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# Dental Trauma among School Children at Age 7-12 Years in Fallujah City, Anbar Governorate, Iraq

Mohammed I. Abdullah<sup>1)</sup>, Lamia Ibrahim Sood<sup>1)</sup>, Abdul Nasser H. Warwar<sup>2)</sup>

## ABSTRACT

**Background:** Dental trauma often occurs among children, as well as adolescents and adults. It is however more frequent among children. The permanent anterior teeth are more exposed to trauma especially at age 9-10 years.

**Methods:** A cross-sectional study was conducted on school children in Fallujah city, Anbar governorate, Iraq. The sample size was 2830, for both gender - boys (1430) and girl (1400). Their ages range between 7 to 12 years. The dental trauma was classified according to the modified Ellis and Davey fracture crown. Prior to the examination of each subject, the children were interviewed to record information regarding age, gender, number of the tooth and type of dental trauma.

**Results:** Prevalence of dental trauma was 5.68% (161) for both genders. Boys were 101 (62.73%) and 60 girls (37.26%). The boys/girls ratio was 1.68:1. The highest frequency of fractured teeth occurred at 9-10 years old. The most frequently affected by dental trauma were the maxillary central incisors (96.90%), among them 45.35% of the cases involving the right central incisor and 51.55% of the cases involving the left central incisor. The upper jaw teeth were more frequently affected by dental trauma. The most frequent dental trauma was: class I crown fracture (48.44%), followed by class II (45.96%) and class III (5.6%) and class IV (0%) respectively.

**Conclusion:** The prevalence of traumatic fractured teeth is low. Preventive measures should be taken into consideration such as wearing of mouth guard especially for children who are at an early stage of psychophysical development and who are in active of life to reduce dental trauma.

## KEY WORDS

prevalence, permanent anterior teeth, dental trauma

## INTRODUCTION

Dental damage often occurs in children, as well as adolescents and adults. The traumatic injury to the permanent teeth is severe particularly when there is damage to the periodontium tissue<sup>1)</sup>. Damage to teeth that cause loss, displacement or fractured teeth results in a negative impact on the child in terms of functional, psychological and aesthetic<sup>2)</sup>. There are several reasons to tooth fracture, including sports, which are a major cause of tooth fracture; as well as children at aged 9-10 years have been active and effective; as they lose kinetic coordination because of the stage of growth and development, therefore they cannot accurately assess speed and danger<sup>3)</sup>. The incidence of tooth trauma varies widely between different ages of children however more frequently occur in children between the ages of 2-4 years and 8-10 years in both genders - boys and girls<sup>4-6)</sup>. Dental injury involves one or two teeth, and the more affected tooth that is upper maxillary central incisor<sup>7)</sup>. The more frequent types of dental fracture to permanent teeth are fractures of enamel, fractures of enamel and dentine<sup>8)</sup>, and fractures of enamel and dentine with pulpal involvements<sup>9)</sup>. Several studies have been conducted on dental fractures in central Iraq (Baghdad) and northern Iraq (Arbil and Sulaymaniyah). The prevalence of dental trauma was 7.7% among school children at age 6-12 years for both boys and girls in Baghdad city<sup>10)</sup>. Also Hemn reported the prevalence of dental trauma among children visiting College of Dentistry/Hawler Medical University was 4.5%

at age 7-12 years for both boys and girls<sup>11)</sup>. There is also a study in the city of Sulaymaniyah in northern Iraq which was conducted on 4015 children at age 6 -13 years, including 20 primary schools, where it was observed that the prevalence of dental trauma was 6.1%<sup>12)</sup>. As there is lack of studies in the city of Fallujah, governorate of Anbar, Iraq, in relation to the dental trauma and prevalence of the permanent teeth at the ages of 7-12 years. This study was conducted to assess the prevalence of dental trauma.

## METHODS

A cross-sectional study was conducted on school children in Fallujah city, Anbar governorate, Iraq. The sample size was 2830, for both genders, boys (1430) and girls (1400). The age ranges between 7-12 years. Prior to examination of each subject, the children were interviewed to record information regarded to age, gender, number of the tooth and type of dental trauma. Clinical examination was performed in the room in school. All children with dental crown fracture were included in the study. The dental trauma was classified according to the modified Ellis and Davey<sup>13)</sup> fracture crown which include: Class I-simple fracture of the crown involving enamel with little or no dentin, Class II-extensive fracture of the crown involving enamel and considerable amount of dentin but not involve the pulp, Class III-extensive fracture

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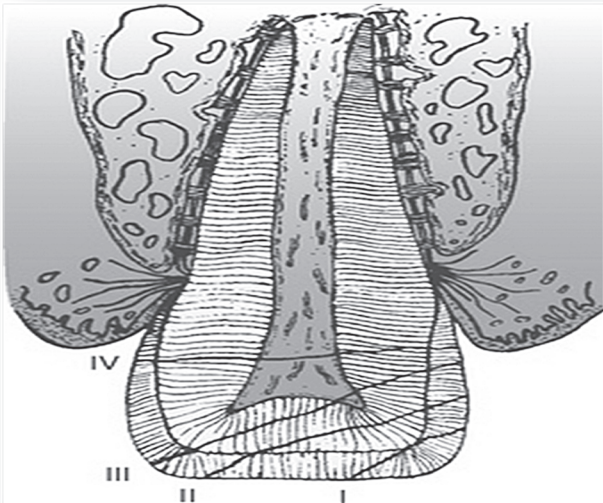


Figure 1. Modified Ellis and Davey classification of crown fracture.

Table 1. Number of permanent teeth injured according to gender.

No. of injured teeth	Boys	Girls	Total
1	98(62.87%)	58(36.02%)	156(96.9%)
2	3(1.86%)	2(1.24%)	5(3.1%)
<b>Total</b>	<b>101(62.73%)</b>	<b>60(37.26%)</b>	<b>161(100%)</b>

Table 3. Number of permanent teeth injured (according to Elli's Classification) for both gender

Type of crown fracture	No. of teeth	%
Class I	78	48.44
Class II	74	45.96
Class III	9	5.6
Class IV	0	0

of the crown with an exposure of the pulp and Class IV-loss of the entire crown

**RESULTS**

From 2830 children records, dental trauma to the permanent anterior teeth were diagnosed in only 161 (5.68%). 101 boys (62.73%) and 60 girls (37.26%) were involved (Table 1). The boys/girls ratio was 1.68 : 1. The highest frequency of dental fracture occurred among 9-10 years old school aged children (Figure 2). Single tooth injuries (maxillary centrals) were found in 96.90% of all cases - 62.73% at boys and 37.26% of girls. The most frequently affected by dental trauma were the maxillary central incisors (96.90%) then maxillary lateral incisors(3.1%), among them 45.34% of the cases involving the right central incisor while 51.55% involving the left central incisor and 3.1% involve the right lateral incisors (Table 2). The most frequent dental trauma were class I crown fracture (48.44%), followed by class II (45.96%), class III (5.6%) and class IV (0%) respectively (Table 3)

**DISCUSSION**

Dental injury results in pain and loss of function in primary teeth. It can also effect the development of occlusion or eruption of the permanent teeth<sup>14</sup>. The incidence of dental injury in this study was as low as (5.68%)

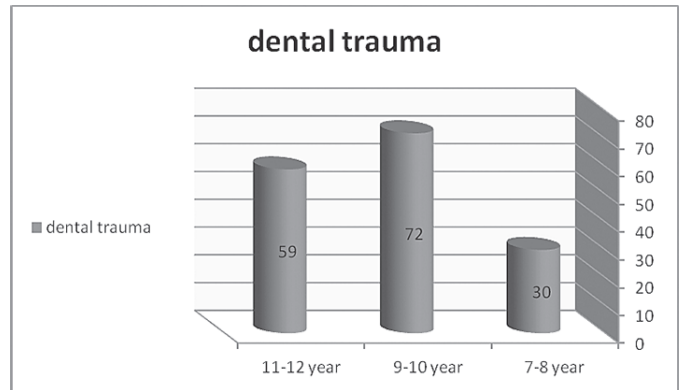


Figure 2. distribution of dental trauma according to age

Table 2. Number of permanent teeth injured according to the right and left maxillary central incisor for both gender

Maxillary central incisor	No. of teeth	%
Right	78	48.45
Left	83	51.55

for both genders. This may be attributed to the system of referral of children with dental trauma to the early dental care. The results were approximately similar to that revealed by Al-Obaidi and Noori in Sulaimani governorate, Iraq<sup>11</sup>. Dental trauma is more frequent in boys<sup>15-17</sup>. This is attributed to the fact that boys are conducting more strenuous activities, such as sports and more aggressive playing which may involve higher risk of trauma<sup>11</sup>. The highest value of dental trauma was found in the age 9-10 years<sup>18,19</sup>. This may be due to fact that children are usually more effective in this stage of age and they lose kinetic coordination because of the stage of growth and development, therefore they cannot accurately assess speed and danger<sup>20</sup>. In this study the results show, the incidence of dental trauma is more frequent in boys (101, 62.73%) than in girls (60,37.26%), which has an agreement with some recent studies<sup>21-24</sup>. The reason why boys are highly exposed to dental trauma than girls may be due to their involvement in more aggressive sports, as well as their violent behavior<sup>14,20</sup>. In general, the traumatic injuries of the maxillary central incisor form high percentage. This can be explained by the prominence of maxillary central incisors. Sometimes the maxillary central incisors are in a prominent position and are not sufficiently covered by the upper lip that absorbs the strike<sup>25,26</sup>. This is unlike the mandibular teeth and the canines, as the canines are the strongest teeth in the jaw and are usually better protected by the lips and not exposed to the trauma<sup>27</sup>.

**CONCLUSION**

The incidence of dental injury is low. Preventive measures to reduce dental trauma should be taken into consideration such as wearing of mouth guard especially for children who are at early stages of psycho-physical development and who are in active of life.

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