RESEARCH ARTICLE

IMPACT OF ORAL HEALTH ON THE ELDERLY – ARE THEY AWARE ENOUGH? – A CROSS SECTIONAL STUDY IN A SLUM OF KOLKATA

Aparajita Dasgupta, Somak Majumdar, Somnath Das, Mahul Mukhopadhyay

Department of Community Medicine, All India Institute of Hygiene and Public Health, Kolkata, West Bengal, India

Correspondence to: Somak Majumdar (somakm88@gmail.com)

ABSTRACT

Background: Oral health is an integral component of general health and is essential for general well-being, especially among the elderly people, where poor oral health forms a deadly concoction with non-communicable diseases and this has a devastating effect on the overall quality of life. Oral diseases restrict their activities both inside and outside the house with both functional and psychosocial impact.

Aims & Objectives: To find out the awareness about oral health and impact of oral health on the quality of life of geriatric population.

Materials and Methods: The present cross-sectional study was undertaken in a slum of Chetla, under the purview of Urban Health Centre, All India Institute of Hygiene and Public Health, Kolkata. Response to each question in the questionnaire was given a weighted score and the composite scores assessed the awareness and impact of oral health among the study population.

Results: Out of a total of 145 elderly persons, the mean (SD) knowledge score was 5.56 (2.619) and the mean (SD) overall impact score was 32.89(16.31). The prevalence % of all the domains were >50% and the mean score of each domain was >2 which reflected a high impact of oral health on the quality of life of the geriatric population. Also decreased knowledge scores (OR 0.464, 95% CI 0.224-0.963) were significantly associated with overall oral health impact on daily life.

Conclusion: There is a need to provide sensitive and effective oral health services that are accessible, appropriate, acceptable and affordable to the elderly.

Key Words: Oral Health; Impact; Quality of Life; Geriatric; Slum

Introduction

Oral health means more than just good teeth; it also means being free of chronic pain in the mouth or in the facial region; the absence of oral and throat cancer, oral sores, and birth defects such as cleft lip and palate; freedom from periodontal (gum) disease, tooth decay and tooth loss, or many other diseases and disorders that affect the oral, dental and craniofacial tissues, collectively known as the craniofacial complex.[1] The craniofacial complex allows us to speak, smile, kiss, touch, smell, taste, chew, swallow, and to cry out in pain. It provides protection against microbial infections and environmental threats.

Oral health is an integral component of general health and is essential for wellbeing. There is evidence to prove the interrelationship between oral and general health.[2] Severe periodontal disease, for example, is associated with diabetes. The strong correlation between several oral diseases and non-communicable chronic diseases is primarily a result of the common risk factors like many general disease conditions have oral manifestations that increase the risk of oral disease. So, these form part of a vicious cycle. Despite great successes in improving the oral health of populations globally, problems still remain in many communities around the world, particularly among the underprivileged groups in developing countries.[3] Elderly people can be referred to, as such a susceptible and underprivileged group, where poor oral health may form a deadly connection with non-communicable diseases and may have a devastating effect. Moreover, the psychosocial impact of oral diseases often significantly diminishes the quality of life, especially in older people.

The age distribution of the world's population is changing. With advances in medicine and prolonged life expectancy, the proportion of older people will continue to rise worldwide.[4] By 2050, there will be 2 billion people over the age of 60, 80% of them living in developing countries.[5] The growth in this population is staggering, posing tremendous challenges in caring for the ageing population.

The interrelationship between oral health and general health is particularly pronounced among older people. Poor oral health can increase the risks to general health and, with compromised chewing and eating abilities, affect nutritional intake.[7] The high prevalence of multi-medication therapies in this age group may further complicate the impact on oral health. Other relevant

issues include high sugar content diets, inadequate oral hygiene owing to poor dexterity, alcohol/ tobacco use and risk factors that are detrimental to oral health.[8] Thus as people age, their susceptibility to chronic and life-threatening diseases as well as acute infections increases, exacerbated by a compromised immune system.[6] The consequences of these diseases and conditions are significant, leading to disabilities and reduced quality of life. Oral diseases are usually progressive and cumulative. The process of ageing may directly or indirectly increase the risk of oral diseases and tooth loss, which are compounded by poor general health, illnesses or chronic diseases.[7]

Barriers to oral health care among the elderly are considerable. Impaired mobility impedes access to oral health care.[9] The situation is worsened in developing countries where least importance is given to oral health services. Given that some older people may experience financial hardship following retirement, the cost or perceived cost of dental treatment, together with negative attitudes to oral health, may deter them from visiting a dentist.[9,10]

Till now, very few studies especially in this part of the country, have been conducted which has assessed the impact of oral problems and awareness about oral hygiene on the functional and psychosocial aspects of geriatric population. Thus, it is strongly felt that such a study is the need of the hour since it will help the policy makers and health administrators to comprehend the real situation of oral problems among our aged population and its impact on their day-to-day life, which on the other hand, will help them to organize and execute a high quality, appropriate and effective program for the mitigation of the suffering of the old people at large.

With the above milieu in mind, a study was planned, approved by the Institutional Ethics Committee and then conducted among a population aged 60 years and above in a slum of Kolkata with the following objectives ---

- To find out the awareness about oral hygiene among the geriatric population in a slum of Kolkata.
- To assess the impact of oral hygiene on the quality of life of the study population.
- To elicit the predictors of oral health knowledge and oral health impact in the study population.

Materials and Methods

Study Design: The study was analytical in nature and cross-sectional in type. Data collection was done through interview and clinical examination.

Study Setting: The study was conducted in Chetla, which is a slum in Kolkata, West Bengal, and is the urban field practice area of All India Institute of Hygiene and Public Health, Kolkata. The All India Institute of Hygiene and Public Health (AIIH&PH) was established on 30th December, 1932 with a generous assistance from the Rockefeller Foundation. It is devoted to teaching and research in various disciplines of public health and to develop health manpower by providing post-graduate training facilities of the highest order. The Urban Health Centre, Chetla caters to a population of 33,138 people and provides comprehensive health care services to them.
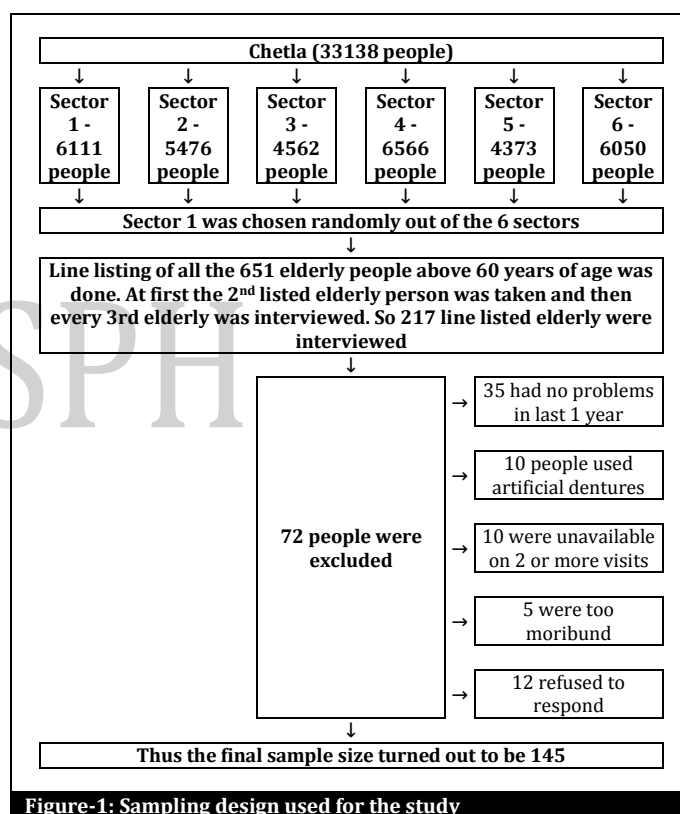

Figure-1: Sampling design used for the study

Sampling Design: The Urban Health Centre, Chetla caters to a slum population of 33,138 people (figure 1). The whole slum area has been divided into 6 sectors. Sector 1 was chosen randomly out of the 6 sectors. Line listing of all the 651 persons aged 60 years and above was done and 217 such individuals were identified by systematic random sampling (every 3rd elderly was considered). All the persons were included in the study, except those who (1) did not have any oral problems during the past year; (2) used dentures; (3) were on some dental medications; (4) were unavailable on 2 or more visits; (5) were too moribund to respond to the

researcher's queries; and (6) refused to respond to the questions. So 72 such persons were excluded from the study and the sample size was 145.

Study Period: The study was conducted for a period of 3 months (September – November, 2013).

Tools and Techniques: The interview was conducted with a pre-designed and pre-tested schedule after obtaining informed consent from each participant. This questionnaire was judged by a group of experts of the institute, where necessary corrections were made to enhance the face validity and content validity. The questionnaire was then translated to Bengali which was translated back into English. The questions in retranslated English version were matched with the originally developed English questionnaire and necessary modifications were made so that there was unambiguity and clarity in the questionnaire. This English questionnaire was finally translated into Bengali. Thus the final Bengali questionnaire was so constructed that it had semantic equivalence with the original English questionnaire. Also utmost care was taken to make the language as simple as possible so that the respondents, even if illiterate, could understand the questions easily. The questionnaire had 3 parts:

- Part 1: to elicit the socio-demographic characteristics (age, sex, religion, type of family, literacy, occupation, per capita income) of the sample population.
- Part 2: to elicit the knowledge among the participants about oral hygiene and presence of any oral problems or any problems in the recent past (1 year).
- Part 3: to elicit the functional and psychosocial impacts of oral problems in the participants, using the oral health impact profile (OHIP-14) questionnaire.

Each knowledge question was given a best possible score of 1 and the worst possible option was given a score of 0. Those who achieved greater than median score were considered to have good score and those equal to or below it were considered to have bad score. For the total impact score, items were scored on a Likert frequency scale, as follows: never, hardly ever, occasionally, fairly often and very often (coded from 0 through 4, respectively). The sum of the item scores were then calculated which had a range from 0 to 56 with higher values indicating a higher impact.

Oral Health Impact Profile Questionnaire (OHIP-14): The Oral Health Impact Profile (OHIP) was developed with the aim of providing a comprehensive measure of self-reported dysfunction, discomfort and disability attributed to oral conditions. These impacts were intended to complement traditional, oral and epidemiological indicators of clinical disease, thereby providing information about the "burden of illness" within populations and the effectiveness of health services in reducing that burden of illness. The original version of the OHIP-49 included 49 items but was too long and Slade [1977] developed a shorter version of 14-item version called as OHIP-14. The OHIP-14, a short form of the OHIP-49, consists of 2 items for each of the 7 subscales in the source instrument (functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap). Each item asks about the presence of a functional or psychosocial impact associated with problems involving the teeth, mouth and dentures. Items are scored on a Likert-type frequency scale, as follows: never, hardly ever, occasionally, fairly often and very often (coded from 0 through 4, respectively). The sum of the item scores are then calculated, which may range from 0 to 56 with higher values indicating a higher impact.

Data Analysis: Data were entered, compiled and analyzed with the help of SPSS version 17 software.

Results

Our study was conducted on 145 individuals aged 60 years and above. Table 1 shows that out of 145 individuals, 78 (53.8%) were males and 67 (46.2%) were females, the M:F ratio being 1.164:1. The age range was 60-85 years with the mean age of 71.71 ± 6.208 years and the median age of 71 years. 49.6% of the study population was in the age range of 66-75 years, 20% in the age group of 61-65 years, 20.7% in 76-80 years and 9.7% were above 80 years of age. Among the study population, 96 (66.2%) were Hindus and 49 (33.8%) were Muslims. Out of the 145 respondents, 55 (37.9%) were illiterate and 41 (28.3%) had primary education. Most of the elderly women were homemakers. Joint families continue to dominate the Indian society as was seen here also with 110 (75.9%) people belonging to joint families. Majority (52.4%) of the study population resided in mixed type of houses, as prevalent in the slums. The per capita-income range was ₹ 750-3571 with the mean income of Rs.2137.88±682.30, median income

was ₹ 2000. 92 (63.4%) of them belonged to class 3 with an income slab of ₹ 1547-2577 as per the modified BG Prasad's socioeconomic status scale of 2013.

Table-1: Socio-demographic profile of the sample population (N=145)				
Variables		N	%	Cumulative %
Age (years)	61-65	29	20	20
	66-70	36	24.8	44.8
	71-75	36	24.8	69.7
	76-80	30	20.7	90.3
	81 and above	14	9.7	100
Gender	Male	78	53.8	53.8
	Female	67	46.2	100
Education	Illiterate	55	37.9	37.9
	Literate	90	62.1	100
Per-Capita Income (₹/month)	<773	3	2.1	2.1
	773-1546	27	18.6	20.7
	1547-2577	92	63.4	84.1
	2578-5155	23	15.9	100
Occupation	At home	114	78.6	78.6
	Working	31	21.4	100
Religion	Hindu	96	66.2	66.2
	Muslim	49	33.8	100
Type of House	Mixed	76	52.4	52.4
	Pucca	69	47.6	100
Type of Family	Nuclear	35	24.1	24.1
	Joint	110	75.9	100
Marital Status	Currently married	84	57.9	57.9
	Widow	43	29.7	87.6
	Widower	18	12.4	100

Table-2: Prevalence % and mean scores of respondents on the OHIP-14 questionnaire		
Domains of Oral Health Impact	Prevalence (%)	Mean Item Score (Range 0-4)
Functional Limitation		
Had trouble pronouncing words	56.6	2.35
Felt that sense of taste has worsened	53.8	2.34
Physical Pain		
Had painful aches in mouth	53.8	2.34
Was uncomfortable eating foods	56.6	2.31
Psychological Discomfort		
Has been feeling self-conscious	59.3	2.33
Has felt tense	56.6	2.32
Physical Disability		
Diet has been unsatisfactory	57.9	2.41
Has had to interrupt meals	61.4	2.41
Psychological Disability		
Finds it difficult to relax	55.9	2.27
Has been a bit embarrassed	63.4	2.39
Social Disability		
Has been irritable with other people	55.9	2.37
Has had difficulty doing other jobs	59.3	2.31
Handicap		
Has found life less satisfying	51.1	2.23
Has been totally unable to function	62.0	2.50

Table-3: Measures of central tendency and dispersion of the knowledge and OHIP score		
Scores	Knowledge Score	OHIP Score
Maximum attainable score	11	56
Maximum attained score	9	56
Minimum attainable score	0	0
Minimum attained score	2	0
Median (IQR)	6 (3-8)	39 (18-49)
Mean score ± SD	5.56 ± 2.619	32.89 ± 16.31

| Table-4: Predictors of oral health awareness and impact: A multivariate analysis					
Variables		Poor Knowledge Scores		OHIP/Low Impact Scores	
		AOR	95%CI	AOR	95%CI
Age (years)	<71	0.833	0.391-1.778	0.569	0.256-1.265
Gender	Female	0.806	0.362-1.797	1.581	0.681-3.670
Per-Capita Income (₹/month)	<2000	0.613	0.281-1.339	0.593	0.260-1.353
Education	Illiterate	1.538	0.661-3.576	1.832	0.743-4.517
Occupation	At home	0.875	0.347-2.207	0.758	0.284-2.026
Knowledge Scores	<median	-	-	0.464	**0.224-0.963***
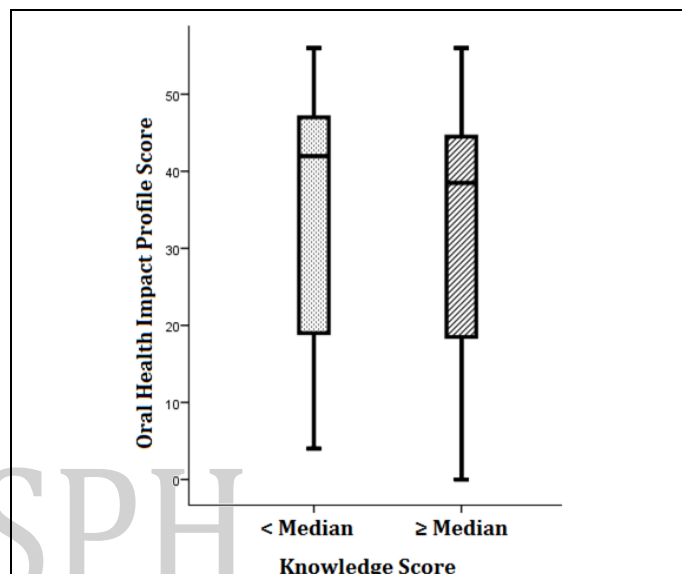
Figure-2: Sampling design used for the study

As per Table 2, 55% and 59% of the study population had functional and psychosocial limitations due to oral problems. Subsequently, 55.2% had physical pain, 59.6% had physical disability due to oral health problems, 59.6% had a psychological disability, 55.6% had a social disability and 56.6% had a handicap due to oral health issues.

As Table no. 3 shows, the mean (SD) knowledge score was 5.56 (2.619) and the mean (SD) overall impact score was 32.89 (16.31). The median scores were 6 and 39 for knowledge and overall impact respectively. 45 (31%) had a poor knowledge score and 78 (54%) of the respondents had a high impact score.

As per table 4, on multivariate analysis of the predictors of oral health impact and knowledge, it was seen that none of the variables were significant, except the poor knowledge scores which had a significant association with low impact AOR 0.464 (95%CI 0.224-0.963). This observation can be further consolidated by the box-whisker plot (figure 2) which shows that for a good knowledge score, the median of impact score is lower,

which means that high knowledge about oral health has a lower impact on the day-to-day lives of the elderly.

Discussion

Only a few studies were conducted on the geriatric population in the community. One such study on oral health related quality of life was conducted on 1244 community dwelling elderly >60 years of age, who were participants of senior citizen's college in Japan, using the Japanese version of the OHIP as a means of evaluation. It demonstrated that none of the socio-demographic variables were significantly associated with the overall OHIP score. Our study showed that a low knowledge score or low awareness about oral health leads to a high self-reported impact on the lives of the elderly.

From our study it is clearly evident that impact due to oral health problems is quite high in the elderly residing in a slum, in spite of the awareness about the problems being quite good. It turns out to be so because a knowledgeable population is quite aware about the impacts as well. We could not find any association of the socio-demographic variables with the oral health impact except increasing age. This may well be ascribed to the fact that oral health problems are so prevalent in the elderly that there could be no association or pattern that would be explainable. This can be displayed as different domains of impact of oral health on the elderly, where each domain is found highly affected in the aged. Functional and psychosocial aspects seem to be highly impaired in the aged along with the other domains of oral health.

Our study had certain strengths viz. (1) this study provided a useful focus on the impact of oral problems on the psychosocial and functional aspects of the geriatric people. To the researcher's knowledge hardly any study has ever focused on such an issue in this part of the country. (2) This study also proves itself quite effective in a limited time-frame with limited resources.

There were also certain limitations in our study viz. (1) the study was done in an urban setting and in geriatric population. Further studies in rural settings and in different age-groups and throughout a time-period may be needed to consolidate the validity of the findings and promulgate them. (2) Due to lack of availability of trained dental experts, examination of prevalent oral problems and calculation of useful indices could not be done which may have delved deeper into the situation. (3) The study period was limited, so the people with problems could not be followed up to observe the impact of oral problems through a period of time. A longitudinal study may prove more useful here.

Conclusion

Thus, it is important that health care service providers recognize these important impacts of oral health on the elderly. There is a need to provide sensitive oral health services that are accessible, affordable, appropriate and acceptable to them. Special needs, diagnosis and advanced treatment planning are crucial. Finally, the implications for research and training are considerable.

References

1. Oral health. Media center. Fact sheet N°318. World Health Organization. 2012. Available from: URL: http://www.who.int/mediacentre/factsheets/fs318/en/index.html
2. Grossi SG, Genco RJ. Periodontal disease and diabetes mellitus: A two way relationship. Ann Periodontol 1998;3:51-61.
3. The World Oral Health report 2003: Oral health. World Health Organization. 2003. Available from: URL: http://www.who.int/oral_health/publications/report03/en/
4. World Health Report 1998 - Life in the 21st Century: A Vision for All. The world Health Report. World Health Organization, 1998. Available from: URL: http://www.who.int/whr/1998/en/
5. Active Ageing: A Policy Framework. Ageing and Life Course. World Health Organization, 2002. Available from: URL: http://www.who.int/ageing/publications/active_ageing/en/
6. WHO Kobe Centre for Health Development. Globe Review on Oral Health in Ageing Societies. WHO Ageing and Health Technical Report 3. Kobe: World Health Organization, 2002.
7. Shay K, Berkey D, Beck J. The First International Conference on rural Ageing: A Global Challenge. Proceedings of the oral health component. Charleston, West Virginia, USA, 2000. International Dental Journal 2001;51:177-264.
8. WHO Kobe Centre for Health Development. Good Oral Health in Ageing Societies. To Keep Healthy Teeth for Your Healthy Life. Proceedings of a WHO international symposium, Kobe, Japan, November 2001. Kobe: World Health Organization, 2002.
9. Walls AWG, Steele JG. Geriatric oral health issues in the United Kingdom. International Dental Journal 2001;51:183-7.
10. World Health Organization. The Implications for Training of Embracing a Life Course Approach to Health. Geneva: World Health Organization, 2000.