

Original Research

Periodontal oral health in geriatric patients: An observational study

Dr. Shipra Sepolia¹, Dr. Parul Verma²

¹Lecturer, Department of Periodontics and Implantology, Indira Gandhi Government Dental College, Jammu;

²Senior Lecturer, Department of Conservative and Endodontics, Institute of Dental Sciences, Sehora, Jammu

ABSTRACT:

Background: Oral disease conditions, for example, dental caries, periodontal disease, and loss of teeth are chronic as well as cumulative in nature. Oral health status may get worsened as people become aged. Few of the diseases affecting the general health may lead to an increase in the risk of development of oral diseases like- dry mouth or xerostomia and alterations in the sensation of taste and few treatments that are followed may additionally result in complications affecting teeth. Loss of teeth may be the chronological outcome of these oral diseases among the geriatric population and may result in masticatory difficulties along with esthetic problems. In severe disease, difficulties in mastication may affect nutritional status leading to the development of debilitating states. Old-aged individuals form an increasing size of the population. **Aim:** The aim of the study was to evaluate the periodontal oral health in the geriatric population. **Materials and Methods:** This cross-sectional and observational analysis was performed on geriatric patients aged 60 years and above using convenient sampling. Obtained clinical data consisted of a questionnaire and clinical observations by recording Decayed, Missing, Filled index, and Community Periodontal index for assessment of dental caries and periodontal disease health. Collected data were analyzed using SPSS (Statistical Software for Social Sciences) version XVII statistical software. **Results:** Significant differences were observed in comparing age-groups and gender distribution. Extreme significance was seen between education levels while significant association in diseases such as diabetes, hypertensive states, and other co-morbidities. Dental caries and periodontal diseases (chronic periodontitis) or missing teeth demonstrated significant influence over the psychological health of an individual. A high prevalence of dental caries was found (83.1%). Similar results were seen for periodontal health as well. **Conclusion:** There is a significant increase in periodontal diseases among geriatric subjects related to disease progression.

Keywords: Geriatric, periodontal, oral, health.

Received: September 24, 2020

Revised: October 26, 2020

Accepted: October 28, 2020

Corresponding author: Dr. Shipra Sepolia, Lecturer, Department of Periodontics and Implantology, Indira Gandhi Government Dental College, Jammu

This article may be cited as: Sepolia S, Verma P. Periodontal oral health in geriatric patients: An observational study. J Adv Med Dent Res 2020;8(11):223-228.

INTRODUCTION

Diseases of periodontium constitute important oral health issues found affecting populations all over the world. These diseases form the most important and major cause of loss of teeth, especially in the elderly population. Thus, this has a significant increase in morbidity and reduces one's quality of life (QoL), formulating a large oral health concern in the general population. The prevalence of periodontal diseases varies between different age groups. There are also wide variations in the data available from different countries. Thus, an understanding of various risk-

factors and disease distribution can help in planning the management of various public health programs, including an arrest in oral disease progression of which periodontitis is most common.^[1] Advanced or reaching old age is a physiological phenomenon that involves numerous changes in human body functioning.^[2] The process of aging involves both physiological as well as pathological mechanisms undergoing alterations and differ under both conditions. Histological features of periodontal disease include a decrease in the number of elastic fibers, disturbances in the remodeling of collagen, and a reduction in cellularity due to a decrease

in collagen remodeling by fibroblasts. Also, there is a decrease in keratinization of gingival tissue leading to its recession.^[3,4,5]

"Gerodontology" may be defined as- "the study of various physical as well as psychological alterations or changes which a body may undergo during the aging process. Geriatrics may be defined as "that branch of medicine or sociological sciences which deals with health-care of aging individuals. This category of individuals may be sub-classified under three broad categories depending upon the age groups such as-a) Aged between 65 to 74 years olds i.e., the "young old": These individuals are comparatively healthier and have an active lifestyle; b) Aged between 75 to 84 years old i.e., the "old-old": The subjects in this age group range between the healthy and fitter individuals to older subjects suffering from various co-morbid health conditions and c) Those aged above 85 years: This group constitutes the most frail individual. Persons falling under this subgroup are gradually increasing in numbers due to better quality of health care which helps in extending the average life span.^[2]

Periodontal diseases, in particular, periodontitis are inflammatory processes seen in response to dental plaque.^[6] The periodontal loss of attachment in process of aging manifests in form of the gingival recession on buccal surfaces in patients with chronic periodontitis. It is found in approximately 12 % of the general population and its peak age of incidence is usually observed at the age range of 35 to 40 years that gradually increases as one age.^[7, 8]

Formation of periodontal pocket depths may create minute niches or microenvironments that harbor numerous pathogenic bacterial species that can release a variety of metabolic end-products in the bloodstream leading to various systemic diseases such as-Alzheimer's disease, various cardiovascular diseases, and diabetes mellitus. The onset of these diseases mainly affects a person's lifestyle and as a result, may reduce or decrease an individual's physical as well as social activities.^[9]

As there is an expansion in population in the geriatric age group, there is also an increase in oral health problems as access to modern dental and oral health has helped in retaining natural dentition for a longer period. In the developed nations, a high caries prevalence with mean DMFS value has been found to range between 22 to 35 in coronal tooth surfaces while it is found that a caries score of 2.2 to 3.5 in root surfaces.^[10,11,12,13]

Good oral health implies that a relatively disease-free oral environment exists that allows for effective masticatory, swallowing, and speech functioning. Poor oral health is a state of inefficient functioning which is contributed by tooth decay, diseases of periodontium, ill-fitted or absence of dentures, non-maintenance or

neglecting of oral hygiene, any painful, inflammatory, or infectious process within the body.^[14]

The health-related quality of life or HRQoL is a measure that is used to refer to the impact that a person's health has on their physical, psychological, and mental domains.^[15] A subject's perspective regarding their health-related signs affects their physical as well as psychological functional well-being and closely impacts one's daily performance and social interactions.^[16]

Based upon the above pre-text, this study aimed to evaluate and make an assessment of periodontal health status in Geriatric age group individuals.

MATERIALS AND METHODS

This cross-sectional observational study was performed on geriatric patients aged between 60 years and above. The convenient sampling method was performed and the study cohort comprised of older individuals reporting for dental treatment requirement. The purpose of this study was explained to the patients in clear language and those who were willing to participate were included as study sample subjects after getting informed consent from them. The only exclusion criteria were that patients who were not willing to participate in the study. All clinical data were collected on a pre-validated and pre-designed performa which consisted of a detailed questionnaire and observations on clinical oral examination alone. Patient characteristics such as age, gender, levels of education achieved were recorded along with detailed medical histories and methods of maintaining oral hygiene. Clinical oral examination was performed to record the 'DMF (Decayed, Missing, and Filled)' index and 'CPI' (Community Periodontal) index for assessing patient's dental caries and periodontal disease scores.

An entire oral clinical examination was performed by a single investigator. The collected data was entered in Microsoft Excel Worksheets and was analyzed using the SPSS (Statistical Software for Social Sciences) version XVII statistical software. Univariate statistical analysis was done and statistical analysis was performed by employing the Chi-square as well as Wilcoxon tests, wherever it was deemed applicable. A Probability (P) value of less than 0.05 was fixed as significant statistically.

RESULTS

(I) Demographic characteristics of the studied population:

A total of 300 study participants of which 150 were males and 150 were female subjects participated in the study. The mean age of participants was 67.2 ± 2.9 and 65.1 ± 3.4 for male and female geriatric individuals. Almost a third of the study participants were found to have received no education while approximately two-

thirds of the study cohort received education above primary school level. Significant differences were observed in comparing age groups and gender distribution (P = 0.04 and 0.02, respectively). An extreme association was observed on comparing education levels in the study participants (P less than 0.0001). while a significant association between the presence of medical conditions such as diabetes mellitus, hypertensive states, and other co-morbidities demonstrated significant results (P = 0.02) (table 1).

(II) Oral health assessment of study participants:

On assessing the oral health status in the study cohort, no significant difference was observed between both the genders studied while assessing the functional limitations due to these oral diseases. Similarly,

assessing the presence of any pain or uncomfortable sensation during mastication or any feeling of sensitivity towards the intake of hot and cold foods and beverages demonstrated no significant differences were observed between the genders. However, the presence of oral debilitating conditions like dental caries and periodontal diseases such as chronic periodontitis or missing teeth demonstrated significant impact and influence over the psychological status of an individual (P= 0.04). The prevalence of dental caries was found to be 83.1 % while on analyzing the CPI scores, a code of 2 (for the presence of calculus) was found in 48.2 % of subjects that was closely followed by a code of 3 i.e., associated with a shallow pocket depth of 4 to 5 mm and was seen in 24 % subjects. (Table 2).

Table 1: Showing demographic data and frequency of oral hygiene procedures in the Geriatric population studied

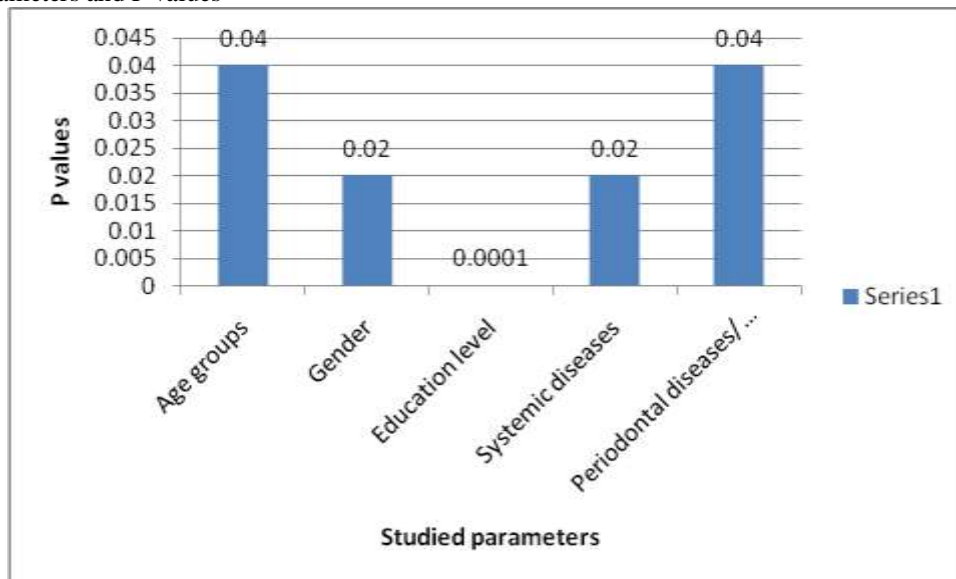
Demographic features	Frequency of oral hygiene practices			P Values
	No Oral hygiene (n %)	Once-daily (n %)	Two times daily (n %)	
I. Age-group (in years):				0.04
a. 60 to 69	12	62	32	
b. 70 to 89	23	59	21	
II. Gender:				0.02
a. Males:	10.2	53.1	40.2	
b. Females	15.1	66.6	23.1	
III. Education levels:				0.001
a. No education:	31	52	12	
b. Primary school education:	19	63	20.1	
c. Middle or high school education:	9.2	65.2	30.5	
d. Tertiary or higher education level	8.5	53.1	65.7	
IV. Medical history:				0.02
a. Diabetes mellitus:	12.1	48.1	45.6	
b. Hypertension:	17.8	69.2	17.6	
c. Other co-morbid conditions:	14.1	56.1	28.1	

Table 2: Demonstrating oral health assessment among geriatric study subjects

Questionnaire items	Intermittent complaints		Regular complaints		P values
	Male (n %)	Female (n %)	Male (n %)	Females (n %)	
i. Limitations in functions:					1.1
a. Difficulty masticating	43.1	38.1	28	38	
b. Uncomfortable swallowing	27.2	20.1	47.1	58.1	
c. Problems in speech	46.1	32.4	12.1	15.2	
ii. Pain and discomfort					0.2
a. While mastication	48.2	55.1	43.2	12.1	
b. Use of medicines for pain-relief	55.1	49.2	12.3	33.1	
c. Sensitivity towards hot or cold food intake	48.1	43.2	20.2	29.2	
iii. Impact on psychological status:					0.04
a. Unhappiness over esthetic appearance:	40.2	46.1	45.1	34.1	
b. Worries or concern:	37.2	50.2	40.2	39.2	

c. Nervousness/self-consciousness:	46.1	59.4	30.2	28.1	
d. Feeling conscious in front of people:	39.2	44.5	25.2	22.1	
iv. Effects on person's behavior:					0.05
a. Limiting intake of food:	39.1	53.1	28.3	20.2	
b. Limiting social contact:	42.1	42.1	15.5	17.5	

Graph I: Parameters and P values



DISCUSSION

Prevalence of periodontal diseases reflects increasingly in its occurrence and severity among elderly patients. A steep increase in cases of severe periodontal involvement is observed between the 3rd to 4th decades of life and may remain relatively stable at an older age group. [17, 18, 19]

A current study performed on Geriatric patients reported the presence of oral diseases namely, dental caries and periodontal diseases, and were found to have a significant impact on their psychological and social lives as supported by various studies described below.

Lorenzo et al (2015) in their assessment through a cross-sectional survey performed in elderly adults in Uruguay reported that the prevalence of mild and severe forms of periodontitis was 21.8 % and 9.12 %, respectively. Also, the consumption of tobacco products was found to be strongly associated with periodontitis among the elder subjects. [1]

Okoje et al (2019) examined the patterns of various oro-dental diseases, interventional methods in performing oral hygiene, and the presence of co-morbid conditions among the elder population. It was seen that the most common oro-dental diagnosis were- periodontal and endodontic diseases in 68 % and 11.35, respectively. The most commonly encountered co-morbid medical conditions were found to be hypertension and

osteoarthritis in 51.3 % and 29 % cases, in a respective manner. [14]

Ramsay et al in 2015 described the prevalence of oral diseases and related problems among the elderly male population which was aged between 71 to 90 years. 20 % of the population was edentulous while less than 43 % had less than 21 total number of teeth and 19 % suffered from loss of gingival attachment. 35 % suffered from poor oral health, 11 % suffered from difficulty in eating and 31 % reported xerostomia or dry mouth. [20]

Braihmoh and Alde in 2019 in their observational study on periodontal health in the elderly population reported a prevalence of 60.2 % cases of gingivitis and 35 % cases of periodontitis in their study cohort which was comprised of elderly people. These diseases were reportedly higher among the male subjects when compared to female subjects. Individuals who were smokers were found to suffer less from gingivitis than periodontal diseases which were found more among those who were non-smokers. Thus, the overall periodontal disease burden was found to be higher among the elderly population. [21]

Ojehanon and Ehizele in 2016 studied various patterns in periodontal disease diagnosis among the older adult population in Nigerian residents. Most common diagnosis were- chronic marginal gingivitis in 56.6 %, chronic periodontitis in 54.7 %, attrition in 59 %,

abscess of periodontal origin in 56.3 % and enlargement of gingival in 60 %. 59.7 % of older individuals with chronic periodontal disease belonged to the lowest socio-economic levels with a probability value of greater than 0.05. 83.3 % of older individuals with a tendency to develop chronic periodontitis were male subjects with a significant statistical association of $P = 0.0005$.^[22]

Botelho et al in 2020 investigated the impact of xerostomia along with stress levels as factors affecting oral health-related quality of life (OHR-QoL) in older adults and demonstrated a significant correlation between these two factors.^[23]

Sembing and Adam in 2019 reported that the management of periodontal health in the elder population requires control of infections and also, a comprehensive involvement of other health professionals in managing those suffering from systemic conditions.^[9]

CONCLUSION

It is to be mentioned that while treating geriatric patients or older age group patients, it is imperative to keep a check on various factors apart from chronological age that is largely dependent upon their medical status and their emotional quotient (EQ) levels. The most important factor is financial feasibility before deciding upon clinical management.

REFERENCES

1. Lorenzo SM, Alvarez R, Andrade E, Piccardo V, Francia A, Massa F et al. Periodontal conditions and associated factors among adults and the elderly: findings from the first National Oral Health Survey I Uruguay. *Cad Seude Publica* 2015;31(11):2425-36.
2. Vasthare R, Ankola AV, Ran ALY, Mansingh P. Geriatric oral health concern, a dental public health narrative. *Int J Comm Med Publ Health* 2019;6(2):883-8.
3. Rakic M, Vojvodic D, Schulean A. Periodontology for geriatric patients. *Curr Oral Health Reports* 2018;doi:10.1007/s40496-018-0169-z.
4. Lee W, McCulloch CA. Deregulation of collagen phagocytosis in aging human fibroblasts: Effects of integrin expression and cell cycle. *Exp Cell Res* 1997;237(2):383-93.
5. Perunovic N, Rakic M, Jankovic S, Aleksic Z, struillou X, Cakic S et al. MMP-9-1562 C > T (rs 3918242) promoter polymorphism as a susceptibility factor for multiple gingival recession. *Int J Periodontitis Restorative Dent* 2005;35:Inetnet.
6. Shay K. Infectious complications of dental and periodontal diseases in the elderly population. *Cl Infec Dis* 2002;34:1215-25.
7. Persson GR. Periodontal complications with age. *Periodontol* 2000;201878:185-94.
8. Ship JA, Beck JD. Ten-year longitudinal study of periodontal attachment loss in healthy adults. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996;81(3):281-90.

9. Sembiring IA, Adam AM. Periodontal management of the elderly with medical compromise: a case report. *J dentomaxillofac sci* 2019;4(1):57-60.
10. Delwel S, Binnekade TT, Perez SGM, Hertogh CP, Scherder EJA, Lobbezoo F. Oral hygiene and oral health in older people with dementia: a comprehensive review focus on oral soft tissues. *Clin Oral Invest* 2018;22:93-108.
11. Peterson PE, Yamamoto T. Improving the oral health of elder people: the approach of the WHO Global Oral Health Programme. *Comm dent Oral Epidemiol* 2005;33:81-92.
12. Peterson PE. The World Health Organization Health Report 2003.: continuous improvement of oral health in the 21st century- the approach of the WHO Global Oral Health Programme. *Comm Dent Oral Epidemiol* 2003;31:3-24.
13. Thomson WM. Dental caries experience in older people over time: what can the large cohort studies tell us? *Br Dent J* 2004;196:89-92.
14. Okoje VN, Adebusoye LA, Olowookere F, Alonge FO. Oral diseases in Geriatric patients; patterns of presentation and challenges of management in a developing economy. *Med Res Arch* 2019;7(9):1-12.
15. Gil-Montoya JA, de Mello ALF, Barrios R, Gonzalez-Moles MA, Bravo M. Oral health in the elderly patient and its impact on general well-being: a nonsystematic review and. *Clin Interv Aging* 2015;10:461-7.
16. Wong FMF, Ng YTY, Leung WK. Oral health and its associated factors among older institutionalized residents- A systematic review. *Int J Environment Res Pub Health* 2019;16:4132-81.
17. Gonsalves WC, Wrightson AS, Henry RG. Common oral conditions in older persons. *Am Fam Physician* 2008;78(7):847-52.
18. Lopez R, Smith PC, Gostemeyer G, schwendicke F. Aging, dental caries and periodontal diseases. *J Clin Periodontol* 2017;44(Suppl 11):S145-52.
19. Kassebaum NJ, Bernabe E, dahiya M, Bhandari B, Murray CJ, Marcenes W. Global burden of severe periodontitis in 1990-201: A systematic review and meta-regression. *J Dent Res* 2014;93:1045-53.
20. Ramsay SE, whincup PH, Watt RG, Tsakos G, Papacosla AO, Lennon LT et al. Burden of poor oral health in older age : findings from a population-based study of older British men. *BMJ Open* 2015;5:e009470;doi:10.136.
21. Braihmoh OB, Alade GO. Gingivitis and periodontitis among the elderly in Port Harcourt Nigeria: A population-based study. *J Oral Health Comm Dent* 2019;10.005/jp-journals-10062-0038.
22. Ojehanon PI, Ehizele AO. Periodontal conditions seen in a group of Nigerian older adult patients. *J Interdiscp Dent* 2016;6:21-7.
23. Botelho J, Machado V, Proence L, Oliveira MJ, Cavacas MA, Amaro L et al. Perceived xerostomia, stress and periodontal status impact on elderly oral health-related quality of life: findings from a cross-sectional survey. *BMC Oral Health* 2020;20:199-208.

