



## Dental students' knowledge about emergency management of dental trauma

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### ABSTRACT

**Background and Aim:** Proper and immediate management of traumatic dental injuries depends highly on dentists' knowledge. The aim of this study was to evaluate knowledge of dentistry students at universities of Tehran about managing traumatic dental injuries.

**Materials and Methods:** The participants of this cross-sectional study were senior year students at dental faculties of four universities of Tehran, Iran (Tehran University, Islamic Azad University, Shahed University and Shahid Beheshti University) in 94-95 (2016). In this study, anonymous questionnaires were distributed among students; the content of these questionnaires were obtained from previous standardized ones, and were re-evaluated. The questionnaire was consisted of questions regarding background information (5 questions), traumatic dental injuries (TDI) treatment history (2 questions), and knowledge questions (10 items). Class attendance records were obtained from educational assistants of these four universities in order to distribute questionnaires. After the questionnaires were filled, the answers were scored and the results were analyzed using descriptive tables and linear regression model in SPSS software.

**Results:** In this study 66 male students (45.20%) and 80 female students (54.79%) filled the questionnaires which made a total number of 146 participants. The highest grade point average (GPA) for the participants was 19 and the lowest was 12. The answers to TDI knowledge were scored on a scale of 0-12. Participants mean score was 5.48 (SD= 2.3) for TDI knowledge section (of 12). Students of Tehran and Shahid Beheshti University had answered the questions better. Marriage status and trauma treatment experience, gender and age were not significantly associated with the scores for TDI knowledge.

**Conclusions:** The low percentage of correct answers to the questions indicates the need to improve the information of the students. Novel student-centered teaching methods are necessary to provide an effective learning process for TDI treatment.

**Keywords:** Dental trauma, Management, Knowledge.

### Introduction

Among all facial injuries, traumatic dental injuries are most common and may lead to dental fracture, dental dislocation or loss of teeth and may cause significant negative effects on children's physiological function, appearance and psychological state. About 16% of traumatic dental injuries (TDI) cause tooth loss which is associated with problems such as facial development disorder, emotional disorder, mental disorder,

etc. So dental trauma is a major concern in the field of public health and can affect daily function and the quality of life. Studies show that about 20% of elementary school students have a history of dental trauma. The average rate of TDI occurrence is 25% to 58% [1]. A review on a similar article (1995 – 2007) shows that dental trauma injuries (TDI) to permanent teeth occurred in 1/4 of children and 1/2 of adults in most countries, and this represents the vul-

nerable ages. Different studies in Iran show that 56.5% of traumas caused by falls, 30.4% is due to exercise or physical activity, and the ratio of boys to girls is %67.2 to %32.8 and about 20% of children have experienced dental trauma [2].

Due to higher physical activity, dental trauma injuries (TDI) happen more frequently in boys than girls and often occur at the age of 7-9, which is the age that upper incisors erupt. A 9-year-old child who has suffered a trauma is 8 times more in risk for the next trauma, than a child who experiences their first trauma in the age of 12. The relation between TDI and ethno-racial factors is not clear; the former rate of male to female was 2 to 1, but nowadays the gap is lower [3]. The first peak of incidence for TDI is the period of 2-4 years old [4]. A significant increase in permanent teeth TDI is observed in boys of 8 to 10 years of age, while this rate among girls is almost constant. The last peak of incidence for TDI occurs after the age of 65, which is due to higher probability of falling.

The most vulnerable areas are the upper incisors, and the most involved teeth are maxillary central incisors, maxillary lateral incisors and mandibular incisors. Sometimes two or more teeth are engaged simultaneously. Most dental trauma injuries (TDI) occur in anterior segment which plays an effective role in physical and mental health; early intervention can improve the prognosis.

TDI (traumatic dental injuries) classification is based on the etiology, anatomy, pathology, therapy and severity. The oral cavity constitutes only 1% of total body area; however 5% of all injuries in all ages occur there. The declining prevalence of traumatic dental injuries (TDI) is slower than the decline in dental caries' prevalence and if this trend continues, the prevalence of TDI will be higher than dental caries in the future [3].

TDI management is challenging for dentists because of its low occurrence compared to dental caries, and because dentists are not prepared to manage it; in addition, dentists' knowledge affects the prognosis of traumatized tooth highly because immediate intervention broadens the restoration capacity of tooth. Given the relatively high prevalence of traumatic dental injuries and the fact that in both developed and developing countries, the majority of traumatic dental injuries remain untreated; the cumulative effects of TDI are significant. Considering the treatment costs of TDI, and the fact that most teeth are untreated or inappropriate-

ly treated, TDIs seem to be an important part of public dental health issues. The aim of this study was to evaluate knowledge of dentistry students at universities of Tehran about managing traumatic dental injuries and assess its associating factors.

## Materials and Methods

The participants of this cross-sectional study are senior year students at dental faculties of four universities of Tehran, Iran (Tehran University, Islamic Azad University, Shahed University and Shahid Beheshti University) in 94-95 (2016). In this study, anonymous questionnaires were distributed among students; the content of these questionnaires were obtained from previous standardized ones and were re-evaluated qualitatively by three Dental Public Health specialists, a pediatrician and an Oral and Maxillofacial surgeon. The questionnaire was consisted of questions regarding background information (5 questions), TDI treatment history (2 questions), and knowledge (10 questions). Knowledge questions included items on management of different traumatic injuries including intrusion, extrusion, lateral luxation, fracture and avulsion.

Class attendance records were obtained from educational assistants of these four universities in order to distribute questionnaires. The participants were informed about the purpose and voluntary nature of the study, and were asked to fill the questionnaires carefully. After the questionnaires were filled, the answers were scored and the results were analyzed using descriptive tables and linear regression model in SPSS software.

## Results

Approximately 69% of students participated in this study among them 66 male students (45.20%) and 80 female students (54.79%) filled the questionnaires which makes a total number of 146 participants. The highest grade point average (GPA) for the participants was 19 and the lowest was 12. The answers to TDI knowledge were scored on a scale of 0-12. Participants scored a maximum of 11 with the average and deviation of 5.48 and 2.3 for TDI knowledge section. Among the students, 104 participants were single, while the number of married participants was 42. The mean score for single participants in TDI knowledge was  $5.57 \pm 2.31$  (Table 1). The mean score for married participants in TDI knowledge section was  $5.26 \pm 2.27$ .

Totally, 59 participants were from Tehran University, whose mean knowledge score was  $5.45 \pm 2.12$ . Among participants, 23 were from Shahed University who with mean score of  $4.86 \pm 2.2$  in knowledge. 21 participants were from Shahid Beheshti University with mean score of  $6.19 \pm 2.24$  in knowledge section and 43 participants were from Islamic Azad University who scored an average of  $5.15 \pm 2.57$ .

Among all, 97 participants had no experience in TDI management and scored 0 to 10 with an average of  $5.11 \pm 2.14$  in knowledge section and 17 participants who had treated 1-2 TDI patients, scored 3 to 11 with an average of  $5.94 \pm 2.04$  in knowledge section and 4

to 11 with an average of  $9.11 \pm 1.69$  in self-reported performance section. There was participant who had treated 3-4 TDI patients, scored 9 in knowledge section and there was participant who had treated more than 4 patients, scored 4 in knowledge. Table 2 presents the results of linear regression model showing the role of background variables in knowledge section scores. Students of Tehran University of Medical Sciences and Shahid Beheshti University, had answered the questions better. Marriage status and trauma treatment experience, gender and age were not significantly associated with the scores for TDI knowledge.

		Minimum	Maximum	Mean	SD
Gender	Male	2	11	5.59	2.15
	Female	0	11	5.40	2.42
Marriage status	Single	0	11	5.57	2.31
	married	2	11	5.26	2.27
University	Tehran	0	11	5.45	2.12
	Shahid Beheshti	2	9	6.19	2.24
	Shahed	1	11	4.86	2.20
	Azad	1	10	5.51	2.57
Trauma treatment experience	none	0	10	5.11	2.14
	1-2	3	11	5.94	2.04
	3-4	9	9	9.00	2.04
	>4	4	4	4.00	2.00

Table 1. Knowledge scores of dental students according to backgrounds.

Variables	B	P
University (TUMS)	0.346	0.033
University (Shahid Beheshti)	0.286	0.050

Table 2. The results of linear regression model showing the role of background variables in knowledge section scores:

## Discussion

In this study, we evaluated the knowledge of senior year students of Tehran's dental faculties. Most of the participants (66.4%) had no TDI management experience which is similar to research conducted by Dr. Akhlaghi [5], in which this rate was reported as 44.4%. With the high importance of TDI management in teeth maintenance and prevention of permanent damage kept in mind, the gap for TDI management experience is seen in dental curriculum (6&7).

The response rate in some similar studies about TDI management, were 70% for Dr. Seraj's study [2] in TUMS, 71-74% for Jackson [8] and Kostopoulou's [9] study in England, 42% for Prisco's study [10] in Brazil, 35% for Stokes's study [11] in New Zealand and 69% for the present study. The average knowledge scores acquired were 64% in Dr. Seraj's study [2], 53% in Hamilton's study [12]; in the present study the average score was 45.71% for knowledge questions. The relatively low score of around 50% implies a need to improve students' information.

In a study conducted by Dr. Akhlaghi [5], the average knowledge score was  $7.61 \pm 2.68$  out of 14, while in the present study it was 5.4 out of 12 which are comparable. In studies by Seraj [2], Kostopoulou [9] and Hamilton [12], a negative correlation was observed between age and knowledge. According to these three studies, it seems that longer time passed between graduation and evaluation result in lower knowledge scores. This may explain about no relationship between age and knowledge in our study as all our sample included final year dental students with minor age difference.

The present study and a similar study on freshmen and senior year students by Yuko Fujita [13], have two questions in common, one of which is about avulsed tooth management, and the other one is about the appropriate containment for avulsed tooth. In Fujita study, for the first question the 28.3% of freshmen and 55.9% of senior year students provided the correct answer (immediate visit by dentist and possible re-plantation). 26.4% of freshmen and 57.4% of senior year students provided the correct answer (milk) to the second question. In our study, the same questions were answered correctly by 85.6% of the participants for the first one, and 43.8% of the participants for the second one.

In Seraj's study [2] a positive correlation is present between pediatric TDI management experience and

total score (74.99% correct scores for experienced participants and 27.72% for inexperienced participants). The lack of significant correlation between experience and scores in our study, may be due to less or more similar experience level of the participants.

## Conclusions

The low percentage of correct answers to the questions indicates the need to improve the information of the students. It seems that TDI treatment experience for all students and novel student-centered teaching methods are necessary to provide an effective learning process for TDI treatment which finally leads to improved awareness for TDI management among students.

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