah T, Katz R, Soriano TA. Significant Unmet Oral Health Needs of Homebound Elderly Adults. *Journal of the American Geriatrics Society*. 2015;63(1):151-157.

27. Molete M. P, Yengopal V, Moorman J. Oral Health Needs and Barriers to Accessing Care among the Elderly in Johannesburg. *SADJ: Journal of the South African Dental Association*. 2014;69(8): 352, 354–57.
28. Krishnamurthy R, Desouza KC. Chennai, profile. *Cities* 42. 2015;118-129.
29. WHO Oral Health Surveys: Basic Methods. 5<sup>th</sup> Edition.
30. Costa MJF, Lins CAA, Macedo LPV, Sousa VPS, Duque JA, Souza MC. Clinical and self-perceived oral health assessment of elderly residents in urban, rural, and institutionalized communities. *Clinics (Sao Paulo)*. 2019;74:e972.
31. Tsakos G, Steele JG, Marcenes W, Walls AW, Sheiham A. Clinical Correlates of Oral Health-Related Quality of Life: Evidence from a National Sample of British Older People. *European Journal of Oral Sciences*. 2006;114 (5): 391–95.
32. Khanal S, Bhattacharai R, Rao G, Shrestha S. Institutionalized Elderly People Oral Health Status and Treatment Needs Assessment in Kathmandu District. *Journal of Dental and Allied Sciences*. 2018.
33. Gaszynska E, Franciszek S, Godala M, Gaszynski T. Oral Health Status, Dental Treatment Needs, and Barriers to Dental Care of Elderly Care Home Residents in Lodz, Poland. *Clinical Interventions in Aging*. 2014; 9:1637–44.
34. Saintrain MW, de Souza EH. Impact of Tooth Loss on the Quality of Life. *Gerodontology*. 2012;29(2):e632-6.
35. de Lira LS, da Silva DP, Silva MS. The Elderly's Perception about Their Oral Health. *Ana de Acta Scientific Dental Sciences*. 2018; 2 (4).
36. Naidu GM, Reddy VB, Satti NR, Allareddy S, Babu RP, Kandregula C. Self-Reported and Clinically Diagnosed Dental Needs among Institutionalized Adults in Vijayawada: A Cross-Sectional Study. *Journal of International Society of Preventive and Community Dentistry*. 2014;4(1):35-9.
37. Nogueira CMR, Lucilia MNF, Nuto S, Saintrain MVL, Gomes AP. Self-Perceived Oral Health among the Elderly: A Household-Based Study. *Revista Brasileira de Geriatria E Gerontologia*.2017;20(1).
38. Lo GL. The use of dental services by adult Singaporeans. *Singapore Dental Journal*. 1993; 18(1):22-25.
39. Gilbert G.H, Heft M.W, Duncan R.P, Ringelberg M.L. "Perceived need for dental care in dentate older adults". *Inter Dent J*. 1994;44(2):145-152.
40. Heft MW, Gilbert GH, Shelton BJ, Duncan RP. Relationship of Dental Status, Socio-demographic Status, and Oral Symptoms to Perceived Need for Dental Care. *Community Dentistry and Oral Epidemiology*. 2002;31(5): 351–60.
41. Hugo FN, Hilgert JB, de Sousa Mda L, da Silva DD, Pucca GA Jr. Correlates of Partial Tooth Loss and Edentulism in the Brazilian Elderly. *Community Dentistry and Oral Epidemiology*. 2007;35 (3): 224–32.