Original Article

Causes of Full Mouth Extraction of Teeth and the Mean age of Patients

Mohammad Mehdizadeh[1], Zahra Jafary Nodoushan[2], Alireza Naderi Farsani[2], Aida Mehdipour[3]

[1] Associate Professor, Department of Oral and Maxillofacial Surgery, School of Dentistry, Qom University of Medical Sciences, Qom, Iran
[2] Dental Student, Student Research Committee, School of Dentistry, Qom University of Medical Sciences, Qom, Iran
[3] Assistant Professor, Department of Pediatric Dentistry, School of Dentistry, Qom University of Medical Sciences, Qom, Iran

Abstract

Background and Aim: Full extraction is often accompanied by adverse functional and esthetic effects. Postponing tooth loss is the ultimate goal of dental care. Thus, knowledge about the reasons of tooth loss and the mean age of patients can help in designing preventive programs. The aim of this study was to evaluate the causes of full mouth extraction of teeth and the mean age of patients.

Materials and Methods: This cross sectional descriptive analytical study evaluated 102 patients referred to the Department of Maxillofacial Surgery in 2018-2019 for full mouth extraction of teeth. Information including age, gender, income, history of smoking, history of drug use, and systemic diseases was recorded in a checklist by the examiner. The data were analyzed using the Chi-square test and ANOVA.

Results: The mean age of patients was 46.42 ± 10.58 years. The most important causes of full mouth extraction were caries (43.2%), caries and periodontal disease (37.3%), periodontal disease (16.7%), and prosthetic considerations (3.9%). Of all, 48% of patients had a history of substance abuse, and more than 97% had a medium income level.

Conclusion: The most important reasons for full mouth extraction were dental caries, periodontal disease, and prosthetic considerations. The mean age of patients presenting for full mouth extraction of their teeth was relatively low.

Key Words: Tooth Extraction, Dental Caries, DMF Index, Periodontal Diseases, Tooth Loss

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Corresponding author: Aida Mehdipour, Assistant Professor, Department of Pediatric Dentistry, School of Dentistry, Qom University of Medical Sciences, Qom, Iran

mehdipoor_aida@yahoo.com

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Introduction

Full mouth extraction refers to the extraction of all teeth in a patient. Tooth extraction is a common dental procedure due to its low cost and ease of work compared with other dental procedures among patients with low or moderate socioeconomic level. Tooth extraction is performed in case of severe dental caries, advanced periodontal disease, prosthetic considerations, and pathological reasons [1, 2]. Edentulism impairs the masticatory function and has adverse functional and esthetic effects [3].

The side effects of tooth extraction include pain, bleeding, fracture of the bony socket walls, dry socket, delayed healing due to infection, and injury to the inferior alveolar nerve [4]. Other side effects include wrinkles, mandibular prognathism, and aging of the face [5]. People with 25 teeth or more have a better quality of life compared with those with smaller number of teeth [6, 7]. According to the goals set by the

World Health Organization, and the need for finding the causes of edentulism, some attempts have been made to determine the causes of tooth extraction [8].

A previous study reported the most common reasons for tooth extraction to be dental caries, periodontal disease, and prosthetic and orthodontic reasons [9]. Another study investigated the reasons for tooth extraction and reported that about 50% of the cases of tooth extraction were due to dental caries, and periodontal disease accounted for approximately one-third of the cases [10].

Postponing the onset of edentulism is the ultimate goal of dental care, and understanding the reasons for tooth loss can help in designing preventive programs [7]. Given the importance of this issue and the limited number of studies in this field in Iran, this study aimed to evaluate the mean age of patients seeking full mouth tooth extraction.

Materials and Methods

This cross-sectional study was conducted at the Department of Oral and Maxillofacial Surgery of Dental School, Qom University of Medical Sciences, and evaluated all patients seeking full mouth tooth extraction. The data collection tool was a checklist. The inclusion criteria were the ability to fill out the checklist, having at least one tooth in each dental arch for extraction, and being a candidate for full mouth tooth extraction. The exclusion criteria were unwillingness for participation in the study and inability to open the mouth for examination.

A total of 102 patients referred for full mouth tooth extraction from the departments of oral medicine, periodontology, prosthodontics, and restorative dentistry were examined for dental caries, periodontitis, and prosthetic problems. All conditions were recorded. The demographic information of patients, cigarette smoking, history of substance abuse, and systemic diseases were all recorded.

The participants were briefed about the study and consented to participate in the study. They were ensured about the confidentiality of their information. The study protocol was approved by the Research Ethics Committee of Qom University of Medical Sciences (IR.MUQ.REC.1397.127).

The collected data were analyzed using SPSS version 21 software. The descriptive data of the study were reported as frequency and percentage, and the inferential data were analyzed by the correlation tests, Chi-square test, t-test, and ANOVA. Significance level was set at 0.05.

Results

The results showed that 66.7% (n=68) of patients were males and 33.3% (n=34) were females. The mean age of patients was 46.42±10.58 years (range 28 to 72 years). There was a significant relationship between the mean age of patients and causes of extraction (P=0.02; Table 1), and the main cause of tooth extraction was dental caries in younger patients while periodontal disease was the main cause in older patients.

Most patients were self-employed (42.2%); employees were the least frequent (12.7%). Table 2 shows the distribution of patients according to their demographic information.

Of all, 28.4% of patients had systemic diseases and 49 patients (48%) were smokers. The most common causes of full mouth tooth extraction were dental caries (43.2%), dental caries and periodontal disease (37.3%), periodontal disease (16.7%), and prosthetic considerations (3.9%). Also, 48% of patients were substance abusers and 32% had a 3-10-year history of substance abuse. A significant relationship was noted between full mouth extraction and substance abuse (P=0.01).

Of all, 97% of patients had an income level lower than average. More than 47.1% of patients reported very low income levels. The Chi square test showed a significant relationship between gender and full mouth extraction (P=0.01). In males, dental caries was the most common cause of full mouth extraction while periodontal disease and prosthetic considerations were the most common causes in females. There was a significant relationship between occupation and full mouth extraction (P=0.02), such that the prevalence of periodontal disease and prosthetic considerations was

Table 1. Mean age of patients based on the causes of full mouth tooth extraction

Causes	N	Minimum	Maximum	Mean age	Std. Deviation
Dental caries	43 43	28	66	43.88	8.327
Dental caries and periodontal disease	38 38	28	72	45.55	12.793
Periodontal disease	17 17	30	63	51.71	8.651
Prosthetic Problems	4 4	45	64	54.75	10.145

higher in self-employed patients and housewives, but dental caries was the main cause among the employees. There was an insignificant inverse relationship between the educational level of patients and full mouth extraction (P=0.08).

No significant relationship was noted between systemic diseases and full mouth extraction (P>0.05) although dental caries and periodontal disease were more common in patients with specific systemic diseases. There was a significant relationship between smoking and full mouth extraction (P=0.02). Caries and periodontal disease were more common in smoker patients than non-smokers and had a significant relationship with substance abuse (P=0.01). The prevalence of caries and periodontal disease increased with longer history of substance abuse (P=0.019).

Discussion

The objective of the present study was to investigate the mean age of patients referred for full mouth extraction of their teeth and the factors affecting it.

In the current study, the mean age of patients requiring full mouth extraction was 46.6 ± 10.58 years indicating the relatively young age of patients compared with the World Health Organization goals for the reduction of edentulism in older ages [8]. Nonetheless, the results from a study by Almasri [11] showed that the mean age of patients referred for tooth extraction was 39.8 ± 12.4 years. This difference might be due to the fact that tooth extraction may occur in younger ages as well (such as the extraction of third molars) and the patients in the study by Almasri were between 11-82 years. The gender distribution of the referred patients showed higher proportion of males compared with females, which was consistent with the study by Lee et al [12]. Jung and Cho [13] showed that a greater percentage of males compared with females retained at least one third molar, and this finding was statistically significant [13]. In contrast, the percentage of females with tooth loss was higher compared with males in studies by Muller et al, [14] and Hewlett et al [15]. In the study by Hewlett et al, [15] edentulism was observed to be positively associated with female gender. The reason for this difference in the findings and the significantly higher percentage of males in the abovementioned studies might be due to the social and cultural differences. Another reason for the difference between our findings and those of Hewlett et al, [15] and Jung and Cho [13] might be that women possibly appreciate dental, oral and facial appearance more than males and therefore it can be a motivating factor to seek dental care.

According to our results, there was a significant relationship between occupation and full mouth extraction, such that the prevalence of full

Table 2. Distribution of patients according to their demographic information

Variable		Number	Percentage
Occupation	Self-employed	43	42.2
	Employee	13	12.7
	Unemployed	21	20.6
	Housewife	25	24.5
Educational level	Lower than high school diploma	61	59.8
	High school diploma	25	24.5
	Bachelor's degree	14	13.7
	Master's degree	2	2
Income level	Less Than 1 million Tomans	48	47.1
	1-2 million Tomans	33	32.4
	2-3 million Tomans	14	13.7
	3-5 million Tomans	6	5.9
	More Than 5 Million Tomans	1	1
Drug abuse history	No	53	52
	Less Than 1 Year	3	2.9
	1-3 Years	9	8.8
	3-5 Years	17	16.7
	5-10 Years	16	15.7
	More Than 10 Years	4	3.9
Causes of tooth loss	Dental caries	43	43.2
	Dental caries and periodontal disease	38	37.3
	Periodontal disease	17	16.7
	Prosthetic considerations	4	3.9

mouth extraction was the highest among the self-employed patients and housewives, and it was the lowest among the employees, which is consistent with the results of Kato et al [16]. The reason for this may be the higher level of awareness in employees.

In terms of income level, a significant relationship was found between the income level and full mouth extraction, such that 97% of the patients had low income levels. This finding is in contrast to the results of Lee et al [12]. It is obvious that people with better financial status can afford better treatments such as root canal treatment and dental restorations, and people with higher level of income can better afford dental care. This difference may be due to the fact that Lee et al, [12] in their study excluded low-income

patients who could not visit dental clinics. This limitation of the study may explain why the incidence and odds ratio for tooth extraction were both significantly lower among the beneficiaries with low economic status and patients with disabilities who had more physical disabilities.

Our results showed that there was a significant correlation between the educational level of patients and full mouth extraction such that 85% of the patients had an educational level lower than high school diploma. This finding is consistent with the results of Adams et al, [17] and Jafarian and Etebarian [10]. Unfortunately, the lower awareness of people with low educational level is a reason for ignoring the importance of dental treatments.

In addition, no significant relationship was noted between systemic diseases such as type II diabetes, hypertension, and heart disease, and full mouth extraction, which was consistent with the results (having chronic diseases) of Saman et al [18].

According to the results of our study, the causes of full mouth extraction included dental caries, dental caries and periodontal disease, and periodontal disease and prosthetic considerations, which are consistent with the results of Richards et al [9], but in contrast to the results of Jafarian and Etebarian [10] in Tehran. Jafarian and Etebarian [10] identified the reasons for tooth loss to be dental caries, periodontal disease, supernumerary and impaction, and this difference could be due to the lack of similarity of the target population between the two studies. It should be noted that in the study by Jafarian and Etebarian [10] the sample size was smaller than the sample size in our study.

There was a significant relationship between smoking and full mouth extraction in our study, which was also previously reported by Mai et al [19]. They reported that there was a significant relationship between smoking and tooth loss due to caries, and concluded that smoking might be a major cause of tooth loss due to periodontal disease.

According to the results of the present study, 48% of patients were substance abusers, and there was a significant relationship between full mouth extraction and this parameter. Our results showed that 32% of the patients had a 3-10-year history of substance abuse, which was in agreement with a study conducted by Mohammadi et al, [20] who examined the relationship between substance abuse and missing teeth. They reported a significant correlation between full mouth extraction and decayed teeth in substance abusers compared with healthy controls.

Future studies with a larger sample size are recommended in this respect. In addition, further efforts should be made to raise the public awareness in this regard through public education (schools, mass media, etc.). Furthermore, the government's financial support policies for dental patients should be expanded to prevent dental extraction in patients due to financial problems.

Conclusion

According to the results of this study, the most important causes of full mouth extraction included dental caries, periodontal disease, and prosthetic considerations. Full mouth extraction had a significant relationship with the occupation of patients, substance abuse, smoking, and gender of patients. Also, the results suggest tooth extraction due to low socioeconomic level and related problems such as substance abuse.

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References

1. Medina-Solís CE, Pérez-Núñez R, Maupomé G, Casanova-Rosado JF. Edentulism among Mexican adults aged 35 years and older and associated factors. Am J Public Health. 2006; 96

(9):1578-81.
2. Sudiono J. The features of degenerativedis-eases and their association with the loss of teeth in the elderly of East Jakarta (Indonesia). South-east Asian J Trop Med Public Health. 2008;39(1):249-84.
3. Khazaei S, Firouzei MS, Sadeghpour S, Jahangiri P, Savabi O, Keshteli AH, et al. Edentulism and Tooth Loss in Iran: Sepahan Systematic Review No. 6. Int J Prev Med. 2012; 3 (Suppl 1):S42-7.
4. Rajan SR, Hussain KA, Tarakji B, Azzeghaibi SN, Sirajuddin S. Iatrogenic damage to the periodontium caused by exodontic treatment procedures: An overview. Open Dent J. 2015; 9: 197-9.
5. Ozturk CN, Ozturk C, Bozkurt M, Uygur HS, Papay FA, Zins JE. Dentition, bone loss, and the aging of the mandible. Aesthetic Surg J. 2013; 33 (7):967-74.
6. Heydecke G, Tedesco LA, Kowalski C, Inglehart MR. Complete dentures and oral health-related quality of life -- do coping styles matter? Community Dent Oral Epidemiol. 2004; 32(4):297-306.
7. Emami E, de Souza RF, Kabawat M, Feine JS. The impact of edentulism on oral and general health. Int J Dent. 2013;2013:498305.
8. Hobdell MH, Myburgh NG, Kelman M, Hausen H. Setting global goals for oral health for the year 2010. Int Dental J. 2000;50(5):245-9.
9. Richards W, Ameen J, Coll AM, Higgs G. Reasons for tooth extraction in four general dental practices in South Wales. Br Dent J. 2005; 198(5):275-8.
10. Jafarian M, Etebarian A. Reasons for extraction of permanent teeth in general dental practices in Tehran, Iran. Medical principles and practice. Int J Kuwait Univ, Health Sci Centre. 2013;22(3):239-44.
11. Almasri M. Assessment of extracting molars and premolars after root canal treatment: A retrospective study. Saudi Dent J. 2019; 31(4): 487-91.
12. Lee CY, Chang YY, Shieh TY, Chang CS. Reasons for permanent tooth extractions in Taiwan. Asia Pac J Public Health. 2015;27(2): Np2350-7.
13. Jung YH, Cho BH. Prevalence of missing and impacted third molars in adults aged 25 years and above. Imaging Sci Dent. 2013;43(4):219-25.
14. Muller F, Naharro M, Carlsson GE. What are the prevalence and incidence of tooth loss in the adult and elderly population in Europe? Clin Oral Implants Res. 2007;18 Suppl 3:2-14.
15. Hewlett SA, Yawson AE, Calys-Tagoe BNL, Naidoo N, Martey P, Chatterji S, et al. Edentulism and quality of life among older Ghanaian adults. BMC Oral Health. 2015;15:48.
16. Kato H ,Tanaka K, Shimizu K, Nagata C, Furukawa S, Arakawa M, et al. Parental occupations, educational levels, and income and prevalence of dental caries in 3-year-old Japanese children. Environ Health Prev Med. 2017;22(1):80.
17. Adams C, Slack-Smith LM, Larson A, O'Grady MJ. Edentulism and associated factors in people 60 years and over from urban, rural and remote Western Australia. Aust Dent J. 2003;48(1):10-4.
18. Saman DM, Lemieux A, Arevalo O, Lutfiyya MN. A population-based study of edentulism in the US: does depression and rural residency matter after controlling for potential confounders? BMC Public Health. 2014;14:65.
19. Mai X, Wactawski-Wende J, Hovey KM, LaMonte MJ, Chen C, Tezal M, et al. Associations between smoking and tooth loss according to the reason for tooth loss: the Buffalo OsteoPerio Study. J Am Dental Assoc (1939). 2013; 144(3): 252-65.
20. Mohammadi TM, Hasheminejad N, Salari HR, Rostamizadeh MR, Najafipour H. Association between tooth loss and opium addiction: Results of a community-based study on 5900 adult individuals in south east of Iran in 2015. J Int Soc Prev Community Dent. 2017; 7 (4):186-90.