Reasons for Permanent Teeth Extraction in Srinagar District of Uttrakhand

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Abstract

Objective:The aims of the present study are to determine the causes and pattern of loss of permanent teeth among patients attending a medical college in Uttrakhand. Subjects and Methods: Data collected from patients attending the outpatient wing of the Government Medical College, Srinagar Garhwal , Uttrakhand, during a 12 month period (First Jan 2014- First Dec 2014) was used for the study. The cause for extraction was classified as follows: (1) Dental caries (2) periodontal disease, (3) endodontic failures, (4) trauma, (5) orthodontic needs, (6) impactions, and (7) supernumerary teeth. Results: A total of 1506 permanent teeth were extracted of which 662 (43.95%) teeth were extracted due to caries, 472 (31.34%) due to periodontal disease, 154 (10.4%) for orthodontic purposes, 88 (0.58%) due to impactions, 68 (0.45%) for endodontic treatment , and 44 (0.29%) for trauma and 18 (0.11%) for supernumerary teeth. Conclusions: The results of the present study suggest caries and periodontal disease are the major causes of tooth mortality in the study population.

Key Words: Dental caries, Periodontal disease, Teeth extraction

Introduction

Oral disease such as Dental caries, periodontal disease are one of the major problems in developing countries. Partial Edentulism have a profound effect on the overall health, and quality of lifePartial edentulism had significant impact on socioeconomic status of individual, it is essential to identify the reasons for extraction of permanent teeth in individual populations so dental health policies can be developed more effectively.

National surveys to determine the causes and pattern of extraction have been carried out in several countries [1-10]. Different studies shows the reasons for tooth loss among different populations. At present, there is very little information regarding the trends in loss of permanent teeth among patients in India. Therefore, the aims of the present study were to identify the reasons and pattern of extraction of permanent teeth among patients attending a medical college in India.

Materials and Methods

In this prospective cross-sectional study, data was collected among the sample patients attending the outpatient wing of Government Medical college for extraction of permanent teeth from first Jan 2014 to First December 2014. Variables recorded include age and sex of the patient, individual tooth extracted, age distribution of patients, cause for extraction, pattern of extraction in both arches. The main reasons for extraction were classified as follows:(1) Dental caries (2) periodontal disease, (3) endodontic failures, (4) trauma, (5) orthodontic needs, (6) impactions, and (6) supernumerary teeth.

Results

A total of 1506 permanent teeth were extracted from 1208 patients during the study period. The age of the patients ranged from 10 to 80 years. Of the 1506 extracted teeth, 664 (44%) were extracted in males and 842 (55.9%) were extracted in females. *Table 1* shows the number of teeth extracted in various age groups among males and females. In almost all the age groups more teeth were extracted in females than in males. The largest numbers of teeth were extracted in the age groups of 51-60 years followed by the age groups of 61-70 and 11-20 and 51-60 years.

The pattern of extraction in the maxillary and mandibular arches as well as the right and left sides of the dentition was analyzed. Of the 1506 teeth extracted, 765 (46.8%) were extracted from the maxillary arch and 801 (53.1%) were extracted from the mandibular arch; 941 (62.4%) teeth were extracted from the right side while 565 (37.5%) teeth were extracted from the left side. The distribution for the causes of extraction of the teeth among males and females was analyzed (*Table 2*).

Table 1. *Number of teeth extracted among males and females in different age groups.*

Age groups	Male patients	Females patients	Total	Percentage
>10 years	52	76	128	8.40%
11-20 years	108	128	236	15.60%
21-30 years	46	108	154	10.20%
31-40 years	68	106	174	11.50%
41-50 years	108	116	224	14.80%
51-60 years	140	150	290	19.20%
61-70 years	122	140	262	17.30%
71-80 years	20	18	38	2.50%
Total	664	842	1506	100%

In males, the leading cause for tooth extraction was found to be dental caries (29.2%) followed by periodontal disease (25%). However, in females, caries (56.5%) was found to be

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the primary cause for tooth loss while periodontal disease accounted for 36.3% of the extractions.

Dental caries was found to be the main cause of tooth extraction in the study population. Caries and periodontal disease together accounted for more than 75% of the extractions. Of the 1506 teeth extracted, 662 (43.9%) teeth were extracted due to dental caries , 472 (31.3%) teeth due to periodontal disease, 154 (10.4%) teeth for orthodontic purposes, 88 (0.5%) teeth due to impactions, 68 (0.4%) teeth for endodontic purposes, 44 (0.29%) teeth due to trauma and, 18 (0.1%) due to supernumerary tooth.

Table 2. Reasons of tooth loss among males and females.

Reasons of tooth loss	Males subjects		Females subjects		Total subjects	
	Number	percentage	Number	Percentage	Number	Percentage
Dental caries	186	29.20%	476	56.50%	662	43.90%
Periodontal disease	166	25%	306	36.30%	472	31.30%
Orthodontic treatment	67	10%	87	10.30%	154	10.20%
Impaction	36	5.40%	52	6.10%	88	5.80%
Endodontic failure	26	3.90%	42	4.90%	68	4.50%
Trauma	22	50%	22	50%	44	2.90%
Supernumerary teeth	6	0.90%	12	1.40%	18	1.10%
	664	100%	842	100%	1506	100%

When the distribution of causes for extraction in different age groups was analyzed dental caries was observed to be an important factor in the extraction of permanent teeth in patients of all age groups. In individuals between 11-20 years of age more teeth were extracted for orthodontic purposes than due to any disease. In males Orthodontic extractions accounted for 71.6% of the extractions in the age group of 11-20 years and 28.3% of extractions in the age group of 21-30 years whereas in females patients orthodontic extractions were 67.8% and 43.7% in age groups of 11-20 and 21-30 years. Dental caries was the major reason for extraction in females in the age groups of 21-30 years (62.3%) and 31-40 years (62.%).

Table 3. Reasons of tooth loss among different age groups among male and females

Dental caries	Periodontal disease	Orthodontic treatment	Impaction	Endodontic failure	Trauma	Supernumerary teeth
		Males Subjects				
11	0	0	0	0	0	1
35	0	48	0	0	0	2
44	8	19	18	6	0	2
41	25	0	16	13	15	1
23	41	0	0	4	0	0
18	51	0	0	3	0	0
13	37	0	2	0	7	0
1	4	0	0	0	0	0
186	166	67	36	26	22	6

Table 3. Reasons of tooth loss among different age groups among male and females.

Dental caries	Periodontal disease	Orthodontic treatment	Impaction	Endodontic failure	Trauma	Supernumerary teeth
		Females Subjects				
0	0	0	0	0	0	0
67	17	38	0	0	0	6
116	36	49	28	1	0	3

113	39	0	17	8	16	2
86	65	0	0	12	6	1
46	98	0	7	21	0	0
44	38	0	0	0	0	0
4	13	0	0	0	0	0
476	306	87	52	42	22	12

First premolar (26.9%) was the most frequently extracted teeth followed by first molar (20.5%) and third molar (15.1%) as shown in *Table 4*. The pattern of individual teeth extraction in both arches was also examined. First premolar (216 in maxillary arch and 190 in the mandibular arch) were the most frequently extracted teeth. In the maxillary arch most frequently extracted teeth after first premolar (216) was first molar (145) followed by second premolar (118). In the mandibular arch the next most frequently extracted teeth was first molar (165) followed by third molar (155).Incisors, canine and premolars were extracted more from maxillary arch than the mandibular arch. Molars were extracted more from mandibular arch than the maxillary arch.

First and first molars were extracted more in the age groups of less than 10 years, 11-20 years and 21-30 years whereas incisors and canine were extracted more in the age groups of 41-50, 51-60,61-70 years.

Table 4. *Number of tooth loss according to tooth types.*

Tooth type	Total Number	percentage	Maxillary Arch	Mandibular Arch
Central incisor	56	3.70%	30	26
Lateral incisor	74	4.90%	41	33
Canine	98	6.50%	67	29
First Premolar	406	26.90%	216	190
Second Premolar	215	14.20%	118	87
First Molar	310	20.50%	145	165
Second Molar	119	7.90%	51	68
Third Molar	228	15.10%	73	155

Regarding the cause of extraction of individual tooth central and lateral incisors (88) and canines (59) were extracted due to periodontal disease.

Table 5. *Extraction of individual tooth type among various age groups Males subjects.*

Age groups	Central incisor	incisor Lateral	Canine	First premolar	Sec premolar	First molar	Sec molar	Third molar	Total
>10	6	4	0	18	8	16	0	0	52
20-Nov	9	8	5	38	0	32	12	4	108
21-30	3	1	2	17	2	16	3	2	46
31-40	5	6	8	25	3	10	7	4	68
41-50	37	28	18	7	5	9	4	0	108
51-60	42	39	33	3	5	9	3	6	140
61-70	39	37	24	8	6	5	1	2	122
71-80	2	6	4	1	2	1	4	0	20
Total	143	129	94	117	31	98	34	18	664

Females subjects:

Table 5. *Extraction of individual tooth type among various age groups Males subjects.*

Age groups	Central incisor	Lateral incisor	Canine	First premolar	Sec premolar	First molar	Sec molar	Third molar	Total
>10	4	8	4	32	0	28	0	0	76
20-Nov	12	8	18	48	9	33	0	0	128

21-30	17	9	15	27	11	21	6	2	108
31-40	9	15	11	31	8	24	2	6	106
41-50	41	32	18	7	9	5	4	0	116
51-60	52	33	38	5	9	5	6	3	150
61-70	48	41	27	9	5	3	4	3	140
71-80	6	3	7	0	0	1	1	0	18
Total	189	148	138	159	51	120	23	14	842

The main cause of extraction of first premolar (154) was for the orthodontic treatment while the second premolars (79 and 81) were extracted due to dental caries and periodontal problems. First (165), second (76) and third molars (129) were mainly extracted for dental caries (*Tables 5 and 6*) .

Table 6. *Reasons of tooth loss among individual teeth.*

Individual teeth	Caries	Periodontal disease	Orthodontic extraction	Impaction	Endodontic failure	Trauma	Supernumerary teeth
Incisors	36	98	0	0	3	2	1
Canine	27	59	0	4	6	2	0
First Premolar	128	104	154	0	12	8	0
Sec Premolar	106	98	0	0	5	6	0
First Molar	165	121	0	0	18	6	0
Sec Molar	76	37	0	0	3	1	0
Third Molar	129	83	0	82	14	0	0

Table 7. *Reasons of extraction of individual teeth in both arches.*

Individual teeth	**Dental caries**		**Periodontal disease**		**Ortho treatment**		**Impaction**	
Incisors	**Maxillary arch**	**Mand arch**	**Max arch**	**Mand arch**	**Max arch**	**Mand arch**	**Max arch**	**Mand arch**
	16	20	62	26	0	0	0	0
Canine	19	8	12	47	0	0	0	0
First premolar	68	60	32	72	77	77	0	0
Sec premolar	66	40	48	31	0	0	0	0
First molar	50	115	85	36	0	0	0	0
Sec molar	48	28	32	5	0	0	0	0
Third molar	47	82	20	63	0	0	49	33

Discussion

This study is the first that has evaluated the relationship between age, tooth loss and the reasons of tooth loss at a Department of Dentistry at a Medical college in Uttrakhand.

Out of the 1506 permanent teeth extracted 664 (44%) were extracted in males and 842 (55.9%) were extracted in females. This may be explained by the fact that males were more concern about conservative treatment than females. This could be because rural females had a lower level of education and they could not have afforded treatment procedures that would have saved their tooth in question and therefore opted for extraction. Dental caries and periodontal problems constitute 75% of the total extractions. Dental caries was a significant factor of tooth loss in all age groups and the premier cause of tooth loss in males and females. Dental caries as the leading cause of tooth loss in younger age groups is well supported by previous studies [4,5,9-14].In this study dental caries (43.9%) was found to be the leading cause of tooth loss , Some other studies have also shown similar significant findings[4,5,9] but not others [13]. Periodontal disease (36.3%) was the second most leading reason for tooth loss in the current study this findings were consistent with previous findings [4,6,9,13,14] but not others [15,16].

Among the age groups of more than 30 years of age periodontal disease was observed to be the major reason of tooth loss. This finding is consistent with previous study [17]. Periodontal disease was also observed to be the leading cause

of tooth loss in the males in this study. This may reflect the habit of smoking and chewing tobacco among the males in rural regions of Srinagar garhwal.

Orthodontic treatment was the leading cause of tooth extractions in the age groups of 11-20 and the second most cause in the age group of 21-30. This findings is consistent with few studies but not other [4,7,8,9,10,14]. Nowadays there is increasing trends among patients regarding orthodontic treatment. Of all the teeth extracted the most frequently extracted teeth was the first premolar which was extracted mainly for orthodontic treatment. The next most frequently extracted teeth were the first molar, third molar and second premolars. They were mainly extracted for dental caries. The anteriors were mainly extracted for periodontal disease. The different cause of extractions of anteriors and posteriors were the tooth morphology and inappropriate oral hygiene maintenance among the subjects. A great number of mandibular anteriors were extracted for periodontal disease as compare to maxillary anteriors. The possible explanation for this could be that the mandibular anteriors were less susceptible to dental caries than their maxillary counterparts [18,19].

Conclusions

Dental caries and periodontal contributes 75% of the total extractions in the current study. There is an increase need for public health programs and oral health awareness camps designed to better address the burden of caries and periodontal disease. In this study females has undergone more extractions than their male counterparts therefore require more attention regarding dental awareness and motivation. The present study has been conducted among the patients attending the dental outpatient department of a medical college which is not a true representative of the general population. Various studies correlates the influence of various variables on the patterns of tooth loss in various regions [20,21].

Our country India has diverse socioeconomic status, different lifestyles, and dietary patterns, the patterns and reasons of tooth loss may vary in different regions. At present very little data is available regarding the causes of permanent tooth loss in India. Data generated from such studies would serve as a valuable reference for the design of public health policies for this nations populations. It is essential to identify feasible strategies to provide primary dental health education and treatment to all rural and urban populations in the future. We suggest community dental health services as a general health need of the rural populations rather than a special health need of the community. Incorporating primary, as well as rehabilitative dental care services under the existing rural health infrastructure may be an effective method to improve access to oral health-care for the rural populations in developing countries.

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