

## Magnifying the Senescence: Impact of Oral Health on Quality of Life and Daily Performance in Geriatrics: A Cross-Sectional Study

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### INTRODUCTION

Health and disease are apparent proximately similar with the recognition “quality or value of life.” Since 30 years there has been association found between “health-related quality of life” and “quality of life” with the outcomes of health conditions and therapy.<sup>[1]</sup>

The World Health Organization Quality of life (WHOQOL) group gave the definition that “Quality of life is an individual’s perception of his/her position in life, within the culture and value systems in which they live and in relation to the objectives, expectations, standards, and concerns.” It has a vast assumption that it is influenced by an individual’s corporeal health, his/her intellectual level, grade of independence, societal, and environmental relation.<sup>[2]</sup> Quality of life is a multifaceted

concept that has been assessed from various points of view.<sup>[1]</sup>

Oral health status has an integral part in everyone’s life, which influences physical, emotional and social health.<sup>[3]</sup> According to Government of India, Ministry of Statistics and Programme Implementation 2016, around 103.9 million people have passed the age of 60 years, and it is expected that by 2050, this number will rise to 323 million which will constitute around 20% of the total population of India. This rise will be a great objection

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### ABSTRACT

**Objective:** The objective of the study is to study the behavior of the GOHAI as well as the OIDs as potent measures in oral health related to quality of life in senior citizens.

**Materials and Methods:** An outreach program-based cross-sectional study conducted in Modinagar, Uttar Pradesh, India. A total of 340 study participants aged >60 years were selected from outreach program which were held between January 2017 and April 2017 based on inclusion and exclusion criterion. The dental health status and its influence on the self-perceived value of life was assessed using GOHAI and OIDP index among the participants. The data were estimated using Statistical Package for the Social Sciences version 21.0 (SPSS Inc., Chicago, IL, USA). Chi-square analysis and Pearson correlation were used to test the significance of the independent variables and the distinct the overall oral impact scores in groups with different dental status.

**Results:** OIDP shows that most of the patients are suffering from eating food (57.74) and speaking clearly (45.96). GOHAI shows that most of the geriatric population with a lowest mean score of 2.12 and 2.13 were difficulty in chewing food and sorrowful with the condition of mouth and teeth. Similarly, a lower number of population of 3.68 had difficulty in swallowing food.

**Conclusion:** The prevalence of OIDs in this geriatric population was high. Oral impact mainly effect their quality or value of life leading to difficulty in eating and verbal communication.

**KEYWORDS:** Dental caries, dentures, geriatrics, oral health, quality of life

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for the health organization to provide an attainable, inexpensive, and fair health care to this population.<sup>[4]</sup>

Aging is considered as the most censorious issue in the 21<sup>st</sup> century globally. In India, the elderly population is increasing rapidly, and it is seen that the life assurance of Indian community is expanded to 66.9 years for men and 69.9 years for women in 2015 in compare to 23.8 years for both in 1901.<sup>[5]</sup>

Although the general health in elderly population has significant outcome on the excellence of life, however, the role of dental health cannot be underestimated as the dental problems interfere with the initial needs of life such as chewing of food, esthetics, and verbal which leads to loss of mental stability and change in behavior often cause irritation. At the same point in time, it gives rise to humiliation when the appearance is affected. These psychological, physiological, and functional impacts of the oral diseases have been frequently evaluated by the standardized instruments - Oral Impacts on Daily Performances (OIDPs), Geriatric Oral Health Assessment Index (GOHAI), and the Oral Health Impact Profile (OHIP-49), and its shorter version, OHIP-14.<sup>[6,7]</sup>

The GOHAI, a 12-item questionnaire, developed by Atchison and Dolan in 1990, explore the problems related to physiological, physical, and psychological needs of elderly or old age Indian community thus supplement the clinical care. It estimate three measures of oral health-related quality of life implicate physical functions such as mastication, verbal, deglutition; psychosocial functions like have to do with, deal about dental health, annoyance with impression, insecurity about oral health, self-restraint of social contacts because of dental problems; pain or discomfort including the use of medication or discomfort from the mouth.<sup>[8]</sup> According to Locker *et al.*, in 2001<sup>[9]</sup> the GOHAI gives substantial importance to functional condition and discomfort. Hassel *et al.*, in 2010 reported that GOHAI is more focused attention or emphasizing on subjective oral health with lesser clinical changes and immediate clinical aspects.<sup>[10]</sup>

OIDP was first described by Adulyanon in 1996. OIDP is one of the characteristics of quality of life scales related to oral health. These instruments measure the psychometric properties which are acceptable in the elderly population. OIDP is comprised of nine items which estimate the prevalence and sternness of problems detect with teeth or dentures in the past 6 months, and how these problems impacted on the development of day-to-day activities.<sup>[11]</sup>

Although there has been plentitude of documented literature from different parts of the globe, on the oral

health-related quality of life (OHRQOL) among the elderly population, in Indian summary or scenario very few studies are available the OHRQOL among the elderly population. Thus, the present study was conducted to assess the impact of oral health on quality of life and impact on daily performance in geriatric population of in and around Modinagar.

## OBJECTIVE

To study the behavior of the GOHAI Assessment Index as well as the OIDPs or enforcement as potent measures in oral-dental health related to quality of life in senior citizens.

## MATERIALS AND METHODS

### STUDY DESIGN AND STUDY SETTING

An outreach program-based cross-sectional study was conducted from January 2017 to April 2017 in Modinagar city, Uttar Pradesh, India, to assess the dentition status and its impact on quality of life among elderly population in Modinagar. The ethical letter number was 2017/A-038 and clearance for the study was obtained from the institutional review board of the college.

### STUDY SUBJECTS

The sample size for the present study was estimated on the evidence of the pilot study which came out to be 336. A total of 340 study participants were implicated in the present study based on the inclusion criterion and exclusion criterion.

### CLINICAL EXAMINATION

All participants were clinically examined by two trained professionals who are expert in this field. All clinical examinations were done under natural daylight. The analytic abstract assessed for dentition status of teeth including number of decayed missing and filled teeth, number of teeth with a fixed prosthesis, dentate participants included number of teeth present.

### INCLUSION CRITERIA

- Aged >60 years
- Those who have given informed consent.

### EXCLUSION CRITERIA

- Participants who were having severe debilitating diseases
- Persons who were not present at the time of examination.

### QUESTIONNAIRE

Aiming to estimate old age oral self health-recognition, GOHAI was used which is expected to report oral function problems and psychosocial impacts associated with oral diseases. The 12 items of the GOHAI

determine three dimensions which are physical function, pain and discomfort, and psychosocial function. Patients were questioned about the repetitiveness at which they experience any of 12 listed problems, using a five-point liker scale ranging from never to very often.

The quality of life in terms of impact on daily performances was determined using the OIDP Index. This index consists of 9-item questions which measures the impact of oral health on the enforcement of daily activities such as chewing, speaking, cleaning teeth or dentures, going out, pleasing, smiling, and showing teeth without humiliation. The repetitiveness and sternness of each reported oral health impact were then further assessed. Finally, each impact was associated to a specific oral condition, as indicated by the respondents. The OIDP score was expressed as the sum of the different enforcement or performance score (performance score = severity score  $\times$  frequency score) divided by the maximum possible score and then multiplied by 100 to provide a percentage score. Both frequency and severity scores were expressed on a scale from 0 to 5. Severity or sternness was assessed at six levels from no effect to very severe effects on everyday life.

#### DATA MANAGEMENT AND STATISTICAL ANALYSIS

The collected data were estimated using Statistical Package for the Social Sciences version 21.0 (SPSS Inc., Chicago, IL, USA), Descriptive statistics were used to describe the prevalence, the sternness, and the intensity of OIDPs among participants with different dental status. Chi-square analysis and Pearson correlation were used to test of significant in the independent variables and the variation in the overall oral impact scores in groups with different dental status.

#### RESULTS

Table 1 describes the gender- and age-based descriptives. Out of 340, 185 (54.4%) individuals were men while 155 (45.6%) were women. The mean age of the participants were noted to be 70.01 years where, majority presented within the age band of 60–65 years age group (30.88%) followed by 84 (24.70%) in 66–70 years age group, 79 (23.24%) were in 71–75 years, and 72 (21.18%) were aged above 75 years.

Table 2 shows the mean score descriptives of dentition status. The highest mean was for missing teeth (17.49  $\pm$  8.8) then by sound teeth (9.81  $\pm$  8.9), carious teeth (3.29  $\pm$  1.9), fixed dental prosthesis (0.79  $\pm$  1.4), and the least for filled teeth (0.62  $\pm$  1.5).

Table 3 presents the mean scores of OIDP of the study participants. Most of the patients were suffering from problems such as chewing food (57.74), followed by speaking clearly (45.96), expressing, laughing, and

showing teeth without humiliation (27.37), enjoying the contact of other people (20.07), cleaning your teeth/dentures (18.62), becoming more easily upset with your emotional state than usual (13.96), carrying out your major work (11.84), and pleasing (7.70).

Table 4 presents the response characteristics and mean GOHAI scores of the population.

Table 4 shows most of the elderly populace with lowest mean scores of 2.12 and 2.13 were having difficulty in chewing food and were sorrowful with the condition of mouth and teeth, whereas 3.68 had difficulty in deglutition food. Majority of the sample, i.e., 37.8%, often found it difficult to eat. Around 38.2% had problems with verbal communication clearly whereas 37.1% sample were fairly often sorrowful with the condition of their mouth and teeth. Large number of sample (47.6%) were fairly often worried about the problems with their mouth/teeth and 52.6% of sample were found to be fairly often humiliated to eat in front of others.

Table 5 shows the correlation between GOHAI and dentition status. There is statistically convincing positive interrelation found between number of sound teeth, no, filled teeth, and fixed prostheses with GOHAI and a significant negative interrelation was found between number of carious teeth and missing teeth with GOHAI.

Table 6 shows the correlation between OIDP and dentition status. The significant positive interrelation was found between carious and missing tooth with OIDP, and negative interrelation was found between sound, filled, and fixed prostheses with OIDP.

**Table 1: Demographic characteristics of the study participants**

	<i>n</i> (%)
Gender	
Male	185 (54.4)
Female	155 (45.6)
Age groups	
60-65 years	105 (30.88)
66-70 years	84 (24.70)
71-75 years	79 (23.24)
Above 75 years	72 (21.18)

**Table 2: Dentition status of the study participants**

Condition	Mean $\pm$ SD
Sound teeth	9.81 $\pm$ 8.9
Carious teeth	3.29 $\pm$ 1.9
Filled teeth	0.62 $\pm$ 1.5
Missing teeth	17.49 $\pm$ 8.8
Fixed dental prosthesis	0.79 $\pm$ 1.4

SD=Standard deviation

**DISCUSSION**

Human can enjoy the important opportunities of life that defines “Quality of Life.”<sup>[12]</sup> The purpose of this study was to determine and examine the comparison between the psychometric properties so, the two tools used are ODIP and GOHAI among geriatric community in outreach program. The validity of measurement about OHRQOL are established as reliability, reproduceability, and to construct.

A self-administered questionnaire was intended and used GOHAI for the older people those really need continuous care and that questionnaire was administered, a personal

interview as old age community really have defenseless care so that affects their capability to complete self-administered questionnaire.<sup>[13]</sup>

In this study, most of the participants were suffering from missing teeth and according to OIDP most of the participants were suffering from eating problem. OIDP and GOHAI were found the significant positive correlation between carious and missing tooth.

The two instruments used and their results suggest that these instruments behave in a similar manner which really effects the quality of life in geriatric community when they are used as measurements foe assessing. Nevertheless, GOHAI exhibited greater discrimination in the population characteristics under study, whereas OIDP presented greater interrelation coefficient with the state of dentition. It has been concluded that no single OHRQoL instrument is better than the others and that these cannot be considered a gold standard. As, we are aware that GOHAI and GOIDP are based on different theories, as well as the time, so the oral-dental-related health problems are assessed are different: 3 and 6 months, respectively.

In this study, most of the elderly population is suffering from physical functions such as chewing, verbal communication, and deglutition. Higher number of population is also suffering from psychosocial functions, and they felt sorrowful about the condition of mouth concerned like oral health, dissatisfied with

**Table 3: Mean scores of oral impact on daily performance among the study participants**

Problems in the past 6 months	Mean±SD
Eating food	57.74±29.03
Speaking clearly	45.96±35.22
Cleaning your teeth (dentures)	18.62±17.02
Going out, for example, to shop or visit someone	20.07±16.27
Relaxing	7.70±14.65
Smiling, laughing, and showing teeth without embarrassment	27.37±15.97
With your emotional state, for example, becoming more easily upset than usual	13.96±16.18
Carrying out your major work	11.84±16.18
Enjoying the contact of other people, such as relatives, friends or neighbors	25.20±13.60

\*Higher OIDP scores indicate poorer self rated oral health. OIDP=Oral impact on daily performance, SD=Standard deviation

**Table 4: Distribution of responses and mean scores for the Geriatric Oral Health Assessment Index**

Items (past 3 months)	Never (%)	Hardly ever (%)	Occasionally (%)	Fairly often (%)	Very often (%)	Mean±SD
Is there any kind of food you cannot eat or cannot eat the desired amount?	26 (7.6)	22 (6.5)	50 (14.7)	114 (33.4)	128 (37.8)	2.12±1.2
Do you have difficulty eating certain food, such as meat or a hard apple?	25 (7.4)	19 (5.6)	120 (35.3)	99 (29.1)	77 (22.6)	2.46±1.1
Do you have difficulty swallowing certain food?	111 (32.6)	103 (30.3)	67 (19.7)	24 (7.1)	35 (10.3)	3.68±1.2
Does the condition of your teeth and mouth prevent you from speaking as clearly, as you wish?	11 (3.2)	45 (13.2)	113 (33.2)	130 (38.2)	41 (12.2)	2.57±0.97
Are you, due to the feeling of discomfort, unable to eat all kinds of food?	1 (0.3)	31 (9.1)	94 (27.6)	155 (45.6)	59 (17.4)	2.29±0.87
Do you avoid contact with other people because of the condition of your mouth and teeth?	11 (3.2)	33 (9.7)	107 (31.5)	172 (50.6)	17 (5)	2.56±0.85
Are you unhappy with the condition of your mouth and teeth?	2 (0.6)	17 (5)	100 (29.4)	126 (37.1)	95 (27.9)	2.13±0.91
Do you use any medications to reduce pain or discomfort caused by the condition of your teeth and mouth?	32 (9.4)	41 (12.1)	113 (33.2)	92 (27.1)	62 (18.2)	2.67±1.1
Are you worried about the problems with your mouth and teeth?	6 (1.8)	47 (13.8)	110 (32.4)	162 (47.6)	15 (4.4)	2.61±0.84
Do you feel uncomfortable or stressed because of the condition of your mouth and teeth?	11 (3.2)	29 (8.5)	126 (37.1)	150 (44.1)	24 (7.1)	2.57±0.86
Are you embarrassed to eat in front of others because of the condition of your mouth and teeth?	19 (5.6)	20 (5.9)	104 (30.6)	179 (52.6)	18 (4.9)	2.54±0.90
Are your teeth sensitive to hot, cold or sweet food?	66 (19.4)	34 (10)	99 (29.1)	94 (27.6)	47 (13.8)	2.94±1.3

\*For each question scores ranged from 1-5 with higher scores denoting better self-rated oral health or a lower degree of negative impact on quality of life. SD=Standard deviation

**Table 5: Correlation between Geriatric Oral Health Assessment Index and dentition status**

Items (past 3 months)	GOHAI
Number of sound teeth	0.212**
Number of carious teeth	-0.280**
Number of filled teeth	0.123*
Number of missing teeth	-0.213**
Fixed prostheses	0.242**

\*\*Correlation is significant at the 0.01 level, \*Correlation is significant at the 0.05 level. GOHAI=Geriatric Oral Health Assessment Index

**Table 6: Correlation between oral impact on daily performance and dentition status**

Items (past 3 months)	OIDP
Sound	-0.734**
Caries	0.844**
Filled	-0.170**
Missing	0.633**
Fixed prostheses	-0.322**

\*\*Correlation is significant at the 0.01 level, \*Correlation is significant at the 0.05 level. OIDP=Oral impact on daily performance

their impression, self-consciousness about oral health, avoidance of social contacts because of the more missing and caries teeth in the geriatric community. The findings of this study are in agreement with the study conducted by Murariu *et al.*<sup>[6]</sup> in which GOHAI score where higher for elderly people especially for physical function as they perceived negative impact on the quality of life.

In this study, OIDP is highly interrelated with the dentition status. The findings of this study are in agreement with the study conducted by Montes-Cruz *et al.*<sup>[14]</sup> in which the teeth with healthy crowns and more in function are presented, a statistically significant correlation coefficient with OIDP and Gupta *et al.* 2012<sup>[15]</sup> in which interrelation between missing teeth and toothache were found to be stronger.

In this study, a higher number of geriatric population always suffering from physical function like eating problem, i.e., 37.8%. The findings of this study are in agreement with the study conducted by Osta *et al.* and Jain *et al.*<sup>[16,17]</sup> in which 35% population always having eating problem and 41.3% always having chewing problems.

The limitations are in design, size of sample and convenience as sample size is kept small and design is cross-sectional hence, inference cannot be generalized for the population. For further studies, the author recommended the sample size to be larger so the participants should be included from the different socioeconomic background and varied age groups, so that more precise conclusions can be drawn regarding the

impacts of oral health on the quality of life among this target study population.

## CONCLUSION

The present study throws light on the fact that oral impacts affected the quality of life of elderly population mainly through difficulty in chewing, deglutition, and verbal communication. The prevalence of OIDPs or enforcement in the population was noted to be substantially expanded. There are a variety of oral conditions that contributed significantly to the incidence of impacts, namely, missing, and caries teeth. To improve oral dental health in senior citizens, further more studies are necessary to ascertain how both instruments behave in clinical tests, in the preventive and therapeutic program. We can finally conclude that GOHAI exhibited greater inequity in the characteristics of the population under study, and OIDP presented greater interrelation coefficient with the state of the dentition.

## RECOMMENDATIONS

- Prevention of dental disease is possible by maintaining good oral hygiene that improve quality of life in geriatric community
- Dental check-ups should at regular intervals
- Preferable method of dental treatment, tooth extraction should not be appreciated
- To prevent further deterioration of dental health in geriatric community replacement of missing teeth with dentures should be regarded as a normal procedure
- Modify the consistency of the diet
- Exclude certain foods and reducing the possibility of nutritional deficit and include nutritional diet that is beneficial for their health.

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Nil.

## CONFLICTS OF INTEREST

There are no conflicts of interest.

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