



Research Article

ASSESSMENT OF PERIODONTAL HEALTH AMONG GERIATRIC RESIDENTS IN OLD AGE HOMES: AN EPIDEMIOLOGICAL STUDY

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ABSTRACT

Background: Periodontal diseases are the most commonly found oral health problem among the elderly. Assessment of periodontal disease in a population is an important step in planning effective prevention and control programs for periodontal disease. **Aim:** The aim of the study was to evaluate the oral health of the elderly living in old age homes of Manipur. **Material and Methods:** An observational study was carried out among 250 elderly from old-age homes of Manipur, included structured questions regarding on socio demographic variables, daily oral health practice, systemic conditions, drug history and personal oral habits. Simplified oral hygiene index (OHIS) and Periodontal index (PI) were recorded. **Results:** The results of the study showed that the mean OHI-S score of males was 4.78 ± 0.31 & for females was 3.02 ± 0.46 . The difference as statistically significant in males compared to females with $p < 0.05$. The periodontal index shows that higher score was observed among males with a mean score of 5.98 ± 0.83 and for females was 4.7 ± 0.96 . The difference was statistically significant in males compared to females with $p < 0.05$. **Conclusion:** Based on the results, it can be concluded that oral health status of the geriatric population living at the old age home of Manipur is very poor.

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INTRODUCTION

- Aging is defined as a progressive deterioration of physiological functions with age, including a decrease in productivity¹. It is universal and inevitable for all of us. The United Nations defines a country as aging, where the proportion of people over 60 years reaches 7%. By 2000, India has expected that proportion (7.7%) and is expected to reach 12.6 % in 2025².
- Oral disease, owing to their high prevalence in the elderly, pose a major health – care concern in this population. Elders have very limited access as well as functional physical limitations which makes them more prone to oral diseases³.
- Furthermore, lack of financial support, institutionalization, and the presence of physical impairment limits maintenance of oral hygiene which is often associated with poor oral health among the elderly^{4,5}.
- The oral health related problems in geriatric patients are different from those seen in younger individuals⁶.
- In terms of the provision of dental/periodontal care for older adults, there exists a link between dental caries and periodontitis, which is generally not present in younger individuals⁶.

- Tooth loss in the elderly can be considered as a disability, manifesting as reduced masticating efficiency and poor dietary choices⁷, and resulting in other challenges in daily functioning, including difficulty speaking and greater psychological stress⁸.
- Systemic disease can also affect the oral cavity. Number of periodontal systemic interactions that are relevant in an ageing population that is diabetes, respiratory disease, stroke, myocardial infraction, osteoporosis, arthritis, Alzheimer’s disease⁹.
- Assessment of periodontal disease in a population is an important step in planning effective prevention and control programs for periodontal disease. Elderly people living in old age homes have even poorer dental health than those residing at home. Residents rarely receive more than emergency treatment for dental pain and discomfort¹⁰.
- Adequate access to dental care can reduce morbidity and mortality, preserve function, and enhance overall quality of life.
- Moreover, studies have indicated that the dental status of the institutionalized older people is generally poor.
- So, an integrated care approach to promote oral health among elderly people residing at the old age homes should be developed¹¹.

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- Hence the present study was intended to assess the periodontal health status of elderly people residing as inmates at the old age homes of Manipur, India.

Aim and Objectives

To study the health problems of the elderly population. The aim of the study was to evaluate the oral health of the elderly living in old age homes of Manipur. The data on their general health and oral hygiene were gained through questionnaire. Clinical condition was evaluated by oral examination.

MATERIAL AND METHODS

The present observational study was conducted in Manipur. A total of 350 subjects were selected from old age homes of Manipur. The study population who was present on the day of examination was considered and the age ranged from 60 years and above. residents of old age homes of Manipur. Permissions for conducting study and clinical examinations on institutionalized elderly population were obtained from the respective authorities of old age homes.

Inclusion Criteria

- All the inmates aged 60 years and above.
- Subjects present at the old age homes on the day of examination.

Exclusion Criteria

Inmates who refused for the oral examination.

The data were collected by an interview with the help of proforma which designed to collect the information of the demographic details (age, sex, education, and marital status), name of the old age home, duration of stay in the old age home, medical history, history of medication used, dental visit, last visit, personal history (smoking, smokeless tobacco, pan chewing, and alcohol), oral hygiene practices, and diet.

In the clinical oral examination, oral mucosa, Simplified oral hygiene index (OHIS) and Periodontal index (PI) were recorded dentition status and treatment needs.

Statistical Analysis

All the collected data were analysed and tabulated in MS-Excel. The SPSS (Statistical Packages for Social Sciences). 25.0, IBM, India Software was used to analyze the data. Frequent distribution was used to evaluate frequencies in this study. The student’s unpaired t- test was used for comparison of study variables with age and gender respectively. The p – value < 0.05 tells us about the statistical significance at 95 % CI.

RESULTS

Table 1 Age and gender wise distribution of geriatric patients in old age homes

Gender	Age (in years)		Total	χ ² value	p-value
	60-69	70 and above			
Male	71(20.29%)	32(9.14%)	103(29.43%)	37.183	<0.0001*
Female	81(23.14%)	166(47.43%)	247(70.57%)		
Total	152(43.43%)	198(56.57%)	350(100%)		

*Significant when p<0.05

Table 1: shows that age and gender wise distribution of geriatric population in old age homes and it was observed that out of 350(100%) of patients majority 247(70.57%) of females and 103(29.43%) of males. Among the females 166(43.44%) of 70 and above years & 81(23.14%) of patients age was 60-69 years, also in males 71(20.29%) of patients age was 60-69 years and 32(9.14%) of patients age 70 & above years.

Table 2 History of disease of geriatric patients in old age homes

History	Frequency	Percentage
Diabetes	173	49%
Hypertension	288	82%
Other co-morbidities	320	91%

Table 2: It was observed in this study that majority 91% of geriatric patients had co-morbidities, 82% of patients were hypertensive whereas 49% were diabetic.

Table 3 Distribution of personal habits of geriatric patients in old age homes

Personal Habits	Frequency	Percent
Pan Chewing		
Yes	161	46
No	189	54
Smoking		
Yes	90	25.71
No	260	74.29
Alcohol		
Yes	118	33.71
No	232	66.29

While discussed about personal habits, among the study patients 46% of patients addicted in chewing pan followed by 25.71% of patients had smoking habits and 118(33.71%) of patients consume alcohol.

Table 4 Distribution of brushing habits of geriatric patients in old age homes.

Oral Hygiene Habits	Frequency	Percent
Type of Tooth Brush		
Soft	83	23.71
Medium	241	68.86
Hard	26	7.43
Brushing Techniques		
Vertical	20	5.71
Horizontal	36	10.29
Vertical + Horizontal	201	57.43
Circular	28	8
Circular + Vertical + Horizontal	65	18.57
Frequency of brushing		
Once	268	73.42
Twice	72	19.73
Thrice	10	2.74

While discuss about oral hygiene habits in this study it was found that out of 350(100%) of study patients majority 68.86% patients used medium tooth brush, 23.71% patients used soft tooth brush and remaining 26(7.43%) participant used hard tooth brush, to study brushing techniques majority 201(57.43%) of patients not followed correct direction use vertical + horizontal technique and 65(18.57%) of patients follow correct direction of use of tooth brush i.e. circular + vertical + horizontal. Majority 268(73.42%) of participant brush only once in day followed by 72(19.73%) twice in day and 10(2.74%) thrice in day respectively.

Table 5 Age wise association of study variables (dental status) of geriatric patients in old age homes

Study Variables	Age (in years)		Total	χ ² value	p-value
	60-69 (n=152)	70 and above (n=198)			
<i>Highest Recession Grade</i>					
I	11(3.14%)	21(6%)	32(9.14%)	4.6	0.2
II	20(5.71%)	29(8.29%)	49(14%)		
III	51(14.57%)	47(13.43%)	98(28%)		
IV	70(20%)	101(28.86%)	171(48.86%)		
<i>Attrition</i>					
Localized	11(3.14%)	1(0.29%)	12(3.43%)	9.82	0.0017*
Generalized	141(40.29%)	197(56.29%)	338(96.57%)		
<i>Missing teeth</i>					
Absent	10(2.85%)	49(14%)	59(16.86%)	18.98	<0.0001*
Present	142(40.57%)	149(42.57%)	291(83.14%)		
<i>Highest PPD</i>					
4	68(19.43%)	44(12.57%)	112(32%)	29.41	<0.0001*
5	45(12.86%)	50(14.29%)	95(27.14%)		
6	39(11.14%)	104(29.71%)	143(40.86%)		
<i>Highest Mobility</i>					
0	36(10.29%)	0	36(10.29%)	81.27	<0.0001*
1	18(5.14%)	2(0.57%)	20(5.71%)		
2	21(6%)	30(8.57%)	51(14.57%)		
3	69(19.71%)	133(38%)	202(57.71%)		
4	8(2.29%)	33(9.43%)	41(11.71%)		

*Significant when p<0.05

The age wise association with dental status was done and it was observed that attrition, missing teeth, highest PPD and highest mobility except highest recession grade was found statistically significant with age (p<0.05).

Table 6 Comparison of age groups with OHI-S

Age groups	OHI-S				
	Mean	Std. Deviation	Mean Difference	t-test value	p-value
60-69 years	3.71	0.50	0.47	-3.380	0.001
70 years and above	4.18	0.38			

The mean OHI-S score was compared between 60-69 years and 70 years and above age groups using the unpaired t-test. The mean OHI-S score of 60-69 years age patient was 3.71±0.5 & for age group 70 & above years was 4.18±0.38. The difference was statistically significant in 70 years and above age group compared to 60-69 years age group with p<0.05.

Table 7 Comparison of age groups with Russel's periodontal index score

Age groups	Russel's periodontal index score				
	Mean	Std. Deviation	Mean Difference	t-test value	p-value
60-69 years	4.49	0.98	-1.41	0.197	0.844
70 years and above	5.91	0.84			

The mean Russel's periodontal index score was compared between 60-69 years and 70 years and above age groups using the unpaired t-test. The mean Russel's periodontal index score of 60-69 years age patient was 4.49±0.98 & for age group 70 & above years was 5.91±0.84. The difference was not statistically significant in 70 years and above age group compared to 60-69 years age group with p>0.05.

DISCUSSION

The present study was done among 60 years and above elderly residing in old age home of Manipur to evaluate the periodontal health.

According to medical history, hypertension 82% was most noticed. A study done by Jokstad *et.al*¹² in Skedsmo, Norway, stated that 89% of the subjects were receiving continuous medication which was similar to the present study.

While discussing about the oral hygiene habits in this study it was found that majority 68.86% participants used medium toothbrush, 23.71% used soft toothbrush and remaining 7.43% participant used hard toothbrush. Majority 73.42% of participant brush only once in day followed by 19.73% twice in day and 2.74% thrice in day respectively. In the study done by Roma M *et al* (2021)¹³ 52.11% participants maintain their oral hygiene brushing at least once in a day.

From this population, 48.86% were class IV recession and Class III were of about 28% and class II were 14% and in class I 9.14% and affected with recession found among males. In our present studies, highest PPD was seen among 70years and above when compared to other age groups. 6% for males had 6mm pocket depth and 23.4% had a pocket depth of 4-5mm. About 38.8% for female and 6mm pocket & 35.69% had a pocket depth of 4-5mm.

Qiao *et.al*¹⁴, conducted a study to find the periodontal status of the geriatric population in Haikou, China and found that prevalence rate of periodontal disorders was high, and men had a higher risk of periodontal pockets as compared to females was similar with our study. This finding is contradictory to our study.

Nisha Rani Yadav *et.al*³, conducted a study in old age homes of Delhi to assess the periodontal status and found that only 25.4% of the elderly had healthy periodontium and about 71.1% had a periodontal pocket of 6mm or more and 34.70% had 9-11mm LOA.

In our present study, about 40.8% had a periodontal pocket depth of 6mm. These differences might be due to small sample size.

In a study by Nguyen *et.al*¹⁵, it was observed that 60% of female had pocket depth of 4-5mm and 17.6 % had 6mm or more, about 64.6% of male had a pocket depth of 4-5mm and 24.4% had 6mm or more respectively.

The mean OHI-S score of males was 4.78±0.31 & for females was 3.02±0.46. The difference as statistically significant in males compared to females with p<0.05. Studies done by Roma M *et.al*¹³, found 52.11% had a good oral hygiene, assessed using the OHIS. In contradictory, mean value of OHIS score of 60-69 years age patient was 3.71±0.5 & for age group 70 & above years was 4.18±0.38, which was not similar to the present study.

On periodontal examination, higher score was observed among males with a mean score of 5.98±0.83 and for females was 4.7±0.96. The difference was statistically significant in males compared to females with p<0.05. The finding of the study was similar with a study done by Sabiha Shaheen *et.al* (2015)¹¹.

In the present study, none of the subjects was found to have a completely healthy periodontium. This finding was similar to

that reported by Holmgren *et al.* (1994)¹⁵ in their study on the Honk King Chinese. However, Rao *et al.* (1993)¹⁶ in their study on the rural elderly in Varanasi, India, reported that 8.5% of the subjects presented with a healthy periodontium.

From this population, missing teeth component was higher in the elderly aged 70 years and above (42.5%) when compared to other age groups. There is significant increase in the mean number of missing teeth as age advance. This finding was accordance with the study done by Roa *et al* (1999)¹⁸, Loh *et al* (1996)¹⁹.

But contrary with this study done by Cortes Martinicorena *et al.*, (1993)²⁰, Cruz *et al* (2001)²¹, & Rohit Agrawal (2015)¹⁰. Tooth loss may be due to caries, deleterious oral hygiene practices, insufficient supply of toothbrushes and toothpaste, tobacco related habit, lack of awareness and non-availability of nearby dental services as well as most importantly contributed by the periodontal disease which eventually result in loss of teeth.

Present studies have shown the strategies to improve the oral health of older adults residing in old age homes to achieve the highest oral health related quality of life.

Limitations

Study was carried out in a limited time period on a small sample of old ages homes thus may not be generalised to a great extent.

History of dental visits could have been taken this from the participants as these factors might have affected the periodontal health of these elderly.

This was an epidemiological survey, and the oral examinations was carried with a basic equipment's and under field conditions, rather than in a dental clinic with the used of extensive diagnostic tools. This may have miscalculated the extent of oral disease.

CONCLUSION

Based on the results of present study, it can be concluded that oral health status of the geriatric population living at the old age home of Manipur is very poor. Improving oral health care provision through regular dental visits and providing the necessary treatment to this population is an important step that old age homes should take.

Taken together the data of prevalence of oral diseases among the study population indicates more lack of awareness among the study population about oral diseases, oral hygiene practices, preventive measures and adverse effects of tobacco and lack of access to the needed services. The results also indicate a high prevalence of missing teeth, periodontal disease, and prosthetic needs. Further provision of oral health education regarding maintaining oral hygiene as well as enhancing self-care in these individuals is an important in improving periodontal health of these individuals.

References

1. Bhadauria US, Dasar PL, Sandesh N, Mishra P, Partridge, L., and Mangel, M. "Messages from mortality :the evolution of death rate in the old" Trends in ecology and evolution 1999;14(11):438-42.
2. Bhadauria US, Dasar PL, Sandesh N, Mishra P, Godha S. Assessment of oral health status and treatment needs among institutionalized elderly population of four major Cities of Madhya Pradesh. J Indian Assoc Public Health Dent 2019;17: 313-21
3. Yadav NR, Jain M, Sharma A, Jain V, Singh S, Singh A, Reddy VK, Tandon S. Periodontal health of the geriatric population in old-age homes of Delhi, India. J Indian Soc Periodontol. 2021 Sep-Oct;25(5):427-431. doi: 10.4103/jisp.jisp_193_20. Epub 2021 Aug 30. PMID: 34667387; PMCID: PMC8452175.
4. Jablonski RA, Munro CL, Grap MJ, Elswick RK. The role of biobehavioral, environmental, and social forces on oral health disparities in frail and functionally dependent nursing home elders. Biol Res Nurs. 2005; 7:75–82.
5. Gonsalves WC, Wrightson AS, Henry RG. Common oral conditions in older persons. Am Fam Physician. 2008; 78:845–52.
6. Lamster IB. Geriatric periodontology: how the need to care for the aging population can influence the future of the dental profession. Periodontol 2000. 2016 Oct;72(1):7-12. doi: 10.1111/prd.12157. PMID: 27501487.
7. Walls AW, Steele JG, Sheiham A, Marcenes W, Moynihan PJ. Oral health and nutrition in older people. J Public Health Dent 2000; 60: 304–307.
8. Roohafza H, Afghari P, Keshteli AH, Vali A, Shirani M, Adibi P, Afshar H. The relationship between tooth loss and psychological factors. Community Dent Health 2015; 32: 16–19.
9. Darby, I (2015). Periodontal considerations in older individuals. *Australian Dental Journal*, 60, 14–19. doi:10.1111/adj.12280.
10. Rohit Agrawal, Nalam Radhika Gautam, P Mahesh Kumar, Assessment of Dental Caries and Periodontal Disease Status among Elderly Residing in Old Age Homes of Madhya Pradesh, *Journal of International Oral Health* 2015; 7(8):57-64
11. Sabiha Shaheen S, Suhas Kulkarni, Dolar Doshi. Indian journal of dental research: official publication of *Indian Society for Dental Research* 26(5):493-499
12. Jokstad A, Ambjørnsen E, Eide KE. Oral health in institutionalized elderly people in 1993 compared with in 1980. Acta Odontol Scand 1996;54:303-8.
13. M R, Sen M, Mala K, Sujir N, Poojary D, Shetty NJ, Shenoy R, Saldanha S. Critical Assessment on Unmet Oral Health Needs and Oral Health-related Quality of Life Among Old Age Home Inhabitants in Karnataka, India. Clin Cosmet Investig Dent. 2021 May 17; 13:181-186. doi: 10.2147/CCIDE.S302824. PMID: 34040448; PMCID: PMC8139721.
14. Qiao LI, Wang X, Liu X, Gao Y. Analysis of periodontal health status and its related factors in the elderly in Haikou city. Chin J Geriatrics. 2017;36:97–101
15. Nguyen MS, Jagomägi T, Voog-Oras Ü, Nguyen T, Saag M. Oral health behaviour and oral health status of elderly vietnamese. Oral Health Prev Dent. 2018; 16:153–61.
16. Holmgren CJ, Corbet EF, Lim LP. Periodontal conditions among the middle-aged and the elderly in Hong Kong. Community Dent Oral Epidemiol 1994;22:396-402

17. Rao S, Homagain S, Singh BP. Periodontal status and treatment needs of an adult rural community. *J Pierre Fauchard Acad* 1993;7(2):72-8.
18. Rao A, Sequeira P, Peter S, Rajeev A. Oral health status of the institutionalized elderly in Mangalore, India. *Indian J Dent Res* 1999;10(2):55-61.
19. Loh T, Ow RK, Neo J, Khoo J, Lim LP. Tooth loss and coronal caries of elderly residents in Singapore. *Community Dent Oral Epidemiol* 1996;24(4):300-1.
20. Cortes Martinicorena FJ, Moreno Iribas C, Ardanaz Aicua E. Tooth loss and dental caries in an adult population in Navarra, Spain. *Community Dent Oral Epidemiol* 1993;21:172-3.
21. Cruz GD, Galvis DL, Kim M, Le-Geros RZ, Barrow SY, Tavares M, *et al*. Self-perceived oral health among three subgroups of Asian-Americans in New York City: A preliminary study. *Community Dent Oral Epidemiol* 2001;29(2):99-106

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