

CAUSES OF EXODONTIA AND ITS RELATIONSHIP WITH AGE IN A TERTIARY CARE DENTAL HOSPITAL

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ABSTRACT

Objective: To evaluate causes of tooth extraction and their association with age.

Study Design: Cross sectional study.

Place and Duration of Study: Oral surgery department of Armed Forces Institute of Dentistry (AFID), a tertiary care dental setup in Rawalpindi, from Nov 2018 to Dec 2018.

Methodology: Study comprised of 500 patients selected by random sampling technique. Only permanent teeth extracted for all necessary and elective reasons were included. Data was analyzed using SPSS 24. Categorical variables such as reason for extraction were presented as frequency and percentages.

Results: Among the 500 patients assessed for the exodontia cases the leading cause of extraction was tooth being grossly carious 237 (47.2%), followed by fractured tooth/broken down roots 91 (18.1%). Study patients ranged from 20-79 years in age, with 61.2% males and 38.8% females. A significant difference was observed between reasons of exodontia and different age groups ($p < .001$).

Conclusion: Cases of exodontia have not shown considerable decline in the past few years mainly because of the causes observed in the study. It is imperative for the dentists to spread large scale awareness in the society regarding preservation of natural teeth.

Keywords: Exodontia, Grossly carious, Molar.

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INTRODUCTION

Dental treatment options are increasing at a very fast pace in the modern world and the approach of dentists has now transformed towards the idea of conservative dentistry by providing services and practicing techniques for preservation of natural tooth structure. The advancements in endodontic procedures, periodontal therapies, crown preservation procedures, feasible broad scale oral hygiene improvement measures such as water fluoridation program has deteriorated the trend of tooth extraction to a considerable extent. There is still a huge influx of patients in the surgery department coming for the extraction of teeth for various reasons, and that too in a tertiary care dental setups, primarily because of dental caries¹⁻². This rise in cases of exodontia is definitely an alarming situation for the oral health practitioners and dentists

who despite all the resources and expertise available cannot prevent the patients from undergoing the last resort treatment that is the extraction of teeth.

Improvement in dental practice worldwide has made the preservation of dentition until old age a realistic outcome. However, in case of under developed countries like Pakistan or in countries where population is not covered under the expensive health insurances, the number of people undergoing exodontia is alarming. Permanent dentition loss continues to be an oral health dilemma in adults and elderly individuals; this consequently has negative effects on quality of life³. Tooth extraction is sometimes an easy way out of a dental problem but usually brings with it some associated problems such as impaired mastication, unpleasant aesthetics, bad phonetics and temporomandibular dysfunction and social withdrawals; it even causes a detrimental effect on the development of occlusion and the alveolar bone. Furthermore it can lead to complications such as fistula formation^{4,5}. These disturbing

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consequences should be catered for in this modern era by prior assessment of oral diseases.

The main aim of this study was to evaluate the causes of exodontia in a population that was having access to a tertiary care dental hospital and still went for tooth extraction of permanent dentition. It will also signify the relationship of exodontia with age, in order to find out the flaws in the dental education and awareness among the subjected population.

The application of this study will definitely affect the oral hygiene education programs and strengthen the preventive dentistry practices in the local practices.

METHODOLOGY

This cross-sectional study was carried out in the Oral Surgery department of Armed Forces Institute of Dentistry (AFID) which is a tertiary care dental hospital in Rawalpindi, Pakistan. It was made sure that the subjected patients belonged to the same socio-economic class of the population. The study was approved by the Ethical review committee of Armed Forces Institute of Dentistry. A verbal informed consent was taken from the patient before the research form was filled in. The sample size was decided to be 500 by using WHO sample size calculator, and stratified cluster sampling technique was used. The study was conducted from November 2018 to December 2018. The decision for tooth extraction was made at the Out Patient Department (OPD) of AFID by two trained dentists to remove the bias. The diagnosis was made after thorough clinical and radio-graphic examination.

The research forms included all possible causes of exodontia such as advanced dental caries, periodontal pathologies, impacted teeth, fractured tooth/broken down roots, RCT treatment issues, extraction for prosthodontic/orthodontic reasons etc. Six of the major causes noted in the dental surgeries were addressed separately and rest of the causes that were found to be rare were put in "others" category. Only permanent dentition was considered, age range

of subjects ranged from 20 to 79 years and was divided into groups of 10 years for analysis. Categorical variables such as reason for extraction were presented as frequency and percentages. Effect of age was controlled by stratification. Post-stratification chi-square test was used. A $p < 0.05$ was taken as significant. SPSS version 24 was used for statistical analysis of the data.

RESULTS

Among the 500 cases assessed for exodontia and after the statistical analysis of the data, the percentages of males and female patients was found out to be 61.2 and 38.8 respectively, and the age groups of subjected patients with highest frequency of extraction was 30-39 years followed by 20-29 years. The cumulative percentage of patients with age from 20-39 years was 72.8%. The tooth with the highest frequency of extraction, irrespective of the cause was mandibular left 3rd molar with 12.8% followed by mandibular

Table-I: Frequency of different extractions.

Cause of Extraction	Frequency	Percentage
Grossly carious	237	47.2
Fractured Tooth / BDRs	91	18.1
Impacted Tooth	83	16.5
Unable to go for Root Canal Therapy	16	3.2
Prosthodontics Reasons	9	1.8
Mobile Tooth	34	6.8
Others	30	6.4

left 1st molar with 9.6%. The numeric evaluation of causes of tooth extraction as shown in table-I provided the evidence that the grossly carious condition of tooth was the paramount cause of exodontia, and tooth extraction due to prosthodontics reasons was the least observed cause. The other causes included fractured tooth, impacted tooth, unable to go for the root canal treatment (due to time or financial issues), mobility of the tooth and other causes.

The "others" or less common causes included extraction prior to radiotherapy, orthodontic treatment, supernumerary teeth, jaw fracture,

malposed teeth. In addition, the comparison among the age groups (fig-1).

Furthermore, the relationship of tooth

percentage of 72.8%. The age distribution according to the obtained results is not similar to the researches in this regard during recent past^{6,7}.

Table-II: Association of age with the causes of Exodontia.

Age Group	Reasons of Exodontia							p-value
	Grossly Carious	Fractured Tooth/BDRs	Impacted Tooth	Root Canal Therapy Issues	Prosthodontics Issues	Mobile Tooth	Others	
20-29	79	29	37	5	1	5	19	<0.001
30-39	100	29	30	5	4	5	5	
40-49	37	15	11	5	0	12	5	
50-59	8	6	5	0	1	6	1	
60-69	5	6	0	0	1	5	0	
70-79	8	6	0	1	2	1	0	

extraction with age was found out to be very significant by chi-square test with *p*-value <0.001 (table-II).

DISCUSSION

Dental caries was the most common cause of tooth extraction in our study. The subject population of this research in general had a satisfactory literacy rate and had almost free

The depiction of this dilemma according to the obtained results is obviously alarming and predicts the future complaints of the patients losing permanent teeth at this young age. Aftermath of exodontia includes destruction and alteration of the hard and soft tissues of oral cavity along with resorption of alveolar bone.

The grossly carious tooth comes out to be the

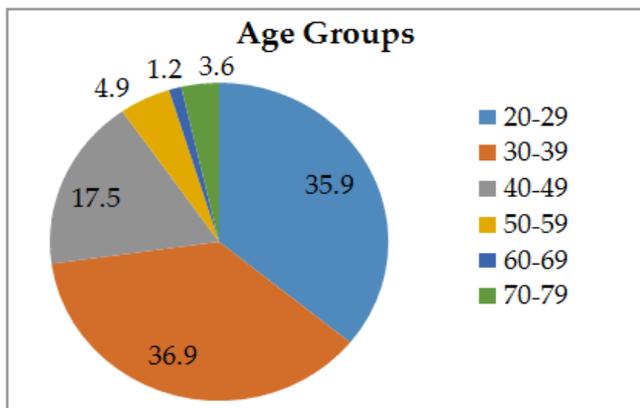


Figure-1: Age group undergoing causes of extraction.

access to all the facilities of a tertiary care dental setup. The striking figures of young men and women going for extraction of young permanent teeth is perhaps shocking as the most common age group who went for extraction was 30-39 years followed by 20-29 years with a cumulative

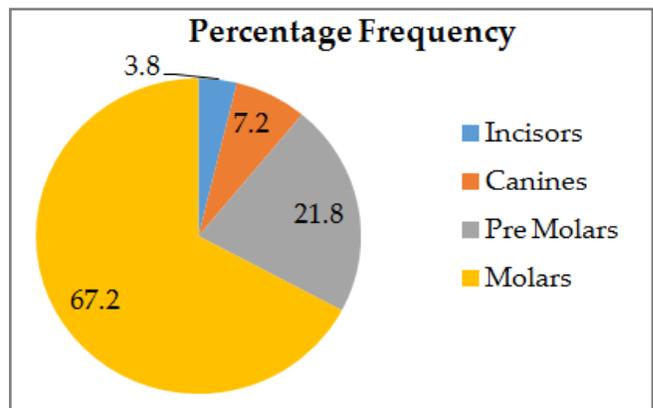


Figure-2: The different type of tooth extracted.

most common cause of tooth extraction in the present study, this is consistent with the study done on diabetic patients in Peshawar and the research done at de'Montmorency College, Lahore^{7,8}. This might be because the subject population belongs to the main city area of

Rawalpindi that has access to refined sugar products easily and live a busy life with insufficient time to present at a dental office. The grossly carious teeth depict that the targeted population do not bother to take the carious lesion seriously due to which small or sometimes arrested carious lesion progress to a completely deteriorated tooth structure. The dentists generally have a belief that extraction of an acutely infected tooth should be avoided but the inadequate dental education of the patient leads to caries that reach to an extent making the tooth non-salvageable⁹.

The second most common cause was fractured teeth and broken down roots (BDRs), as opposed to the results of study conducted in Quetta, this is again a reflection of the fact that the population living in the city are more prone to suffer from traumatic injuries. Some of the fractured teeth were a result of crown that was destroyed as a result of excessive caries that had completely undermined the tooth structure. Some of the patients also had an experience of having extraction done from quacks that had left the broken roots inside the socket, which was diagnosed on the periapical radiograph at AFID.

Impacted teeth presented as third most common cause of exodontia and the result goes along with the research done in Iran¹⁰. The probable cause is inability to maintain good oral hygiene, resulting in pericoronitis and eventually extraction. The increased incidence of angulated impacted molar teeth in the general population that may cause external root resorption of adjacent teeth¹¹. This may be an indication for a larger influx of the patients in the years to come that will present with the complaint of impacted teeth since it is an easy way out of the symptoms that an impacted tooth presents with.

This was followed by extraction due to time and financial issues in root canal treatment (RCT) and due to prosthodontics reasons. RCT is considered to be a very common procedure that is available at almost all of the dental setups whether they are primary care or tertiary care.

The patients still going for exodontia when RCT is an available option is a clear depiction of the general psyche of getting rid of salvageable teeth and avoiding the greater good because of poor dental education and awareness in the society. Secondly, the extraction of teeth due to prosthodontics reasons is justified by the rehabilitation concept of dentistry but still present as a situation packed with perplexity to the conservative dentistry approach.

The malposed teeth were found out to be a case of not very significant concern for the target population and a small amount of extractions were done due to this cause. Finally, the "other" cause included extractions due to orthodontic reason, extraction prior to radiotherapy, pulpal necrosis etc. These causes were found out to be very rare in the population and signify the general outlook of city population towards these causes of exodontia.

Our study shows that the most common teeth extracted were lower molars, this fact goes along with the research done in Islamabad Medical and Dental College, and this is also logical because of the fact that molars are most prone to the dental caries due to their occlusal anatomy. This fact also validates the study of Palmer on dental caries that compares the susceptibility of caries on various morphological types of permanent teeth¹²⁻¹⁵.

The extraction of teeth is also followed by a number of anatomical and morphological changes locally, as the cortical bone shape and height undergoes a lot of deterioration on buccal as well as lingual side¹⁶. Thus in order to replace the tooth with an implant supported prosthesis at a later stages, bone mimicking substances or natural bone graft procedures have to be performed¹⁷. This makes the treatment plan even more tiring, time consuming and expensive for the patient¹⁸.

Considering the relationship of age to all the causes of tooth extraction, it was observed that the major bulk of extracted teeth belonged to a limited age group of the patients which was

analytically proven with a chi-square test. This provokes an alarming call for the general population that loses its permanent teeth in a certain age bracket, and is exposed to the anatomical, physiological and psychological complications of tooth loss.

This study specifically targets the evaluation of tooth extraction in the population of a densely populated city that has free access to a tertiary care dental setup. This study also confronts the lacking in the previous studies regarding limiting of social status as a confounding factor and only those patients were considered that belonged to the same socio-economic class. The fact that 20-39 years is the most common age for tooth extraction calls for some serious educational interventions since this is too early for extraction of tooth as it will affect the preservation of other oral structures.

The limitation of this study was the short duration of time but was able to accumulate the data of required sample size.

It is suggested that a similar study should be conducted with a broader outlook and horizons and the community should work on the better dental education and awareness of the population in order to save the teeth from extractions when they can be salvaged, since greater number of missing or extracted teeth is an indicator of both the poor oral health condition and inadequate dental knowledge of the society¹⁸.

CONCLUSION

The cases of exodontia has not shown considerable decline in the past few years mainly because of the above observed causes. It is imperative for the dentists to spread large scale awareness in the society regarding preservation of natural tooth.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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