

# Reasons and Patterns of Tooth Extraction in a Tertiary Care Hospital- A Cross Sectional Prospective Survey

Mehwash Kashif, Khalid Mehmood, Tahera Ayub, Mehmil Aslam

## ABSTRACT

**OBJECTIVES:** The aim of this study was to find the reasons of tooth extraction in permanent dentition and to identify the patterns of tooth extraction among karachiates.

**MATERIAL AND METHODS:** This study was carried out in the department of oral and maxillofacial surgery (OMFS), in tertiary care hospitals of Karachi from October 2013 to March 2014. In this cross sectional study total 6251 patients were selected through non-probability convenience sampling and data was collected by trained clinician using predesigned questionnaire after informed verbal consent. The reasons and pattern of tooth loss was recorded and data was computed on SPSS. Version 19.00.

**RESULTS:** According to the result analysis on SPSS version 19.0, the male to female percentage was 43.25% and 56.74% respectively and the highest number of extractions was observed at the age of 50 years i.e. 6.24%. The percentage of reasons of extraction of teeth in our population is as follows, the grossly carious teeth are 51.8%, Periodontal problem 19.2%, Impaction 2.9%, RCT failure 2.8%, Economics 0.9%, Root caries 6.8%, Orthodontics 2.9%, Prosthodontics 0.1%, Fracture 1.3% , Malopposed 0.7%, Supernumerary teeth 0.9%, tooth In the fracture line 0.1%, Aesthetics, Pathological fracture, Preradiation 0.0%.

**CONCLUSION:** It was concluded from the above study that dental caries, is the most common reason for tooth loss followed by periodontal disease and first molar is the commonest tooth extracted.

**KEY WORDS:** Tooth loss, Extraction, reasons, Permanent, Pattern, First Molar.

## INTRODUCTION

Tooth extraction is one of the skilled dental procedure carried out routinely in dental practice since centuries. It is the demand of the new era and our young dental practitioners to know various reasons of tooth extractions and changing trends in the reasons of extractions with time.

The first tooth to appear into oral cavity is the first permanent molar at the age of 6-years, hence called the 6-year molar. The first permanent molar is the strongest and the largest among all the teeth. It helps in mastication and guiding eruption of other posterior teeth into proper occlusion<sup>11</sup>. Many local studies have been conducted to look the pattern and reasons of extraction of permanent teeth in our population<sup>12, 13</sup>.

Studies have shown that edentulism has decreased but a considerable proportion of adults are still losing teeth. Tooth loss has various harmful effects on an individual e.g. impairment of masticatory function, unpleasant aesthetics, bad phonetics, temporomandibular dysfunctions, psychological issues, social withdrawal and decrease in confidence level<sup>14</sup>. Common

indications for extraction of teeth includes dental caries and its sequelae (e.g. pulpitis and periapical infections), periodontal diseases, tooth fracture, malpositioned or impacted teeth, orthodontic treatment, retained deciduous teeth, prosthetic considerations, supernumerary teeth and preparation for radiotherapy<sup>15</sup>. It has been evident that caries and periodontitis are the most common cause of tooth loss<sup>16, 17</sup>, with caries being more common than periodontitis<sup>18-20</sup>.

This study was carried out with the aim that determination of various causes and pattern of tooth loss to evaluate any changing trends that will help in improving the level of oral hygiene and dental awareness among patients, thereby reducing their early extractions and consequent adverse sequelae. Therefore, the rationale of this study as to evaluate the various causes and pattern of tooth loss among Karachiates. We also evaluate the current changing trends in the etiology and pattern of tooth loss.

**Objectives:** The aim of this study was to identify possible reasons and pattern of tooth extraction in permanent dentition and to establish their relation with age and gender among Karachiates.

**MATERIALS AND METHODS**

This cross sectional prospective study was carried out at the department of oral and maxillofacial surgery (OMFS), of Abbasi Shaheed Hospital (ASH) and Liaquat College of Medicine and Dentistry (LCMD) Karachi. The out patients undergoing extraction at OMFS department were included from October 2013 to March 2014. Non-probability convenience sampling was used to recruit the patients for study. The inclusion criteria were patients having permanent dentition i.e. above 18 years, patients with non-restorable teeth/tooth, and patients from both genders. The exclusion criteria were patients suffered from severe uncontrolled medically compromised systemic diseases, patients on radiotherapy/chemotherapy, handicapped patients, and patients non-consented for the study. All the patients were asked for the informed verbal consent to be included in the study. After history, clinical examination and investigations a record sheet was filled by the practitioner before the tooth extraction. The Proforma consist of the demographics of patient, various causes of tooth loss and pattern of tooth extraction.

The statistical analysis has been done using SPSS version 19.00. The quantitative variables i.e. gender, reasons of tooth extraction, pattern of tooth loss and comparison between genders and pattern of tooth loss were calculated as frequency and percentage. Maximum number of extractions at a particular age was calculated and presented in percentage.

**RESULTS**

According to the result analysis on SPSS version 19, in a sample of 6251 patients, the male and female percentage was 43.25% and 56.74% respectively (Figure I) and the highest number of extraction was observed at the age of 50 years i.e. 6.24%.

The percentage of reasons of extraction of different teeth in our population is as follows, the grossly carious teeth are 51.8%, Periodontal problem 19.2%, Impaction 2.9%, RCT failure 2.8%, Economics 0.9%, Root caries 6.8%, Orthodontics 2.9%, Prosthodontics 0.1%, Fracture 1.3%, Malopposed 0.7%, Supernumerary teeth 0.9%, tooth In the fracture line 0.1%. Aesthetics, Pathological fracture and Preradiation accounts for 0.0%. (Table I, Figure II).

The results for the pattern of tooth loss have shown that the most common tooth extracted is first molar of both arches. Further results has been shown in table II.

Results for the comparison of gender with pattern of tooth loss has been shown in figure III.

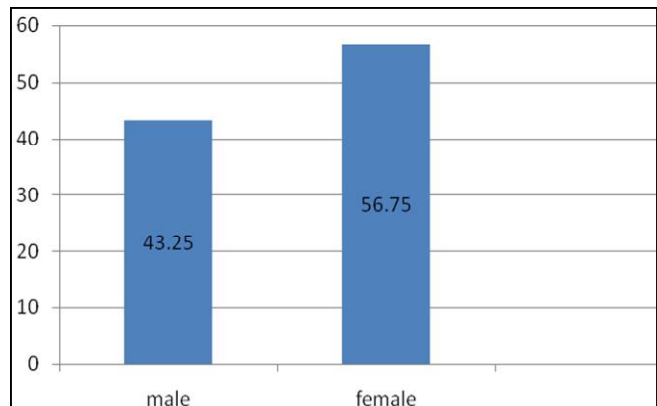
**TABLE I: SHOWING PERCENTAGE DISTRIBUTION OF ETIOLOGY OF TOOTH LOSS**

Reasons of Extraction	Percentage
Grossly carious	51.8
PDL problems	19.2
Impaction	2.9
Root caries	6.8
RCT failure	2.8
Orthodontics	2.9
Economics	0.9
Prosthodontics	0.9
Malposed teeth	0.7
Supernumerary teeth	0.9
Tooth in the line of fracture	1.3
Aesthetic	0
Pre radiation	0
Pathological fracture	0

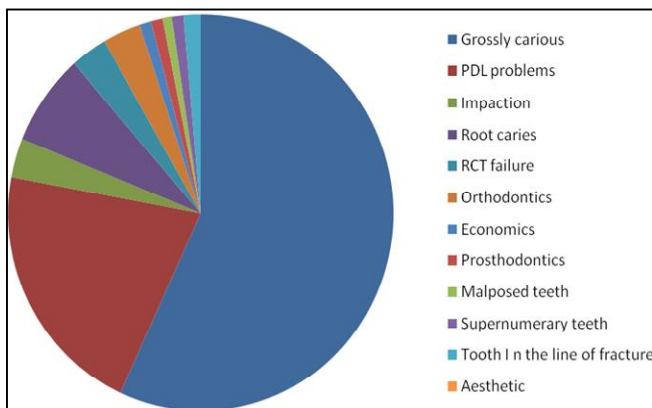
**TABLE II: SHOWING NUMBER OF EXTRACTION OF SPECIFIC TOOTH AND THEIR PERCENTAGES**

Name of the tooth	No. of Extractions	Percentage
Central incisor	392	6.26
Lateral incisor	307	4.91
Canine	337	5.39
First premolar	567	9.06
Second premolar	667	10.66
First molar	2053	32.83
Second molar	1051	16.81
Third molar	878	14.04

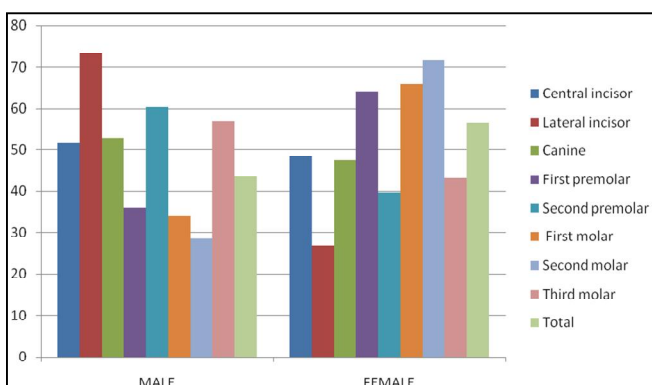
**FIGURE I: SHOWING GENDER DISTRIBUTION (%) AMONG STUDY POPULATION**



**FIGURE II: SHOWING FREQUENCY OF ETIOLOGY OF EXTRACTION**



**FIGURE III: SHOWING PERCENTAGE DIFFERENCE AMONG GENDER**



**DISCUSSION**

In the light of above analysis it was evident that females were in higher proportion for extraction as compared to males. The reason for this might be the low self-care and especially dental care in our female population. It could also be due to lack of awareness, dependency and difficult approach to dental facilities. This is in consistent with other study which was conducted in Department of Khyber College of Dentistry, Peshawar in which 61.5% patients were females as compared to males.<sup>1</sup> However results are inconsistent with the study conducted in Lahore in which large proportion of male population has undergone extraction as compare to females.<sup>2</sup> Similarly, difference from our study was observed in a study conducted in Brazil, South America where gender ratio was similar along all age groups.<sup>7</sup>

The highest incidence of extraction was observed at the age of 50 years. The results are almost similar to the studies conducted in other regions.<sup>2,5,8</sup> This could be due to poor oral hygiene maintenance, age related periodontal problems, bone atrophy, tooth wear, smoking and increase risks of co-morbidities in

adults. Although this is not in consistent with the study at Department of Khyber College of Dentistry, Peshawar in which higher incidence of proportion of patients had undergone extraction at a younger age i.e. 26 – 35 years.<sup>1</sup>

The Dental caries is considered as the major reason for tooth extraction in our population. This is in consistent with many studies which shows higher incidence of caries such as studies conducted in Lahore<sup>2</sup>, Ajman<sup>3</sup>, Jordan<sup>6</sup>, Iran<sup>8</sup>, Afghanistan<sup>9</sup> and Khyber<sup>1</sup>. Many reasons had been identified for this etiology of tooth loss. It could be due to the presence and increased use of refined sugar in our diet, improper brushing technique, lack of awareness of oral hygiene maintenance, lack of proper dental visits and follow ups.

The second important cause of tooth loss was periodontal problems. A study conducted in Quetta which also showed PDL problems as the second most common cause of tooth extraction i.e. about 23.2%.<sup>4</sup> The possible causes were lack of oral hygiene maintenance, smoking, uncontrolled systemic diseases, lack of awareness of periodontal problems, delay in diagnosis of periodontal pathologies. In a study conducted in Nepal, loss of tooth due to periodontal disease was most prevalent in patients greater than 30 years of age.<sup>10</sup>

Impaction was observed as third common cause of tooth loss in our population showing similarity with a research on same perspective conducted in our neighboring country Iran<sup>8</sup> and far countries like Brazil.<sup>7</sup> This could be due to the increase incidence of third molar impaction in our population. The increased incidence of impaction removal could be because of recurrent pericoronitis because of lack of oral hygiene maintenance and awareness. Another reason of third molar extraction is lack of conservative treatment options for third molar tooth because of its malpositioning and difficulty to approach for endodontic and other conservative procedures.<sup>3</sup>

Root caries is considered as the next important cause of tooth loss. This could be again because of poor oral hygiene, smoking, improper brushing technique and increased periodontal problems.

Orthodontics contributed as 2.9% for tooth loss. Another study conducted in Karachi revealed that 6.1% teeth were extracted due to orthodontic reason.<sup>5</sup> Almost Similar result showing 5.7% teeth extracted at various dental clinics due to orthodontic planning in Brazil.<sup>7</sup>

RCT failure and tooth fracture also shares the small proportion of tooth loss. This could be due to increased trauma to the teeth. Both these factors can be related to lack of experience of dental undergradu-

ate students and house surgeons and lack of supervision of students which may leads to iatrogenic tooth damage and improper technique of endodontic procedure.

Economics, Prosthodontics, Malopposed teeth, Supernumerary teeth, tooth in the fracture line and extraction because of Aesthetic reason were the other reasons of tooth loss contributing minor percentage of tooth removal. Preradiation contributes no reason for tooth loss this could be due to short duration of study period.

Our study showed the pattern of tooth loss and the most common tooth to be extracted is the first molar i.e. 32.8% of both the arches. The possible reasons of early loss of first permanent molar could be due to its early eruption in the arch, lack of prophylactic measures such as fissure sealants to protect the tooth from caries, poor eating habits i.e. excessive use of sweets and candies, improper brushing techniques, lack of dental visits/follow-ups and poor oral hygiene. This result is supported by studies carried out in, Karachi<sup>13</sup>, peshawar<sup>12</sup>, kenyans<sup>21</sup>, Afghanistan<sup>22</sup> and Tanzania<sup>23</sup>.

No trend change has been observed in the pattern and etiology of tooth loss as compare to previous studies<sup>12,13</sup>.

The limitations of study could be short duration and cross sectional type of study design. But similar type of studies has been conducted in other parts of the world like one in our neighboring country i.e. Afghanistan where sample size was 184 and study duration was of three months.<sup>9</sup>

It is recommended that this study should be conducted in broad horizon and should be designed longitudinally so that the results should be more representative of the population. It is also recommended that community awareness programs must be initiated and people must be emphasized for vigorous oral hygiene maintenance. Government authorities should facilitate the dental organizations for community awareness campaigns. A proper health system including efficient dental care programs focusing on prevention and treatment of these diseases should be created and developed on larger scale.

## CONCLUSION

It was concluded from the study that caries has been the most common cause of extraction followed by periodontal disease among Karachiates.

## ACKNOWLEDGEMENT

We would like to acknowledge the efforts of Dr. Ikram (MCPS resident, Oral and Maxillofacial Surgery) in data collection procedure.

## REFERENCES

1. Ali R, Rehman B, Noreen N. Pattern of tooth loss in patients reporting to Khyber college of dentistry peshawar. *Journal of Khyber College of Dentistry*. December 2012;3(1):17-21.
2. Haseeb M, Ali K, Munir MF. Causes of tooth extraction at a tertiary care centre in Pakistan. *J Pak Med Assoc*. August 2012;62(8):812-15.
3. Thomas S, Al-Maqdassy SE. Causes and Pattern of Tooth Mortality among Adult Patients in a Teaching Dental Hospital. *Ibnosina J Med BS*, 2010;160-167.
4. Janjua Os, Hassan Sh, Azad Aa, Ibrahim Mw, Luqman U, Qureshi Sm. Reasons and pattern of first molar extraction – a study. *Pakistan Oral & Dental Journal*. 2011;31(1):51-4.
5. Naz F. Reasons for extraction in permanent dentition A study in a tertiary care setting in Pakistan. *JPDA*. 2011;20(04):235-8.
6. Nsour HF, Masarweh NA. Reasons For Extraction Of Primary Teeth In Jordan - A Study. *Pakistan Oral & Dental Journal*. 2013;33(2):336-9.
7. Montandon A, Zusa E, Toledo BE. Prevalence and reason for tooth loss in a sample from a dental clinic in Brazil. *Int J Dent*. 2012;719750.
8. Jafarian M, Etebarian A. Reasons for extraction of permanent teeth in general dental practices in Tehran, Iran. *Med Princ Pract* 2013;22(3):239-44.
9. Da'ameh D. Reason for permanent tooth extraction in the North of Afghanistan. *J Dent*. 2006;34(1):48-51.
10. Dixit LP, Gurung CK, Gurung N, Joshi N. Reasons underlying the extraction of permanent teeth in patients attending Peoples Dental College and Hospital. *Nepal Med Coll J*. 2010;12(4):203-6.
11. JanjuaOM, HasanSH, AzadAA, IbrahimMW, LuqmanU, QureshiSM. Reasons and patterns of first molar extraction- A study. *Pakistan oral and dental journal*. 2011; 31(1):51.
12. Ali R, Rehman B, Noreen N, Pattern of tooth loss in patients reporting to Khyber college of dentistry Peshawar, JKCD. 2012;3(1):17-21.
13. Baqar A, Mirza D, Ahmed S, Hakeem S. Patterns of missing teeth in patients seen in prosthodontics department in a teaching hospital of Karachi. *Pakistan oral and dental journal*. 2014;34(2):366-9.
14. George B, John J, Saravanan S, Arumugham IM. Prevalence of permanent tooth loss among children and adults in a suburban area of Chennai. *Archives of Oral Sciences and Research* 2011;1(2):72-8.
15. Oginni FO. Tooth loss in a sub-urban Nigerian population: causes and pattern of mortality revisited. *Int Dent J*. 2005;55:17-23.

16. Afridi SH, Rehman B, Din QU. Causes of tooth extraction in oral surgery. An analysis of 400 patients reporting to Khyber College of Dentistry. J Pak Dent Assoc. 2010;19(2):110-14.
17. Adeyemo WL, Oderinu HO, Oloseye SB, Taiwo OA, Akinwande JA. Indications for extraction of permanent teeth in Nigerian teaching hospital: 16 year follow up study. Niq QJ Hosp Med 2008;18(3):128-32.
18. Chestnut I. Reasons for tooth extraction in Scotland. Naeem S. Pattern of tooth loss in maxillary arch- A land. J of Dent. 1984;28(4):295-7.
19. Sanya BO, Ng'anga PM, Ng'anga RN. Causes and pattern of missing permanent teeth among Kenyans. East Afr Med J. 2004;81(6):322-5.
20. Chauncey HH, Glass RL, Alman JE. Dental caries. Principal cause of tooth extraction in a sample of U.S male adults. Caries Res. 1989;23(3):200-5.
21. Cahen PM, Frank RM, Turlot JC. A survey of reasons for dental extractions in France. J Dent Res. 1985;64:1087-93.
22. Da'ameh D. Reasons for permanent tooth extraction in North of Afghanistan. J. Dent. 2006;38:48-51.
23. Sarita PT, Witter DJ, Kreulen CM, Matee MI, Van't Hof MA, Creugers NH. Decayed/Missing/Filled teeth and shortened dental arches in Tanzanian adults. Intl. J. Prosthodont. 2004;17:224-30.



*AUTHOR AFFILIATION:*

**Dr. Mehwash Kashif** (*Corresponding Author*)

Assistant Professor  
Department of Oral Pathology and Maxillofacial Surgery  
Karachi Medical and Dental College  
Karachi, Sindh-Pakistan.  
E-mail: mehwashkashif@gmail.com

**Dr. Khalid Mehmood**

Assistant Professor  
Department of Oral and Maxillofacial Surgery  
Karachi Medical and Dental College  
Karachi, Sindh-Pakistan.

**Dr. Tahera Ayub**

Assistant Professor  
Department of Oral and Maxillofacial Surgery  
Liaquat College of Medicine and Dentistry  
Karachi, Sindh-Pakistan.

**Dr. Mehmil Aslam**

MCPS Trainee  
Department of Oral and Maxillofacial Surgery  
Abbasi Shaheed Hospital, Karachi, Sindh-Pakistan.

*This article may be cited as:* Kashif M, Mehmood K, Ayub T, Aslam M. Reasons and Patterns of Tooth Extraction in a Tertiary Care Hospital- A Cross Sectional Prospective Survey. J Liaquat Uni Med Health Sci. 2014;13(03):125-9.