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Assessment Of Oral Health Related Quality Of Life Using Hindi Version Of Geriatric Oral Health Assessment Index In Geriatric Day Care Centers In New Delhi

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Abstract
Background: *Oral diseases present an overwhelming burden among the elderly population, coupled with other existing comorbidities provide a public health challenge that impairs the quality of life.*
Objectives:*To assess the oral health related quality of life using the Geriatric Oral Health Assessment Index-Hi (GOHAI-Hi) amongst elderly population visiting the geriatric day care centers in New Delhi.*
Methods: *A cross‐sectional study was conducted among seven purposively selected geriatric day care centers in New Delhi, and a convenience sample of 518 elderly patients was obtained. OHRQoL was measured using a pre-validated instrument (GOHAI-Hi) along with other variables. Statistical analysis was done using Statistical Package for the Social Sciences software version 28, and descriptive results were obtained.*
Results: *The sample consisted of 428 males (82.6%) and 90 females (17.3%). The mean GOHAI score for the population were 40.05 (SD-7.52 range 23-58). 482 subjects (93.1%) reported to have low quality of life, 33(6.4%) moderate and only 3(0.6%) had high quality of life. The quality of life was observed to increase with increasing levels of education and was found to be highest amongst retired government officials (81.5%).*
Conclusion: *The current study assessed GOHAI-Hi score and highlighted that age, education and occupation are important determinants of OHRQoL in elderly population visiting the geriatric day care centres in New Delhi.*

Keywords: *Geriatric Dentistry; Oral Health; Quality of Life; Homes for the Aged*

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I. Introduction

Oral health is a keycomponent of general health; the World HealthOrganization (WHO) has emphasized the importance oforal health as a major component of general health andquality of life.[1, 2] Generally,health tends to decrease with advancing age, with oral health being no exception. Tooth loss, advancing periodontal disease, and bone loss are synonymous with old age. Worldwide, the geriatric population is growingrapidly than any other age group as a result of both longer lifeexpectancy and declining fertility rates.[3, 4,] The aging population in India is increasing exponentially and the national average is projected to increase from the estimated 8% in the year 2010 to 19% in the year 2050.[5]On one hand the proportion of aging individuals is increasing over time;on the other, life expectancy is also improving.With current life expectancy in India being 62.36 years for males and 63.39 years for females, it is expected to increase by 19% by 2025.[6]

Oral health-related QoL (OHRQoL) is a subset of health-related QoL and reflects people's comfort when carrying out daily tasks such as eating, and engaging in social interaction; their satisfaction with respect to their oral health.[7] Self-care including oral care often declines as older adults become care-dependent, this puts them at high risk for developing oral diseases. The specialization of dentistry has witnessed the development of multiple scales to measure the OHRQoL.

GOHAI was initiallydeveloped by Atchinson and Dolan in 1990 for geriatric populations.GOHAI is a 12-item instrument intended to evaluate three different aspects of oral health-related quality of life: (1) physical functioning, including eating, speech, and swallowing; (2) psychosocial functioning, including worry or concern

about oral health, being dissatisfied with appearance, self-consciousness about oral health, and avoiding social contacts due to oral problems; and (3)pain or discomfort, including the use of medication to relieve pain or discomfort from the mouth. A GOHAI score is computed from the subject's responses to the 12 questions, a higher score indicating a better perceived oral health status and quality of life.[8]

II. Materials And Method

A cross-sectional, descriptive study, in all seven geriatric day care centers of New Delhiwas conducted to assess the oral health related quality of life (OHRQoL) amongst elderly population.

Study Area and Study Subjects

Inclusion criteria-

1. All senior citizens listed in the latest records of the geriatric day care centers inNew Delhi.
2. Available during the time of examination at the geriatric day care centers and willing to participate in the study.
3. Age 60 years and above.

Exclusion criteria-

1. Not willing to be examined.
2. Homebound members of geriatric day care centers.

Pilot study

A pilot study was conducted to translate the original English version of the Geriatric Oral Health Assessment Index (GOHAI) into the local language i.e., Hindi, and to test the validity and reliability of the translated instrument (GOHAI-Hi) for use among the elderly in New Delhi. The linguistic translation of English version of GOHAI into the Hindi language, involved two stages: back translation technique and preliminary test using both versions. The GOHAI was translated by 2 accreditedtranslators and the back translated into English by two different accredited translators. English and the Hindi versions were applied alternately to twenty bilingual volunteer subjects at PremNiketan old age home by one trained and experienced interviewer, and the interviewer recoded the volunteers' comments and any difficulty that they had encountered.

To develop the final version of GOHAI-Hi, a discussion session with the accredited translators, the interviewer and some of the volunteers was arranged, to clarify the subjects' comments. The comprehensibility of the translated version was assessed, and only minor changes were made to make the questionnaire more understandable.

The GOHAI-Hi demonstrated a high level of internal consistency and reliability assessed by an internal consistency analysis and a test-retest approach. A preliminary validation process was conducted by a qualitative approach/interview. Results of internal consistency showed a Cronbach's alpha of 0.84 or 0.86 for the first or second appointment respectively. Through the test-retest analysis, an intra-class correlation coefficient of 0.57 was recorded. Interviewed volunteers comprehended most questions well.

Training and Calibration

The training and calibration were conducted by performing the modified WHO proforma and selected indices on a group of 10 pre-selected geriatric populations visiting the OPD of ESIC Dental College and Hospital, New Delhi for training. Then another 10 subjects were examined by the examiner twice at a gap of 30 minutes between examinations. The same 10 pre-selected subjects were then calibrated against a gold standard to determine the reliability and validity of the proforma. Once the calculated kappa value agreed only then was the examinations conducted at the geriatric day care centers.

The final version was assessed on 518 elderly populations registered in 7 geriatric day care centers. Clinical examination was carried out by a single pretrained and calibrated examiner (the investigator) following 'universal precautions' under adequate illumination. The recording was carried out by a pretrained recorder. Each geriatric day care center was visited several times by the investigator herself till all the willing members of the centers were examined and details about oral health, general health, functional status, life satisfaction, prior health services used, and sociodemographic were collected using the interviewer-administered questionnaires. Following this the oral health status and treatment needs were assessed.

Organizing the Survey

Ethical clearance

The ethical clearance to conduct the survey was taken from the Ethical committee of ESIC Dental College and Hospital, New Delhi.

Obtaining approval from the authority/Scheduling

Written permission to conduct the survey was obtained from the concerned heads or the organizing members of the respective centers. The planned schedule of the investigator was either published in the monthly bulletin or informed via pamphlets, notice or announcement to the members of the respective day care centers in advance.

Examination area

The survey was conducted at the geriatric day care centers by selecting an area providing maximum efficiency and ease in conducting the survey. The subjects were examined under natural light seated in a chair with a high backrest and investigator stood either behind or in front of the chair. The person recording the data was positioned on the left side of the subject close to the examiner, so that the recorder was able to hear the examiner's instructions and codes, and the examiner was able to see the data being entered correctly.

Implementing the Survey

The survey was conducted for 3 months (from 16thJune 2022to 10th September 2022). First, the interview - administered questionnaire was filled which was then followed by the examination with appropriate instruments of approximately 25 subjects in a day.

Instrumentation

The following instruments were used in the survey.

1. 30 Plane mouth mirrors.
2. 30 CPI Probes
3. No.23 explorers - 30 in number
4. Adequate pairs of tweezers
5. Containers (one for used instruments and one for sterilizing instruments) and concentrated sterilizing solution.
6. 2% Glutaraldehyde solution
7. Cloth or paper hand towels
8. Gauze and cotton
9. Disposable gloves and Mask.
10. Data recording proforma.

The instruments were sterilized using 2% glutaraldehyde followed by autoclaving in the Department of Public Health Dentistry, ESIC Dental College and Hospital, New Delhi and after single use they were dipped in disinfectant solution.

Methodology

Questionnaire

The questionnaire composed of sections, designed to collect general information in the survey which included personal data and the socio-demographic profile consisting of his/her age, gender, height, weight, diet, marital status, dependence, occupation, educational level, members in the family,and finally the oral hygiene habits and practices.A variety of question formats were used including some which involved a yes/no response, a forced-choice selection response and Likert scale response.

GOHAI-Hi consisting of 12-item instrument intended to evaluate three different aspects of oral health-related quality of life, including physical functioning, pain and discomfort, and psychosocial functioning was conducted. Nine and three questions were asked in the negative and positive ways, respectively, to discourage respondent acquiescence. There were five response categories for each question and a score was assigned for each response category (l=always, 2=often, 3=sometimes, 4=seldom, and 5=never). Scores from the positively worded questions were reversed during data processing so that the directions of all responses were the same. The GOHAI score was computed by adding up the scores of the responses of the 12 questions. Thus, the GOHAI score ranges from 12 to 60 and a higher score indicated a better reported oral health status.

Treatment

After the collection of data treatment camps were held at each geriatric day care center to provide the comprehensive treatment for respective conditions. Elderly population requiring emergency treatment or prosthesis was referred to ESIC Dental College and Hospital, New Delhi for which transportation was provided.

Statistical Analysis

The data was analyzed using the SPSS package version 28. For each of the parameters in the questionnaire, the percentages, means and standard deviations for each subject for both men and women were calculated. The differences among subjects based on gender using $\chi 2$ analysis for proportions and analysis of variance (ANOVA) for means was analyzed. Data was analyzed to statistically compare results between quality-of-life scores and sociodemographic, self-assessed and clinical variables. For nominal and ordinal variables, chi- square test was also used. Pearson's correlation was performed for univariate association between continuous variables and QoL scores. A significant ANOVA was followed by post hoc comparison using Borferneni test.

III. RESULTS

The present study was conducted to assess the oral health quality of life amongst elderly population visiting day care centers in New Delhi.Five hundred and eighteen elderly volunteers participated in the study satisfying the inclusion criteria from the seven geriatric day care centers of New Delhi.

Distribution of participants according to Age and Gender: Table 1, 2

Out of the total (518) there were only 90 female (17.3%) and the remaining 428(82.6%) were male. Sixty percent females were less than 70years of age, whereas there was an equal distribution of 40.9% and 44.4% amongst the male population in the age groups less than 70years and less than 80years respectively. As illustrated, by Table 2 mean age for males and females were 71.17years (SD 7.16) and 65.97years (SD 6.04) respectively.

Percentage distribution of participants according to Marital Status: Table 3

Three fourth (79.2%) of the participants were married and stayed along with the partners, of which 66.7% were females and 81.8% were males, remaining 20.8% stayed alone either because they were widow/widower (18.5%) or divorced (2.3%).

Percentage distribution of participants according to Education: Table 4

To assess the level of education, the results of the participants were categories under three, i.e., higher school (i.e., graduate and postgraduates), middle school (secondary and high secondary school) and primary school (primary and middle school). Majority, that is more than half (66.8%) of the participant had high school education (49.4% graduation and 17.4% post-graduation) whereas 10.8% had middle school education (secondary 2.5% and higher secondary education 8.3%) and 15.4% had primary school education (primary 7.7% and middle 7.7%). A small proportion of about 6.9% participants had no formal education.

Percentage distribution of participants according to Occupation: Table 5

A large proportion of elderly visiting day care centers were government officials (61.6 %) dependent on their pension for their livelihood. Remaining 25.9% had businesses which now were taken care by their children, 10.6% were retired from private jobs and remaining 1.9 % were housewives. The percentage of female in government and private services was recorded as 5.6% and 47.8% respectively whereas 73.4% males were retired government officials and 2.8% retired from private services.

Percentage distribution of participants according to Diet: Table 6

Of the total participants, 84% were vegetarian (male 86.0%, female 74.4%) the remaining 16% had mixed diet (male 14%, female 25.6%).

Percentage distribution of participants according to Frequency of Brushing: Table 7

Majority (79.5%) of the population brushes once a day whereas 18.5% subjects brushed twice, and 1.9% subjects never brushed their teeth. The frequency of brushing teeth once was reported to be higher amongst female (82.2% vs. 79.0%) whereas twice brushing of teeth was reported higher amongst males (18.7% vs. 17.8%). The overall percentage distribution of subject brushing once was reported to be four times that of brushing twice.

Percentage distributionof participants according to Oral Hygiene Practices: Table 8

More than three fourth (75.5%) subjects reported to use brush and paste to clean their teeth whereas the remaining 14.9% subjects used Neem/ Datun (5.4%), powder and finger (9.5%), only water (6.8%), water and soap (1.7) (for denture users) and 1.2% reported to use nothing. Approximately three fourth of the participants both males (76.4%) and females (71.1%) reported use of brush and paste.

Percentage distribution of Oral Habits of Study Participants: Table9

More than three fourth (77.4%) of the participants reported to have no oral habit whereas remaining participants reported habits in the ascending order as alcohol(1.2%),betel nut chewing (2.3%), bidi/cigarettes(4.6%), and tobacco chewing (14.5%) respectively.

Geriatric Oral Health Assessment Index - Hindi

Geriatric Oral Health Assessment Index – Hindi (GOHAI-Hi)Score: Table 10

GOHAI - Hi a 12-item instrument was used to evaluate three different aspects of oral health-related quality of life including physical functioning, pain and discomfort, and psychosocial functioning. Nine and three questions were asked in the negative and positive ways, respectively, to discourage respondent acquiescence. There were five response categories for each question and a score was assigned for each response category (l=always, 2=often, 3=sometimes, 4=seldom, and 5=never).

The mean GOHAI scores were 40.05 (SD-7.52 range 23-58), for physical functioning was 13.30 (SD-3.33 range 3-20), pain and discomfort 9.63(SD-2.17 range 5-15), psychosocial domain 17.12 (SD-3.11 range 10-25).

For chi square test the GOHAI-Hi scores were divided in three categories: high (57-60), moderate (51-56) and low (less than 50) rating of health (Table 10a). About 482 subjects (93.1%) reported to have low quality of life, 33(6.4%) moderate and only 3(0.6%) had high quality of life.

Percentage distribution of responses of GOHAI-Hi questionnaire: Table 11

The combined response of the GOHAI-Hi questionnaire on the response of always, often, and sometimesin comparison to seldom and neverfor an individual showed that 68.9% vs. 31.1% subjects reported limiting theintake of food because of problemsof teeth, 45.9%vs. 54.1% faced discomfort during chewing food, 45.2% vs. 54.8% had difficulty in swallowing food, 66% vs. 44%had sensitivity to hot and cold, 59.6%vs40.4% limited their contact with others, 52.2% vs. 47.8% were uncomfortable eating in front of others, 57.3%vs.42.7% were self- conscious of dental problems, 58.3% vs. 41.7% were pleased with the look of their teeth.

Percentage distribution of Geriatric Oral Health Assessment Index-Hindi Scores and Selected Variables: Table 12

To compare GOHAI-Hi scores with independent variables it was further categorized into two categories high quality of life (more than 50) and low quality of life (less than 50). Higher the GOHAI-Hi score indicative of a better reported oral health.Inbivariate analysis, the GOHAI-Hi was associated with selected independent variables.

The percentage distributions of subjects with low quality of life were uniformly distributed amongst all age groups. More than ninety percent of both male and females had low quality of life. The quality of life was observed to increase with increasing levels of education and was found to be highest amongst retired government officials (81.5%).

Mean distribution of Geriatric Oral Health Assessment Index-Hindi Scores and Selected Variables: Table 13

There was significant relation between mean GOHAI-Hi scores and subject's age, education, and occupation.

Although higher mean GOHAI-Hi score was observed amongst the individuals in the 60-74 age group. Mean GOHAI-Hi score was also recorded high amongst with higher levels of education and amongst retired government officials.

IV. Discussion

The present cross-sectional study was carried out to assess the OHRQoL of persons above the age of 60 years residing in old age homes in New Delhi. The data used were collected through interviews and a full-mouth oral examination

Distribution of elderly according to age and gender

The present study disclosed that amongst the members of geriatric day care centers more than three fourth of members were males, with an age range of 60-91years. This is similar to Khosrozadeh et al. and Karani et al. who also reported more male respondents, but is in stark contrast to prevalent literature which reports more females subjects in old age homes.[1, 9]

Distribution of elderly according to marital status

The present study illustrated that majority of members were married and stayed with their partners and the majority considered themselves independent with regards to their daily activities. This agrees with Khosrozadeh et al.,[1] while other studies showed that majority of respondents were either widowers or staying single.[10, 11]The reason supporting the above statement might be because majority of population in the present study were males who were highly qualified and financially independent.

Distribution of elderly according to education

Most literature presents subjects having an educational background till primary education or lower.[1, 9, 10, 12, 13] The present study reports that more than three fourths of subjects of the day care centers had at least high school education, which is similar to Rekhi et al. andRodakowska et al. which reported that majority of patients had at least a formal education. [14, 15] Older population generally become reluctant towards life and wishes to stay at home, fortunately the participants of present study due to their higher education status and occupation showed positive vibes towards their life and wish to indulge in activities even after retirement. Various activities like yoga, meditation, camps and celebration of festivals were done in this day care centers for which the member participated with great zeal and enthusiasm.

Distribution of elderly according to occupation

Most were employed individuals withthe majority being government officials before retirement and dependent on their monthly pension for their living in this study, only about 2% were unemployed which is in contrast to a study by Bianco et al. which reported unemployment rates of 26%.[10]

Distribution of elderly according to diet

The present study also showed that most subjects were vegetarians or turned vegetarian and preferred soft and cold diet which is very similar to Karani et al. who reported 82% of participants as being vegetarians.[9]Old people considered that eating hard food can damage their teeth, because teeth become fragile when we get older. They also consider that soft food can be very nutritious and as good as normal food after careful food preparation. Therefore, elderly population in present study adapted to eating soft food instead of hard and fibrous foods as that in Western populations.

Percentage distribution of participants according to Frequency of Brushing

Around 80% of participants reported to brushing only once a day and only 18.5% of respondents brushed the recommended twice a day. This is in contrast to studies like Khosrozadeh et al. and Bianco et al. which reported that only 14.2% and 37.7% of people brushed once a day respectively.[1, 10]

Distribution of Elderly According to Oral Hygiene Practices

The predominant oral hygiene aid reported was toothbrush and toothpaste (75.5%), and a number of subjects (9.5 %) also reported using only tooth powder and fingers. This is similar to findings published by Chahar et al. which reported 48.2 % of people using toothbrush and toothpaste and 22.8% people using tooth powder and fingers.[13]These findings reflect paucity of proper information on contemporary plaque control techniques in older individuals. However, most subjects reported rinsing their mouth with water always after meals, which is a healthy cultural practice followed in India.

Distribution of Elderly According to Oral Habits

77.4% of elderly subjects reported no oral habit of any sort, while only 4.6% of participants reported using bidi/cigarettes. This is similar to Bianco et al. and Khosrozadeh et al. which reported approximately 30% of participants using cigarettes.[1, 10]

Geriatric Oral Health Assessment Index – Hindi (GOHAI-Hi) Score

GOHAI was originally developed in English.[8] The Indian population is multiethnic; hence, language used not only varies between states itself but also between the different ethnic groups. India has its own characteristics that reflect the culture of the country that well differentiates it from others. Likewise, health problems are expressed in different ways. Due to the cultural diversity, there was much deliberation on the best common way to express the GOHAI items in the Indian language. To make use of this instrument to measure the oral health-related quality of life of elderly in India, translation of the instrument was necessary. The Cronbach's alpha of the translated Hindi version of GOHAI was similar to that of the original English version in the present study (0.81 vs0.79)[8],and similar ranges of item-scale correlation coefficients were obtained in both versions of GOHAI.

These suggested that the validity of the translated Hindi version was comparable to that of the original English version. However, it is worth noting that the data collection of the original English version of GOHAI

was through self-completion by the subjects themselves, while the data collection of this translated Hindi version of GOHAI was through face-to-face interviews. The reliability and validity of this translated Hindi version when used in studies requiring the subjects to complete the questionnaire by themselves might be different from those reported in this study.

The average GOHAI-Hi score amongst these patients was 40.05, which showed that these patients had poor oral health status. GOHAI-Hi is a sum of the recorded values for 12 questions with a high score indicating good oral health. [8] The GOHAI-Hi scores were divided into three categories: high, moderate and low rating of health. A score of 57–60 was considered high score, 51–56 was considered moderate score and less than 50 was a low score. 93.1% of patients had a score of less than 50, which indicates that the majority of participants had poor oral health. Majority of studies reported mean GOHAI scores of less than 50 indicating that individuals residing in old age homes and institutionalized day care centres had poor oral health status[1, 9, 11, 13, 14, 15, 16, 17, 18]. Literature reported a wide range of average GOHAI scores ranging from as low as 14.12 to as high as 53.30[16, 10].

Percentage distribution of responses of GOHAI-Hi questionnaire

The highest inter-item correlation was between 'limit the kinds of food' and 'sensitive to hot/ cold/ sweet food; this might be expected as the subjects in this age group were not able to enjoy all forms of food for different reasons, one of which was the discomfort caused by the hypersensitivity to hot, cold and/or sweet food. This is in agreement with Rekhi et al. who reported greater impairment in these sections.[14]

Almost half the patients in our study faced discomfort during chewing food, and had difficulty in swallowing food. This is similar to studies in elderly people from Sweden and Japan reporting chewing problems and dry mouth.[19, 20]

Andrade et al. reported similar results as of the present study that approx. 60% of the populations in the present study were self-conscious and unpleased with the look of their teeth and limited contact with other people. [21]

Aging usually proceeds as an unpredictable series of fluctuating experiences, some for the worse and some for the better. Through them, people adapt to cope with adversity and maintain an overall sense of coherence. Typically, people assimilate what is at hand to compensate for expectations and perceptions of loss, and they modify activities and expectations to achieve an acceptable quality of life.

Distribution of Geriatric Oral Health Assessment Index-Hindi Scores and Selected Variables

It was noteworthy that the quality of life amongst participant of geriatric day-care center decreased with increasing age irrespective of the gender. A higher score of mean GOHAI-Hi index was recorded for elderly with higher level of education and those who were retired government officials.

Statistically significant correlation was seen in cases of decreasing average GOHAI-Hi scores with increasing age and this was similar to results published by M et al. and other authors. [1, 13, 14, 16, 22, 23] But this was in contrast to Zenthöfer et al. which reported no correlation with either age or gender.[18]

Gender did not have a statistically significant correlation with average GOHAI-Hi scores in our study, though other studies did report that males had better scores than females as seen in reports by Cornejo et al. and others.[1, 13, 14, 16, 24] This is in contrast to Shekhawat et al. which reported that females have better oral health. [11]

Education and occupation played an important role in influencing the oral health related quality of life. Better scores were recorded by individuals with education greater than secondary level and with occupations that paid a steady source of income even after their retirement. This agreed with studies by Khosrozadeh, et al., and Rekhi et al., which reported that better education levels correlated with better oral health status of patients. [1, 14]Due to the higher level of education and pension these participants considered themselves independent and showed a higher concern to maintain their oral health.A positive attitude towards life was also observed amongst these elderlies.

V. Conclusion

This study assessed GOHAI-Hi score and focussed on the determinants of OHRQoL in elderly population visiting the geriatric day care centresin New Delhi. The health and OHRQOL and physical indicators of oral cavity in elders of New Delhi were not satisfactory with majority of patients having poor oral health. Age, education and occupation played an important role in influencing the oral health of an individual. The results of this study are important for publichealth professionals, gerontologists, and dental practitioners. These providers can play a pivotal role in improving oral health care for these elderly individuals.

References

[1]. Khosrozadeh H, Alavi NM, Gilasi H, Izadi M. Oral Health- Related Quality Of Life In Older People In Kashan/Iran 2015.Nurs Midwifery Stud 2017;6:182-8.

[2]. Petersen PE, Yamamoto T. Improving The Oral Health Of Older People: The Approach Of The WHO Global Oral Health Programme. Community Dent Oral Epidemiol2005; 33:81‐ 92.
[3]. Parth Patel B, Shivakumar KM, Patil S, Suresh KV, Kadashetti V. Association Of Oral Health‐ Related Quality Of Life And Nutritional Status Among Elderly Population Of SataraDistrict, Western Maharashtra, India. J Indian AssocPubl Health Dent 2015; 13:269‐ 73.
[4]. Irudaya RS. The National Policy For Older Persons: Critical Issues In Implementation BKPAI\Working Paper No. 5. New Delhi, US: United Nations Population Fund (UNFPA); 2011.
[5]. Singh A, Purohit BM. Addressing Geriatric Oral Health Concerns Through National Oral Health Policy In India. Int J Health Policy Manag. 2015; 4:39–42. Doi:10.15171/Ijhpm.2014.126
[6]. Kulkarni G. Dental Caries And Oral Health Status Among Geriatric Population, Bangalore, India - A Retrospective Study. Int J Dent Clin. 2015; 7(2):4–5.
[7]. Sischo L, Broder HL. Oral Health‐ Related Quality Of Life: What, Why, How And Future Implications. J Dent Res 2011; 90:1264‐ 70.
[8]. Atchison K.A., Dolan T.A. Development Of The Geriatric Oral Health Assessment Index. J Dent Educ. 1990 Nov; 54 (11): 680-8.
[9]. Karani J, Savla I, Mistry S.Dental Care Of Elderly Inmates Living In Old Age Homes: A Survey Report.Indian Journal OfGerontology. 2016; Vol. 30, No. 1, Pp. 74–85.
[10]. BiancoA, Mazzea S, Fortunato L, Giudice A, Papadopoli R, Nobile C.G.A., Et Al. Oral Health Status And The Impact On Oral Health-Related Quality Of Life Among The Institutionalized Elderly Population: A Cross-Sectional Study In An Area Of Southern Italy. Int. J. Environ. Res. Public Health 2021; 18, 2175.
[11]. Shekhawat KS, Chauhan A, Koshy AA, Rekha P, Kumar H. Reliability Of Malayalam Version Of Geriatric Oral Health Assessment Index Among Institutionalized Elderly In Alleppey, Kerala (India): A Pilot Study. ContempClin Dent 2016; 7:153-7.
[12]. Shivakumar KM, Patil S, Kadashetti V, Raje V. Oral Health-Related Quality Of Life Of Institutionalized Elderly In Satara District, India. J DattaMegheInst Med SciUniv2018; 13:183-9.
[13]. Chahar P, Mohanty VR, Aswini YB. Oral Health-Related Quality Of Life Among Elderly Patients Visiting Special Clinics In Public Hospitals In Delhi, India: A Cross-Sectional Study. Indian J Public Health 2019; 63:15-20.
[14]. Rekhi A, Marya CM, Nagpal R, Oberoi SS. Assessment Of Oral Health Related Quality Of Life Among The Institutionalized Elderly In Delhi, India. Oral Health Prev Dent. 2018; 16:59-66.
[15]. Rodakowska E, Mierzyńska K, Bagińska J, Jamiołkowski J. Quality Of Life Measured By OHIP-14 And GOHAI In Elderly People From Bialystok, North-East Poland. BMC Oral Health. 2014; 14:106.
[16]. M R, Sen M, Mala K, Sujir N, Poojary D, Shetty NJ, Et Al. Critical Assessment On Unmet Oral Health Needs And Oral Health-Related Quality Of Life Among Old Age Home Inhabitants In Karnataka, India.Clinical, Cosmetic AndInvestigational Dentistry. 2021; 13:181–186.
[17]. Maille G, Serre BS, Ferrandez AM, Ruquet M. Objective And Perceived Oral Health Status Of Elderly Nursing Home Residents: A Local Survey In Southern France. Clinical Interventions InAging 2019; 14: 1141–1151.
[18]. Zenthöfer A, Ehret J, Zajac M, Kilian S, Kostunov J, Rammelsberg P, Et Al. How Do Changes In Oral Health And Chewing Efficiency Affect The Changes Of Oral-Health- Related Quality Of Life Of Nursing-Home Residents In The Short Term? Clinical Interventions InAging. 2021; 16: 789–798.
[19]. Ikebe K, Hazeyama T, Enoki K, Murai S, Okada T, Kagawa R, Et Al. Comparison Of GOHAI And OHIP-14 Measures In Relation To Objective Values Of Oral Function In Elderly Japanese. Community Dent Oral Epidemiol2012, 40:406–414.
[20]. Stenman U, Ahlqwist M, Bjorkelund C, Hakeberg M: Oral Health–Related Quality Of Life – Associations With Oral Health And Conditions In Swedish 70-Year-Old Individuals. Gerodontology2012; 29:440–446.
[21]. Andrade FB, Lebrão ML, Santos JL, Duarte YA, Teixeira DS. Factors Related To Poor Self-Perceived Oral Health Among Community-Dwelling Elderly Individuals In Sao Paulo, Brazil. Cad SaudePublica. 2012; 28(10):1965–1975.
[22]. Ornstein KA, De Cherrie L, Gluzman R. Significant Unmet Oral Health Needs Of Homebound Elderly Adults. J Am Geriatr Soc. 2015; 63 (1):151–157.
[23]. Raja BK, Radha G, Rekha R, Pallavi SK. Relationship Between The Sense Of Coherence And Quality Of Life Among Institutionalized Elders In Bengaluru City India: A Questionnaire Study. J Indian Assoc Public Health Dent.2015;
[24]. 13:479-85.
[25]. Cornejo M, Pérez G, De Lima KC, Casals‐ Peidro E, Borrell C. Oral Health‐ Related Quality Of Life In Institutionalized Elderly In Barcelona (Spain). Med Oral Patol Oral Cir Bucal2013; 18: E285‐ 92.

Table No. 1
Percentage distribution of participants according to Age and Gender

Age (Years)	Female		Male		Total	
	No. of participants	%	No. of participants	%	No. of participants	%
60-69	58	60	175	40.9	229	44.3
70-79	36	40%	190	44.4	226	44.6
80-91	0	0	63	14.7	63	12.1
Total	90	100	428	100	518	100

Table No. 2
Percentage distribution of Mean age (in yrs.) and gender

	Female	Male
Mean age	65.97	71.17
S.D.	6.04	7.16
Min	60	60
Max	76	91

Table No. 3
Percentage distribution of participants according to Marital Status

Marital Status	Female		Male		Total	
	No. of participants	%	No. of participants	%	No. of participants	%
Married	60	66.7	350	81.8	410	79.2
Single	0	0.00	0	0.00	0	0.00
Divorced	0	0.00	12	2.8	12	2.3
Widow/ Widower	30	33.3	66	15.4	96	18.5
Total	90	100	420	100	518	100

Table No. 4
Percentage distribution of participants according to Education

Education		Female		Male		Total		Total
		No. of participants	%	No. of participants	%	No. of participants	%	%
Illiterate	Illiterate	19	21.1	17	4.0	36	6.9	6.9%
Primary School	Primary	6	6.7	34	7.9	40	7.7	15.4%
	Middle	5	5.6	35	8.2	40	7.7	
Middle school	Secondary	6	6.7	7	1.6	13	2.5	10.8%
	Higher Secondary	11	12.2	32	7.5	43	8.3	
Higher school	Graduation	37	41.1	219	51.2	256	49.4	66.8%
	Post-Graduation	6	6.7	84	19.6	90	17.4	
	Total	90	100	428	100	518	100	

Table No. 5
Percentage distribution of participants according to Occupation

Occupation	Female		Male		Total	
	No. of participants	%	No. of participants	%	No. of participants	%
Private Service	43	47.8	12	2.8	55	10.6
Private Business	37	41.1	97	22.7	134	25.9
Government	5	5.6	314	73.4	319	61.6
No occupation / housewife	5	5.6	5	1.2	10	1.9
Total	90	100	428	100	518	100

Table No. 6
Percentage distribution of participants according to Diet

Diet	Female		Male		Total	
	No. of participants	%	No. of participants	%	No. of participants	%
Mixed Diet	23	25.6	60	14.0	83	16.0
Vegetarian	67	74.4	368	86.0	435	84.0
Total	90	100.0	428	100.0	518	100.0

p=0.01

Table No. 7
Percentage distribution of participants according to Frequency of Brushing

Brush in a day	Female		Male		Total	
	No. of participants	%	No. of participants	%	No. of participants	%
Once	74	82.2	338	79.0	412	79.5
Twice	16	17.8	80	18.7	96	18.5
Never	0	0.00	10	2.3	10	1.9
Total	90	100	428	100	518	100

Table No. 8
Percentage distribution of participants according to Oral Hygiene Practices

Oral Practices	Female		Male		Total	
	No. of participants	%	No. of participants	%	No. of participants	%
Brush and Paste	64	71.1	327	76.4	391	75.5
Neem/Datun	0	0.00	28	6.5	28	5.4
Powder and Finger	12	13.3	37	8.6	49	9.5
Only water	10	11.1	25	5.8	35	6.8
Water and Soap (Edentulous patients)	1	1.1	8	1.9	9	1.7
Nothing	3	3.3	3	0.7	6	1.2
Total	90	100	428	100	518	100

Table - 9
Percentage distribution of participants according to Oral Habits

Oral Habit	No. of Individuals	%
No Oral habit	401	77.4
Alcohol	6	1.2
Betel Nut chewing	12	2.3
Bidi/Cigarettes	24	4.6
Tobacco chewing	75	14.5

Table-10
Geriatric Oral Health Assessment Index-Hindi (GOHAI-Hi)

	Quality of life	Physical	Pain and Discomfort	Psychosocial
Mean	40.05	13.30	9.63	17.12
Median	40.00	13.00	10.00	17.00
SD	7.52	3.33	2.17	3.11
Minimum	23	3	5	10
Maximum	58	20	15	25

Table-10a
Oral Health Quality of Life

Quality of life	No. of participants	Percentage
High (60-57)	3	0.6
Moderate (51-56)	33	6.4
Low (≤ 50)	482	93.1
Total	518	100%

Table-11
Percentage distribution of responses of GOHAI-Hi questionnaire

Quality of life	l= Always	2= Often	3= Sometimes	Total Score 1+2+3	4= Seldom	5= Never	Total Score 4+5
No trouble biting/chewing	22 (4.2%)	87 (16.8%)	157 (30.2%)	266 (51.2)	182 (35.1%)	71 (13.7%)	253 (48.8%)
Have to limit food intake/choice of food	108 (20.8%)	100 (19.3%)	149 (28.8%)	357 (68.9%)	60 (11.6%)	101 (19.5%)	161 (31.1%)
Able to speak clearly	31 (6%)	44 (8.5%)	153 (29.5%)	228 (44%)	164 (31.7%)	126 (24.3%)	290 (56%)
Discomfort during eating	11 (2.1%)	61 (11.8%)	166 (32.0%)	238 (45.9%)	249 (48.1%)	31 (6%)	570 (54.1)

Sensitive to hot/cold/sweet/sour food	34 (6.6%)	118 (22.8%)	138 (26.6%)	270 (66%)	213 (41.1%)	15 (2.9%)	228 (44%)
Use medication to relieve pain	9 (1.7%)	26 (5%)	224 (43.3%)	259 (50%)	197 (38%)	62 (12%)	259 (50%)
Unable to swallow comfortably	14 (2.7%)	14 (2.7%)	206 (39.8%)	234 (45.2%)	250 (50%)	25 (4.8%)	275 (54.8%)
Worried about teeth problems	19 (3.7%)	70 (13.5%)	175 (33.8%)	265 (51%)	228 (44%)	26 (5%)	254 (49%)
Limit contacts with people	10 (1.9%)	65 (12.5%)	234 (45.2%)	309 (59.6%)	190 (36.7%)	19 (3.7%)	209 (40.4%)
Uncomfortable eating in front of others	0 (0%)	31 (6%)	239 (46.2%)	270 (52.2%)	225 (43.4%)	23 (4.4%)	248 (47.8%)
Self-conscious of teeth problems	6 (1.2%)	50 (9.7%)	241 (46.4%)	297 (57.3%)	206 (39.8%)	15 (2.9%)	221 (42.7%)
Pleased with look of teeth	52 (10%)	67 (13%)	183 (35.3%)	302 (58.3%)	162 (31.3%)	54 (10.4%)	216 (41.7%)

Table-12
Percentage Distribution of Geriatric Oral Health Assessment Index - Hindi Scores and Selected Variables

	Higher quality of life	**Lower quality of life**	**P-value**
Age (in yrs.)			
60-74	24 (6.6%)	337 (93.4%)	0.902
75-84	11 (7.5%)	135 (92.5%)	
85-95	1 (9.1%)	10 (90.9%)	
Gender			
Females	7 (7.8%)	83 (92.2%)	0.734
Males	29 (6.8%)	399 (93.3%)	
Marital Status			
Married	180 (43.9%)	230 (56%)	0.410
Single	96 (88.8%)	12 (11.1%)	
Education			
Illiterate	6 (16.6%)	30 (0.83%)	0.736
Primary + middle	54 (0.6%)	36 (0.4%)	
Secondary + higher secondary	20 (35.7%)	36 (64.2%)	
Graduate + postgraduate	291 (84.1%)	55 (15.8%)	
Occupation			
Private service	12 (21.8%))	43 (78.1%)	0.233
Business	21 (15.1%)	133 (84.3%))	
Retired government service	260 (81.5%)	59 (18.4%)	
No occupation	0 (0%)	10 (100.00%)	

* Significant – $p < 0.05$

Table-13
Mean distribution of Geriatric Oral Health Assessment Index - Hindi Scores and Selected Variable

	No. of participants	**Mean ± SD**	**P value**
Age (in yrs.)			
60-74	362	40.08±7.41	0.023*
75-84	146	40.00±7.42	
85-95	11	34.00±8.00	
Sex			
Females	90	39.72±7.14	0.427
Males	428	40.12±7.60	
Marital Status			

Married	410	42.02±6.95	0.233
Single	108	40.04±7.56	
Education			
Illiterate	36	38.01±7.11	0.01*
Primary + middle	80	40.16 ±7.27	
Secondary + higher secondary	56	40.29±8.001	
Graduate + postgraduate	346	40.08±6.41	
Occupation			
Private service	55	39.09±7.18	0.005*
Business	134	38.08±6.17	
Retired government service	319	42.08±7.19	
No occupation	10	30.11±4.12	

* Significant $p < 0.05$