

Traumatic dental injuries and their management among children aged 6 -12 years in Dar es salaam, Tanzania

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Abstract

Aim: The aim of this study was to determine, by utilizing patient records, the various types of dental trauma and the treatment provided among children aged 6 - 12 years. **Materials and Methods:** A retrospective cross sectional survey was conducted at Dental department, Muhimbili National Hospital, Dar es Salaam, Tanzania. The subjects were obtained from the register books available at the Dental Department of the Muhimbili National Hospital. Records of all sixty seven (67) dental patients aged six to twelve years who received treatment for dental trauma from January 2001 to January 2003 were obtained. Results were presented in tables and the data analysed using Epi Info 2002 statistical package. **Results:** All together, sixty-seven children presented with a total of 101 injured teeth. The age distribution of the study group was found to have a peak at 6 - 9 years. Thirty-nine children (58.2%) sustained injuries to one tooth, 24 (35.8%) children had injuries to two teeth and only 4 (6%) children injured three or more teeth. Of the 101 total injured teeth, deciduous teeth constituted 16.8% and permanent teeth 83.2%. The upper anterior teeth (incisors and canines) in both dentitions were the most frequently affected teeth (76.2%), followed by the lower anterior teeth, while posterior teeth (premolars and molars) were the least affected. The most frequently observed dental injury was complicated crown fracture (36.6%), followed by uncomplicated crown fracture (30.7%). Subluxation and Extrusion were the least sustained types of dental injury (2.0%) and there was no case with a tooth avulsion. The most frequently offered treatment of injured teeth was either crown build-up, root canal treatment or splinting. Only 20% of all teeth were extracted. **Conclusion:** From this study it is concluded that the observed correct treatment of traumatic dental injuries is the success in the part of hospital based management, but controversy remain in the community based management of dental injuries. The findings of this report thus stress the importance of prevention of dental trauma and to minimize its complications through proper treatment, use of mouth guards, supervision of children during play, orthodontic treatment of proclined incisors, and educational programs.

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Introduction and Literature review

Dental trauma is seen by most dentists who deal with children. In the permanent dentition the most accident-prone age is reported to be between 8 and 12 years [1,2,3].

Epidemiological studies on traumatic injuries to anterior teeth in children shows that the prevalence is relatively high with more boys affected than girls [1,2,4,5,6].

Dental injuries usually affect one or two teeth, and the maxillary central incisors that are important both functionally and esthetically [7] are the most frequently involved. Kahabuka et al [8] reported that the upper incisors were the most frequently affected teeth (78%), while canines, premolars, and molars were least affected.

The most common type of traumatic dental injuries is uncomplicated fracture (fracture of

enamel) [10,11]. In the study done by Al-Majed et al [10] it was observed that fracture of enamel (74%) was the commonest dental trauma followed by fracture that involved dentine (15%). The least common types of dental trauma reported were those which involved the pulp (5%) and loss of whole tooth due to trauma (avulsion) (3%) [10].

Management of traumatic dental injuries is categorized into the following treatment modalities; extraction, repositioning and immobilization (splinting), restorative procedures, and prescribing of antibiotics [8]. In the study done by Kahabuka et al, [8] it was reported that, 31%, 52% and 17% of the teeth received the correct, wrong and unnecessary treatment respectively.

The proposed preventive measures of dental trauma include, use of mouth protectors/guards, supervision of children during play, integral use

of motorcycle helmets, car seat belts and special car seats for small children. Other measures include, careful monitoring of occlusal development, timely orthodontic treatment of proclined incisors, and most importantly educating the community on the prevention and immediate treatment of dental injuries [12].

In Tanzania there are no standardized methods of managing dental trauma. This fact is observed from the large number of teeth which were simply extracted following dental injury [8]. Therefore, in an effort to standardize the treatment methods recommendation for management of different types of traumatic dental injuries in Tanzania have been made [13,14]. However, it is not known as to whether the recommended management is adhered to or not. The aim of this study was to determine, by utilizing patients records, the treatment provided in accordance to various types of dental injuries in children aged 6 – 12 years.

Materials and Methods

A cross sectional retrospective study was conducted at Dental department of Muhimbili National Hospital Dar es Salaam, Tanzania.

Table 1: Distribution of study participants by age

Age group (years)	n	%
6 – 9	35	52
10 – 12	32	48
TOTAL	67	100

The subjects were obtained from the register books available at the Dental Department of the Muhimbili National Hospital. The targeted subjects were all dental patients aged six to twelve years who received treatment for dental trauma in the period from January 2001 to January 2003. Data regarding age, sex, type of teeth injured, type of injury and treatment

provided were collected and recorded in a special data form designed for this study.

A total of 67 patients' records were retrieved. Almost equal number of boys and girls were observed, males were 34 (50.7%) and females were 33 (49.3%).

Records with incomplete information especially on diagnosis (type of injury) and treatment were excluded from the study.

Data were entered into a computer and analysed by using Epi Info 2002. Chi-square test was used to test the difference between age groups and sex, and a level of statistical significance was set at $p \leq 0.05$.

Ethical clearance regarding accessing and handling patient records was obtained from Muhimbili University College of Health Science (MUCHS), through Head, Department of Preventive and Community Dentistry, School of Dentistry.

Results

All together, sixty-seven children presented with a total of 101 injured teeth. The age distribution of the study group was found to have peak at 6 - 9 years. Children aged 10 - 12 years (48%) were the least affected among the study population, (Table 1).

Thirty-nine children (58.2%) sustained injuries to one tooth, 24 (35.8%) children had injuries to two teeth and only 4 (6%) children injured three or more teeth. Of the 101 total injured teeth, deciduous teeth constituted 16.8% and permanent teeth 83.2%. The upper anterior teeth (incisors and canines) in both dentitions were the most frequently affected teeth (76.2%), followed by the lower anterior teeth, while posterior teeth (premolars and molars) were the least affected (Table 2).

Table 2: Distribution of Injured teeth according to type of Dentition

TEETH	DENTITION		TOTAL
	Deciduous Teeth	Permanent Teeth	
Upper Anteriors	8	77	85
Lower Anteriors	5	4	9
Posteriors	4	3	7
TOTAL	17	84	101

The most frequently observed dental injury was complicated crown fracture (36.6%), followed by uncomplicated crown fracture (30.7%). Subluxation and Extrusion were the least sustained types of dental injury (2.0%) and there was no case with a tooth avulsion (Table 3).

The most frequently offered treatment of injured teeth was either crown build-up, root canal treatment or splinting. Only 20% of all teeth were extracted (Table 4).

Table 3: Distribution of types of trauma by treatment option

TYPE OF TRAUMA	TREATMENT OPTION		TOTAL EVENTS
	Extraction	Restoration	
Complicated crown fracture	11	15	26
Uncomplicated crown fracture	0	22	22
Concussion	1	8	9
Intrusive luxation	1	5	6
Extrusive luxation	0	2	2
Subluxation	0	2	2
TOTAL EVENTS	13	54	67

Discussion

Unlike many previous studies [1,2,4,5,6], the results of this study showed almost equal number of boys and girls attended at a Paedodontic clinic with dental trauma. However, this finding is in agreement with the study done by Traebert J et al [9].

From the results of this study 52 percent of the study participants were in the age group of 6 – 9 years. It has been reported that at 6 – 9 years of

age there is an increased vulnerability to injuries particularly for the upper central incisors [12]. In addition, at this age children are in their most rapid development and maturation therefore their orderliness reaches lowest level while the society imposes demand on them. At 10-12 years children are at their teenage where they are frequently involved in dangerous games such as riding bicycles, playing football, etc and therefore are at greater risk of sustaining dental injuries [12].

Table 4: Distribution of type of teeth by treatment provided

TEETH	TREATMENT		TOTAL
	Extracted	Not Extracted	
Upper Anteriors	14	71	85
Lower Anteriors	4	5	9
Posteriors	3	4	7
TOTAL	21	80	101

The findings of this study show that majority of children had injuries to one tooth. This finding is in agreement with the study done by Rajab [2]. Traumatic dental injuries often involve one or two teeth. The maxillary central incisors were the most frequently affected teeth, as it has also been reported in previous studies done in Jordan, Turkey and Tanzania [2,3,8].

Regarding types of dental trauma, crown fracture (complicated and uncomplicated) is the most frequently observation. Other types of traumatic dental injuries, such as concussion, luxation (intrusion and extrusion) and subluxation are rarely observed.

Correct treatment of traumatic dental injuries has been observed as per fewer cases with extraction of teeth as their treatment of choice. Unlike many previous studies done in Tanzania [8], this study has indicated none or very few cases of extraction of teeth in various types of dental injuries that is, uncomplicated crown fracture, concussion, luxation (intrusion and extrusion) and subluxation. Restoration of these types of dental injuries includes crown build-up with Glass Ionomers or Composite resins, root canal treatment and splinting. Wrong or unnecessary treatment were previously common to these types of injuries [8].

Conclusion

From this study it is concluded that the observed correct treatment of traumatic dental injuries is the success in the part of hospital based management, but controversy remain in the community based management of dental injuries. The findings of this report thus stress the importance of prevention of dental trauma and to minimize its complications through proper treatment, use of mouth guards, supervision of children during play, orthodontic treatment of proclined incisors, and educational programs.

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References

- Borssen E, Holm AK. Traumatic dental injuries in a cohort of 16-year-olds in northern Sweden. *Endod Dent Traumatol.* 1997 Dec; 13(6): 276 – 80.
- Rajab LD. Traumatic dental injuries in children presenting for treatment at the Department of Pediatric Dentistry, Faculty of Dentistry, University of Jordan, 1997 – 2000. *Dent Traumatol.* 2003 Feb; 19(1): 6 – 11.
- Saroglu I, Sonmez H. The prevalence of traumatic injuries treated in the Paedodontic clinic of Ankara University, Turkey, during 18 months. *Dent Traumatol.* 2002 Dec; 18(6): 299-303.
- Hamdan MA, Rock WP. A study comparing the prevalence and distribution of traumatic dental injuries among 10 – 12 – year – old children in an urban and in a rural area of Jordan. *Int J Paediatr Dent.* 1995 Dec; 5(4): 237 – 41.
- Otuyemi OD. Traumatic anterior dental injuries related to incisor overjet and lip competence in 12 – year – old Nigerian children. *Int J Paediatr Dent.* 1994 Jun; 4(2): 81 – 5.
- Marcenes W, Alessi ON, Traebert J. Causes and prevalence of traumatic injuries to the permanent incisors of schoolchildren aged 12 – years in Jaragua do Sul, Brazil. *Int Dent J.* 2000 Apr; 50(2): 87 – 92.
- Adekoya – Sofowora CA. Traumatized anterior teeth in children: a review of the literature. *Niger J Med.* 2001 Oct – Dec; 10(4): 151 – 7.
- Kahabuka FK, Willemsen WL, van't Hof MA, Ntabaye MK, Plasschaert A, n Frankenmolen F, Burgersdijk R. Oro – dental injuries and their management among children and adolescents in Tanzania. *East African Med J* 1999; 76:160-2
- Traebert J, Peres MA, Blank V, Boell Rda S, Pietruza JA. Prevalence of traumatic dental injuries and associated factors among 12 – year – old schoolchildren in Florianopolis, Brazil. *Dent Traumatol.* 2003 Feb; 19(1): 15 – 8.
- Al – Majed I, Murray JJ, Maguire A. Prevalence of dental trauma in 5 – 6 and 12 – 14 – year – old boys in Riyadh, Saudi Arabia. *Dental traumatol.* 2001 Aug; 17(4): 153 – 8.
- Petti S, Tarsitani G, Arcadi P, Tomassini E, Romagnoli L. The prevalence of anterior tooth trauma in children 6 to 11 years old. *Minerva Stomatol.* 1996 May; 45(5): 213 – 8.
- Kahabuka FK. Management of dental trauma among children in Tanzania. Thesis, katholieke Universiteit Nijmegen 2001; 1:1 – 6.
- Kahabuka FK, Willemsen W, van't Hof M, Ntabaye MK, Burgersdijk R, Frankenmolen F, Plasschaert A. Initial treatment of traumatic dental injuries by dental practitioners. *Endod Dent Traumatol* 1998; 14:206-9.
- Kahabuka FK, Ntabaye MK, van't Hof MA, Plasschaert A. Testing a consensus conference method in Africa by discussing the management of traumatic dental injuries in Tanzania. *East African Medical Journal* 2000; 77:552–7.