



## DENTAL TRAUMA KNOWLEDGE LEVEL AMONG EDUCATIONAL FACULTY SENIOR STUDENTS\*

### EĞİTİM FAKÜLTESİ SON SINIF ÖĞRENCİLERİNİN AĞIZ DIŞ YARALANMASINA İLİŞKİN BİLGİ DÜZEYİ\*

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#### ABSTRACT

**Aim:** The aim of this study is to determine the level of knowledge of dental trauma and especially permanent dental avulsion among the Department of Primary Education senior students.

**Material and Methods:** Ethical approval of Hacettepe University Non-Interventional Clinical Research Ethics Board was obtained. The data were collected via a structured, pre-tested, self-administered questionnaire in Hacettepe University Faculty of Education.

**Results:** A total of 145 students, 60 (41.0%) from the division of Early Childhood Education and 85 (59.0%) from the division of Classroom Education participated in this descriptive study. Of the students, 9.7% had previously received training on oral dental injuries. Even 33.1% knew that avulsed permanent tooth can be replanted, 91.7% thought that the tooth should not be replanted by themselves. Almost all of the students (94.5%) wish to learn more information about dental trauma.

**Conclusion:** It has been observed that senior students' level of knowledge related to dental trauma was inadequate. In this regard, prospective primary education teachers are in training need about this subject. It is also recommended that basic information on dental trauma has to be given in the context of first aid and emergency intervention trainings in these departments.

**Keywords:** Tooth avulsion, knowledge, dental trauma, teacher

#### ÖZ

**Amaç:** Temel Eğitim Bölümü son sınıf öğrencilerinin ağız-diş yaralanmalarına ve özellikle de daimi diş avulsiyonuna ilişkin bilgilerinin belirlenmesidir.

**Gereç ve Yöntem:** Hacettepe Üniversitesi (H.Ü.) Girişimsel Olmayan Klinik Araştırmalar Etik Kurul izni alınmıştır. Veriler araştırmacılar tarafından hazırlanmış, yapılandırılmış, ön denemeden geçirilmiş, bir anket aracılığı ile H.Ü. Eğitim Fakültesinde toplanmıştır.

**Bulgular:** Bu tanımlayıcı araştırmaya Okul Öncesi Eğitimi Anabilim Dalı'ndan 60 (% 41,0), Sınıf Eğitimi Anabilim Dalı'ndan 85 (% 59,0); toplam 145 öğretmen aday öğrenci katılmıştır. Öğrencilerin % 9,7'si önceden ağız-diş yaralanmalarına ilişkin eğitim almış olduklarını belirtmişlerdir. Çalışmada % 33,1 öğrencinin avulse olmuş daimi dişin yerine geri yerleştirilmesi gerektiğini bilmekte olduğu; ancak % 91,7'sinin bu müdahalenin kendileri tarafından yapılmaması gerektiğini düşündükleri görülmüştür. Neredeyse tüm öğrenciler (% 94,5) ağız-diş yaralanmaları hakkında daha fazla bilgi edinmek istediklerini belirtmişlerdir.

**Sonuç:** Çalışmada son sınıf temel eğitim bölümü öğretmen aday öğrencilerinin ağız-diş yaralanmaları konusunda bilgi düzeylerinin yetersiz olduğu görülmüştür. Bu bağlamda temel eğitim bölümü öğretmen adaylarının ilgili konuda eğitim ihtiyaçları olduğu düşünülmektedir. Ayrıca bu bölümlerde verilen ilk yardım ve acil müdahale eğitimleri kapsamında temel ağız-diş yaralanmaları bilgisinin verilmesi önerilmektedir.

**Anahtar Kelimeler:** Diş avulsiyonu, bilgi, diş yaralanması, öğretmen

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## INTRODUCTION

Injuries involving hard tissues of the teeth (enamel, dentin) and/or pulp and/or tissues surrounding and supporting the teeth, known as "traumatic" dental injuries<sup>1</sup>. Traumatic dental injuries are confronted as serious dental public health problems<sup>2</sup>. Dental trauma is a very important condition affecting the quality of life of children and families. Speech, smile, taste, socialization, establishment of interpersonal relationships, feeling of self-esteem are related to oral and dental health; and children with traumatized teeth are in a bad manner in smiling, speech, eating, and shamelessly showing their teeth compared with the children not traumatized<sup>3,4</sup>. Even the mouth constitutes a small part of the whole body, injuries of mouth constitute 5.0% of all injuries for all ages<sup>5</sup>. Dental injuries are most common in mouth injuries<sup>6</sup>. Traumatic dental injury is a serious problem frequently encountered in preschool age children, school children and young adults<sup>7</sup>. In preschool age children, mouth injuries are in second order (18.0%) after head and face injuries among all kind of injuries<sup>5</sup>. The prevalence of traumatic dental injuries is quite high throughout the world<sup>2</sup>. Boys are exposed to dental trauma more often than girls. Environmental and personal predisposing factors play a role in dental trauma. Sports accidents, traffic accidents, falls, collisions, battles are situations that cause dental trauma<sup>2</sup>. Since children spend most of their day-time in schools and, in terms of organized sports activities, traumatic dental injuries are frequently seen<sup>8-10</sup>. It has been reported that 16.0% of dental injuries occur in schools<sup>11</sup>. In case of a dental trauma occurs at school, especially for certain types of injuries (eg, avulsion), immediate intervention done by the teacher and directing the child to a dentist as soon as possible has a great importance in that continuing the traumatized tooth vitality in the future.

In the literature, the knowledge about dental trauma of the classroom teachers<sup>12,13</sup> and preschool teachers<sup>14-17</sup> have been reported. Teachers' information about the issue was found to be inadequate and educational needs related to the subject were reported. Also, low level of knowledge of different branch teachers about avulsion and

emergency were shown in some other studies<sup>18-23</sup>. Similarly the results of studies evaluating the knowledge level of dental trauma of the prospective teachers (teacher education students) from different branches show the inadequate level of knowledge<sup>24-26</sup>. In our country, it was not found that tooth trauma information of teacher candidates were evaluated, while it was found that the knowledge of classroom education teachers were assessed<sup>27-29</sup>. Besides, determination of the parents knowledge about avulsion was found in the local literature<sup>30</sup>.

The aim of this study is to determine the level of knowledge on dental trauma, especially permanent dental avulsion among the senior students of the Early Childhood Education and Classroom Education divisions.

## MATERIAL AND METHOD

This study was conducted on last year students of Classroom and Early Childhood Education Divisions of the Department of Primary Education of a university located in the capital city of Turkey, namely Ankara. Ethical approval of Hacettepe University Non-Interventional Clinical Research Ethics Board (GO 16/752-19), and written official permission of the related Faculty Dean's Office were obtained. The inclusion criteria were being the last year student of the abovementioned departments and volunteer to participate. A total of 145 students of a Primary Education Department, 60 (41.0%) from Early Childhood Education Division and 85 (59.0%) from Classroom Education Division were participated.

The data of this descriptive study was gathered in December 2016, and the data were collected via a structured, pre-tested, self-administered questionnaire. The variables in the study were age, sex, educational and working status of parents, health staff member existence in the family, the student's himself/herself or one of his/her family members' dental trauma experience, student's having training receiving situations on first aid-emergency intervention and/or dental trauma. The questionnaire consists of 24 questions (12 questions about the socio-demographic characteristics of the students; 10 questions about the dental trauma information and 2 questions about the opinions on their competence on dental trauma and training need). The information



level on dental trauma assessment was based on the total number of correct answers given to the ten trauma information questions, which were classified in 3 groups: <4- low, 4-7- middle, >7-good.

Data analysis were performed by using SPSS 20.0 package program. Frequency, percentages, mean, median, standard deviation were used for descriptive statistics. For the difference between categorical variables chi square and fisher's exact test were used. T test for independent variables and Mann Whitney U tests were used for the comparison of means and medians, respectively. The level of significance was determined as  $p < 0.05$ .

## RESULTS

Of the participants, 88.0% was female; there were significantly ( $p= 0.005$ ) more males (18.8%) among classroom education students than early childhood education (3.3%). The mean age was  $21.5 \pm 0.9$ . There was at least one health personnel among 15.2% of the family members of the students (half of them were nurse). Eight students (5.5%) had dental trauma history, and 9 students stated that their family members had. Even 90 students (62.1%) received first aid and emergency training, only 7 had reported that oral-dental trauma was mentioned. Of all students, 9.7% ( $n=14$ ) had received training on oral dental injuries.

The level of dental trauma knowledge of the students was assessed with multiple choice 10 questions in which each question has a single correct answer (Table 1). The most known three item were "emergency intervention necessity of traumatized permanent tooth" (84.8%), "the distinction of anterior primary and permanent teeth" (82.8% and 60.0%, respectively), and the least was "true practice in case of dental fracture" (17.9%). Less than one-third knew the "replantation possibility of the avulsed permanent teeth", one-fifth knew "the storage media (in a glass of cold milk) for the transportation of an avulsed tooth". For the transportation media of avulsed tooth, dry paper tissue (25.0%), glass of ice (18.8%), glass of tap water (4.2%) and glass of hot water (2.1%) were chosen in different proportions.

Table 1. The correct answer proportions of the participants on the questions related to dental trauma knowledge (Ankara, 2016)

| Correct answers (n=145)  | (%)          |
|--|--------------|
| The anterior teeth of children aged 6 years or less, are primary teeth           | 82.8         |
| The anterior teeth of children aged 7 years or more, are permanent teeth         | 60.0         |
| When a primary tooth traumatized, emergency intervention is a necessity.         | 46.2         |
| When a permanent tooth traumatized, emergency intervention is a necessity.       | 84.8         |
| Replantation of impossibility of the avulsed primary tooth                       | 63.4         |
| Replantation possibility of the avulsed permanent tooth                          | 33.1         |
| Immediate replantation possibility of the avulsed permanent tooth by the teacher | 0.7 (2.1*)   |
| The correct part of the avulsed tooth to hold on                                 | 19.3 (58.3*) |
| Storage media for the transportation of an avulsed tooth                         | 7.6 (22.9*)  |
| True practice in case of dental fracture   | 17.9         |

**Note: \*Among the students who answered as possible of the permanent tooth replantation**

There was no student who knew all of the correct answers of 10 questions, and 7 students got 0 point. The highest score was 8 points (4 students, 2.8%); the level of dental trauma knowledge was moderate (4-7 points) in almost two-thirds of the students (60.0%) and low in 37.2%. The difference between the dental trauma knowledge levels of the two department students was found statistically significant ( $p < 0.001$ ). While half of the classroom education students had low knowledge level, 78.3% of the early childhood education students had moderate (Table 2).

Table 2. Distribution of the students by the level of dental trauma knowledge and department (Ankara, 2016)

| Department of Primary Education | Knowledge Level |      |          |      |      |     | Total |       |
|---------------------------------|-----------------|------|----------|------|------|-----|-------|-------|
|                                 | Low             |      | Moderate |      | High |     | n     | %     |
|                                 | n               | %    | n        | %    | n    | %   |       |       |
| Early Childhood Education       | 11              | 18.3 | 47       | 78.3 | 2    | 3.3 | 60    | 100.0 |
| Classroom Education             | 43              | 50.6 | 40       | 47.1 | 2    | 2.4 | 85    | 100.0 |
| Total                           | 54              | 37.2 | 87       | 60.0 | 4    | 2.8 | 145   | 100.0 |

**Note: Fisher's Exact Test.  $\chi^2 = 16.3$ ,  $p < 0.001$**

According to students' self-evaluation, 91.7% thought that they had not sufficient knowledge about dental trauma and almost all of them (94.5%) wish to learn more about the topic.



## DISCUSSION

Traumatic dental injuries are often encountered in children<sup>1</sup> and basically divided into two approaches, injuries in the primary and permanent teeth<sup>31</sup>. The great majority of dental trauma affects the front teeth, especially the upper central incisors, as well as the lower central incisors and the upper permanent lateral incisors<sup>9, 32</sup>.

In most cases of traumatic dental injury, timing plays a key role in the prognosis of the tooth. Correct and rapid intervention is of great importance in dental health<sup>6</sup>. When injury occurs in the teeth, general health status should be assessed and then the required dental emergency intervention should be performed<sup>31</sup>.

Teachers are more likely to encounter a child with traumatic dental injury. In this context, it is essential for teachers having a basic knowledge of dental trauma for the first intervention if needed or directing the injured child correctly. There are different studies in the literature evaluating the knowledge level of dental trauma of the classroom and preschool teachers<sup>12, 15, 16, 18, 23, 33</sup>.

Since the present study was conducted among the education faculty senior students, the mean age was lower than the studies in which the teachers were evaluated<sup>12, 19, 33</sup>. Accordingly, years in the profession could not be evaluated in this study. The majority of students (87.6%) were female. In this study, female students were predominant in both departments, however, among classroom education students, males were more than early childhood education division. This is similar to some other studies in which dental trauma and avulsion knowledge of preschool and classroom teachers were assessed<sup>12, 15, 16, 18, 22, 33</sup>.

According to the findings, 62.1% students had first aid and emergency intervention training, but only 7.8% of them had given information about oral and dental trauma within this training. It's thought that in the first aid training, information on the survival of the person has been noticed more and the knowledge about dental trauma omitted. Apart of first aid training, 9.7% of the students had a training about oral dental injuries. In the literature, prevalence was reported 24.4%<sup>12</sup>, 47.0%<sup>18</sup> for having first aid and emergency intervention training, which did not

address the issue of dental trauma. Besides, 13.5%<sup>34</sup> and 12.5%<sup>15</sup> of the teachers having first-aid training related to dental trauma had been also reported in two different study. These results, both this study and literature are in accordance with having low level dental trauma knowledge in the first aid training sections. In Ersin et al's study<sup>27</sup> similar to the present study, 70.0% of classroom teachers had been reported as they had received first aid training but only 9.0% had received a first aid course related with dental trauma.

Of the students, 60.0% had answered correctly the tooth type according to the age for permanent teeth. It was reported 52.0%<sup>22</sup>, and 51.0%<sup>18</sup> in different studies. It is especially important to distinguish whether the tooth is permanent or primary tooth in case of avulsion considering the replantation<sup>6, 35</sup>.

It should be kept in mind that the dental trauma conditions in the primary teeth are closely related to the developing permanent tooth at the bottom. The effects in the permanent tooth that develops under a traumatized primary tooth are color change in the enamel, enamel hypoplasia, crown angulation, root dilaceration, prevention of root development, interruption or delay in eruption<sup>31</sup>. Hence, correct and rapid intervention in dental trauma is important for dental health<sup>6</sup>. Dental trauma status, type of the injury (displaced or avulsed) must be examined carefully. Urgent intervention is needed in order to avoid or minimize the complications. Dental trauma may result in pulp necrosis, pulpal canal obliteration, different types of internal and external resorptions, temporary apical breakdown, periodontal ligament regeneration and dental discoloration<sup>31</sup>. The presence of periodontal ligament fibers vitality around the root in the case of a permanent tooth avulsion is of great importance for the prognosis of the tooth<sup>36</sup>.

In the case of avulsion, duration the tooth stays dry outside is related to the risk of root resorption after repositioning. It is therefore important to be kept in a suitable storage (Hank's balanced salt solution, milk, saline), for remaining alive the fibers surrounding the root, and replace it quickly with not touching the root surface<sup>35</sup>. In this study, two thirds of the students did not know the replantation possibility in case of a permanent tooth avulsion. This finding seems to be in line with Prasanna, Giriraju and



Narayan's<sup>37</sup> study (76.0%). Even 84.8% of students had answered emergency intervention is a necessity when a permanent tooth had traumatized, but only one student had known the immediate replantation possibility of the avulsed permanent tooth by the teacher. In other three studies, 18.8%<sup>19</sup>, 19.5%<sup>22</sup>, 15.0%<sup>18</sup> of the teachers had stated replacing the avulsed tooth by themselves is possible.

Nearly one-fourth of the students had chosen the correct answer (a glass of cold milk) about the storage media of the avulsed tooth. In the literature, milk as the storage media was reported 7.6%<sup>19</sup>, 11.0%<sup>18</sup>, and 22.8%<sup>22</sup> in different studies. These results are indicating incomplete knowledge of the about the avulsion and replantation period.

37.2% of the students had low and 60.0% had moderate level of dental trauma knowledge. The most level is moderate, similar as Mehrabkhani et al.<sup>33</sup> and Francisco et al.<sup>18</sup>. It is thought that both department students had not sufficient knowledge about dental trauma and avulsion, and it is suggested that these information should be included in the scope of pre-graduation education. Inadequate level of knowledge and the need for education, are paralleled by many studies in which teachers and/or prospective teachers were assessed<sup>12, 13, 15-17, 19, 22</sup>.

Among the students, 8.3% of thought that they had adequate knowledge about dental trauma. Nirwan et al<sup>15</sup> had reported that 21.4% of the preschool teachers were satisfied about their knowledge related to dental trauma. Parallel with the present study (94.5%), 96.8% of the teachers in another study had reported that they wish to learn more about emergency intervention in avulsion<sup>23</sup>.

## CONCLUSION

Occupational groups working with children must be knowledgeable about dental trauma. Teachers should learn about basic and urgent approaches to the situation of dental trauma during the course of teacher education and should intervene and direct the necessary situations in their professional life.

In this study, it has been observed that senior students of the Classroom education and Early childhood education inadequate level of knowledge of dental trauma. It is thought that dental trauma and

the necessary emergency response training needed in this group and suggested that this education should be implemented in the curriculum so that the students could gain the information before completing their school. It is also recommended that basic information on dental trauma had be given in the context of first aid training of the students as well as all trainees.

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