Traumatic Dental Injuries Experience in Suburban Nigerian Adolescents

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Citation

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Abstract

The aim of this study is to ascertain the prevalence and type of treatment received regarding traumatic dental injuries in Nigerian adolescents. The sample included 1,028 thirteen- to - fifteen - year old children attending secondary schools in Ife Central Local Government in Ile - Ife , Nigeria. Dental injuries were clinically assessed as follows: 1) uncomplicated crown fracture, 2) complicated crown fracture, 3) crown discoloration, 4) intrusive luxation, 5) extrusive luxation, 6) exarticulation or extraction after trauma and 7) subluxaion. The prevalence of dental injuries was 9.1%. Boys sustained more injuries than girls with a ratio of 2:1. The dental injuries were almost entirely restricted to the maxillary central incisors (75 %). Single tooth injury was predominant in all age groups. The commonest type of injury was uncomplicated crown fracture (57.4%). The commonest cause of injury was fall (42.6%). 10% of the children who had their teeth traumatized attended the dentist and this was found to be statistically significant ($p < 0.0001$). The observed increase of dental injuries with age indicates accumulated treatment needs due to lack of dental awareness in the population examined. Health care promotions and education at health centres is called for to prevent dental trauma in children.

INTRODUCTION

The importance of anterior permanent teeth regarding esthetic and functions during mastication cannot be over emphasized. Anterior permanent teeth have significant effect on the individual facial profile. Facial trauma that results in fractured, displaced or lost teeth can have significant negative functional, esthetic and psychological effect on children[1]

The most common injuries to permanent teeth occur as a result of falls [2,3,4] followed by traffic accidents, violence and sports [5,6,7]. All sporting activities have an associated risk of orofacial injuries due to falls, collusions and contact with hard surface [8]. The use of protective gear including mouth guards which help distribute forces of impact thereby reducing the risk of severe injury have been encouraged [9,10].

Pulpal complications, appearance of a vestibular sinus tract or colour change of the crown associated with sinus tract could arise from fractured tooth. Traumatized primary tooth may result in any of several permanent tooth complications including enamel hypoplasia, hypocalcification, crown/root dilacerations, or disruptions in eruptions[11]. There is need to inform the patients of these possible complications because it could help to assure timely intervention and minimizing complications for developing succedaneous teeth [11,12,13].

The treatment strategy after injury to a permanent tooth is dictated by the concern for vitality of the pulp and periodontal ligament. To determine efficiently the extent of injury and correctly diagnose injuries to the teeth, periodontal ligament and associated structures, a systematic approach to the traumatized child is essential [14]. Subsequent to the initial management of the dental injury, continued periodic monitoring is indicated to determine clinical and radiographic evidence of successful intervention. In cases of spontaneous pain, abnormal, response to pulp tests, lack of continued root formation or apexogenesis or breakdown of periradicular supportive tissue, initiation of endodontic treatment is indicated [14,15,16,17] To restore a fractured tooth's normal esthetics and function, reattachment of the crown fragment is an alternative that can be considered [14, 16]. To stabilize a tooth following traumatic injury a splint may be necessary [18, 19,20].

A literature review showed that traumatic dental injuries had been given a considerable attention [1,2,3,4,5,6,7,8,9] and recent reported studies on African children is sparse.. In Nigeria, the few reported studies were carried out on urban Nigerian school children [21,22,23,24,25].

The purpose of this study is to determine the prevalence of traumatic dental injuries amongst suburban Nigerian adolescents attending secondary schools and their attitudes towards dental treatment after sustaining traumatic dental injuries.

MATERIAL AND METHODS

A cross sectional survey (n-1,028) of traumatic dental injuries among 13 to 15 - year- old semi urban Nigerian school children attending secondary schools in Ife central local government, Ile-Ife was carried out in 2003. The parents were informed and consent obtained from both parents and the school authorities before the study commenced. No child declined to participate in the study. One of the authors who had been trained and calibrated collected the data through questionnaire and clinical examination. Information concerning sex, age, cause of trauma, number of injured teeth, type of tooth, type of trauma and the adolescents' attitude to dental injuries were recorded. The clinical examination confirmed the type of traumatic dental injuries (TDI), the treatment required and provided.

The children were examined with plane mouth mirror while seated on a chair at Secondary schools in selected rooms with good natural light and artificial illumination.

Traumatic injuries affecting the teeth were clinically recorded based on objective signs:

1. uncomplicated crown fracture (fracture involving enamel without pulpal exposure).
2. complicated crown fracture (fracture involving dentine and exposing the pulp)
3. Crown discoloration (tooth with discoloration of the crown indicating pulp damage)
4. Intrusive luxation (tooth with infra-occlusion probably due to a traumatic injury)
5. Extrusive luxation (tooth with supra-occlusion probably due to a traumatic injury).
6. Exarticulation (Avulsion or extraction after trauma).

RESULTS

A total of 1,028 children (521 boys, 507 girls) were examined.The authors found that 11% of the children had experienced dental injury revealed by questionnaire. A total of 9% (63 boys, 31 girls) were confirmed by clinical examination to have sustained traumatic dental injuries (TDI) with a boy to girl ratio of 2:1. (Table 1). The prevalence of traumatic dental injuries was 9.1%.

Figure 1

Table 1: Age and sex distribution of children with traumatic anterior dental injuries.

Age (years)	male	female	Frequency	%
13	15	6	21	22.3
14	23	12	35	37.2
15	25	13	38	40.4
Total	63	31	94	100.0

Fall was the commonest cause of traumatic dental injuries in both sexes 42.6% followed by fight 14.9%. The least cause of TDI was road traffic accident 4.3% (Table 2). The sex distribution of children with TDI varied significantly with the cause of injuries ($p<0.01$)

Figure 2

Table 2: Gender distribution of children with traumatic dental injuries according to cause

Causes (n=185)	Boys		Girls		Total	
	N0	%	NO	%	No	%
Fall	23	24 .5	17	1 8.1	40	42.6
Road traffic accident	2	2.1	2	2.1	4	4.3
Bicycle accident	2	2.1	3	5.3	5	5.3
Contact sports	13	13.8	1	1.1	14	14.9
Assaults	3	3.2	3	3.2	5	5.3
Fight	9	9.6	5	3.2	14	14.9
Collision	4	4.3	3	3.2	7	7.4
Child abuse	3	3.2	2	2.1	5	5.3
Total	59	62.8	36	38.3	94	100.0

A total of 101 teeth were traumatized. Uncomplicated injury (enamel – dentine fracture) was the commonest type of injury 57.4%, followed by avulsion 20.8% and complicated fracture 7.9% (Table 3). Maxillary central incisor was the most traumatized tooth 74.3% and the least injured tooth was maxillary canine 1% (Table 4)

Figure 3

Table3: Types of treatment received after traumatic dental injury.

Type of treatment (n=94)	Yes	%	No	%
Untreated injury	53	57.3	39	42.7
Treated using paracetamol	21	22.7	71	77.3
Self medication (antibiotics, paracetamol)	12	13.5	80	86.5
Treated by Pharmacist	2	2.2	90	97.9
Treated by Doctor	4	4.9	87	94.6
Treated by Dentist	9	10.3	83	89.7
Treated with hot water	5	5.9	87	94.0
Treated with "Touch and go"	2	1.1	9.1	98.9

Figure 4

Table 4: Distribution of traumatized anterior teeth according to type of injury

Type of injury	No	%
Uncomplicated	58	57.4
Complicated	8	7.9
Crown discoloration	2	2.2
Intrusive luxation	6	5.9
Extrusive luxation	5	5.0
Subluxation	1	1.0
Exarticulation (Avulsion)	21	20.8

Simple restorations, endodontic and prosthetic treatment were needed by the injured teeth but majority of the children left the injury untreated 57.3%. Out of the 42.7% whose teeth were treated, only 10.3% attended the dentist and this was found to be statistically significant when compared with those that left the injured teeth untreated.($p< 0.0001$) Composite restoration accounted for 66.7% and root canal therapy 33.3%. All the children with avulsed teeth 20.8% did not have them replaced. with prosthetics.. Self medication, using paracetamol and antibiotic was very common and accounted for 36.2% (Table 5). All the 94 children with traumatized teeth were referred to the dental hospital for treatment and only 15 children (16%) showed up.

Figure 5

Table 5: Type of injured tooth

Oral Location	No	%
Maxillary central incisors	75	74.3
Maxillary lateral incisors	15	14.8
Maxillary canine	1	1.0
Mandibular central incisors	8	7.9
Mandibular lateral incisors	2	1.9
Total	101	100.0

DISCUSSION

In Nigeria the prevalence of traumatic dental injuries to the permanent anterior teeth ranged from 6.5 % to 19.5% [21,22,23,24,25] The literature review showed that recent study on traumatized anterior permanent teeth in the Nigerian adolescent is sparse. The earlier studies were carried out on urban Nigerian primary school children [21,22,23,24,25]. The present study showed a prevalence of 9.1%. This showed a decrease in the prevalence of traumatized anterior teeth in the population when compared with previous reported studies [2, 26] in which a prevalence of 10.4% and 9.8% were reported. The study also showed that the prevalence of TDI in suburban Nigerian adolescents is low compared with reported studies in Nigerian cities [21,22,23,24,25] and developed countries [27, 28, 29]

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 2:1`. The peak incidence to injury to the permanent anterior teeth is 8-10 years of age with statistics revealing 22% of children suffered trauma to permanent dentition by the age of 14 [30]. The study showed that the highest prevalence of dental injuries was at the age of 15 years indicating that these children accumulated treatment needs. This is evident in this study in which 57.3% of the injured teeth were left untreated.

The number of injured teeth ranged from one to three. As reported by previous studies, the majority of observations concerned a single injured tooth [2,29,31]In the whole sample only 3 children had three injured teeth. The most frequently traumatized tooth in the present study was the maxillary central, incisor and the least traumatized was maxillary canine. This is in agreement with other reported studies in the literature [2,29, 31]. Uncomplicated fracture was the commonest type of dental injury in the present study. Of

interest was the high prevalence of avulsed teeth 20.8% in the population examined.. Majority of the avulsed teeth occurred in the boys as a result of blow on the face during fight. Further investigation, revealed that the boys were very keen to knock out as many teeth as possible during fight to boast their ego that they were powerful.

Table 5 showed the type of treatment received by suburban Nigerian children after injury. The attitude and knowledge regarding treatment of injured teeth was not impressive. The study has shown a shocking revelation that dental awareness is very low as evident in the number of children 10% who attended the dentist compared with children who were not treated by dental professionals. The high prevalence of self medication using antibiotic and paracetamol after dental injuries and high numbers of untreated fractured teeth call for concern. Lack of dental awareness and non affordability of the cost of treatment were the major reasons why the fractured teeth were not treated. The Nigerian adolescents obviously need information regarding dentistry. The information need of adolescent on dental matters is important in order to improve their quality of life. The concern raised in this study calls for an urgent need for dental health education to be stepped up among suburban Nigerian adolescents. Information needs of young people are important because acquisitiveness for dental information in this group, has a possible implications for future pattern of seeking dental care [32].

CONCLUSION

The prevalence of dental injuries in suburban Nigerian adolescents showed that uncomplicated fracture and avulsion are the most common type of injuries and fall was the commonest cause of these injuries. There is need to create dental awareness through dental health education amongst suburban Nigerian secondary school children to improve their quality of life regarding esthetics and discourage self medication.

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