

Tooth Loss and Need for Replacement of Teeth among Adult Population attending Out Patient Department of Two Dental Colleges in Uttara, Dhaka: A Cross-sectional Study

Shamima Easmin Nishi¹, Mohammad Khan¹, Sumaiya Jabin Yusufzai², Nafiz Bin Jamayet³

¹PhD student, Department of orthodontic, School of Dental Science, University Sains Malaysia, Malaysia, ²Senior Lecturer, Department of orthodontic, Northern University, Dhaka, Bangladesh, ³Senior Lecturer, Department of Maxillofacial Prosthetics, School of Dental Science, Universiti Sains Malaysia, Malaysia

ABSTRACT

Background: Oral health status is an integral part of total health; thus, an oral health affects general health by causing several sufferings such as pain associated with discomfort, modified chewing, and temporomandibular joint (TMJ) disorder.

Objective: The objective was to determine the tooth loss and need for replacement of missing teeth among above 20 years old patient.

Materials and Methods: A descriptive cross-sectional study was design to conduct in Bangladesh with a pretested modified questionnaire with the use of oral hygiene index by face to face interview with sample size 361. Statistical Package for Social Sciences 17 statistical software was used for analysis of all data.

Results: The current study revealed that nearly one-third of the respondents were fit to age group 40-59 years (35%) where more than half belong to 20-39 years (65%). Most of the respondents were female (57%). Distribution of respondents by clinical sign and symptoms of TMJ, where the frequency of joint pain increased with decreasing number of posterior occluding pairs from 8% of the respondents having 7+ occluding pairs developed pain while nearly half (46%) having 1-2 occluding pairs had complained about pain. The majority of the respondents had the need for replacement (59.4%).

Conclusion: Results indicate that loss of teeth have a big impact on patient's life. It reduced chewing ability, esthetic problem, and also TMJ disorder.

Key words: Adult, Edentulous, Oral health, Oral hygiene index, Tooth loss

INTRODUCTION

Oral health is essential to maintain the quality of life.¹ Dental cavities and periodontal disease are major causes of tooth loss.² Globally, about 30% of people aged 65-74 have no natural teeth.³ Oral health status is an integral part of total health thus oral health affects general health by causing several sufferings.⁴ A study piloted in Great Britain which reveals that tooth loss can have a substantial influence on the oral function.⁵ Although many epidemiologic studies express that oral functionality by numbers of teeth has existed with the occluding pairs that strongly correlated with oral functional status.⁶ It was demonstrate that

the impact of missing teeth on oral functions and quality of life is dependent on location and type.⁷ A systematic review states that also the number of teeth as well teeth type, tooth location, and number of occluding pairs define the oral health status.⁸ Developing countries like Bangladesh, the main aim was to seek for dental care is pain that has come intolerable after a delay in seeking treatment, and extensively decayed teeth can no longer be saved by the conservative restorative procedures.⁹ As a consequence it can therefore supposed that the people with risk of caries and periodontal diseases will have a large figure of missing teeth in advanced stage that may cause more

CORRESPONDING AUTHOR:

Mohammad Khan,
School of Dental Science, Universiti Sains Malaysia, Kubang Kerian, Kota Bharu, Kelantan, Malaysia.
E-mail: dr.mohammadkhan1001@gmail.com

Submission: 04-2015; Peer Review: 05-2015; Acceptance: 06-2015; Publication: 06-2015;

fast facial aging, trouble in mastication, and reduction of mouth opening as consequences.^{10,11} It was well proven that chewing performance, which measured with chewing tests falloffs linearly with a lessening of the number of posterior teeth create the chewing area.¹² Nutrition and oral health study reported that chewing capability of elder people confines by lessening the number of natural teeth.¹³ On the other hand, several studies have decided that tooth loss is of slight significance in the etiology of temporomandibular joint (TMJ) disorders.^{14,15} Joint pain has also reported more often on that flank with most missing teeth and amplified the risk of disorders in subjects without any molar support.^{16,17} For these reasons dentists often tend to recommend the replacement of missing teeth to prevent the occurrence of TMJ disorder.¹⁸

Therefore, this study aimed to determine the tooth loss and need for replacement of teeth among adult's patient attending at two selected dental college and hospital in Dhaka, Bangladesh. For instance of most people, loss of teeth has a relation with reduced eminence of life. Thus, it is essential for taking primary importance to inhibit oral diseases leading to edentulism. However, due to medical, economic, and social reasons; a conventional approach may not always be optimal.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted between May and November 2014 to carry out the research. Face-to-face interviews with a pretested, modified questionnaire along conducted on 361 patient attending outpatient department of two selected dental college in Uttara, Dhaka. Prior to the interviews, verbal informed consent was taken from participants. Simplified oral hygiene index (OHI) was also undertaken to check oral hygiene status of the sample. We used purposive sampling technique for the study purpose to reach the target sample quickly. A 20-year-old and over and incomplete dentitions (one or more missing teeth except for third molars) was inclusion criteria. Inability to communicate such as mental incapability, conditions that alter the dental arch and oral function such as oral tumors, the severe dental pain was determined as exclusion criteria.

Statistical Analysis

Data were collated and analyzed by using the Statistical Package for Social Sciences 17.0 (IBM, Chicago, USA). Results were calculated in percentages and frequencies and presented in tables and figures.

Questionnaire

The interview was a pretested, modified questionnaire which divided into six different parts for collect the information.

Section 1, 2, 3, 4, 5, and 6 containing socio-demographic information, oral hygiene, temporomandibular disorders, tooth loss and tooth wear need, and the reason for replacement, respectively, where section 1 is set up by questionnaire and section 2, 3, 4, 5, and 6 was clinical examination only.

Section 1: Socio-demographic information: Socio-demographic information existed the age, gender, school education, and occupational status.

Section 2: Oral hygiene: By following method:

Debris index:

0 - No debris or stain present

- 1 - Soft debris is covering not more than 1/3rd of the tooth surface, or presence of extrinsic stains without other debris regardless of surface area covered
- 2 - Soft debris covering more than 1/3rd, but not more than 2/3rd of the exposed tooth surface
- 3 - Soft debris covering more than 2/3rd of the exposed tooth.¹⁹

Calculus index:

0 - No calculus present

- 1 - Supragingival calculus covering not more than 3rd of the exposed tooth surface
- 2 - Supragingival calculus is covering more than 1/3rd but not more than 2/3rd of the exposed tooth surface or the presence of individual speckles of subgingival calculus around the cervical portion of the tooth or both
- 3 - Supragingival calculus is covering more than 2/3rd of the exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of the tooth or both.¹⁹

Calculating OHI-S index:

The debris index and calculus score were calculated individually. Then debris and calculus scores cumulatively added to get the simplified OHI.¹⁹

Section 3: Clinical sign and symptom: Such as:

- a. Pain in or around the TMJ disorder.
- b. Mouth opening
- c. Two other factors show a relationship with TMJ disorder were also investigated:
 - Chewing side preferences
 - Clenching or grinding habits.

Section 4: Tooth loss and tooth wear: Clinical examination had done to determine tooth loss and for tooth wearing by following index:

- 0 - No visible wear
- 1 - Wear in Enamel
- 2 - Dentine just exposed
- 3 - Substantial loss of dentine
- 4 - Wear into secondary pulp/dentine²⁰

Section 5: Need for replacement:

Need for replacement of missing teeth by the following criteria:

- 0 - No prosthesis need
- 1 - Need for partial denture
- 2 - Need for full prosthesis (complete denture)

Section 6: Reason for replacement:

Reason for replacement was categorized by patient's perception where the main concern was:"

- a. Appearance/aesthetics
- b. Function: Chewing, speech,
- c. Aesthetics and chewing
- d. Others.

RESULTS

This study revealed that nearly one-third of the respondents were 40-59 years age group (35%) while more than half belong to 20-39 years (65%). The majority of the respondents were female (57%) (Table 1). In case of educational qualification, nearly half of the respondent (42%) were secondary pass while

about one-third had the primary education (37%) and only twenty percent were only highly educated (Table 1).

We also found that the majority (63.71%) of the respondent had fair oral hygiene by the mean of OHI (Table 2).

Table 3 shows the distribution of respondents by clinical sign and symptom of TMJ. About 8% of the respondents having 7+ occluding pairs developed pain while nearly half (46%) having 1-2 occluding pairs had complained about pain. Joint sounds were more commonly by respondents without posterior occlusal pairs than the others. A small number of those informed restricted mouth opening and the incidence did not vary meaningfully between groups of posterior occlusal pairs.

This study presented that the mainstream of the respondents had a requisite for replacement (59.4%) (Table 4). Among them nearly, the half of need for both esthetic and chewing (41.4%), one-third for esthetic (36.6%), and the rest of twenty-three percent for chewing (Table 5).

DISCUSSION

At our knowledge, this study had not done previously in this area. This age group was not engrossed earlier in such study. In addition, we directed to determine the probable associations between numerous demographic and socio-economic factors on the dental status and tooth replacements and to determine the chance of teeth for decayed, missing, or filled. As a final point, it was the purpose of this study was to

find out to what extent the aim as planned by the WHO - the preservation of not less than 20 teeth all the way through life, without or with prosthetic replacement in Bangladesh. The development of dental and prosthetic treatment for this age group needs data of the patient's oral and general health status, as well as public coordination. As for most people, loss of teeth related with quality of life. Thus, it is essential to give primary importance to inhibit oral diseases leading to edentulism. On the other hand, due to medical, economic, and social reasons; a conventional approach may not always be optimal.

In order to prevent the objectionable magnitudes of tooth loss, several forms of prosthodontic treatment (tooth replacement) have conventionally mentioned as the clinical customary of care. On behalf of most of the textbooks of prosthodontics and trained in most dental schools that, a full supplement of teeth is a criterion for a healthy masticatory scheme and suitable function.¹⁵

In our study, 63.71% of the respondents has fair OHI-S, 16.1% has good, and 20.1 % has poor OHI-S when compared to studies conducted in India 24.4% had poor oral hygiene status.²¹ In this study, 22.16% of the respondents had complain of pain, 11.64% had clicking sound, 5.8% had limited mouth opening not more than 40 mm and 60.38% had no complain compared to studies the Muhimbili University of Health and Allied Sciences, 20% had clicking sound, 6% had limited mouth opening, and 22% had pain.²⁰ About 63.8% respondents have mild over eruption of tooth and remaining 36.2% have severe over eruption, which is, also similar to study conducted in Tanzania.²⁰

Table 1: Distribution of respondents by socio-demographic variable (n=361)

Variable	n	Percentage
Sex		
Male	157	43
Female	204	57
Total	361	100
Age groups (years)		
20-39	227	65
40-59	134	35
Education level		
Primary	132	37
Secondary	149	42
Higher	80	21
Total	361	100
Occupation		
Self-employed	136	38
Business	71	20
Housewife	59	16
Student	95	26
Total	361	100

Table 2: Distribution of respondents by oral hygiene index

Age group	Good (%)	Fair (%)	Poor (%)
20-39	20	60	25
40-59	1	70	23
Total	16.1	63.71	20.1

Table 3: Distribution of respondents by clinical sign and symptom of TMJ (n=361)

Posterior occluding pair	Subjective symptoms – pain (%)	Subjective symptoms – joint sound (%)	Subjective symptoms – restricted mobility (%)
0	69	42	8
1-2	46	15	0
3-4	25	11	13
5-6	14	12	14
7+	8	4	1
Total	22	11	8

TMJ: Temporomandibular joint

Table 4: Need for replacement (n=361)

Variable	Percentage
Need	59.4
No need	49.6
Total	100

Table 5: Reason for replacement (n=361)

Reason for replacement	n	Percentage
Esthetic	66	36.6
Chewing	44	23
Both	78	41.4
Total	188	100

From this study, we obtain that half of the (50.4%) respondent needed replacement of missing teeth which better than studies from India.²² One more studies from Finland, 11% had no need to replacement and 89% had a need because of their higher socio-economic lifestyle and educational level.²³ This study showed that 36.7% respondent needs replacement of missing teeth for an esthetic reason, 23% respondent meant for chewing purpose, and 41.4% want to be aimed at both purposes. It means the oral health-related quality of life does not depend on prosthetic need. Some of the adults were quite happy without denture. Deprived of anterior teeth our respondents did not feel so shy and nervous to talk to others which dissimilar from developed country.²⁰ Limitation of the study was due to small sample size it might not represent the actual scenario of the whole population of the country. That's why data from this study different with other studies and may be not reflected real magnification of the need. Furthermore, studies need to conduct in various region and area of the country to making health planning about this factor.

CONCLUSION

Loss of teeth has an enormous effect on a patient's life. It reduced chewing ability, esthetic problem, and also TMJ disorder. At this juncture, socio-demographic status is a large factor. Even with a high need for replacement of missing teeth for few subjects had such replacements. The budget of dentures was the main obstacle to the replace of missing teeth. We concluded that tooth loss has a negative effect on overall oral health function, and it is needed to replace.

REFERENCES

- Mittal M, Chaudhary P, Chopra R, Khattar V. Oral health status of 5 years and 12 years old school going children in rural Gurgaon, India: An epidemiological study. *J Indian Soc Pedod Prev Dent* 2014;32:3-8.
- Åström AN, Ekback G, Ordell S, Nasir E. Long-term routine dental attendance: Influence on tooth loss and oral health-related quality of life in Swedish older adults. *Community Dent Oral Epidemiol* 2014;42:460-9.
- Tsakos G, Watt RG, Rouxel PL, de Oliveira C, Demakakos P. Tooth loss associated with physical and cognitive decline in older adults. *J Am Geriatr Soc* 2015;63:91-9.
- Dworkin SF, Huggins KH, LeResche L, Von Korff M, Howard J, Truelove E, et al. Epidemiology of signs and symptoms in temporomandibular disorders: Clinical signs in cases and controls. *J Am Dent Assoc* 1990;120:273-81.
- Sheiham A, Steele JG, Marcenos W, Tsakos G, Finch S, Walls AW. Prevalence of impacts of dental and oral disorders and their effects on eating among older people; a national survey in Great Britain. *Community Dent Oral Epidemiol* 2001;29:195-203.
- Locker D, Slade G. Association between clinical and subjective indicators of oral health status in an older adult population. *Gerodontology* 1994;11:108-14.
- Elias AC, Sheiham A. The relationship between satisfaction with mouth and number, position and condition of teeth: Studies in Brazilian adults. *J Oral Rehabil* 1999;26:53-71.
- Gotfredsen K, Walls AW. What dentition assures oral function? *Clin Oral Implants Res* 2007;18 Suppl 3:34-45.
- Broadbent JM, Thomson WM, Poulton R. Progression of dental caries and tooth loss between the third and fourth decades of life: A birth cohort study. *Caries Res* 2006;40:459-65.
- Freegrab.net. Dental tooth loss and consequences – An update 2015. [Last cited on 2015 May 7]. Available from: <http://www.freegrab.net/Dental%20tooth%20loss%20and%20consequences.htm> [Last accessed on 2015 May 07].
- Käyser AF. Shortened dental arches and oral function. *J Oral Rehabil* 1981;8:457-62.
- Papas AS, Joshi A, Giunta JL, Palmer CA. Relationships among education, dentate status, and diet in adults. *Spec Care Dentist* 1998;18:26-32.
- Ciancaglini R, Gherlone EF, Radaelli G. Association between loss of occlusal support and symptoms of functional disturbances of the masticatory system. *J Oral Rehabil* 1999;26:248-53.
- Tallents RH, Macher DJ, Kyrkanides S, Katzberg RW, Moss ME. Prevalence of missing posterior teeth and intraarticular temporomandibular disorders. *J Prosthet Dent* 2002;87:45-50.
- DeBoever JA, Carlsson GE, Klineberg IJ. Need for occlusal therapy and prosthodontic treatment in the management of temporomandibular disorders. *J Oral Rehabil* 2000;27:647-59.
- Pullinger AG, Seligman DA, Gornbein JA. A multiple logistic regression analysis of the risk and relative odds of temporomandibular disorders as a function of common occlusal features. *J Dent Res* 1993;72:968-79.
- Wang MQ, Xue F, He JJ, Chen JH, Chen CS, Raustia A. Missing posterior teeth and risk of temporomandibular disorders. *J Dent Res* 2009;88:942-5.
- Hansson LG, Hansson T, Petersson A. A comparison between clinical and radiologic findings in 259 temporomandibular joint patients. *J Prosthet Dent* 1983;50:89-94.
- Greene JC, Vermillion JR. The oral hygiene index: A method for classifying oral hygiene status. *J Am Dent Assoc* 1960;61:172-9.
- Quaker AS. Consequences of tooth loss on oral function and need for replacement of missing teeth among patients attending Muhimbili Dental Clinic [Doctoral Dissertation]. Muhimbili University of Health and Allied Science; 2011.
- Jain M, Mathur A, Kumar S, Duraiswamy P, Kulkarni S. Oral hygiene and periodontal status among Terapanthi Svetambar Jain monks in India. *Braz Oral Res* 2009;23:370-6.
- Shigli K, Hebbal M, Angadi GS. Attitudes towards replacement of teeth among patients at the Institute of Dental Sciences, Belgaum, India. *J Dent Educ* 2007;71:1467-75.
- Nevalainen MJ, Närhi TO, Siukosaari P, Schmidt-Kaunisaho K, Ainamo A. Prosthetic rehabilitation in the elderly inhabitants of Helsinki, Finland. *J Oral Rehabil* 1996;23:722-8.

HOW TO CITE THIS ARTICLE:

Nishi SE, Khan M, Yusufzai SJ, Jamayet NB. Tooth Loss and Need for Replacement of Teeth among Adult Population attending Out Patient Department of Two Dental Colleges in Uttara, Dhaka: A Cross-sectional Study. *Int J Prevent Public Health Sci* 2015;1(1):5-8.