**Knowledge of General Dentists, Endodontists and Pediatric Dentists About the Management on Dental Traumas: A Survey in Turkey**

**Abstract**

**Objective:** The purpose of this study was to determine endodontists, pedodontists and general dentists’ knowledge of management of dental trauma.

**Material and methods:** A web-based survey including 13 questions was prepared using Google forms, and a link to the survey was sent to the general dentists, endodontists and paediatric dentists via social media. The questionnaire asked for information regarding the age, gender, state of education, type of institution and knowledge levels about dental traumas. A total of 258 questionnaires were returned, and the One-Way Anova for practitioners' knowledge and the statistical analysis of the relationship between gender, vocational training and training by using Mann-Whitney U tests for participants.

**Results**: As a result of statistical analysis, although there was no statistical difference between pedodontists and endodontists in their knowledge levels, it was found that both occupational groups had higher knowledge level than general dentists (p=0,0001). While there was a significant difference between practitioners at university and oral and dental health hospital (p=0.0001), there was no difference between practitioners in university hospital and private office (p=0.065).

**Conclusions**: In conclusion, general dentists had knowledge of inadequate dental trauma management and the knowledge level of dentists working at oral and dental hospital was lower.

**Key words:** dental trauma, knowledge level, general dentist, endodontists, pediatric dentistry

**Introduction**

Traumatic dental injuries (TDI) are a common and serious problem in childhood [1]. The incidence is of TDI is between 7% and 58% in children and 35% in adults [2]. TDI affects permanent and complex dentition, and its diagnosis and treatment can be complicated [3]. In both children and adults, the most commonly affected teeth are the anterior teeth which affects the quality of life negatively [4]. According to one study dental trauma patients mostly apply to the emergency clinics of the nearest state hospital, private polyclinics, and private practice clinics [5]. Therefore, general dentists and their knowledge of current approaches to TDI treatment, their experiences and education play an important role in the treatment of TDI.

Treatment options for TDI are based on the extent and the nature of the injury and can include; soft tissue interventions, restoration of the tooth, re-placement of the coronal fragment, or replacement of an avulsed tooth. The abundance of possible trauma scenarios and a wide range of treatment options make it difficult for practitioners to provide evidence-based treatment and recommend the best possible choice for the patient [6]. TDI may require more than one mode of treatment involving more than one specialties, such as pedodontics and endodontics [7]. It is important that the general dentists are also familiar with appropriate emergency approaches using evidence-based guidelines such as the International Association of Dental Traumatology [8]. In case of inappropriate or no treatment after trauma, tooth discoloration, tooth mobility, sensitivity, pulp necrosis, root or bone resorption and eventually loss of tooth may occur [9]. Previous studies have shown that the management of TDI by general dentists are insufficient [10,11]. In our literature review, we found that the assessment of knowledge levels among general dentists and specialists is limited. The aim of this study is to evaluate and compare the level of knowledge among general dentists, pedodontists and endodontists about TDI.

**Material and Methods:**

This study was approved by the Human Ethics Committee of the Institutional Review Board ( Protocol No:2019-317). A 13-question survey (Table 1) was formulated using Google forms, and the uniform resource locator (URL) link of the survey was sent via social media to general dentists, endodontists and paediatric dentists in Turkey. No reminder message was sent, and only those responses delivered within 4 weeks were accepted for analysis. Participation in the study was done on a voluntary basis.

The survey comprised of in two parts:

Part I consisted of questions on demographic information and experience (age, gender, specialty, institution, trauma training and dental trauma experience) Part II consisted of questions about dentoalveolar trauma. The questions were based on the Dental Trauma Guide proposed by the International Association of Dental Traumatology [8].

The data obtained from Part I was analyzed using Mann Whitney U test for Part I. Part 2, which focused on the level of knowledge was analyzed using One Way Anova. The tests were performed using IBM SPSS Statistics version 21 software (IBM Corp., Armonk, NY, USA) and the level of significance was set to α=0.05 for all tests.

**Results:**

From the 602 surveyed general dentists and specialists, 258 participants completed the survey with a 42,8% response rate. 115 general dentists (45%), 81 pedodontists (31%) and 62 endodontists (24%) participated in the study. 120 of the participants were working in the Faculty of Dentistry (44.4%), 99 were working in the Oral and Dental Health Center (33.2%) and 39 working as a free dentist (10.8%), in Turkey.

When the results were examined, statistically significant differences were found between gender, duration of experience, post-traumatic trauma training and the institution and knowledge levels studied (Table-I). Gender wise, females had a higher level of knowledge compared to males. The level of knowledge was higher in those who did have experience in TDI cases and received post-graduate education on TDI compared to those who did not. When the results were analyzed based on institution, the level of knowledge was found to be higher in participants working at a university hospital, compared to those who work in a state hospital or in a private clinic. No significant differences was found in the level of knowledge of participants working in a state hospital and in a private clinic (p=0,065). Lastly, a statistically significant difference was observed in the level of knowledge based on the areas of expertise (Table-I). General dentists had a significantly lower score compared to endodontists or pedodontists (p<0.0001). No significant difference was observed between endodontists and pedodontists (p> 0.05) (Table-I).

The summary of the questions, the percentages of the correct answers and the wrong answers are shown in Table-II. The topics to which most correct answers given were enamel dentin fractures (86%), treatment approaches to avulsion (73%) and types of anesthetics used in avulsion (78.8%). The topic to which the least correct answers given was root fractures (27.8%).

**Discussion**

Proper and immediate treatment of TDI is crucial for the prognosis of the and prevention of further complications [12]. Appropriate treatment of TDI reduces the stress and anxiety in both patients and dentists. It has been shown that when the dentists have an appropriate knowledge on the treatment of TDI patient anxiety decreases and the quality of life increases [13,14]. The aim of this study was to evaluate the level of knowledge among general dentists, endodontists and pedodontists in the treatment of TDI.

According to the results of this study, participants with a specialty, with experience on TDI and/or attended to post-graduate courses on TDI had significantly higher level of knowledge on TDI. In this regard, the results of this study agree with the studies done by Akhlaghi et al [13] and Hartman et al [15]. Both studies report that experience in TDI or participation in traumatology courses significantly increased the level of knowledge on TDI. Likewise, Alyasi et al [16], Hartman et al [15], and Kostopoulo and Duggal [17] found that the level of knowledge of specialists was significantly higher compared to general dentists.Hartman et al [15] have found that endodontists had a higher level of knowledge compared to pedodontists. In present study, we have also observed that specialists had a higher level of knowledge compared to general dentists, however, no significant differences were observed among endodontists and pedodontists.

 Buldur & Kapdan [11] have reported that dentists working in a university hospital had a higher level of knowledge on TDI compared to those working in other institutions. The results of this study also agree with the study by Buldur&Kapdan. These findings attributed to the more experience and training gained at university hospitals due to higher number of TDI cases applying to university hospitals [11].

In the current study, the number of female participants (70%) was higher than male participants (30%). In Turkey, the number of female dentists has been higher than male dentists since 1990s and the difference in the numbers continues to increase. A similar trend is also observed in other countries [8,15,18]. Regardless of the ratio of female to male participants, our study shows that female dentists have a higher level of knowledge on TDI compared to male dentists. This can be attributed to the obvious excess of female participants in this study.

In this study has shown that the highest level of knowledge among all participants was on uncomplicated crown fractures (86.10%). Buldur & Kapdan [11] have also reported a high level of knowledge in crown fractures compared to other TDIs. In clinical studies, it is observed that uncomplicated crown fractures have a small amount of pulpal response and when the irritation is eliminated with restorative treatment, the pulpal inflammation disappears [19,20].Therefore, considering the higher number of cases and simpler treatment procedures, it can be expected that level of knowledge on crown fractures to be higher compared to other TDIs.

52.5% of the participants responded correctly to questions on complicated crown fractures. In contrast, in the studies by Buldur & Kapdan [11] and Alyasi et al [16], only 30.9% and 33.1% of the participants answered correctly to questions on complicated crown fractures, respectively.

 In the present study, 72.2% of the participants responded correctly to questions on root fracture treatment. Similarly, Krastl et al [21] and Alyasi et al [16] reported a correct answer percent of 88.5% and >50% to the questions on the same topic. It is important to note that a comparison between different studies may be difficult due to differences in methodology. Studies may not be generalized to international dental communities.

In the present study, an insufficient number of participants (30.5%) responded correctly to lateral luxation cases. Participants experience instability in splint times. Andreasen et al [22] reported that dental healing will be effective in orthodontic or surgical repositioning of the teeth with 4-week semirigid splint in luxation injuries. IADT guidelines also recommend immediate repositioning and splinting.

The immediate reimplantation of an avulsed tooth is very important for the prognosis and maximum recovery of the tooth [19]. In the present study, 73% of the participants responded to avulsion cases in an open apex immature teeth, but conversely, 29.7% of the participants responded to avulsion cases in a closed apex mature teeth. This shows the lack of knowledge in avulsion treatments in adult patients. Confusion in reading and interpreting questions, or inadequacy of knowledge levels due to avulsed teeth exclusion time may have caused this confusion. Similar to our study, Cohence et al [23] showed a correct treatment approach of <25% of respondents, while Alyasi et al (16) 31.4% responded to immediate reimplantation of avulsed mature teeth. Likewise, storing the avulsed tooth is of great importance for the prognosis of the tooth [19]. Although the majority of the dentists prefer saliva and saline to store avulsed teeth, studies have shown that cold milk is superior to saliva and saline for this purpose [24]. In the present study, 49.8% of the participants preferred milk, while 50.2% of the participants preferred other solutions. Based on the results, there seems to be a lack of a convention on the best media to store the avulsed teeth. Splinting should allow physiological movements of an avulsed tooth in the socket and should ideally be a maximum of 2 weeks to reduce the risk of ankylosis [25]. In this study, 46.2% of the participants stated that avulsed teeth should be splinted for 2 weeks, while 53.8% of them answered incorrectly.

The results show that there is a different level of knowledge on TDI among dentists. The specialists have a higher level of knowledge on the proper treatment of TDI compared to general dentists and our results are in agreement with previous reports [16,26]. At the same time, there has been a lack of knowledge at the level of treatment information for dental traumas from dentists worldwide [27].

**Conclusion:**

Within the limitation of this study, it can be concluded that the general dentists have a lower overall level of knowledge on TDI compared to endodontists and pedodontists. The level of knowledge of dentists working in government hospitals also is lower compared to those working in university or private clinics. In the light of the previous studies and the results of this study, it can be concluded that there is a need of more postgraduate education and hands on experience on TDI for general dentists and dentists working in government hospitals.

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**Table Legends**

Table I. The demographic charecteristics of the study population

Table II. Questions about treatment of dental trauma