Original Article

Oral hygiene practice and oral health status of geriatric population in selected area of Rangpur, Bangladesh

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Abstract

Background: *Throughout the world, a demographic revolution is underway. The proportion of older people is growing faster than any other group. A growth spurt in the number of elderly persons has resulted from improvements in both social living conditions and medical care. This poses tremendous challenges to health and social policy planners, particularly because disease patterns will shift concurrently.* ***Objectives:*** *The present study was planned and carried out with the aim of assessment of the oral hygiene practice and oral health status among geriatric population.* ***Materials & Methods:*** *This cross sectional study was done among the geriatric population with a view to assess their oral hygiene practice and oral health status. Purposively selected 26 geriatric peoples were interviewed through a structured closed end questionnaire followed by a observational checklist.* ***Results:*** *In this study, it is found that most (84.6%) respondents brush their teeth regularly; more than half (57.7%) respondents brush their teeth twice; most (53.8%) of respondents brush their teeth after awake at morning, and 30.8% respondents brush 2-3 min; half of respondents use tooth brush and tooth paste. In this study, it is found that, respondents aged≥ 70 years have Decayed Missed Filled Teeth (DMFT) (mean ± SD) 5.20 5.72, OHI (mean ± SD) 2.56 01.87. We also found that, respondents have Plaque Index (PI) (mean ± SD) 1.29 1.50, and GI (mean ± SD) 0.20 0.44.* ***Conclusion:*** *Oral health is one of the important components of aging; due to the presence of oral disease, it can affect general health and quality of life of elderly people.*

Keywords: *Geriatric population, Oral Health Status, Oral Hygiene Practice.*

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Introduction

Throughout the world, a demographic revolution is underway. The proportion of older people is growing faster than any other group. A growth spurt in the number of elderly persons has resulted from improvements in both social living conditions and medical care. Approximately 600 million people are aged 60 years and over, and this number will double by 2025. This poses tremendous challenges to health and social policy planners, particularly because disease patterns will shift concurrently.[1] Globally, poor oral health among older people has particularly been seen in a high level of tooth loss, dental caries experience, and high prevalence rates of periodontal disease, xerostomia, and oral precancer/cancer. The increase of the elderly population would almost likely to result in the raising of the number of geriatric patients. United Nation classified elderly as people who are more than 60 years old.[2] Bangladesh would pose tremendous challenges in health status of this specific population since disease pattern would shift. Degenerative diseases such as cardiovascular disease, hypertension, cancer, and diabetes are prevalent in elderly. As a result of decreased fertility and increased life expectancy, the populations of most countries are ageing rapidly. The proportion of older persons in developed countries is currently much higher than in developing countries; however, from a global perspective the majority of older persons live in developing countries.

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A notable aspect of population ageing is the progressive demographic ageing of the older population itself. Health authorities worldwide are now confronting an increasing public health problem, including a growing burden of oral disease among older people.[3,4] Globally, poor oral health among older people has been illustrated particularly in high levels of tooth loss, dental caries experience, periodontal disease, xerostomia, and oral cancer.[5,6] Among the negative impacts on daily life of poor oral health are reduced chewing performance, constrained food choice, weight loss, impaired communication, low self-esteem and well-being.[7-9]

A systematic review of the scientific literature[7] was recently carried out to assess the impact of oral disease on the general health of older people. Strong associations were established between periodontal disease and diabetes, and tooth loss with poor nutrition. Obviously, such conditions influence the quality of life. Increased life expectancy without enhanced quality of life has a direct impact on public health expenditures and is becoming a key public health issue in the more developed countries. It will also be of major concern to developing countries and countries with high population densities and emerging economies, such as Bangladesh, China and India. Oral health for older people is a priority action area in the WHO Global Oral Health Programme. Age-friendly primary oral health care; disease prevention and oral health promotion are of major concern to WHO.[10,11]

WHO stated that impairment of all component of physical condition would be apparent in the elderly. Therefore, it would also happen in the oral mucosal condition. Dentist as health professional dealing with oral problems should be aware of the possible diverse condition of oral mucosa in elderly population and making assessment of the condition of oral health should always be integrated to the physical assessment of the elderly to ensure holistic geriatric patient care.[12,13] The Indonesian Basic Health Research in 2007 showed that the prevalence of oral health disease in elderly was 22.1%.[14] Nevertheless, data on oral health in geriatric patients in Bangladesh is still limited and scattered. Data presenting this condition would provide basic information for developing health policies especially to this particular population and to the overall population, in order to prevent and manage the existing conditions. The study was conducted to assess the oral hygiene practice and oral health status among the geriatric patients in Rangpur area of Bangladesh. This study explores recommendations for interdisciplinary collaborations, reviews the current and future needs of the geriatric population, discusses educational models and content, and expresses the need for leadership to address oral health disparities in the elderly.

Materials and Methods

This was a cross-sectional type of descriptive study conducted among old-aged population residing in an old-home in Rangpur district, Bangladesh over the period of 3 months from November 2014 to January 2015. Twenty six peoples residing in old-home was selected by purposive sampling technique. Written consent was taken from old-home authority & each of the respondents before data collection. In order to collect the data a structured closed end questionnaire and an observational checklist was prepared at the beginning of the study considering all objects and variables of the study. It was then pre-tested. After making necessary alternations and corrections, a final questionnaire was developed in both Bengali and English. Data were collected by the researcher themselves by face to face interview separately among the respondents. To assess the oral hygiene practice and oral health status among the geriatric patients DMFT, Oral Hygienie Index, Plaque Index, and Gingival Index were assessed. Data analysis was done using Statistical Package for Social science (SPSS 19) for Windows version and Microsoft Excel.

Results

In this study it is found that most (84.6%) respondents brush their teeth regularly. More than half (57.7%) of respondents brush their teeth twice and only (7.7%) respondents brush thrice daily. Majority (53.8%) of respondents brush their teeth after awake at morning and least (7.7%) respondents brush at bathing; 30.8% respondents brush 2-3 min and 11.5% brush 3-4 min. More than half (57.70%) of respondents brush in vertical stroke; half of respondents use tooth brush and tooth paste. Most (84.6%) use tooth pick or stick for inter dental cleaning (Table I).

Table I: Practice of oral hygiene by the respondents (n=26)

Parameter	N	%
Regularity on Teeth Brushing		
Yes	22	84.6
No	4	15.4
Total	26	100.0
Frequency of Tooth Brushing		
1	4	15.4
2	15	57.7
3	2	7.7
5	5	19.2
Total	26	100.0
Time of Tooth Brushing		
Morning after Awake	14	53.8
Morning After Break Fast	6	23.1
Every Day in Bathing	2	7.7
Before Every Prayer	4	15.4
Total	26	100.0
Duration of teeth Brushing		
1-2 min	5	19.2
2-3 min	8	30.8
3-4min	3	11.5
4-5 min	7	26.9
>5 min	3	11.5
Total	26	100.0
Teeth Brushing Technique		
Vertical Stroke	11	42.3
Horizontal Stroke	15	57.7
Total	26	100.0
Tooth Brushing Materials		
Tooth Brush & Tooth Powder	13	50.0
Tooth Brush & Tooth Paste	8	30.8
Meswak	3	11.5
Tooth Powder & Finger	2	7.7
Total	26	100.0
Inter Dental Cleaning		
Swing Thread	2	7.7
Needle/Pin	2	7.7
Stick/ tooth pick	22	84. 6
Total	26	100.0

In this study it is found that, respondents aged ≤ 60 years have DMFT (mean ± SD) 7.00 ± 7.39; respondents aged 60-70 years have DMFT (mean ± SD) 9.82 ± 5.45; and respondents aged ≥ 70 years have DMFT (mean ± SD) 5.20 ± 5.72. It is found that, respondents aged ≤ 60 years have OHI (mean ± SD) 1.11 ± 1.45; respondents aged 60-70 years have OHI (mean ± SD) 2.89 ± 2.49; and respondents aged ≥ 70 years have OHI (mean ± SD) 2.56 ± 01.87. It is found that, respondents aged ≤ 60 years have PI (mean ± SD) 0.25 ± 0.22; respondents aged 60-70 years have PI (mean ± SD) 1.00 ± 1.08; and respondents aged ≥ 70 years have PI (mean ± SD) 1.29 ± 1.50. It is found that, respondents aged ≤ 60 years have GI (mean ± SD) 0.26 ± 0.51; respondents aged 60-70 years have GI (mean ± SD) 0.21 ± 0.46; and respondents aged ≥ 70 years have GI (mean ± SD) 0.20 ± 0.44 (Table II & Figure 1).

Table II: Oral health status of the respondents in relation to age (n=26)

Age Group		DMFT	Oral Hygiene Index	Plaque Index	Gingival Index
60 years	Mean	7.00	1.1130	.2450	.2640
	Std. Dev.	7.379	1.15804	.22087	.51541
	n	10	10	10	10
60-70 years	Mean	9.82	2.8982	.9991	.2127
	Std. Dev.	5.456	2.49223	1.08729	.46596
	n	11	11	11	11
70 years	Mean	5.20	2.5620	1.2960	.2000
	Std. Dev.	5.762	1.87665	1.50577	.44721
	n	5	5	5	5
Total	Mean	7.85	2.1469	.7662	.2300
	Std. Dev.	6.342	2.05940	1.02072	.46396
	n	26	26	26	26

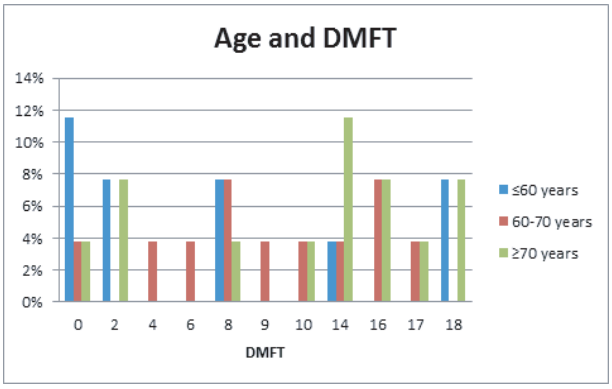

Figure 1: DMFT of the respondents in relation to age

In this study it was found that, male respondents have DMFT (mean ± SD) 8.71 ± 6.46 and female respondents have DMFT (mean ± SD) 6.22 ± 6.12. It was found that, male respondents have OHI (mean ± SD) 2.57 ± 2.07 and female respondents have OHI (mean ± SD) 1.32 ± 1.89. Male respondents have PI (mean ± SD) 1.02 ± 1.17 and female respondents have PI (mean ± SD) 0.27 ± 0.31. It was found that, male respondents have GI (mean ± SD) 0.21 ± 0.45 and female respondents have GI (mean ± SD) 0.25 ± 0.51 (Table III & Figure 2).

Table III: Oral health status of the respondents in relation to sex (n=26)

Sex		DMFT	Oral Hygiene Index	Plaque Index	Gingival Index
Male	Mean	8.71	2.5729	1.0200	.2147
	Std. Dev.	6.469	2.07036	1.17518	.45292
	n	17	17	17	17
Female	Mean	6.22	1.3422	.2867	.2589
	Std. Dev.	6.119	1.88856	.31333	.51084
	n	9	9	9	9
Total	Mean	7.85	2.1469	.7662	.2300
	Std. Dev.	6.342	2.05940	1.02072	.46396
	n	26	26	26	26

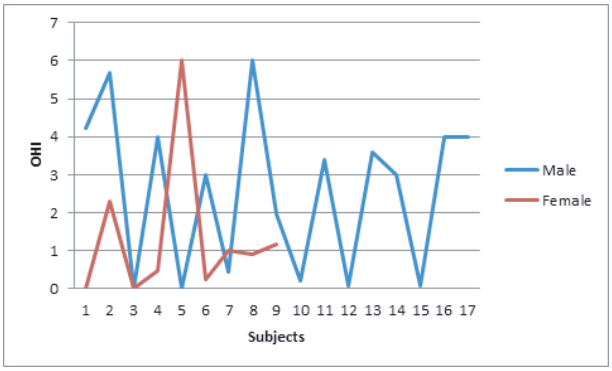

Figure 2: Oral hygiene index of the respondents in relation to sex

Discussion

Oral health conditions in older people comprise a considerable public health problem in the majority of countries. Significant disparities are observed in epidemiologic indicators of oral disease. The prevalence rates of tooth loss and experience of oral problems vary substantially by WHO Region and national income. Experience of oral problems among older people is high in low income countries; meanwhile, access to health care is poor, in particular in rural areas. Although tooth brushing is the most popular oral hygiene practice across the world, regular tooth brushing appears less common among older people than the population at large.

In this study, 38.5% respondents were < 60 years and 19.2% were >70 years. Recent available studies[15] showed that in the 4th quarter of 2010, 24% of Polish people at the age of 45-59 years receive public dental services.[16] The global population is increasing at an annual rate of 1.2%, while the population of those 65 years or older is increasing at a rate of 2.3%. About 600 million people are currently aged 60 years or older, and this number is expected to double up by 2025. By 2050, there will be 2 billion older people, 80% of them living in developing countries.[17] Geriatric populations have higher rates of comorbid diseases compared with younger cohorts. There is increasing scientific evidence in the medical and dental professions that oral health and systemic diseases are related. Dental professionals should intercollaborate with medical

professionals when systemic conditions influence oral health care. In particular, this practice is less frequent in low income countries; in contrast. Oral health services are available in developed countries; however, the use of such services is low among the older people. Lack of financial support from government and/or lack of third party payment systems render oral health services unaffordable to them. Health promotion programs targeting older people are rare and this reflects the lack of oral health policies. Opportunities for oral health programs for old-age people are related to updated information on the burden of oral disease and need for care, fair financing of age-friendly primary health care, integration of oral health into national health programs, availability of oral health services, and ancillary personnel. The integration of oral health into national general health programs may be effective to improve the oral health status and quality of life of this population group.[18]

In a study, the institutionalized participants had poorer oral health than the non-institutionalized individuals was seen to increase with age.[19] In this study it is found that, respondents aged ≤ 60 years have DMFT (mean ± SD) 7.00 ± 7.39; respondents aged 60-70 years have DMFT (mean ± SD) 9.82 ± 5.45; and respondents aged ≥ 70 years have DMFT (mean ± SD) 5.20 ± 5.72 (Table II). In a previous study,[20] the caries prevalence among dentate subjects was 96.3% and which is concordance with Indian elderly population who has caries prevalence and experience of 100%.[21] However, in another study on elderly population of South Delhi, India[22] 54.5% had caries. The reason for caries prevalence in the past study could be because of geriatric health program operational in urban area of South Delhi and its adjoining villages. In a study by Mattin and Smith[23] on Asians in Southampton, 44.9 % had experienced caries. Our respondents' dental status was worse than in Lockers et al.[24] study where the participants had on average 7 teeth being ten years older. Furthermore, our data were in contrast to the Japanese study where the mean age of participants was four years less than ours but almost 80% of them had 20 or more teeth.[25] It is found that, respondents aged 60-70 years have OHI (mean ± SD) 2.89 ± 2.49; and respondents aged ≥ 70 years have OHI (mean ± SD) 2.56 ± 01.87. The study found that, respondents aged ≤ 60 years have PI (mean ± SD) 0.25 ± 0.22. It can be anticipated that with increase in age the teeth were lost due to dental caries. It is found that, respondents aged ≤ 60 years have GI (mean SD) 0.26±0.51; respondents aged 60-70 years have GI (mean ± SD) 0.21 ± 0.46; and respondents aged ≥70 years have GI (mean ± SD) 0.20 ± 0.44 (Table III). A study in Chennai city using cluster sampling methodology found the overall prevalence of caries was 67.3% and mean caries experience was 7.95 ± 9.67. The oral health status of institutionalized elderly people was found to be poor.[26] A study on geriatric patients at Geriatric Policlinic in Cipto Mangunkusumo Hospital found mean of DMF-T score 4.68 ± 2.893, OHI-S 2.790 ± 1.102 which is lower than this study. The study showed that poor oral health status and pathological oral lesion found in elderly population. Systematic oral examination of the elderly is of considerable importance and ought to be carried out regularly by a dentist in collaboration with the physician; making holistic management of the elderly properly performed.[21]

Conclusion

Oral disease can affect general health and quality of life of elderly people. Major problems found in elderly include oral health and causing impairment in its function. The elder aged population experiences varying levels of oral health among their diverse demographic subgroups. For those in poverty, experiencing social isolation, residing in long-term care institutions, and with complex medical illness, oral health care may be unreachable. Various models of training, education, and community, public, and professional collaboration have been proposed, yet few strategies have been implemented. Interdisciplinary approaches that bring interested partners together as equal stakeholders may create faster tracks in improving access to health care for those geriatric patients.

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References

1. Peterson PE, Yamamoto T. Improving the oral health of older people: the approach of the WHO Global Oral Health Programme. Community Dent Oral Epidemiol. 2005;33: 82-92.

2. World Health Organization. Improving Oral Health amongst the Elderly. http://www.who.int/oral_ health/action/groups/ en/ index1.html. Accessed 16/10/2011.

3. Petersen PE, Ueda H. Oral health in ageing societies. Integration of oral health and general health. Geneva: WHO, 2006.

4. Harford J. Population ageing and dental care. Comm Dent Oral Epidemiol. 2009;37:97-103.

5. Schou L. Oral health, oral health care, and oral health promotion among older adults: social and behavioral dimensions. In: Cohen, LK, Gift, HC. Disease Prevention and Oral Health Promotion; Copenhagen: Munksgaard. 1995.

6. Kandelman D, Petersen PE, Ueda H. Oral health, general health, and quality of life in older people. Spec Care Dent. 2008; 28:224-236.

7. Jensen PM, Saunders RL, Thierer T, Friedman B. Factors associated with oral health-related quality of life in community-dwelling elderly persons with disabilities. J Am Soc Geriatric Dent. 2008;56:711-717.

8. Locker D, Clarke M, Payne B. Self-perceived oral health status, psychological well-being, and life satisfaction in an older adult population. J Dent Res. 2000;79:970-975.

9. Locker D, Matear D, Stephens M, Jokovic A. Oral health-related quality of life of a population of medically compromised elderly people. Comm Dent Health. 2002; 19:90-97.

10. Petersen PE, The World Oral 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.

11. Petersen PE. World Health Organization global policy for improvement of oral health - World Health Assembly 2007. Int Dent J. 2008;58:115-121.

12. Petersen PE. Global policy for improvement of oral health in the 21st century - implications to oral health research of World Health Assembly 2007, World Health Organization. Community Dentistry and Oral Epidemiology 2009;37:1-8.

13. Taiwo JO, Kolude B, Akinmoladun V. Oral mucosal lesions and temporomandibular joint impairment of elderly people in the South East Local Government Area of Ibadan. Gerodontol. 2009;26:291-324.

14. Evans CA, Kleinman DV. The surgeon general's report on America's oral health: opportunities for the dental profession. JADA. 2000; 3(12):1721-1728.

15. Aji K, Yuniardini SW, Febrina R. Oral Health and Salivary Profiles of Geriatric Outpatients in Cipto Mangunkusumo General Hospital. Int J Dent Res 2010;17(2):53-57.

16. Rodakowska et al. Quality of life measured by OHIP-14 and GOHAI in elderly people from Bialystok, north-east Poland. BMC Oral Health. 2014:14:106.

17. Marsha AP, Eleanor PS. Oral Health Disparities among the Elderly: Interdisciplinary Challenges for the Future. J Dent Edu. 2003;67(12):1327

18. Mealy BL, Ocampo GL. Diabetes and periodontal disease. Periodontol 2007;44:127-153.

19. Petersen PE, Kandelman D, Arpin S, Ogawa H. Global oral health of older people - Call for public health action. Comm Dent Health. 2010;27(2):257-268.

20. Pia LJ, Manuel SP, Nieves LE. Effect of oral health dental state and risk of malnutrition in elderly people. Geriatr Gerontol Int. 2013;13:43-49.

21. Vinita AM, Rajesh AVE, Preetha EC, Navin I, Chandrasekara VR. Oral health status and treatment needs of geriatric population of old age homes of Chennai city, India. J Oral Health Res. 2010;1(2):81-85

22. Goel P, Singh K, Kaur A, Verma M. Oral healthcare for elderly: Identifying the needs and feasible strategies for service provision. Indian J Dent Res. 2006;17:11-21.

23. Shah N. Gender issues and oral health in elderly Indians. Int Dent J. 2003;53:475-484.

24. Mattin D, Smith JM. The oral health status, dental needs and factors affecting utilization of dental services in Asians aged 55 years and over, resident in Southampton. Br Dent J. 1991;170:369-372.

25. Locker D, Matear D, Stephens M, Lawrence H, Payne B. Comparison of the GOHAI and OHIP-14 as measures of the oral health-related quality of life of the elderly. Comm Dent Oral Epidemiol. 2001;29:373-381.

26. Daniel K, Poul EP, Hiroshi U. Oral health, general health and Quality of life in Older People. Spec Care Dentist 2008; 28(6):224-236.