

Anterior Traumatic Dental Injuries amongst Children and Adolescents in Western Region of Nepal

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Abstract The facial profile of an individual depends a lot on his /her anterior permanent teeth. Injury to these teeth can impair the function and hamper the esthetic look of the individual. This study is to ascertain the prevalence and type of treatment received regarding traumatic dental injuries in Nepalese adolescents. The sample included 253 patients range from 7 -15 year old children and adolescent attending at Manipal Teaching Hospital, Pokhara, Nepal from 2012 to 2014. Dental injuries were clinically assessed as follows: uncomplicated crown fracture, complicated crown fracture, crown discoloration, intrusion, extrusion, avulsion and subluxation. The prevalence of dental injuries was 9.6%. Boys sustained more injuries than girls with a ratio of 4:1. The dental injuries were almost entirely restricted to the maxillary central incisors (48.40%). Single tooth injury was predominant in all age groups. The commonest type was uncomplicated crown fracture (48.41%). The commonest cause was road traffic accident (50.20%).

Keywords: Dental Trauma, Children, Adolescents, Nepal

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and adolescents attending Dental Out Patient Department of Manipal Teaching Hospital, Pokhara, Nepal.

1. Introduction

Anterior permanent teeth have esthetic and functional importance including significant effect on the individual facial profile. Facial trauma leads to fractured, displaced or lost teeth which can have significant negative functional, esthetic and psychological impact on children and adolescent [1].

The most common injuries to permanent teeth occur as a result of road traffic accidents (bicycle injury) followed by sports, falls and violence [2,3]. All sporting activities had risk of oro-facial injuries due to fall, collision and contact with hard surface [4]. Use of mouth guard which helps to distribute the force of impact and reduces the risk of severe injuries to the tooth [5].

The treatment strategy after injury to a permanent tooth is dictated by the concern for vitality of the pulp and periodontal ligament. In order to evaluate the extent of the injury and to correctly diagnose the injury to teeth, periodontal ligament and related structures, a systematic approach is needed [6]. Patients having spontaneous tooth ache, abnormal, response to pulp tests, or breakdown of peri radicular supportive structures, initiation of endodontic consultation and treatment is needed [6,7]. To stabilize a tooth following traumatic injury a splint may be necessary [8,9]. In some of the cases tooth need to be extracted and replaced with dental prosthesis.

The purpose of this study was to determine the prevalence of traumatic dental injuries among children

2. Material and Methods

There were total 2433 Children and adolescents attended the Dental Clinic of Manipal Teaching Hospital from January 2012 to December 2014. Out of these 2433 patients a cross sectional survey of 253 patients from 7 years to 15 years old who had received traumatic dental injuries were included. Informed consent was obtained from the parents. One of the dental surgeons collected the data through questionnaire and clinical examination. Demographic Information including age, sex cause/modality of trauma, number and type of injured teeth and the adolescents' attitude to dental injuries were recorded in a proforma. Type of Dental Injuries (TDI) was confirmed by clinical examination and managed accordingly.

The children were examined with plain mouth mirror and periodontal probe while seated on dental chair with good natural light and artificial illumination.

Prior permission from the Ethical Committee of Manipal Teaching Hospital was obtained before conducting the study.

Sample size calculation: In a pilot study done prior to the study with 100 subjects showed expected percentage of the Road traffic accident as a cause for traumatic dental injuries among the children was 50%. The required

sample size was 196, for precision= 7% and desired confidence level 95% [10].

3. Results

Out of 2433 children patients who visited Dental OPD of MTH, 253 children had experienced dental injury revealed by questionnaire and clinical examination. A total of 9.6% (209 boys, 44 girls) have sustained traumatic dental injuries (TDI) with a boy to girl ratio of 4:1. The prevalence of traumatic dental injuries was 9.6%. (Table 1).

Table 1. Age and Sex Distribution of The Patients with Traumatic Anterior Dental Injuries

Age(years)	Male	Female
7	22	5
8	25	7
9	29	6
10	33	6
11	29	5
12	23	7
13	19	4
14	15	3
15	14	1
Total	209	44

Road traffic accident (bicycle injury) was the commonest cause of traumatic dental injuries in both sexes 50.20% followed by sports 29.24% and fall 17.78%. The least cause of TDI was violence 2.76% (Table 2).

Table 2. Gender Distribution of Patients with Traumatic Dental Injuries According to Cause

Causes	Male		Female		Total	
	No	%	No	%	No	%
Road Traffic Accident (Bicycle Injury)	113	44.66	14	5.53	127	50.20
Sports	67	26.48	7	2.76	74	29.24
Falls	24	9.48	21	8.30	45	17.78
Violence	5	1.97	2	0.79	7	2.76
Total	209	82.61	44	17.39	253	100

Out of 253 Children and adolescents who attended the Dental Clinic, total 661 teeth were traumatized. Uncomplicated injury (enamel – dentine fracture) was the commonest type of injury 48.41%, followed by avulsion 21.18%. (Table 3).

Table 3. Distribution of Traumatized Anterior Teeth According to Type of Injury

Types Of Injury	No	%
Uncomplicated	320	48.41
Complicated	62	9.38
Crown Discoloration	5	0.75
Intrusive Luxation	84	12.72
Extrusive Luxation	26	3.93
Subluxation	24	3.63
Avulsion	140	21.18
Total	661	100

Maxillary central incisor was the most traumatized tooth 48.4% and the least injured tooth was maxillary canine 3.3%. (Table 4).

Table 4. Types of Injured Tooth

Types Of Injured Tooth	No	%
Maxillary Central Incisors	320	48.4
Maxillary Lateral Incisors	124	18.76
Maxillary Canine	22	3.3
Mandibular Central Incisor	160	24.2
Mandibular Lateral Incisor	35	5.2
Total	661	100

Simple restorations and endodontic were done in majority of the cases. Avulsed teeth were replaced by prosthesis and splinting was done in luxation. (Table 5).

Table 5. Types of Treatment Received after Traumatic Dental Injury.

Types Of Treatment	No
Only Observation	90
Simple Restoration	320
Endodontic Treatment	101
Prosthesis Replacement	90
Splinting	60
Total	661

4. Discussions

In Nepal the prevalence of traumatic dental injuries to the anterior teeth was not found in literature. The Indian subcontinent the prevalence of anterior dental injuries ranged from 8.5% to 15.5% [11]. The literature review showed that the study on traumatized anterior permanent teeth in the Nepalese adolescent is sparse. The study showed a prevalence of anterior traumatic dental injuries is 9.6% in western region of Nepal.

The distribution of children showing dental injuries according to gender and age groups is summarized in (Table 1). A difference in the frequency of dental injuries was observed between boys and girls with a ratio of 4:1. The peak incidence to injury to the permanent anterior teeth is 8-11 years. The study showed that the highest prevalence of dental injuries was at the age of 11 years. In different study has shown that maxillary teeth are more frequently traumatized than mandibular teeth; this is supported by present literatures. The most commonly affected teeth are the maxillary central incisors. This finding are similar to the earlier study only percentage ratio varies [12], whereas in another study it was upper left incisor (48.0%) followed by upper right central (43.1%) [13]. The most traumatized teeth in the study was the maxillary central incisor and the least traumatized was maxillary canine. Uncomplicated crown fracture was the commonest type of dental injury in this study. The high prevalence of avulsed teeth 21.18% was found in the population examined. Majority of the avulsed teeth occurred in the boys as a result of road traffic accident.

Table 5 showed the type of treatment received by the children after injury provided in the Manipal Teaching Hospital. Most of the injured teeth were treated by simple restoration with glass ionomer cement and composite resin.

5. Conclusion

The prevalence of dental injuries in Nepalese adolescents showed that uncomplicated fracture and avulsion are the most common type of injuries and road traffic accident especially bicycle accident was the commonest cause of these injuries. There is need to create dental awareness through dental health education amongst Nepalese adolescent children to improve their quality of life and regarding dental esthetics.

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Declaration of Conflicting Interests

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