

EXTRACTION OF PERMANENT TEETH: A CORRELATION BETWEEN REASONS OF EXTRACTION WITH EDUCATION STATUS & ETHNICITY

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Abstract

Objectives: To determine the frequency of reasons for extraction of permanent teeth and correlate it with educational status and ethnicity of patients reported in private dental clinics.

Materials & Methods: Cross-sectional descriptive study that includes 368 patients, who visited 5 different private clinics in Karachi from March 2016 to August 2017, of both genders, above 12 years of age, having permanent dentition was included in the study. While subjects with tooth fracture caused by trauma and extraction due to radio therapy or any other cause were excluded. WHO calculator was used to calculate sample size which was 368. Pre designed Proforma was used for collection of data which was later analyzed using SPSS version 21.0 Mean \pm standard deviation was calculated for quantitative variables like age. Frequency and Percentage was calculated for categorical variables.

Results: Out of total 368 samples, 168(45.7%) were males and 200(54.3%) were females with mean age of 42.10 ± 16.43 years. Frequency of Dental caries proved to be the most common reason for extraction with 60.3%, followed by periodontal disease 12.5%, prosthetic purpose 10.3% and other reasons. In ethnicity maximum people whose visiting private clinics were Urdu speakers (78.3%) followed by punjabi (10.3%) and then Sindhi (4.9%) while in education many were graduates followed by intermediate and then other educational statuses. Reasons for extraction at different education levels (none, primary, middle, matric, inter, graduate and postgraduate) were not statistically significant ($P=0.063$). Similarly Ethnicity (Urdu speakers, Pashtun, Sindhi, Baloch, Punjabi & Others) has no correlation with reasons for extraction ($P=0.075$).

Conclusion: Females with age above 35 years and below 50 years had maximum reasons for extraction. Level of education had no significance with reasons for extraction which is same in case with Ethnicity concluding no relationship between the two. Dental caries (decay because of all reason) was the leading cause of extraction followed by reason of periodontal reasons.

Key Words: Tooth extraction (MeSH), Oral Surgery (MeSH), Race ethnicity (MeSH)

Introduction

Extraction of teeth is among one of the commonest surgical procedures performed by the dental practitioner¹. Dental extractions have been utilized to treat an assortment of unhygienic conditions, and as a strategy for serious discipline or torment to achieve

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constrained admissions from suspected offenders². Teeth serve individuals not only for functional reasons but also for good esthetics². The importance of permanent teeth can be exemplified by the fact that they last lifelong. Unsalvageable teeth inevitably result in tooth loss, if voluntary then called to be Extraction. Dental extraction is one of the most common and affordable procedure for patients to acquire instant results and relief from pain³. To improve oral health/environment, understanding & figuring the pattern, ways and causes for tooth loss in an area is greatly important, several studies has investigated reasons for extraction of tooth throughout the world, for which most of them were similar². These surveys are similar as they investigated the frequency, the reason behind it and the distribution of loss as per age, gender, education and tooth type.

As per World Health Organization one of the indicators of Good Health is good oral health and included in Global Goals to be successfully achieved by 2000, by which 85% of population should come in this criteria. Loss of teeth keeps on being a noteworthy general medical issue around the world. Numerous justified reasons have been given to represent such extractions, including the nearness of caries, periodontal infection, orthodontic treatment, injury, and prosthetic procedures⁴⁻⁵. In many studies, caries was accounted for to be the most incessant explanation behind tooth extraction, trailed by periodontal disease⁶. In any case, because of advances and development in preventive measures, periodontal illness is now the fundamental purpose behind extraction just in guys matured 46–65 years. Anterior teeth, particularly in mandible, speak to the most elevated level of extractions coming about because of periodontal involvement⁶. An assortment of reasons has been noted in the writing to represent the extensive difference in maxillary tooth misfortune, saw amongst males and females. While maxillary premolars and molars in guys were essentially removed /extracted because of periodontal ailment, just like the case for caries, the presence of caries was the fundamental explanation behind loss of every single maxillary tooth in females⁷.

This is important to know the common reasons for tooth extraction, education status, and ethnicity of society for preventive measures to minimize tooth loss which is included in Global Health Goals. It would also be helpful for clinicians to up-grade their

academics and armamentarium to prevent tooth loss. So the objective of this study was to determine the frequency reasons for extraction of permanent teeth and compare it with education status & ethnicity of patients reporting to dental clinics of Karachi.

Materials and Methods

This cross-sectional descriptive study was conducted at 5 different private dental clinics of Karachi, from March 2016 to August 2017. After informed consent data were collected by using pre-structured Proforma. Patients age above 12 having permanent dentition, both genders, and Pakistani nationals were in the inclusion criteria. Tooth in fracture line requiring extraction during trauma and extraction prior to radiation therapy in any carcinoma case were excluded.

Dental caries and periodontal disease status are measured on extracted teeth, after identification of said extracted teeth it was assessed for either dental caries or periodontal diseases. The periodontal status was measured by a simple technique that is loss of attachment, in which the extracted teeth was rinsed with water to remove blood stains, then after fixing it in 10% formalin before staining of crystal violet. After one minute the tooth again rinsed with water and left to be water dry for next 10-15 minutes by which loss of attachment was expressed. All four surfaces being measured by periodontal probe and most severely affected surface determined attachment loss of the tooth. A particular level in loss of attachment was taken as confirmation for periodontal disease. Whereas dental caries by assessed clinically by checking enamels, pulp, tooth and involvement of root.

Sample size of 368 was calculated by WHO calculator using prevalence from previous study⁸ of 13.9% at 95% confident interval and 5% of margins of error. Age, gender, educational level, ethnicity, and reason for extraction were recorded from each participant.

Data were analyzed using SPSS version 21.0. Mean and standard deviation was calculated for numerical variable like age and frequencies and percentages were calculated for categorical variables like gender, educational level, ethnicity and reason for extraction. Chi-square test was applied among categorical variables while ANOVA for quantitative

parametric variables of more than two groups to make comparison of means. $P \leq 0.05$ were considered to be significant.

Results

In this study the number total participants were 368 in which 168(45.7%) were males and 200(54.3%) were females with mean age of 42.10 ± 16.41 years. Among the age group 26-30 Years 52 (14.3%) were the most common one, followed by age groups of 31-35 Years & 46-50 Years 40 (10.87%), then age groups of 21-25 years and 61-65 years with 26 (7.07%), 16-20 years & 70 & above years with 24 (6.52%) based on Table # 1.

Out of total sample most were non educated 48(13%) while 14(3.8%) had primary, 38(10.3%) had middle, 48(13%) had matriculation, 74(20.1%) were intermediate, 138(37.5%) had graduation and 8(2.2%) had postgraduate level of education, while maximum of patients were Urdu speaker based 288 (78.3%), 38 (10.3%) Punjabi based, 18 (4.9%) Sindhi based, 16 (4.3%) Pashtun based, 2 (.5%) Baloch based and 6 (1.6%) others data based on Table # 2

Most common reasons for extraction were dental caries 222 (60.3%) followed by periodontal disease 46 (12.5%) and 38 (10.3%) due to prosthetic purpose details based on Table: 3

Reasons for extraction were compared with level of education & ethnicity in cross tab and p- value was calculated with results clearly showing non-significant status between reason of extraction with ethnicity and reason of extraction with educational status, data based on Table: 4 & 5.

The cross tabulation between education and reason of extraction clearly shows that 88 (23.91%) graduates had extraction due to Dental caries among which 80 (21.73%) had decay due to poor prognosis followed by 38 (10.32%) patient of inter having extraction due to Dental caries as reason for extraction among which again 34 (9.23%) had decay due to poor prognosis. From the chart it was also being observed that maximum periodontal diseases were from graduate sector and the one having no education i.e 12 (3.26%). Only 4 (1.08%) patients passed graduation had fracture tooth while maximum of 18 (4.89%) graduates had impacted tooth same is the case in patients with prosthetic reasons having 10 (2.72%) graduates in the list. Unlike orthodontic

diseases in which maximum of patients were inter passed only followed middle passed.

The cross tabulation between ethnicity and reason of extraction showed results which can be utilized to have a sound recommendations. Among Urdu speaking community dental caries found have maximum number of patients with 170 (46.19%) in which decay with poor prognosis is in maximum number 156 (42.39%), followed by periodontal diseases and due to prosthetic reasons with 32 (8.69%) & 30 (8.15%) patients respectively. In Punjabi, Pashtun, Sindhi & other community members presented dental caries was again found to be the greatest cause of extraction with 20 (5.43%), 10 (2.71%), 8 (2.17%) & 4 (1.09%) respectively. While from Baloch community only 2 patients came for extraction and both were due to Prosthetic reasons.

Table 1: Demographic age group wise distribution (n=368)

Age Group	Frequency	Percent
11 to 15	10.00	2.72
16 to 20	24.00	6.52
21 to 25	26.00	7.07
26 to 30	52.00	14.13
31 to 35	40.00	10.87
36 to 40	36.00	9.78
41 to 45	36.00	9.78
46 to 50	40.00	10.87
51 to 60	22.00	5.98
61 to 65	26.00	7.07
66 to 70	20.00	5.43
70 & Above	24.00	6.52
Total	368.00	100.00

Table 2: Ethnicity of Patients (n=368)

Ethnicity of patient	Frequency	Percent
Urdu Speakers	288	78.3
Pashtun	16	4.3
Sindhi	18	4.9
Baloch	2	.5
Punjabi	38	10.3
Others	6	1.6

Table 3: Reasons for extraction (n=368)

Reason for Extraction	Frequency	Percent
Decay with poor prognosis	198	53.8
Decay not willing to conserve due to time limitation	4	1.1
Decay not willing to conserve due to financial reason	10	2.7
Decayed but not willing to conserve due to lack of faith in RCT	10	2.7
Mobility	46	12.5
Fracture tooth	4	1.1
Impacted	28	7.6
Endo Failure	12	3.3
Prosthetic purpose	38	10.3
Orthodontic purpose	18	4.9

Table 4: Reasons for extraction in comparison with Education status (n=368)

Reason for extraction	Education of patient							Total	Sig P-Value
	None	Primary	Middle	Matric	Inter	Graduate	Post-graduate		
Decay with poor prognosis	24	6	18	30	34	80	6	198	.063
Decay not willing to conserve due to time limitation	0	0	0	0	0	4	0	4	
Decay not willing to conserve due to financial reason	2	0	2	2	2	2	0	10	
Decayed but not willing to conserve due to lack of faith in RCT	4	2	0	0	2	2	0	10	
Mobility	12	2	6	4	10	12	0	46	
Fracture tooth	0	0	0	0	0	4	0	4	
Impacted	0	0	4	2	2	18	2	28	
Endo Failure	0	0	0	2	4	6	0	12	
Prosthetic purpose	6	4	4	6	8	10	0	38	
Orthodontic purpose	0	0	4	2	12	0	0	18	

*Chi-Square test (P-value ≤ 0.05 taken as significant)

Discussion

The primary aim of the study was to determine the reasons for tooth extraction within different social groups. However, before doing so, it is important to highlight some of the key methodological features of the study. Unlike many reported studies, this study collected data prospectively. The sample used in the study was calculated by WHO calculator of those patients consecutively presenting to five private dental clinics at different locations of Karachi, for tooth extractions⁹.

In the current study, more females were being presented for extraction as compared to males, which can be due to the fact that less female presents for preventive dental care as they are mostly housewives other than that social, cultural and religious matters contributes to the fact of less female presentation. This lack of preventive measures in females leads to increase rate of caries and tooth loss among them

The results of this study indicated that in Private dental clinics at Karachi, dental caries including all its complications were the leading reason for

Table 5: Reasons for extraction in comparison with Ethnicity (n=368)

Reason for extraction	Ethnicity of Patient						Total	Sig P-Value
	Urdu speaking	Pashtun	Sindhi	Baloch	Punjabi	Others		
Decay with poor prognosis	156	10	8	0	20	4	198	0.075
Decay not willing to conserve due to time limitation	4	0	0	0	0	0	4	
Decay not willing to conserve due to financial reason	8	2	0	0	0	0	10	
Decayed but not willing to conserve due to lack of faith in RCT	2	2	2	0	2	2	10	
Mobility	32	0	4	0	10	0	46	
Fracture tooth	4	0	0	0	0	0	4	
Impacted	24	0	0	0	4	0	28	
Endo Failure	12	0	0	0	0	0	12	
Prosthetic purpose	30	0	4	2	2	0	38	
Orthodontic purpose	16	2	0	0	0	0	18	

extraction. Periodontal ailment was the following most regularly prevalent reason. The finding that caries was the most widely recognized reason is in concurrence with majority of same studies^{10,11}. This increased incidence of dental caries and periodontal infections may be due to the increase use of refined sugar, natural product beverages, and sweet have turned out to be promptly accessible in Pakistan, surveys in Japan¹² by Aida J et al under Japan Dental Association on systematic randomization from 57589 dentist took data from 5131 dentists and the results of which coincides with result above. A similar result was also extracted from a study by Angeilo IF et al of Italy¹³ where data from 164 dentists were taken with same outcome. A study at Singapore¹⁴ by Ong G et al extending over a period of 12 months from 1276 (272 patients with extraction) demonstrated that both caries and periodontal illness were similarly critical explanations behind tooth misfortune.

Concentrates in Canada¹⁵ by Mathews DC et al shows periodontal disease as reason of extraction in maximum cases where a similar coinciding study revealing the same out of extraction by periodontal disease was conducted at Jordan¹⁶ Haddad I et al, demonstrated that the primary driver of tooth misfortune was periodontal sickness. Singapore¹⁴ with a study at Germany¹⁷ Reich et al had a lower level of

dental caries contrasted with our study and numerous prior studies.^{10, 18} This distinction might be credited to consume less calories, financial elements, level of dental mindfulness and also water fluoridation in these countries^{14,17}.

At National level Sahibzada et al³ in a study at Islamabad Dental Hospital, an affiliated teaching dental hospital of Islamabad, Pakistan reported that out of 8355 patients (12562 extractions in a total) were evaluated with majority 50 years and above contradicting the age group of our study and predominance of females. Mandibular posterior teeth were frequently extracted, with mandibular 1st molar in dominance due to dental caries. In another study on Nigerian population reported that the most common reasons for teeth extraction were caries (55.2%) and periodontal diseases (23.1%), while the least reason was deliberate extraction (0.1%).¹ In a study on Iran population shows that Tooth loss due to caries was 51%; periodontal disease was 14.4%; supernumerary and tooth impaction 13.9%⁸.

The availability, accessibility, and affordability of education in Karachi City explain why majority of the participants had attained secondary and tertiary levels of education. The relatively low- and non-involvement of patients with lower educational

attainment in research reported in the literature may also be a contributory explanation¹⁹. This study did not observe a significant effect of educational status on patients' request for extraction which is in contrast with Klock²⁰ report of the significant effect of educational level on patient preference for tooth extraction.

Among the ethnic group of patients presented to the clinics, Urdu speakers were found in maximum number which may be due to the reason that they are living in maximum number at Karachi and also because of more awareness, education among them. Followed by Punjabi ethnic group contrary to reason that they are living less in number at Karachi but the education and awareness makes them second most visiting ethnic group. Via cross tab it was also extracted that ethnicity is not significant with reasons of extraction.

Conclusion

This comprehensive study has enlightened the reason of extraction in which Dental caries and periodontal disease are the most common cause of tooth loss (extraction). Level of education had no significance on reasons for extraction which clearly means that oral hygiene has nothing to do with education while same is the case in different ethnic group of patients presented at the clinic having no significant correlation with the reason of extraction.

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