Original Article

Dentition Status and its effect on the Oral Health Related Quality of Life in a Rural Elderly Population: A Cross Sectional Study

Amit Rekhi[*], Amit Mehra[**], Aaron Gomes[***], Siddharth Bisht[****], Gaurav Chahal[***], Himani Dadwal[*****]

Abstract

Background: This study was conducted to find out the effect of dentition status on the oral health related quality of life (OHRQoL) of rural elderly people in an Indian population. The main objectives included the assessment of age wise differences among the elderly segment, particularly the effect of coronal and root caries, missing teeth and filled teeth.

Methods: A total of 368 (192 (52.17%) males and 176 (47.83%) females) elderly subjects from eight villages were included in the study. Oral Health Related Quality of life was measured by using a validated Hindi version of Geriatric Oral Health Assessment Index (GOHAI). Clinical assessment of the subjects was done regarding carious, missing, and filled teeth, and carious roots.

Results: The mean GOHAI score was found to be 18.14 ± 5.71. The mean number of decayed crown was 1.34 ± 1.63, mean number of missing teeth was 12.74 ± 11.14, mean DMFT score was 14.08 ± 10.13, and mean number of teeth with root caries was 0.55 ± 1.17. Average number of carious roots was found to be maximum among 70-79 years age group followed by 60-69 years age group. Age wise differences were found to be statistically significant for mean number of decayed crown, missing teeth, root caries and mean DMFT.

Conclusion: The results revealed that having more teeth present and less decayed teeth were found to be associated with better oral health related quality of life. The elderly are a special part of our society and need the utmost attention since they are most susceptible to oral diseases which impact their daily activities. Hence more light needs to be thrown on such issues to improve the overall health including the oral component.

Keywords: Quality of life, DMFT, Elderly, Dentition status, Rural.

Introduction

The widely accepted definition of health given by the World Health Organization (WHO) places the person's experience of his health in context of physical, psychological and social well-being and rejects that health is merely just the absence of physical disease. Oral health is an integral part of general health and is essential in determining quality of life.[1] Oral health-related quality of life (OHRQoL) is basically the perception of oral health with regard to the functional, social, and psychological impacts of oral disease.[2] This evaluation is made by subjective and clinical indicators and provides information on the self perceived impact of the oral conditions and need for dental care.[3] Ageing of the population is occurring throughout the world, more rapidly in developing countries. The group can also experience certain restrictions due to the condition

[*]BDS, MDS, Dept of Public Health Dentistry, Uttaranchal Dental and Medical Research Institute, Mazri Grant, Haridwar Road, Dehradun-248140, Uttarakhand.
[**]BDS, MDS, Dept of Orthodontics, Uttaranchal Dental and Medical Research Institute, Uttarakhand.
[***]BDS, MDS, Dept of Periodontics & Implantology, Uttaranchal Dental and Medical Research Institute, Uttarakhand.
[****]BDS, MDS, Dept of Endodontics & Conservative Dentistry, Uttaranchal Dental and Medical Research Institute, Uttarakhand.
[*****]BDS, MDS, Dept of Oral & Maxillofacial Surgery, Uttaranchal Dental and Medical Research Institute, Uttarakhand.
Correspondence to: Dr Amit Rekhi, Dept of Public Health Dentistry, Uttaranchal Dental and Medical Research Institute, Mazri Grant, Haridwar Road, Dehradun-248140, Uttarakhand. *E-mail Id:* rekhiamit@gmail.com

of their teeth that modify their life styles and social interactions, in turn affecting their oral health related quality of life.[4]

High prevalence rates of coronal dental caries and root surface caries are found among old-age populations in several countries worldwide.[5] In case of developing countries, the number of restored teeth is quite low and untreated dental caries quite high. Edentulism is prevalent among older people all over the world. Severe dental caries and periodontal disease are the major reasons for tooth extraction.[5,6] The negative impact of poor oral conditions on daily life is particularly significant among edentulous people.

Dental caries is one of the most common oral diseases affecting 50-60% of adult population in India.[7] Nearly 19% of the population aged between 65-74 years is edentulous.[8] Poverty and illiteracy further compound the already existing lack of manpower and poor accessibility to oral care services in rural areas especially for an elderly population. Moreover, there is less data pertaining to OHRQoL of rural population of India which is essential for planning oral health services for the population. Thus in the light of above situation, it is essential to assess the effect of dental caries on OHRQoL, among rural population and hence this study was conducted.

Materials and Methods

A cross-sectional epidemiological study was carried out to assess the dentition status and oral health related quality of life among elderly residents of rural areas of Dehradun, India. A pilot study was conducted among the elderly population in the rural areas to estimate the sample size of the main study and also to check the feasibility of the methodology and the questionnaire, which led to a final sample size of 368. A list of all the villages was compiled, then 8 villages were selected randomly from the list and all residents above the age of 60 years (elderly) were examined till the desired sample size was obtained based on calculations from the pilot study. Those elderly people who were willing to participate and were residing in the rural areas of Dehradun were included. Physically challenged, mentally compromised people and those with cognitive impairment or any terminal illness were excluded.

The clinical examination of all the subjects was done by a single trained examiner to limit the intra examiner variability.

Ethical clearance was sought from the Ethical Committee of Uttaranchal Dental and Medical Research Institute, Dehradun, explaining the aim & importance of the study. Informed consent was obtained prior to the examination from each participant.

OHRQoL was measured by using a validated Hindi version of Geriatric Oral Health Assessment Index (GOHAI). Clinical assessment of the participants was done based on a modified version of the WHO Oral Health Assessment Form (1997).[9]

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 17.0, IBM Inc. Descriptive data was reported for each variable. One way ANOVA was used when comparing more than two groups on continuous, normally distributed variables.

Results

A total of 368 elderly subjects from eight villages of Dehradun were included in the study, out of which 192 (52.17%) were males and 176 (47.83%) were females.

Among study population (Table 1), the mean number of decayed crown was 1.34 ± 1.63, mean number of missing teeth was 12.74 ± 11.14, mean DMFT score was 14.08 ± 10.13, and mean number of teeth with root caries was 0.55 ± 1.17. No subject was found with filled permanent teeth. DMFT was quite high which was composed mostly of the missing component. Average number of carious roots was found to be maximum among 70-79 years age group, followed by 60-69 years age group. Using ANOVA test, mean number of decayed crown, missing teeth, teeth with root caries and mean DMFT score was found to be statistically significant among three age groups (p<0.05).

Table 1. Mean number of decayed, missing, filled teeth, mean DMFT score and carious roots in different age groups

Age group (yrs)		Decayed	Missing	Filled	DMFT	Root Caries
60-69 (N=264)	Mean	1.54	10.16	0.00	11.70	0.47
	SD	1.64	9.77	0.00	9.13	1.02
70-79 (N=78)	Mean	0.98	17.27	0.00	18.25	0.94
	SD	1.66	11.74	0.00	11.13	1.61
Above 80 (N=26)	Mean	0.37	25.73	0.00	26.10	0.29
	SD	0.60	9.00	0.00	8.61	0.83
Total (N=368)	Mean	1.34	12.74	0.00	14.08	0.55
	SD	1.63	11.14	0.00	10.43	1.17
	p value	<0.001	<0.001	-	<0.001	<0.001

The mean GOHAI score of study population was found to be 18.14 ± 5.71. The mean number of questions which were responded as 'sometimes', 'often' & 'always' was found to be 5.94± 2.24.

The bivariate analyses (Table 2) showed that GOHAI scores significantly increased with decrease in number of teeth present and increase in number of teeth having root caries. When total number of present teeth was dichotomized with 20 as middle value, the OHRQoL was found to be significantly lower among subjects having lesser number of teeth present. When total number of teeth having root caries was dichotomized with 2 as middle value, the GOHAI scores significantly increased in subjects having higher number of carious roots. Those subjects who were having at least 1 decayed tooth were divided into those with less than 2 decayed teeth and those with more than or equal to 2 decayed teeth. Significant difference was found between them.

Table 2. Bivariate analyses showing the relationship between the Mean GOHAI scores and indicators of dentition status (number of decayed & missing teeth, number of teeth with root caries) of study population

	Mean GOHAI Scores (SD)	p-value (student's t-test)
No. of decayed teeth (excluding edentulous subjects)		
<2 teeth (n=158)	18.58 (6.28)	<0.001
≥2 teeth (n=149)	16.47 (5.27)	
No. of teeth present		
≤ 20 teeth (n=145)	21.94 (4.28)	<0.001
> 20 teeth (n=223)	15.69 (5.15)	
No. of teeth with root caries (excluding edentulous subjects)		
< 2 teeth (n= 236)	17.07 (5.94)	<0.001
≥ 2 teeth (n=71)	19.14 (5.46)	

Discussion

In 2003, WHO, the World Dental Federation and the International Association for Dental Research appointed a commission that would propose overall goals for oral health by 2020, as guidelines for health services. Maintenance of at least 21 teeth was selected by the study group as the condition for functional dentition.[10]

In the present study, number of teeth present was found to be significantly associated with mean GOHAI scores. Though subjects who were having less than or equal to 20 teeth reported higher GOHAI scores as compared to those who had more than 20 teeth.

Steele et al. (2004)[11] confirmed, in a secondary analysis of two surveys conducted in United Kingdom and Australia, that the number of teeth present is an important determinant of the subjective perception of oral health. In a study[12] conducted among Sri Lankan adults, self assessment of OHRQoL was more favorable among elderly individuals with more than 20 teeth. In the Brazilian context, Hugo et al. (2007)[13] showed that elderly people with fewer than 20 teeth assessed their OHRQoL negatively.

More than one decayed teeth (if at least 1 tooth is present) was found to be significantly associated with mean GOHAI scores. This is in accordance with study conducted by Tubert-Jeannin et al. (2010)[14] and Hassel et al. (2008)[15]. Further, number of decayed roots

emerged as a factor having significant association with mean GOHAI scores. This finding could not be compared with any other study due to lack of relevant comparisons.

Conclusion

Age wise differences were found to be statistically significant for mean number of decayed crown, missing teeth, root caries and mean DMFT. Having more teeth present and less decayed teeth were found to be associated with better OHRQoL. The elderly are a special part of our society and need the utmost attention. They are most susceptible to oral diseases which impact their daily activities. Having special oral health programs focused on the elderly might be able to reduce this burden. These programs can be sponsored by the government or private organizations and can target the improvement of oral health and its related conditions. This group needs to be educated about their oral health along with their general health keeping in mind that they are a vulnerable group of our society and need special care in their twilight years.

Conflict of Interest: Nil

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