TRAUMATIC INJURIES OF THE PERMANENT MAXILLORY INCISORS AT DENTAL DEPARTMENT, PAKISTAN INSTITUTE OF MEDICAL SCIENCES ISLAMABAD: A RETROSPECTIVE STUDY

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Background: The study aims to ascertain the prevalence of traumatic dental injures of the maxillary permanent incisors at Dental Department, Pakistan Institute of Medical Sciences Islamabad during the years 2003–2005. Information concerning age, sex, cause, type of tooth, number of injured teeth and patterns of tooth injury were recorded retrospectively from 336 patients aged between 8–40 years, comprising 498 traumatized teeth**. Methods**: The dental records of all the patients presenting with dental trauma were examined for collection of data relating to age, sex, cause, number of injured teeth, type of tooth and type of tooth trauma. Type of tooth trauma was recorded according to the Andreason classification. The data was subsequently processed and analyzed using the SPSS statistical software programme. The statistical significance level was set at 5%. **Results**: Of the 336 patients, 227 were males (67.6%) and 109 were females (32.4%). The gender difference was statistically significant (p<0.0001). The patients had a total of 498 traumatized teeth. A large number of dental trauma occurred in patients aged between 9–11 years. Most injuries involved one tooth in 227 patients (67.6%). However two teeth in 90 patients (26.7%), three teeth in 11 patients (3.2%) and only in 8 patients (2.3%) four teeth were involved. Fractures in enamel only occurred in 74 teeth (14.6%). Uncomplicated crown fractures in 208 teeth (41.9%) were the most commonly encountered dental trauma. 137 teeth (27.6%) suffered complicated crown fractures, 44 teeth (8.9%) uncomplicated crown-root fractures, 19 teeth (3.8%) complicated crown-root fractures and avulsion in 16 teeth (3.2%) only. The main causes were falls in 225 patients (66.9%), collision with objects in 40 patients (11.9%), road traffic accident in31 patients (9.2%) violence in 21 patients (6.2%), and sports in 19 patients (5.6%). The maxillary central incisor was traumatized in 384 teeth showing a high percentage of 77%. **Conclusion:** Raising public dental awareness regarding the serious outcome of traumatic dental injuries is mandatory to improve the prognosis of dental trauma and to avoid complications.

Keywords: Aetiology, Permanent Incisors, Traumatic dental injuries.

INTRODUCTION

Oral injuries are the fourth most common area of bodily injuries among 7–30 years olds.[1] Traumatic dental injuries can become an important health problem not only because their prevalence is relatively high they have large impact on individual's daily life.[2] They constitute one of the leading reasons for odontological emergencies.[3]

Andreason JO and Andreason FM have reported that the incidence of these injuries has increased during the last 10–20 years and suggested that incidence of dental trauma soon will exceed that of dental caries and periodontal diseases.[4] Many authors have pointed out that a fractured permanent tooth is a tragic experience for both child and parents.[5] This is because of psychological discomfort, pain, loss of function and poor esthetics.[1,2]

Costs to the injured person and community arising from such injuries are substantial. For these reasons the retrospective studies are important in evaluation of occurrence of this condition and various etiologic factors in relation to type and pattern of tooth fractures and these studies can also facilitate the planning of preventive measures. Besides this the dentist can make a better assessment and carry out treatment more effectively with knowledge of potential prognosis of various treatment modalities.[5]

Crown fractures and crown-root fractures deserve special attention due to their prevalence, variety of causative factors and the diversity of clinical solutions proposed for the treatment of these fractures.[6]

The number of patients requiring treatment for dental injuries is constantly increasing. The proportion of children suffering traumatic injuries and also the type of injury varies greatly from country to country.[7]

An appreciable number of publications have discussed dental trauma of primary and permanent dentition. Andreason and Andreason conducted one of the most complex surveys in this field involving epidemiological, statistical, diagnostic and treatment data from several countries.[8]

The objective of this study is to evaluate the occurrence of traumatic dental injuries and their various etiologic factors in relation to the age and sex of the patient, type and number of teeth involved and patterns of tooth fractures.

Data pertaining to traumatic dental injuries was analyzed from records of patients aged 6–40 years, seeking treatment at the dental department Pakistan Institute of Medical Sciences Islamabad from January 2003–December 2005.

In Pakistan only one survey of dental trauma has been carried out. The significance of this study is that it includes a wider age group, aetiology of trauma, number and type of teeth involved and patterns of tooth fractures in clinical environment. Therefore it can raise the Pakistani public awareness regarding the consequences and complications associated with dental trauma. Prompt and in time intervention can greatly improve the prognosis of such injuries.

MATERIAL AND METHODS

The dental records of all the patients presenting with dental trauma at dental department Pakistan Institute of Medical Sciences Islamabad from January 2003–December 2005 were examined for collection of data. A total record of 336 patients comprising 498 traumatized teeth was analyzed. The data included age and sex of the patients, cause of dental trauma, number of injured teeth, type of tooth and type of tooth trauma excluding grossly damaged teeth due to caries, associated alveolar and soft tissue injuries. Teeth which were traumatized but not fractured could not be included as they were not reported by the patient.

Type of trauma was recorded according to the Andreason classification which is based on a system accepted by WHO.[8] The data was subsequently processed and analyzed using the SPSS statistical software programme. The statistical significance level was set at 5%.

RESULTS

Of the 336 patients, 227 were males (67.6%) and 109 were females (32.4%) as shown in Figure-1. The patients had a total of 498 traumatized teeth. A large number of dental trauma occurred in patients aged between 9–11 years. The gender difference was statistically significant. (p<0.0001). Most injuries involve 1 tooth in 227 patients (67.6%); 2 teeth in 90 patients (26.8%) 3 teeth in 11 patients (3.2%) and 4 teeth in only 8 patients (2.4%) as shown in Figure-2. Fractures in enamel only occurred in 74 teeth (14.85%). Uncomplicated crown fractures in 208 teeth (41.76%) were the most commonly encountered dental trauma. 137 teeth (27.51%) suffered complicated crown fractures, 44 teeth (8.84%) uncomplicated crown fractures, 19 teeth (3.81%) complicated crown-root fractures and avulsion in 16 teeth (3.21%) only as shown in Table-1. The main causes were falls in 225 patients (66.9%), collision with objects in 40 patients (11.9%), road traffic accident in31 patients (9.2%) violence in 21 patients (6.2%), and sports in 19 patients (5.6%) as shown in Table-2. The maxillary central incisor was traumatized in 384 teeth showing a high percentage of 77% as shown in Figure-3.

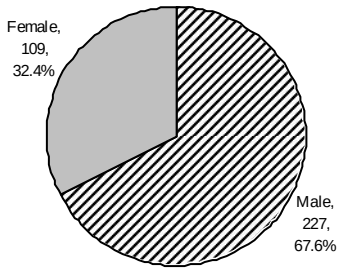

Figure-1: Gender of Patients with injured teeth

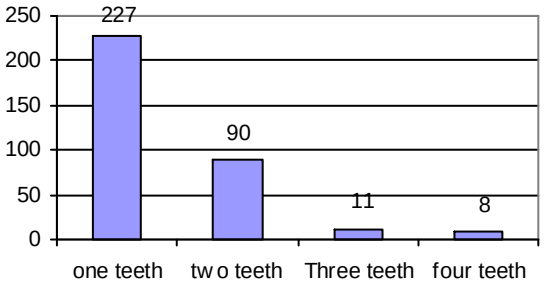

Figure-2: Number of injured teeth

Table-1: Types of tooth trauma

	Number	Percentage
Enamel Infraction	74	14.85
Uncomplicated crown fracture	208	41.76
Complicated crown fracture	137	27.51
Uncomplicated crown-root fracture	44	8.84
Complicated crown-root fracture	19	3.81
Avulsion	16	3.21

Table-2: Causes of tooth trauma

	Number	Percentage
Falls	225	66.9
Collision with objects	40	11.9
Road traffic accident	31	9.2
Violence	21	6.2
Sports	19	5.6

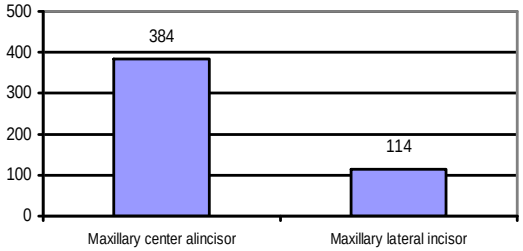

Figure-3: Type of injured tooth

DISCUSSION

This study was conducted at dental department Pakistan Institute of Medical Sciences. Being a Government hospital the treatment provided is fairly affordable hence it covers a wide spectrum of population from each social class. Traumatic dental injuries can be considered a public health problem as revealed by the results of this study.

The most commonly affected age group was 9–11 years which is in agreement with other studies.[9–11] The adolescents being more vulnerable because of their life style and general tendency of taking more risks.

Male predominance is significant as there were 227 males (67.6%) and 109 female (32.4%) in our study and has been reported in majority of previous studies.[1,2,12–14] Girls are less prone to traumatic dental injuries as our social setup and cultural reservations don't allow them to be involved in vigorous outdoor activities. In contrast boys are more inclined towards dangerous work and sports as well as more exposed to road traffic accidents. The findings of present study support the general findings that etiologic factors vary according to age group studied.

Falls were the most frequent cause of trauma in all age groups and this was generally supported by other studies.[4,15,16] This was followed by collision in 40 patients (11.9%) which occurred when children were bicycling, playing at home, at school or outside in the street during leisure activities. Road traffic accidents accounted for 9.2% of traumatic injuries in 31 patients. Violence was the cause of tooth trauma in 21 patients (6.2%). It was found that these cases were related to violence in both street and home like pushing against another child, assaults and physical abuse. Injuries to the teeth due to the sporting activities seemed to be underestimated in our study in 19 patients (5.6%) as compared to other studies.[15,17] This finding can be explained by the fact that sport facilities are not widely available for the poor population in Pakistan.

In this survey most of the trauma cases involved only one tooth (67.6%), and the tooth most commonly affected was maxillary central incisor (77.0%) because of their protrusive and vulnerable position followed by lateral incisor (23.0%). This finding corroborates the earlier findings of researchers.[8,19]

The most frequent injuries were Andreason uncomplicated crown fracture involving enamel and dentin without pulp (41.9%) in 208 teeth which are in agreement with some of the previous studies. The second most common is complicated crown fracture in 137 patients (27.51%).[1,2,13,18]

However there are studies showing that Andreason crown infractions (enamel crack) is the most common type of injury in permanent dentition. Patients with such fractures generally don't have a need for seeking dental care because they don't have any complaint or sometimes they are not aware of their injured tooth.[4,18]

Identifying the etiologic factors makes it possible to establish preventive measures, aimed at avoiding future injuries. Locations such as parks and play grounds are particularly conducive to dental injuries in Pakistan. Health promotion policies should aim to create an appropriate and safe environment as well as increasing awareness of hazards at home, school and street and reducing unsafe activities. An educational programme underlining the importance of prevention of dental trauma and the benefits of immediate treatment and conservation of avulsed and fractured teeth would reduce the overall rate of traumatic dental injuries and minimize their sequels. Therefore dental emergencies should be dealt with high proficiency and providing prompt standard care for such injuries should be the target of dental emergency care providers. Thorough standard documentation of all dental trauma episodes as well as prospective studies on a national level should be conducted to obtain baseline information of this rather common and neglected emergency. This is expected to help policy maker in planning preventive and curative strategy.

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