

Understanding barriers to utilization of available and accessible oral health services among patients attending tertiary center of eastern Nepal

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ABSTRACT

Extraction of permanent teeth is a common practice in Nepal due to neglected oral health by the people. With this in mind, we designed a study to investigate the dental causes of extraction and explore the barriers for utilization of dental services which could have saved the teeth from extraction. This survey was conducted in the Department of Oral and Maxillofacial Surgery at BP Koirala Institute of Health Sciences, Dharan, Nepal. A total of 775 patients who gave consent were included in the study through consecutive sampling over the period of four months. The patients were examined and information regarding their socio demographic characteristics and reasons for exodontia were also recorded. Data was entered in Microsoft excel and analyzed with the help of SPSS version 20.0. A total of 1112 permanent teeth were extracted during the study period. The male to female ratio of patients was 1:1.8 and more than sixty percent of patients had not received high school education. The most frequent cause of extraction was caries and its sequel (31.2%) followed by periodontal causes (27.6%) and root stumps (25.8%). The identified barriers to utilization were lack of money, restoration not being a long term solution, inability to come for multiple visits, old age and not aware about other treatment options. Preventive strategies should emphasize on methods to reduce the burden of caries and periodontal diseases. Poor financial condition and ignorance regarding dental treatment can lead to poor utilization of available and accessible dental services.

Keywords: Barriers, Caries, Health services

INTRODUCTION

Despite great improvements in the oral health of populations in several countries, global problems still persist. This is particularly so among underprivileged groups in both developing and developed countries. Various oral diseases and conditions like dental caries, periodontal disease, tooth loss, oral mucosal lesions and oropharyngeal cancers, HIV/AIDS related oral disease and orodental trauma are major public health problems worldwide.¹ In developing countries, oral health services are offered at the regional or central hospitals operating mostly in urban centers and with less focus on preventive or restorative dental care. Many countries of Africa, Asia and Latin America have a shortage of oral health personnel and the capacity of the systems is generally limited to pain relief or emergency care. In Africa, the dentist to population ratio is approximately 1:150 000 compared with about 1:2000 in most industrialized countries. In children and adults suffering from severe tooth decay, teeth are often left untreated or are extracted to

relieve pain or discomfort. Public health problems related to tooth loss and impaired oral function are therefore expected to increase in many developing countries.² The disparities in respect to oral health and diseases are complex and multidimensional. Socioeconomic factors are the foremost explanation in most of the instances, while in other cases the disparities are highlighted by the lack of community programs such as fluoridated water supplies. The utilization of dental health services are affected by transportation to a clinic and inability in getting time off from work to attend to health needs. Lack of resources to pay for care, either out of pocket or through dental insurance is another barrier. Another major barrier to seeking and obtaining professional oral health care relates to a lack of public understanding and awareness of the importance of oral health.³ Literature review suggests that studies have explored the dental causes for extraction of permanent teeth and have also highlighted lack of access and non-availability of dental services as significant barriers for utilization of dental services [4-6],

but very few actually answer the reason behind extraction of teeth which can be restored to normal function or at least improve esthetics. With this study, we aim to find the answer to this question so that it would help to understand the patient's perception and would guide us in making patient specific modifications in our approach to control of dental diseases.

MATERIALS AND METHODS

A survey was conducted in outpatient department, College of Dental Surgery, BP Koirala Institute of Health Sciences, Dharan, Nepal. A total of 775 patients were included in the study through consecutive sampling over the period of four months. The data regarding socio-demographic characteristics were recorded via a face-to-face interview followed by examination of oral cavity. The patients with teeth which could be restored through endodontic therapy were asked for reasons for undergoing extraction. The patients were counseled regarding importance of dental arch and permanent teeth and alternative treatment options. However, extraction of teeth was done for patients who still opted for it. The time taken for interview, oral cavity examination, counseling (for restorable teeth) and extraction of tooth/teeth was about 35 – 45 minutes. Data was entered, edited and categorized in Microsoft excel. The socio-demographic characteristics were categorized to create equal and relevant class intervals. The extracted teeth were divided into categories based on the type of tooth, quadrant the tooth belongs to, single or multiple extractions and the dental causes of extraction. The data was then exported to Statistical Package for Social Sciences (SPSS) 20.0 for analysis. The descriptive data was expressed in frequencies and percentages. Continuous variables were summarized with the help of mean and standard deviation. The data were presented through frequency

distribution tables. The ethical approval was taken from the Institutional Ethical Review Board (IERB), BPKIHS to conduct the study. Informed consent was taken from the patients with assurance of confidentiality. For patients who were mentally challenged, suffering dento-alveolar trauma and were minors, consent was taken from the patient's attendant and caretakers.

RESULTS

A total of 775 patients agreed to become part of the study and underwent extractions. Among them, 286 patients had restorable teeth and thus, were provided counseling to adopt other treatment options for salvaging the teeth. The patients were explained regarding the importance of teeth and oral health. However, none of the patients were convinced and extraction was done for them followed by advice for prosthetic rehabilitation. Table 1. shows socio demographic characteristics of 775 patients coming for extraction in dental opd of BPKIHS.

The largest fraction of the patients belonged to the young age group of 15 – 30 years while the average age was 44.12 years. The male to female ratio of the patients was 1:1.8. Regarding educational status, about one fifths (17.4%) of respondents did not receive any formal education. The posterior teeth were more commonly extracted compared to anterior teeth Third molars were most frequently (24.7%) extracted followed by first molars (19.8%), premolars (18.5%), second molars (15.6%), incisors (13.9%), canines (7.5%) and supernumerary teeth (0.4%). The distribution of extractions was similar in all the quadrants. The extractions were mostly done in first quadrant (26.6%) and less common in third quadrant (23.6%). More than one fourth (28.8%), of the patients underwent more than one extraction in single sitting (Table 2).

Table 1: Socio demographic characteristics of the patients attending dental OPD of BPKIHS, Nepal. n=775

Characteristics	Categories	Frequency	Percentage
Age	18 – 30 years	223	28.8%
	30 – 45 years	209	27.0%
	45 – 60 years	189	24.4%
	≥ 60 years	154	19.8%
Mean age ± sd (in years) = 44.12 ± 17.5 years			
Sex	Male	273	35.2%
	Female	502	64.8%
Education	No formal education	135	17.4%
	Up to primary school	345	44.5%
	Up to secondary school	252	32.5%
	College and above	43	05.6%

Table 2 : Characteristics of teeth extracted among patients attending BPKIHS, Nepal.

Characteristics	Categories	Frequency	Percentage
Most frequently extracted tooth N = 1112	Third molar	274	24.7%
	First molar	219	19.8%
	Premolars	205	18.5%
	Second molar	172	15.6%
	Incisors	155	13.9%
	Canine	82	07.5%
	Supernumerary teeth	05	00.4%
Number of extractions per quadrant (n = 1107) (excluding supernumerary teeth)	First quadrant	294	26.6%
	Second quadrant	285	25.7%
	Third quadrant	261	23.6%
	Fourth quadrant	267	24.1%
Number of extractions per visit	Single	552	71.2%
	Multiple	223(n = 223)	28.8%
	Two teeth	143	64.2%
	Three teeth	55	24.7%
	Four teeth	17	07.6%
	Five teeth	07	03.1%
	Six teeth	01	0.04%

Dental caries, its sequel (reversible , irreversible pulpitis etc) and periodontal causes together were reasons for extraction of more than 50 per cent of teeth (58.7%) followed by root stumps, complete denture construction, impaction, trauma, orthodontic causes, RCT failure, teeth fracture and traumatic ulcer (Table 3).

Table 3: Dental causes for extraction of teeth among Nepalese patients (n =1112)

Dental Causes for extraction	Frequency	Percentage
Caries and its sequel (caries, pulpitis)	346	31.1%
Periodontal causes	307	27.6%
Root stumps	287	25.8%
Construction of complete denture	61	05.5%
Impaction	36	03.2%
Trauma	29	02.6%
Orthodontic extraction (including supernumerary teeth)	16	01.4%
Failure of RCT	13	01.3%
Fracture of teeth	09	00.8%
Traumatic ulcer	08	00.7%

More than one fourth (25.7%) of the total extracted teeth could have been saved through endodontic therapy. These patients were suffering from dental caries, reversible and irreversible pulpitis with good coronal structure and could have favorable results after restoration and pulp therapy. Majority of the patients (26.9%) opted for extraction due to high cost of root canal procedures and other restorative procedures. A huge chunk also believed that restoration was not a long term solution and that the teeth would eventually exfoliate. The other reasons included unable to come for multiple dental visits for restoration, old age and 22 patients even told that they were not even aware of alternative treatment options apart from extraction (table 4).

Table 4: Reasons for extraction of restorable teeth among patients attending BPKIHS, Nepal. (n =286)

Reasons for extraction of restorable teeth	Frequency	Percent
Lack of money	77	26.9%
Restoration not being a long term solution	72	25.2%
Due to multiple visits	70	24.6%
Old age	45	15.7%
Unaware of other treatment options	22	07.6%

DISCUSSION

In the current study, the largest fraction of the patients belonged to the young age group of 18 – 30 years which was similar to findings from Dhulikhel hospital in Nepal where most of the extractions were done between the age group of 21–30 years.⁷ The male to female ratio of the patients was 1:1.8 indicating more extractions were being done in female patients which is consistent with other studies done in Nepal.^{4,7} The posterior teeth especially third molars were more commonly extracted compared to anterior teeth. Third molars have been the most frequently extracted teeth due to impaction since 1900s and still continue to be so.⁸⁻⁹

More than one fourth (28.8%), of the patients underwent more than one extraction in single sitting probably due to poor oral hygiene as the current study revealed that dental caries, its sequel and periodontal diseases which were the reasons for extraction in more than 50 per cent of the patients. This finding is consistent with studies done in Nepal as well as other countries.^[4-5,10] However, studies also show that in younger age group orthodontics has become the commonest reason for exodontia, and in all age groups over 20 years, caries has become the most frequent cause replacing periodontal disease which was initially the principal reason for extraction in older age groups.¹¹

In our study, more than one fourth (25.7%) of the total extracted teeth could have been saved through direct and indirect pulp therapy. They represent a group of patients who had access and availability of oral health services which are considered as major barriers for utilization of dental services in lower and middle income countries.^{6,12} Majority of the patients (26.9%) opted for extraction due to high cost of root canal and other restorative procedures similar to previous studies which show that socio economic status has a significant influence on health seeking behavior of the population.^{13,14}

Research evidence shows that many countries, comprehensive national dental care systems have

succeeded in increasing the coverage and reducing or even eliminating socioeconomic differences in the use of dental services. However, socioeconomic differences in the utilization of dental services still exist in many countries.¹⁵⁻¹⁷ Majority also believed that restoration was not a long term solution and that the teeth would eventually exfoliate which was also the case in America as expressed in Surgeon General report.³

The other reasons included unable to come for multiple dental visits for restoration i.e. lack of time to come for multiple visits as found in another study.¹⁸ The older patients in the current study expressed that since they are old, they want extraction indicating their physiological state of ageing as a barrier for utilization of dental services as also shown in a study from Washington,¹⁹ and 22 patients even told that they were not even aware of alternative treatment options apart from extraction. Thus, Oral health education is a significant enabler for utilization of dental services.²⁰ A Chinese study has shown that oral health education and awareness brought positive effects on gingival bleeding scores and oral health behavior of children, and on oral health knowledge and attitudes of mothers and teachers.²¹ The study provides valuable insight regarding the possible barriers for utilization of available and accessible dental services however, it has certain limitations. A non-probability sampling technique was used and the study was conducted at a tertiary hospital under Nepal government because of which the study findings cannot be generalized to other patients and different study settings.

Our study describes the various reasons for which restorable teeth are extracted in a tertiary care hospital. Poor financial condition and lack of adequate information regarding dental treatment are leading to poor utilization of available and accessible dental services in Nepal. Caries, its sequel and periodontal disease were the most frequent clinical findings among the patients. Thus, the study implies that preventive strategies should emphasize on methods to reduce the burden of caries and periodontal diseases which is leading to premature extraction of permanent teeth in Nepal. The patients should be made aware of all the available treatment options so, that they can make an informed decision regarding dental treatment. Policy makers and the dental professionals need to work together to create innovative solutions to make dental health services affordable to the general population.

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