

Pattern, Etiology and Risk Factors for Tooth Extraction in Adult Population of Larkana City

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ABSTRACT

Objective: The purpose of this study was to determine pattern, causes and risk factors of dental extractions. Six hundred patients were included in this study.

Study Design: Retrospective study

Place and Duration of Study: This study was conducted at Bibi Aseefa Dental College Shaheed Mohtarma Benazir Bhutto Medical University Larkana from January 2012 to January 2013.

Materials and Methods: A detailed clinical and radiological examination was carried out to determine the reasons of tooth extraction which were classified into a) caries, b) periodontal disease, c) orthodontic, d) prosthodontic, e) trauma, f) others such as endodontic procedure failure and fracture root. The data were processed and analyzed statistically to determine association of risk factors for tooth extraction by using Statistical Package for Social sciences (SPSS version 17).

Results: Among 600 patients 412 were male, 188 were female. Tooth types were assessed which revealed, molars (Both upper and lower) 73%, Premolars 21% and Anteriors 6%. Causes of tooth extraction were analyzed which shows, Caries 57%, Periodontitis 27.8%, Endodontic treatment failure 6.8% and traumatic tooth failure 3.3%. While analyzing the association of cause of tooth extraction and socio-economic group, it is evident by statistically significant value of $p=0.0035$ that lower socio-economic has higher incidence of tooth extraction.

Conclusion: This study shows that caries and periodontal disease are the principal causes for tooth extraction in the population of Larkana, Sindh. The majority of patients had incomplete secondary education or lower and had even more teeth extracted than patients having higher levels of education.

Key Words: Causes, Extractions, Caries.

INTRODUCTION

Extraction of tooth is performed for several reasons including dental caries, periodontal disease, orthodontic reasons, impacted teeth, failed dental treatment, prosthetic indications and other reasons. A number of Studies have been carried out to investigate the amount of tooth loss, the etiological background, risk factors associated with tooth extraction and distribution of tooth loss according to age, gender, and tooth type. The etiology, pattern and risk factors associated with extraction of tooth is an indicator of socio-economic and oral hygiene level of the population.¹ A number of dental diseases and conditions finally lead to tooth loss. Tooth loss can ultimately affect chewing ability, quality of life and nutrition level of a person. An understanding of the causes and patterns of tooth extraction is essential to improve oral health outcomes. A large number of cross-sectional studies have investigated causes of tooth loss in different countries.² Studies carried out in Scotland, Kenya, United States, Brazil and number of others populations have reported that caries is a major cause leading to tooth extraction in

comparison to periodontitis.^{3,4,5} Other causes include trauma, orthodontic, prosthetic reasons and endodontic treatment failures. Most of the studies suggested that caries and its consequences affect tooth loss throughout life while the rate of tooth loss due to periodontal disease increases with age.⁶ Oral diseases such as caries and periodontitis contribute significantly to tooth loss. A survey conducted on 600 patients in all districts of Larkana showed that caries is more common than any other serious oral illness. Rural areas of Larkana have especially been noticed to have poor health standards. Limited numbers of epidemiology studies were carried out to determine the prevalence of oral diseases in Larkana. Dental caries remains as the major dental health problem in Larkana. One study that have been done in the past to assess the reasons for tooth extraction in city of Larkana where caries and periodontal disease have been reported as major reasons for tooth extraction in this study. So far no study has been conducted to compare the prevalence of dental diseases among rural and urban population of Larkana.

The aim of the present study is to determine the main reasons for tooth extraction in larkanian people with respect to age, gender, socioeconomic level, educational level and tooth type.

MATERIALS AND METHODS

The present study was conducted at Bibi Aseefa Dental College Shaheed Mohtarma Benazir Bhutto Medical University Larkana from January 2012 to January 2013. This study comprised of 600 patients in population of larkana. A detailed clinical and radiological examination was carried out to determine the reasons of tooth extraction which were classified into a) caries, b) periodontal disease, c) orthodontic, d) prosthodontic, e) trauma, f) others such as endodontic procedure failure and fracture root.

Patients were selected randomly, after randomization; any patient who was found to be unsuitable regarding deciduous dentition and maxillary and mandibular third molars were excluded from this study, mainly due to their congenitally missing and/ or impacted in nature and the information retrieved was documented on a specially designed proforma. The data about permanent tooth to be extracted including each tooth type, clinical and radiological features and the patient's chief complaint about the tooth to be extracted was recorded. Age, sex, address, past medical history, level of education was classified on a numerical scale from 1-3 (1. No education, 2. Primary / secondary education and 3. college / University education) and frequency of tooth brushing, other methods of maintaining oral hygiene apart from the use of tooth brush. Regarding socioeconomic status, the patients were categorized as upper class, middle class and lower class based on a specific scoring system. Patients with income below Rs 15,000 were graded as lower class, from to Rs 15,000 to Rs 30,000 as middle class and above 30,000 in upper class.

The data were processed and analyzed statistically to determine association of risk factors for tooth extraction by using Statistical Package for Social sciences (SPSS version 17). Descriptive statistics was applied for categorical data to analyze percentages and frequencies. Chi-Square test was applied to assess the association of risk factors. Statistical significance at P -values ≤ 0.05 .

RESULTS

In this study 600 patients were recruited from Larkana. Out of 600 patients, 412 were male while 188 were female patients. Distribution of tooth extraction according to age was analyzed, the highest percentage of age group with extraction of tooth is from 30-40 years of age in both gender populations. TABLE 1 Regarding the tooth type and reasons for extractions, most of the teeth were extracted were molars 73%, 21% premolars and only 6% were anterior. This might be explained by the fact that molars are more involved in

mastication and thus exposed to a greater risk of caries (Table 2).

Table No. 1: Age Distribution

Age Group	Male	Female	Total	Percentage
1-10	0	0	0	0
11-20	34	5	39	6.5%
21-30	89	51	140	23.5%
31-40	242	109	351	58.5%
41-50	38	19	57	9.5%
51-60	9	4	13	2.0%
Total	412	188	600	100 %

Table No. 2: Tooth percentage

Tooth Type	Percentage
Molars (Both upper and lower)	73%
Premolars (Both upper and lower)	21%
Anterior (Both upper and lower)	6%

The primary causes of tooth extraction were due to caries 57%, periodontitis 27.8%, and traumatic tooth fractures. Extraction of teeth due to orthodontic and failure of endodontic treatment 6.8% was also observed in this study. Many cases had multiple reasons for treatment; many of extracted teeth could have been saved through endodontic and periodontal therapy. (Table 3) Regarding the socioeconomic status of patients, the most of the patient's 57% were categorized in lower class category, while of patient 32% in middle class group. Only 11% of patients were in upper socioeconomic status. The prevalence of caries was higher in lower class category 57%. (Table 4)

Table No. 3: Cause of Tooth Extraction

Cause of tooth extraction	Frequency	Percentage
Caries	341	57%
Periodontitis	167	27.8%
Endodontic Treatment failure	41	6.8%
Orthodontics	17	3.00%
Prosthetic	13	2.1%
Traumatic tooth failure	21	3.3%

Table No. 4: Socio-Economic Conditions

Sr No.	Socioeconomic Status	Percentage
1	Lower class	57%
2	Middle class	32%
3	Upper class	11%

Table No. 5: Education percentage

Education	Percentage
Illiterate	54%
Primary/Secondary	33%
College/University	13%

It was found that the highest incidence of extraction was among un-educated patients 54%, patients with

level of education up to Primary/Secondary were 33% and 13% were educated up to college /university level. Backward areas where the people are not aware of oral hygiene procedures including use of tooth brushing and other methods of cleanings. (Table 5) While analyzing the association of cause of tooth extraction and socio-economic group, it is evident by statistically significant value of $p=0.0035$ that lower socio-economic has higher incidence of tooth extraction. The same result is seen in group of patients which belong to illiterate group, having a significantly higher incidence of tooth extraction.

DISCUSSION

The results of this study elaborates various causes for tooth extraction in Larkana, Sindh, it is evident that dental caries is the leading reason for extraction. Periodontal disease was the next most common reason. The finding in this study that caries is the most common reason is in accordance with the majority of similar studies ^{7, 8, 9}. Studies in Japan ¹⁰ and Italy ¹¹ showed that both caries and periodontal disease were almost equally important reasons for tooth loss. In this study the different causes of tooth extraction were attributed to socio-economic factors and level of education. In this study, majority of the patients whose teeth were extracted were 31-40 years old, while extraction in elderly patients in age group of 51-60 years accounted for only 2% of all tooth extraction. Thus, the continuing high frequency of extraction for caries may reflect an increase in restorations prior to extraction rather than high incidence of caries in older people. Molars were the most frequently extracted teeth which are in agreement with other studies as well, while premolars were 21% and anterior were 6% mainly extracted due to dental caries.^{12,17}

Females in age group 31-40 were 109 in number, who accounted for 18.6% of all patients and women in age group of 51-60 were only 4 in number. In this study we found proportionally more extraction for caries in men than in women, which is in agreement with other studies ^{13,14,18}. In various studies, male gender has been reported as a risk indicator for periodontal disease severity ^{15,19}. Patients with higher education levels had fewer tooth extractions than those with incomplete or lower education levels. This relationship is in agreement with other studies in which tooth loss was associated with a low level of education ^{16,20}

It is evident by this study that dental caries is the major cause of tooth extraction in this proportion of the population. Regular dental checkups are still not a routine pattern of behavior for all. Diagnosing caries at an early stage before its progression can prevent extensive dental treatment and the least wanted result of tooth extraction. Furthermore, strategies for efficient ways of screening for periodontal disease, especially for middle-aged people, might be required.

CONCLUSION

The result of this study indicates that caries and periodontal disease are the principal causes for tooth extraction in the population of Larkana, Sindh. The majority of patients had incomplete secondary education or lower and had even more teeth extracted than patients having higher levels of education. The best predictors for tooth loss due to caries were age, gender, socio-economic status, tooth type and level of education.

RECOMMENDATIONS

Future studies can be planned focused on the causes of dental extraction to determine further elaborative causal association. Intervention studies could also be carried out with the available data and more surveys could be conducted to compare extraction patterns between public and private dental practices. Dental community should reform the preventive aspects of dentistry by engaging government, media, and local organizations to carry out the awareness in school-going children and general public regarding oral health care. Strategies must be devised to organize targeted community programmes, fulfilling the needs dictated by the epidemiology of oral diseases in a certain community.

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