

The Perspective of Pakistani Adults Regarding the Consequences of Missing Teeth

Maria Shakoor Abbasi, Naseer Ahmed, Maira Ahmad, Maira Tahir, Nikki Mandhan, Fahim Vohra*

Altamash Institute of Dental Medicine, Karachi Pakistan, *King Saud Bin Abdul Aziz University, Saudi Arabia

ABSTRACT

Objective: To determine the recognition level of the consequences of missing teeth in Pakistani adults.

Study Design: Cross-Sectional study.

Place and Duration of Study: Altamash Institute of Dental Medicine, Karachi Pakistan, from Jul to Dec 2019.

Methodology: A well-structured and validated questionnaire filled by 652 partially dentate patients was included in the study.

Results: Despite having some education, the individuals showed poor knowledge of the consequences of missing teeth. Only 184 (28.2%) and 221 (33.9%) were aware of supra-eruption and drifting, respectively. 330 (50.6%) and 269 (41.3%) were unaware of the temporomandibular joint problems and speech difficulties. However, the majority were aware of masticatory problems, 562 (86.2%) and 460 (70.6%) self-confidence issues. There was no significant association ($r=-0.70$, $p=0.7$) and (0.03 , $p=0.9$) between gender with number and aetiology of missing teeth. At the same time, a moderate relationship ($\rho=0.7$) with no significant difference ($p=0.08$) was found between gender and knowledge of consequences. A negative relationship ($r -0.12$) with a significant difference ($p<0.02$) was found between education level and aetiology. Moreover, no significant association was found ($\rho -0.03$, $p=0.3$) and (-0.06 , $p=0.6$) between education level with number and knowledge about the consequences of missing teeth.

Conclusion: The knowledge and understanding of the general population on matters that are so important and relevant in the long run to each individual's Oral Health-Related Quality of Life are of special concern. Therefore, it is essential for dentists and other health care providers to educate and remember the importance of knowing the inevitable consequences of missing teeth.

Keywords: Consequences, Masticatory problems, Missing teeth, Supra eruption.

How to Cite This Article: Abbasi MS, Ahmed N, Ahmad M, Tahir M, Mandhan N, Vohra F. The Perspective of Pakistani Adults Regarding the Consequences of Missing Teeth. *Pak Armed Forces Med J* 2022; 72(3): 943-947. DOI: <https://doi.org/10.51253/pafmj.v72i3.5162>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Teeth are an essential part of the human body; tooth loss significantly affects the Oral Health-Related Quality of Life (OHRQoL) of an individual,^{1,2} as it causes functional compromises, including difficulty in mastication and phonetics, compromised nutritional status and can affect facial aesthetics, which leads to changes in attitudes in work environments and poor self-confidence.² In addition, it can cause secondary malocclusion and temporomandibular disorders due to continuous changes in the teeth position leading to spaces/gaps between the teeth, rotations, drifting and tipping in adjacent partially edentulous spaces.³

The World health organization (WHO) suggests the suitable criteria be "20 natural teeth" for a normal functioning dentition. The number of teeth in the mouth decreases significantly from the age of 40 years, with an average of 26 to 20 teeth at the age of 65 years.⁴ The consequences of tooth loss begin at an early stage,

usually the first year past extraction, in the form of supraeruption, tilting, gingival recession and functional alterations.^{5,6} It has been reported that tooth loss causes difficulty while chewing in 35.1%, psychological compromise in 17.5%, and problems in social interaction in 18.2% of individuals.^{1,5}

It was found by Yamasaki *et al*, and others that the most commonly missing posterior tooth was the first permanent molar, next to the second permanent molar, followed by the second and first premolar,⁷⁻⁹ In addition, it was reported that with increasing age, more people were to lose their mandibular posterior teeth rather than maxillary teeth, resulting in partially edentulous individuals needing immediate prosthetic replacement.^{9,10}

Despite the various adverse effects of loss of teeth on quality of life, most patients do not want the replacement of their missing teeth, probably because of a lack of awareness regarding the consequences. Unfortunately, there is a paucity of information on patients' awareness and attitudes about the consequences of missing teeth on the remaining dentition. Therefore, our study aims to evaluate the recognition

Correspondence: Dr Maria Shakoor Abbasi, Dept of Prosthodontics, Altamash Institute of Dental Medicine, Karachi-Pakistan

Received: 25 Aug 2020; revision received: 20 Oct 2020; accepted: 26 Oct 2020

level of consequences of missing teeth among partially dentate adult patients.

METHODOLOGY

This cross-sectional study was conducted at the Prosthodontics Department, Altamash Institute of Dental Medicine, Karachi, Pakistan. Ethical approval was taken from the AIDM Ethics and Review Board (AIDM/EC/01/2019/10). The purpose of the research was explained to each subject, and informed consent was taken. The research was conducted for the duration of 6 months, from February to July 2019. The sample size was calculated using the Open-Epi calculator, considering the frequency of knowledge regarding missing teeth, 63%,¹¹ with a confidence level of CI= 0.1%. The sample size calculated was 619 participants, which was later overestimated to a value of 690 to cover the maximum population. Non-probability sampling was used.

Inclusion Criteria: The subjects included in the study were partially dentate residents aged 18-45 years.

Exclusion Criteria: Individuals who were completely edentulous or had any metabolic disease were excluded from the study.

The questionnaire was prior validated for internal consistency and reliability. The Cronbach alpha value obtained was 0.75. Initially, 690 questionnaires were distributed to enquire patients about their demography, the number and cause of their missing tooth/teeth and their knowledge of the consequences of tooth loss, seven clinical conditions were used to assess patients’ level of knowledge, and these were supra-eruption, tooth drifting, masticatory problems, speech difficulties, facial collapse, and temporomandibular disorders along with self-confidence issues. In the end, 38 partially filled questionnaires were excluded based on partially filled status, and 652 were included in the study.

The data was entered and analyzed with the SPSS version 25. Descriptive statistics were done to calculate the mean values and percentages for age, gender, cause, number of missing teeth and knowledge about the consequences of tooth loss. Spearman correlation was used to assess the relationship between education level and gender impact with number, aetiology and knowledge about consequences of missing teeth. The *p*-value of ≤0.05 was considered significant.

RESULTS

A total of 652 patients participated in the study, of which 408 (62.6%) were females, and 244 (37.4%) were

males. The age ranged from 15-45 years, and the mean age was 31.7 ± 9.63. Out of the total participants, 364 (55.8%) patients were undergraduates, 184 (28.2%) graduates, 36 (5.5%) postgraduates and 68 (10.4%) were uneducated.

Moreover, 391 (60%) had 1-3 missing teeth, 189 (29%) had 4-6 missing teeth, 55 (8.4%) had 7-10 missing teeth, 5 (0.8%) had 11-12 missing teeth, and 12 (1.8%) had more than 12 missing teeth. In addition, the majority of the subjects had lost their teeth due to caries; 373 (57.2%), 107 (16.4%) had missing teeth due to elective treatment, 73 (11.2%) had lost their teeth due to trauma, 61 (9.4%) due to periodontitis, 8 (1.2%) had congenitally missing teeth and 30 (4.6) due to other reasons as evident in Figure-1.

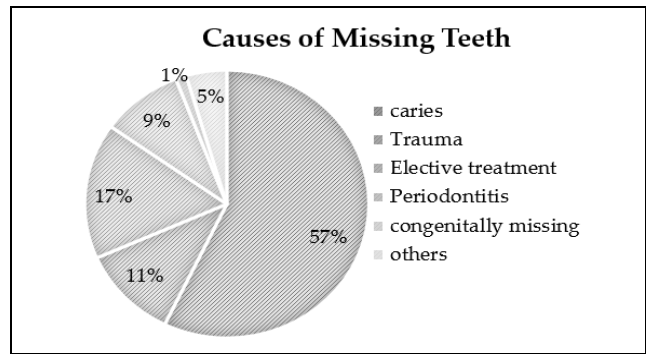


Figure-1: Causes of missing teeth in participants n=652.

Subjects were asked if they knew the consequences of missing teeth, out of which the majority responded to not having any such knowledge 379 (58.12%). The subjects that were aware gained their knowledge about the consequences from sources such as dentists 218 (33.43%), further 27 (4.14%) had been informed by their friends and relatives, 16 (2.5%) respondents had been made aware by medical doctors /nurses while from internet source and commercials, 4 (0.6%) and 8 (1.23%) each respectively as depicted in Table-I.

Table-I: Source of knowledge about consequences of missing teeth n=652.

Information Source	n (%)
Dentist	218 (33.43%)
Medical Doctors and Nurses	16 (2.5%)
Friends and Relatives	27 (4.14%)
Internet Resources	4 (0.61)
Advertisements	8 (1.23%)
Do not know	379 (58.12%)

According to Figure-2, out of 652 respondents, 562 (86.2%) were aware of masticatory problems associated with missing teeth, while 74 (11.3%) were unaware. Out of 460 (70.6%) respondents were aware

of self-confidence issues, while 174 (26.7%) subjects were unaware of the same. The facial collapse of subjects with missing teeth was known to 409 (62.7%), and 233 (35.7%) were unaware of facial collapse. Most subjects were not knowledgeable about supraeruption; 446 (68.4%) and drifting; 415 (63.7%). Only 184 (28.2%) and 221 (33.9%) were aware of supra-eruption and drifting, respectively. 377 (57.8%) were aware of speech difficulties, and 269 (41.3%) were unaware. About TMJ problems associated with missing teeth, 287 (44%) were aware, and 330 (50.6%) were not.

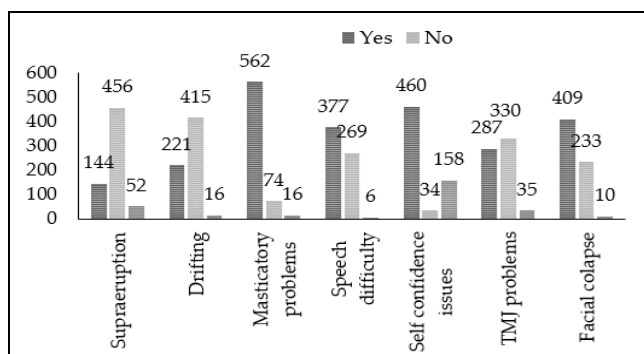


Figure-2: Knowledge of consequences of missing teeth n=652.

Spearman correlation was used to assess the relationship between education level and gender impact with number, aetiology and knowledge about consequences of missing teeth. There was no significant association ($r=0.70$), ($p=0.72$) and ($r=0.036$), ($p=0.94$) between gender and number, along with the cause of missing teeth in participants with caries being the most common aetiology. Similarly, there was a moderate relationship ($r=0.76$), an insignificant difference ($p=0.86$) between gender and knowledge of the consequences of missing teeth.

When education level was compared with the cause of missing teeth, there was a negative relationship ($r = -0.12$) and a significant difference in responses from undergraduates, graduates and postgraduates ($p < 0.02$); no identical aetiology could be seen amongst them. Likewise, there was negative relation ($\rho = 0.03$), ($\rho = 0.06$) and no significant difference ($p = 0.39$), ($p = 0.61$) between education level and number along with the knowledge about consequences of missing teeth as approximately three teeth were missing in common amongst the participants as described in Table-II.

DISCUSSION

This study was carried out to assess the attitude and awareness level of the local adult population

about the consequences of missing teeth in dental arches. In general, females (62.6%) had a prevalence of missing teeth than males (37.4%). This finding was by Nuvvula *et al*, and Ahmed *et al*, who reported that tooth loss is more prevalent in females than males.^{11,12} In this study, although the majority (55.8%) of participants had acquired undergraduate education, this only (58.1%) were unaware of the consequences of tooth loss. Multiple causes of tooth loss such as caries, periodontal diseases, trauma and cancer have been documented in the literature.¹² In our study, most subjects had lost their teeth due to caries; 373 (57.2%) lacked awareness of basic oral hygiene maintenance within the general population. Our findings follow Nuvvula *et al*, Hakam *et al*, and Jerms *et al*, who concluded that dental caries is the most prevalent cause of missing teeth.^{10,13,14}

In our study, the awareness level of the consequences of missing teeth was 42%. On the other hand, Mohril *et al*. in their research, reported that only 18.7% of subjects were aware of the consequences of missing teeth.¹⁵ At the same time, a study by Bahannan *et al*, carried out in Saudi Arabia showed that 83% of subjects were aware of the consequences of missing teeth.¹⁶

Table-II: Relationship of Gender and Education level with knowledge, etiology and number of missing teeth in participants n=652.

Variables	Correlation	Consequences of Missing Teeth	Number of Missing Teeth	Etiology of Tooth Loss
Gender	Coefficient	0.76	-0.70	0.03
	p-value	0.86	0.72	0.94
Education Level	Coefficient	-0.06	-0.03	-0.12
	p-value	0.61	0.39	0.02

In our study, the awareness of the consequences of tooth loss was delivered by mainly general dentists (33.4%), while 58% were unaware of tooth loss effects. There was a very minute contribution from other sources such as friends/relatives, doctors/nurses, ads/commercials and the internet. The results of our study are similar to a study by Dosumu *et al*. They also concluded that Dentists constituted the largest source of information to the patients regarding the consequences of missing teeth (25.6%) while the media constituted the least (0.5%).¹⁷

In this study, mastication had the highest level of awareness amongst the participants (86.2%), which is following studies by Mohril *et al*, and Dosumu *et al*, (41.9%) and (48.3%), respectively. This might be be-

cause it is easier to detect reduced masticatory efficiency depending on the number and position of missing teeth.^{15,17} Furthermore, in our study, 57.8% were aware of speech difficulties, in contrast with other similar studies, which report that only 1.7% were aware of the difficulty in speech.¹⁸

In this study, participants were aware of self-confidence issues (70.6%), and (62.7%) were aware of aesthetic changes such as facial collapse after tooth loss. In a study about the emotional effects of tooth loss in a group of partially dentate people, it was found that out of 100 participants, 45% had difficulty accepting tooth loss, loss of self-confidence, and facial collapse were their main struggles. Also, they could not enjoy food, had restricted food choices, laughed in public and formed close bonds with people. In addition, they felt that they were not adequately prepared for the negative effects of tooth loss on their confidence, appearance and day-to-day lives.¹⁹⁻²¹

Supra-eruption and drifting were the least known phenomena in partially edentulous patients (28.2%) and (33.9%), respectively. This might be true as these changes are so minor and slow-progressing that the patient might not notice a change in their daily lives. However, in a study done of the occlusal changes following posterior tooth loss, it was noted that 92% of unopposed teeth had experienced supra eruption, occurring more often in unopposed maxillary teeth than unopposed mandibular teeth. The extent of supra eruption was also responsible for the feasibility of replacement.^{20,22} Hence a patient must be aware of tooth movements after extraction.

In our study, there was a significant difference ($p<0.05$) between gender and knowledge of the consequences of missing teeth, with the female having more knowledge regarding tooth loss than males. This is in contrast to another study, in which most females (52.4%) and some males (28.9%) were unaware of the consequences.¹² When education level was compared with know-ledge about the consequences of missing teeth, no significant difference ($p=0.6$) was found. This is as per a study by Dosumu *et al*,¹⁷ who also concluded that there was no significant difference between the knowledge of the consequences of missing teeth on level of education.

ACKNOWLEDGEMENT

The authors were grateful to the Research Ethics and Review Committee of Altamash Institute of Dental Medicine, Pakistan, for facilitation and support in this study.

CONCLUSION

The poor knowledge and understanding of the general population on matters that are so important and relevant in the long run to each own Oral Health-Related Quality of Life is alarming. Therefore, it is essential for dentists and other health care providers to educate and remember the importance of knowing the inevitable consequences of missing teeth. Ads/commercials, the internet, and fellow family members/friends who are informed about it must also shed light on this topic. In addition, the patient should be urged to get proper dental rehabilitation as early as possible with the help of prostheses such as implants, bridges, removable partial dentures etc., to improve & maintain one's healthy lifestyle.

Conflict of Interest: None.

Authors' Contribution

MSA: Conception, design, manuscript writing, NA: Data analysis and interpretation, critical review, MA: Manuscript writing, MT: Data collection, Literature review, FV: Critical review, final review.

REFERNCES

1. Khan SU, Ghani F, Nazir Z. The effect of some missing teeth on a subjects' oral health related quality of life. *Pak J Med Sci* 2018; 34(6): 1457. doi: 10.12669/pjms.346.15706.
2. Abbasi MS, Rahim S, Qureshi AW, Sharif M, Shah R, Minallah S. A comparison of cone beam computed tomography and ridge mapping in treatment planning of dental implants. *Isra Med J* 2020; 12(2): 87-90.
3. Fantin R, Delpierre C, Kelly-Irving M, Barboza Solís C. Early socioeconomic conditions and severe tooth loss in middle-aged Costa Ricans. *Community Dent Oral Epidemiol* 2018;46(2):178-84. doi: 10.1111/cdoe.12351.
4. Zhang Q, Witter DJ, Bronkhorst EM, Jia M, Creugers NH. Dental functional status with and without tooth replacement in a Chinese adult population. *Clin Oral Invest* 2012; 16(4): 1251-1259. doi: 10.1007/s00784-011-0616-x.
5. Elani HW, Harper S, Thomson WM, Espinoza IL, Mejia GC, Ju X et al. Social inequalities in tooth loss: a multinational comparison. *Community Dent Oral Epidemiol* 2017; 45(3): 266-274. doi: 10.1111/cdoe.12285.
6. Fang HP, En LJ, Meei TI, Ahmad R, Aziz AF, Said SM et al. Impact of tooth loss and preferences for tooth replacement among clinic attendees at a public university. *J Dent Indones* 2018; 25(2): 108-113. doi.org/10.14693/jdi.v25i2.1237
7. Yamasaki Y, Kuwatsuru R, Tsukiyama Y, Oki K, Koyano K. Objective assessment of mastication predominance in healthy dentate subjects and patients with unilateral posterior missing teeth. *J Oral Rehabil* 2016; 43(8): 575-582. doi: 10.1111/joor.12403.
8. Marcus SE, Drury TF, Brown LJ, Zion GR. Tooth retention and tooth loss in the permanent dentition of adults: United States, 1988-1991. *J Dent Res* 1996; 75(suppl-2): 684-695. doi: 10.1177/002203459607502508.
9. Meskin LH, Brown LJ. Prevalence and patterns of tooth loss in US employed adult and senior populations, 1985-86. *J Dent educ* 1988; 52(12): 686.
10. Steele JG, Treasure E, Pitts NB, Morris J. Total tooth loss in the United Kingdom in 1998 and implications for the future. *Br Dent J* 2000; 189(11): 598-603. doi: 10.1038/sj.bdj.4800840.

Consequences of Missing Teeth

11. Nuvvula S, Chava VK, Nuvvula S. Primary culprit for tooth loss!! J Ind Soc Periodontol 2016; 20(2): 222. doi: 10.4103/ 0972-124X.170852.
12. Ahmad FA, Alrashidi AM, Alajmi B. Causes and Patterns of Tooth Loss Among Patients Attending Riyadh Elm University Hospital: A Cross-Sectional Study. Oral Health Dent Sci 2019; 3(2): 1-5. DOI:10.33425/2639-9490.1047
13. Hakam FA, Ghani F, Khalil A, Khan AU. Awareness to consequences of missing teeth and prosthodontic treatment modalities in partially dentate patients reporting for dental extraction. Pak Oral Dent J 2019; 39(1): 102-105.
14. Gjermo P, Belid MI, Bellini HT, Martins CR. Study of tooth loss in an adolescent Brazilian population. Community Dent Oral Epidemiol 1983; 11(6): 371-374.
15. Mohril KR and Manekar VS. Attitude and Knowledge of the Awareness of Missing Teeth and its Effect among Partially Edentulous Patients. J Dental Sci 2018; 3(5): 000185.
16. Bahannan SA. Knowledge and behaviour of tooth loss and artificial teeth among females residing in Jeddah, Saudi Arabia. J King Abdulaziz University-Med Sci 2001; 9(1): 49-63. doi.org/10.4197/med.9-1.6
17. Dosumu OO, Ogunrinde JT, Bamigboye SA. Knowledge of consequences of missing teeth in patients attending prosthetic clinic in UCH Ibadan. An IB postgrad Med 2014; 12(1): 42-48.
18. Kumar S, Gupta P, Gupta V, Gupta B. Evaluation of clinical consequences postpartial edentulism in patients of Ranchi District: An epidemiological study. J Dent Res Rev 2018; 5(3): 84. DOI:10.4103/jdrr.jdrr_46_18
19. Craddock HL. Consequences of tooth loss: 1. The patient perspective-Aesthetic and functional implications. Dent update 2009; 36(10): 616-9. doi: 10.12968/denu.
20. Davis DM, Fiske J, Scott B, Radford DR. The emotional effects of tooth loss in a group of partially dentate people: a quantitative study. Eur J Prosthodont Restor Dent 2001; 9(2): 53-57.
21. Craddock HL, Youngson CC, Manogue M, Blance A. Occlusal changes following posterior tooth loss in adults. Part 1: A study of clinical parameters associated with the extent and type of supraeruption in unopposed posterior teeth. J Prosthodont 2007; 16(6): 485-494. doi: 10.1111/j.1532-849X.2007.00212.x.
22. Rabbani Z, Shiraz A, Ahmed N, Faruqui S, Jouhar R. Impression techniques and materials used for fabrication of extracoronal restorations, a survey. Pak Oral Dent 2017; 37(4): 650-652.

.....