

# Traumatic Dental Injuries In Nursery School Children From Ile– Ife, Nigeria

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## Citation

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## Abstract

The purpose of this study was to determine by age and sex the prevalence of traumatic dental injuries to primary incisor and canines and their distribution according to type in nursery school children from Ile – Ife, a suburban population in the south western part of Nigeria. A cross sectional study was conducted in which a total of 600 children (300 boys, 300 girls) aged 3 – 5 year - old attending 13 nursery schools in Ife Central local government were examined. The prevalence of traumatic dental injuries was 23.2% (24% in boys and 22.3% in girls) Boys experienced more injuries than girls but the difference was not statistically significant  $p > 0.05$ . The largest percentage of injury was demonstrated by 5 year - old children. The most common type of injury was enamel fracture 53.9%, followed by enamel-dentine fracture 19.2% and concussion 17.3%. The maxillary central incisor was the most vulnerable tooth to injuries 76.9%. The study showed a decline in the prevalence of traumatic dental injuries among suburban Nigerian children in Ile – Ife. However, the high prevalence of dental trauma in the nursery school children and its possible complication on permanent dentition showed that health polices need to be implemented with a view to its prevention.

## INTRODUCTION

Traumatic dental injuries are a common occurrence in children. Previous studies of traumatic injuries to primary teeth showed frequencies ranging from 4% to 33% <sup>1</sup>. A traumatized primary tooth is a tragic experience for a young patient. Dental trauma in a child patient can result in physical and emotional complications not only to the child but also in their parents.

Reported studies showed that the largest percentage of dental injuries was demonstrated by the 4 – 5 year old children <sup>2,3,4,5</sup>. The risk of dental trauma increases as the children grow older <sup>6</sup>. Boys have been reported to sustain dental injuries more than girls <sup>4,7,8</sup> but a report showed that girls traumatized their teeth more than boys <sup>9</sup>. Other reports showed that there were no differences between boys and girls in their susceptibility to traumatic dental injuries <sup>2,3</sup>. It has been reported that the most frequently traumatized tooth was the primary maxillary central incisors <sup>10,11,12</sup> and the frequent type of dental trauma was the enamel fracture <sup>5,10,13</sup>.

Injury to the primary dentition may cause structural defect to the succedaneous teeth or affect the position <sup>14, 15</sup>. Although most of these injuries do not have lasting sequelae careful assessment of the patient during the early stages of trauma is

imperative. Inappropriate approach to the management of the dental trauma can cause more damage than the trauma itself. The counseling of the parents and instruction given to them should be considered as part of their immediate care. Optimal treatment results follow immediate assessments and care <sup>16</sup>, therefore dentists have an ethical obligation to ensure that reasonable arrangements for emergency dental care are available <sup>17</sup>.

Epidemiological studies on traumatic primary dentition had been documented in the literature <sup>1,2,3,4,5,6,7,8,9,10,11,12,13,14,15</sup> with very few reports from African children <sup>5,13</sup>. In Nigeria, reported studies on dental trauma is sparse The purpose of this study was to investigate the prevalence of traumatic injuries to primary incisors and canines and their distribution according to type in nursery school children in Ile – Ife, a suburban population in the south west of Nigeria.

## MATERIALS AND METHOD

The material used in this study consisted of 600 children (300 boys, 300 girls) randomly selected from 13 nursery schools in Ife Central Local Government, Ile – Ife, a suburban population in the southwestern part of Nigeria. During the school year 2004 – 2005, nursery school children aged 3-5 years were examined in their classrooms under

natural lighting with the aid of mouth mirror.

Traumatic injuries to the maxillary and mandibular primary incisor and canines were recorded according to the method described by Garcia – Godoy <sup>20</sup>. This classification is simple, quick, reliable, reproducible, very specific and no injury overlaps another. For example concussion is considered an injury to the tooth without abnormal loosening or displacement, but with marked reaction to percussion. However, after trauma it could be recognized by discolouration of the tooth and/or fistula. In the present study most of the teeth recorded in the entity of concussion had posttraumatic discoloration. Root fractures were not recorded as no dental radiographs were taken. The data were analyzed with IBM computer using SPSS 10.0 version. The statistical analysis was performed using chi – square test.

## RESULTS

The prevalence of traumatic dental injuries in primary incisors and canines was 23.2% (24% in boys and 22.3% in girls). The 139 injured children presented with 156 traumatized teeth. The 5-year-old children presented with the largest number of injuries 28.7%. More boys experienced traumatic dental injuries than girls with the ratio of boy – to –girl being 1: 1.1. The difference was not statistically significant  $p > 0.05$  (Table 1).

Most of the children who sustained injury had one traumatized tooth 91.3%, 5.8% had too affected and one had four teeth injured ( 0.7%) (Table 2). The maxillary central incisor was the most vulnerable tooth to injuries 76.9% the maxillary lateral incisor came next 16.0% followed by mandibular central incisor 3.9% and mandibular lateral incisors 1.9%. The least traumatized teeth were the canines 1.3% (Table 3).

The most common type of injury was enamel fracture 53.9%, followed by enamel – dentine fracture 19.2% and concussion 17.3%. The pattern of injury was the same in both boys and girls. Avulsion (total displacement) was observed in 3.2% of the traumatized teeth, crown fracture with pulp exposure in 1.9%. Luxation, intrusion and extrusion accounted for 4.5% of the injuries (Table 4).

**Figure 1**

Table 1: Distribution of children with traumatized teeth by age and sex.

Age (yrs)	Total no Of boys	Boys with Injured teeth	Total no Of girls	Girls with Injured teeth	Total no Of children	No of Of children With injured Teeth	No of Teeth injured	% of Total Injured Teeth
3	98	18 (18.4)*	100	16 (16.0)	198	34 (17.2)	42	27.0
4	99	23 (23.2)	101	24 (23.8)	200	47 (23.5)	54	34.6
5	103	31(30.1)	99	27 (27.3)	202	58 (28.7)	60	38.4
<b>Total 300</b>	<b>72</b>	<b>300</b>	<b>67</b>	<b>600</b>	<b>139</b>	<b>156</b>	<b>100.0</b>	

\* Percentage

**Figure 2**

Table 2: Sex distribution of children by number of injured teeth

Number of Injured teeth	Boys	Girls	total	%
1	66	61	127	91.3
2	3	5	8	5.8
3	2	1	3	2.2
4	1	-	1	0.7
<b>Total</b>	<b>72</b>	<b>67</b>	<b>139</b>	<b>100</b>

**Figure 3**

Table 3: Sex distribution of traumatized anterior primary teeth according to site of trauma

Site of trauma	Boys	Girls	Total no	%
Maxillary central incisor	67	53	120	76.9
Maxillary lateral incisor	12	13	25	16.0
Mandibular central incisor	4	2	6	3.9
Mandibular lateral incisor	1	2	3	1.9
Maxillary canine	1	1	2	1.3
Mandibular canine	-	-	-	-
Total	85	71	156	100

**Figure 4**

Table 4: Number of teeth traumatized according to type

Classification	Boys		Girls		Total	
	No of Teeth	%	No of Teeth	%	no of teeth	%
Class 1: enamel fracture	44	55	40	52.6	84	53.9
Class 2: enamel – dentine fracture	14	17.5	16	21.1	30	19.2
Class 3: crown fracture with pulp exposure	2	2.5	1	1.3	3	1.9
Class4: enamel – dentine – cementum fracture	-	-	-	-	-	-
Class 5: root fracture*	-	-	-	-	-	-
Class 6: concussion	13	16.2	14	18.5	27	17.3
Class 7: Luxation (partial displacement)	2	2.5	1	1.3	3	1.9
Class 8: intrusion	1	1.3	2	2.6	3	1.9
Class 9: extrusion	1	1.3	-	-	1	0.7
Class 10: avulsion (total displacement)	3	3.7	2	2.6	5	3.2
Total	80	100.0	76	100.0	156	100

\* Not recorded in the present study.

## DISCUSSION

The prevalence of traumatic dental injuries in the present study was 23.2%. The result of the study showed that 23.2% of the children examined sustained traumatic dental injuries in one or more teeth. Recent studies among Brazilian<sup>6</sup> and Cuban<sup>21</sup> preschool children revealed a higher prevalence of 36.8% and 34.2% respectfully. Previous study in Ile – Ife, Nigeria reported a prevalence of 30.8%<sup>18</sup>. When this result was compared with the present study it was evident that there was a decline in prevalence of traumatic dental injuries among suburban Nigerian preschool children in Ile – Ife. The studied population was the same. However, the prevalence of traumatic dental injuries in this study was

higher than reports from other African countries<sup>5,13</sup>.

The general agreement in the literature was that boys suffer injuries to their teeth more often than girls<sup>4, 6, 22</sup>. The majority of studies showed that there was no significant difference between males and females in their susceptibility to trauma<sup>9, 18, 23</sup>. The present study showed a similar result.

The greatest incidence of trauma to the primary dentition occurs at 2 to 3 years of age, when motor coordination is developing<sup>24</sup>. The result of this study showed that the largest injury was observed in the 5 – year old children and this is in agreement with a previous study from Nigeria, which reported highest frequency of trauma in 4 – 5 year age group<sup>2</sup>. This report is similar to studies from other African countries<sup>5, 13</sup> and other parts of the world<sup>9, 25</sup>. It was observed that there was increase in prevalence of trauma (not significant ) with the increase in age of the children (Table 1).

It has been reported that the risk of trauma increases as children get older<sup>6</sup>. The reason for this might be due to the fact that older children with traumatized teeth could have injured their teeth at younger age especially the type of trauma that created permanent damage such as enamel fracture or discoloration of teeth following concussion. Moreso, older children tend to be more active and are more likely to sustain more injuries than the younger ones.

Most of the children affected had only one traumatized tooth. The maxillary central incisor was the most vulnerable to injuries. This finding are in agreement with previous studies<sup>2,4,6,18,19,21</sup>. Reported studies in a private Pedodontic practice in a preschool child population showed that concussion was the most common injury<sup>26, 27</sup>. Other studies reported that enamel fracture was the most common type of injury<sup>6,10,21</sup>. The present study demonstrated that enamel fracture was the most common type of injury, followed by enamel – dentine fracture and concussion. This is similar to previous reports<sup>5, 6, 18</sup>. These findings are not in agreement with result of reported studies which showed that concussion and enamel – dentine fracture were the most common injury<sup>9, 26, 27</sup>. The difference could be attributed to population differences because the classification system used to categorize the injuries was the same<sup>20</sup>.

## CONCLUSION

There was a decline in the prevalence of traumatic dental injuries of the primary incisor and canines in the present study when compared with the prevalence reported in the

same population in a previous study. Although it was evident that there was a decline but the result of the study showed that the prevalence was still high when compared with other African studies. The high prevalence of traumatic dental injuries and its possible complication on permanent dentition showed that health polices need to be implemented with a view to its prevention.

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