

**Original Article**

# Evaluation of Knowledge- Attitude- Practice (KAP) of Intern Dentists in Emergency Management of Traumatic Dental Injuries in Primary Anterior Teeth: A Cross-sectional Study

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**Submitted:** 25-10-2020

**Accepted:** 16-4-2021

## Abstract

**Aim:** This cross-sectional study aimed to evaluate the Egyptian intern dentist's knowledge, Attitude, and Practice in the emergency management of traumatic dental injuries in primary anterior teeth.

**Materials and methods:** A four-part questionnaire was distributed among a total of 500 intern dentists. Part 1 consisted of 8 questions focusing on personal and professional information, part 2 consisted of 7 questions focused on 3 clinical cases, Part 3 consisted of 9 close-ended questions to assess the attitude of intern dentists, and part 4 consisted of 4 close-ended questions related to the assessment of the practice of intern dentists regarding traumatic dental injuries in primary anterior teeth in children. The data were analyzed using the t-test at  $P < 0.05$  level of confidence.

**Results:** A total of 500 intern dentists participated in the survey, 235 were males and 265 were females. The overall mean age was  $23.6 \pm 1.3$  years. The mean value of knowledge scores was  $4.37 \pm 1.45$ . There was no statistically significant correlation between the knowledge score of the intern dentist and the ability to provide proper action when needed.

**Conclusion:** The knowledge of intern dentists regarding the management of traumatic dental injuries in primary anterior teeth was inadequate.

**Keywords:** Traumatic dental injuries, Dental trauma, Dental emergency, deciduous teeth, knowledge assessment, practice assessment.

## Introduction

Traumatic dental injury represents a serious problem affecting many aspects of the patient's life. The central maxillary incisors are the most

frequently affected teeth in primary dentition, because of their position in the dental arch which exposes them to direct traumatic force. These teeth are important for aesthetics and

psychological problems in children may result in their premature loss. For these reasons, proper treatment is extremely important (*Parikh & Shah, 2017, Zafar et al., 2018*). A high prevalence of traumatic dental injuries in primary dentition has been reported to occur mainly in the age range from 18 months to 3 years with a peak of injury at the age of 4 years, when the children's physical activity increases (*Azeredo et al., 2015 & Abdelfattah, 2017*). A systematic review was conducted to evaluate the factors associated with traumatic dental injuries in deciduous dentition. A total of 24 studies were included in this systematic review, and the results showed that TDI's affects 8% to 62.1% of children between 2 and 5 years of age (*Corrêa-Faria et al., 2016*).

The traditional dental curriculum rarely allows the student to evaluate and manage acute dental trauma. As a result of this lack of exposure, most graduating dentists are undertrained and unprepared to manage dental trauma (*Townsend et al., 2017*). The experience level of the dental interns was based on educational programs, previous knowledge, experience, and the months of internship period (*Limbu et al., 2014*).

Management of dental trauma is one of the areas in which dental students reported low levels of confidence. This finding was identified by some previous studies among the United Kingdom dentists which have highlighted the lack of confidence and competence in dental trauma management (*Rodd et al., 2010 & Al-Shamiri et al., 2015*). Few studies have assessed the knowledge, attitude, and practice of intern dentists in the management of traumatic dental injuries (TDI's) in primary teeth. Therefore the present study was planned to evaluate the knowledge, attitude, and practice (KAP) in the management of traumatic dental injuries of primary teeth among intern dentists having their internship in the Faculty of Dentistry- Cairo University and another private university (Modern Science and Arts University- MSA).

## Materials and methods

Five hundred intern dentists were randomly selected from two Universities in Cairo: Modern Science and Arts University- MSA and Faculty of Dentistry- Cairo University. Subjects were asked to fill out a self-administered questionnaire. The intern dentist must not have attended Pediatric Dentistry round, Endodontic round, Emergency round and Surgery round at Cairo University as well as MSA. The questionnaires were collected over 8 month period starting from July 2018 till February 2019

The data was collected using a multiple-choice questionnaire re-constructed from *Cinar et al., 2013, and Fujita et al., 2014*. The questionnaire was including 4 parts. Part 1 including 8 questions focusing on personal and professional information like age, gender, year and university of graduation, and their previous training experiences, background knowledge and if their education was enough to deal with traumatic dental injuries, part 2 consisted of 7 close-ended (multiple choice) questions focused on 3 imaginary dental trauma cases to collect information about interns dentists knowledge in the management of TDI's in primary anterior teeth. These questions were about the management of avulsed primary maxillary tooth, intruded primary teeth toward the labial plate of bone, and extruded teeth. Part 3 consisted of 9 close-ended questions to assess the attitude of intern dentists and part 4 questions related to the assessment of the practice of intern dentists regarding traumatic dental injuries in primary anterior teeth in children.

The data were analyzed using statistical analysis software SPSS version 20. The Student's t-test and one-way ANOVA were used to compare the knowledge of participants about different aspects of traumatic events. The difference between male and female intern dentists was assessed by the student's t-test. P-value <0.05 was considered significant.

## Results

Five hundred questionnaires were completed and returned by 265 females and 235 males with a mean age of the intern dentist  $23.6 \pm 1.3$  years old (22-27 age range). The demographic data and professional information of the participants (part I) are summarized in [Table 1](#). Participants' knowledge about the clinical management of traumatic dental injuries in cases 1-3 and the mean knowledge score (part II) are summarized in [Table 2](#), [Figure \(1,2 &3\)](#). Attitude and practice of participants (part III & IV) are summarized in [Table 3](#).

The total mean knowledge score was  $4.37 \pm 1.45$ . There was a high statistically significant correlation between the knowledge score and the University of graduation ( $P=0.055$ ). There was no statistically significant correlation between knowledge score and previous training for a dental assistant in the clinic ( $P=0.847$ ). The relationship between the ability to provide proper action when needed and the knowledge score was insignificant ( $P=0.788$ ). The need for future education regarding dental trauma had an insignificant effect on the knowledge score as well ( $P=0.979$ ).

## Discussion

Traumatic dental injuries of primary teeth in children are a significant dental public health problem worldwide. Therefore, knowledge concerning the correct procedures to be carried out in these emergencies is of extreme importance for a favorable prognosis ([Azeredo et al., 2015](#) & [Nagata et al., 2018](#)). The questions in the questionnaire aimed to assess knowledge of intern dentists about how to manage different types of TDI's and investigated attitudes as well as practices encountered towards such injuries.

The results in the present study showed that (64%) intern dentists had previous training for a dental assistant, (47%) intern dentists thought they had enough knowledge in dental emergency management, [Limbu et al., 2014](#), [Al-Shamiri et al., 2015](#), and [Hartmann et al.,](#)

[2019](#) studies showed a higher percentage (95%, 65%, and 61% respectively). This difference in findings may be because most of the dental interns had attended an educational program regarding traumatic injuries. Also, (95%) intern dentists thought they need a future education regarding dental emergency management, while (67%) intern dentists thought they are able to provide proper action when needed.

Regarding the 4 years old child comes with an avulsed primary maxillary tooth due to trauma, two hundred and sixty-four (53%) intern dentists responded correctly to reassure the parent and child without replanting the tooth. According to the American Academy of Pediatric Dentistry (AAPD), the replantation of avulsed primary teeth is contraindicated due to possible consequences for the development of the permanent tooth. The primary tooth may also form a dental abscess or undergo ankylosis. It is suggested that this result is due to a lack of exposure to clinical cases in this aspect.

In the present study half of the intern dentists (50%) realized that left the tooth for spontaneous re-eruption is the treatment of choice for a primary maxillary anterior tooth has been intruded toward the labial plate of bone. The results of [Gurunathan et al., 2016](#) systematic review showed that the watchful waiting therapy has been the common therapeutic approach across the included studies of the review were 42.5 to 92.86% of the intruded primary anterior teeth re-erupted within 1 to 6 months completely without any pathological consequences. The apex of primary maxillary central incisors is usually curved in a labial direction, so in many cases intrusion results in the apex being pushed labially away from the permanent successor tooth germ. ([Lai, 2019](#)). This low percentage may be due to the management of traumatic dental injuries is taught to students before they enter the clinical environment.

And regarding the case of a primary maxillary anterior tooth has been extruded (51%) intern dentists choose to reposition, stabilized, and

**Table 1:** Demographic data and professional information

Variables		Frequency (%)
Age range	22-24	429 (85.8%)
	25-27	71 (14.2%)
Gender	Female	265(53%)
	Male	235(47%)
University of graduation	Cairo University	258(52%)
	MSA University	242(48%)
Year of Graduation	2016	5(1%)
	2017	98(19.6%)
	2018	397(79.4%)
Training as a dental assistant in the clinic?	Yes	320(64%)
	No	180 (36%)
Do you think you have enough knowledge in a dental emergency	Yes	235 (47%)
	No	265 (53%)
Regard emergency management of TDI's do you think you need additional education?	Yes	475 (95%)
	No	25 (5%)
Are you able to provide proper action when needed?	Yes	335 (67%)
	No	165 (33%)

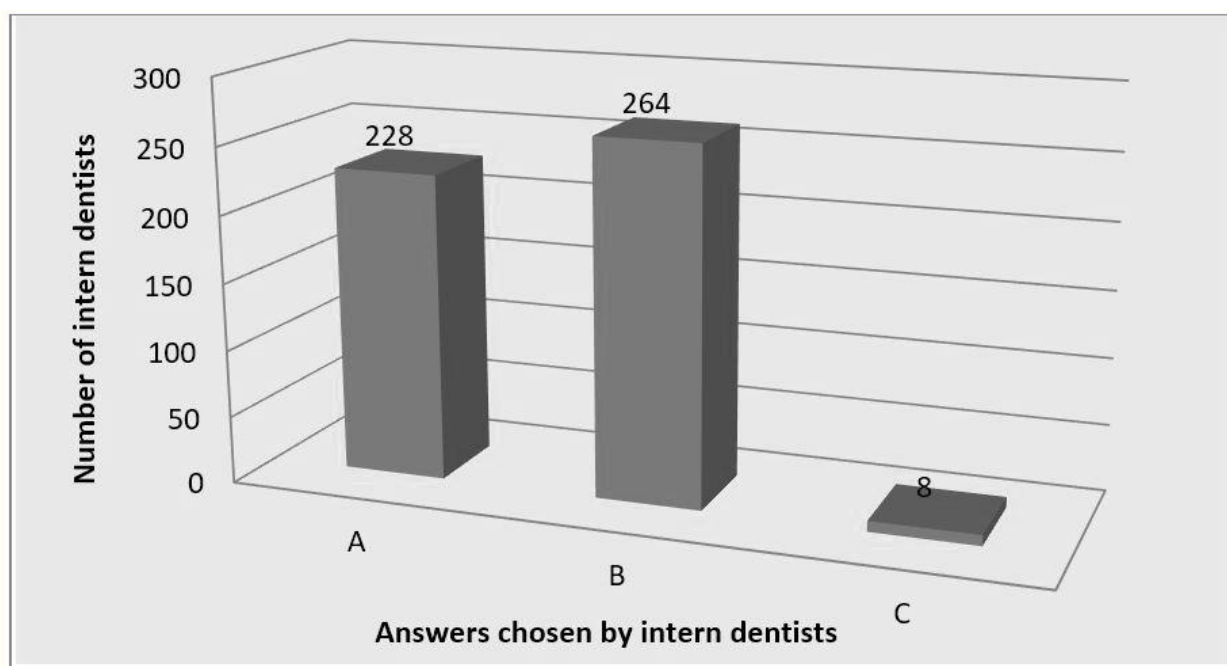
**Figure 1:** Column chart regarding the case of avulsed primary tooth in the study sample

Table 2: The questioner focusing on the knowledge of intern dentists about traumatic dental injuries and frequency (%) of the answers

Questions	Answers	Frequency (%)
A 4 years old child comes to your clinic with an avulsed primary maxillary tooth due to trauma in the facial area, your immediate emergency management of the case is:	Replant and stabilize the tooth with a splint	228 (46%)
	Reassure the parent and child	264 (53%)
	Don't know	8 (1%)
If a primary maxillary anterior tooth has been intruded toward the labial plate of bone	The tooth is left for spontaneous re-eruption	250 (50%)
	Extract the tooth immediately	184 (37%)
	Don't know	66 (13%)
If a primary maxillary anterior tooth has been extruded, the tooth should be	Repositioned, stabilized, and splinted for 1-2 weeks	255 (51%)
	Extract the tooth	220 (44%)
	Don't know	25 (5%)
Knowledge score	0	1 (0.2%)
	7	15 (3%)

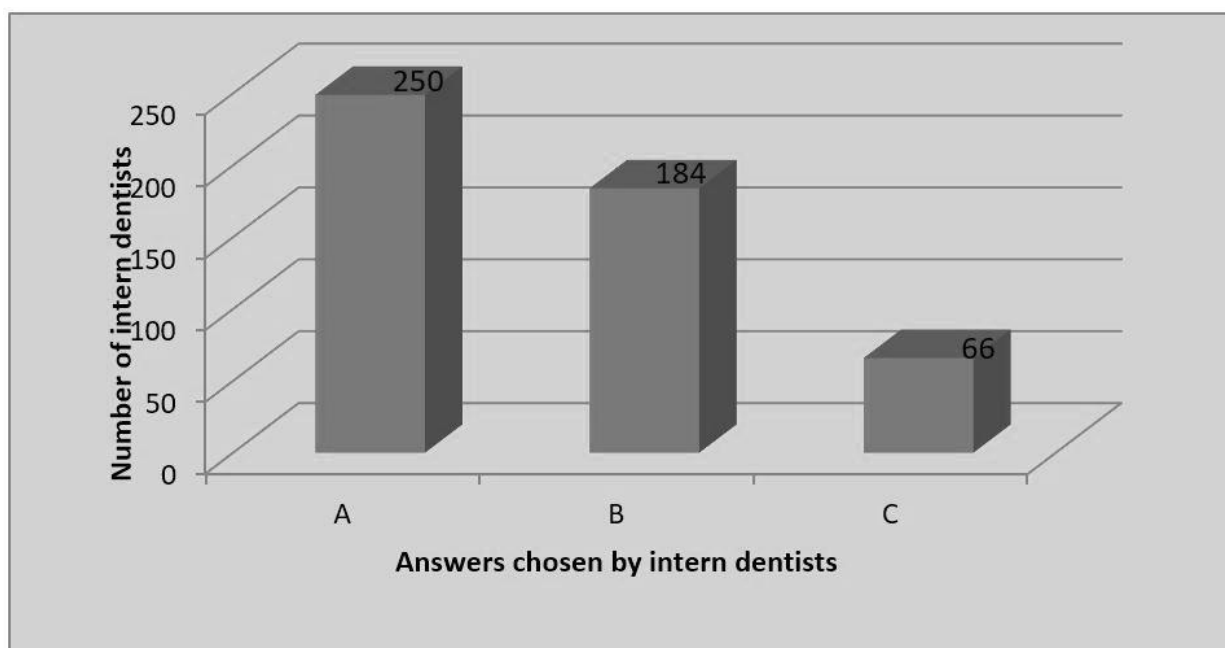
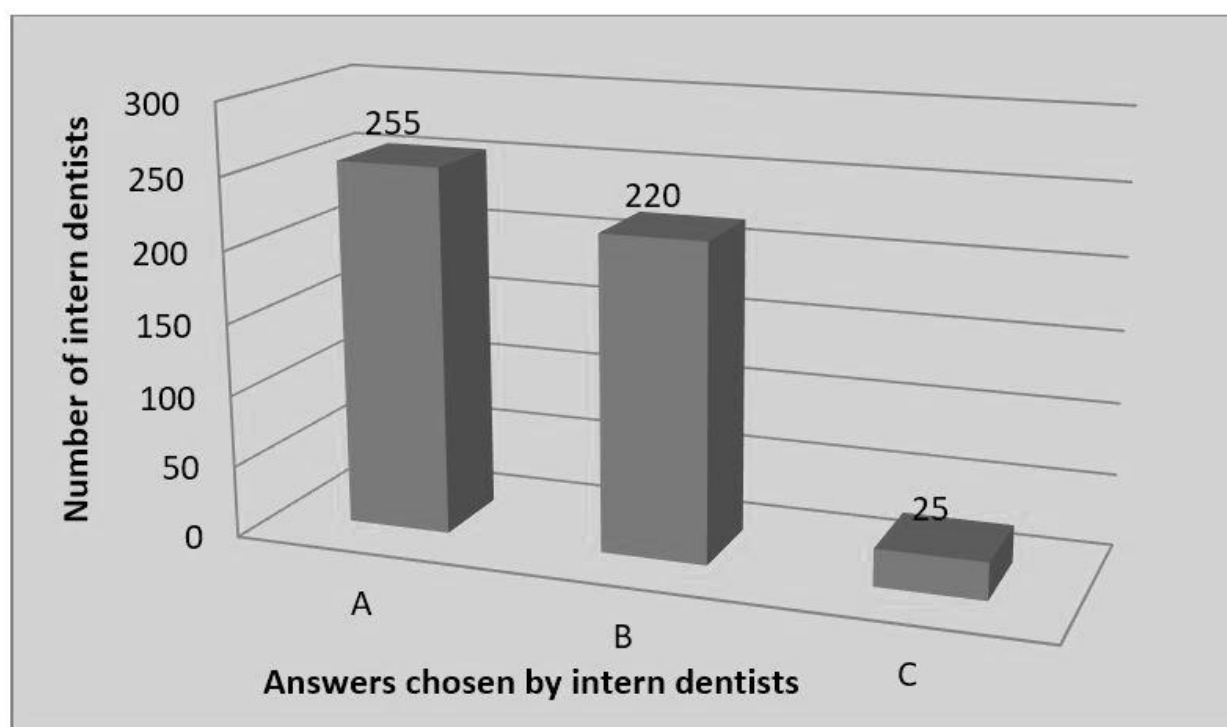


Figure 2: Column chart regarding the case of intruded primary teeth in the study sample

**Table 3:** The questionnaire focusing on the attitude and practice of intern dentists about traumatic dental injuries and frequency (%) of the answers

Question	Answers	Frequency (%)
Time consciousness for the management of dental trauma can play a vital role in improving the prognosis?	Agree	490 (98%)
	Disagree	10 (2%)
Emergency management of dental trauma is professional and requires special education and training?	Agree	465 (93%)
	Disagree	35 (7%)
Management of dental trauma must become one of the educational priorities for intern dentists?	Agree	48 (96%)
	Disagree	20 (4%)
Would you like to attend an educational program on dental trauma management?	Yes	475 (95%)
	No	20 (4%)
	Don't know	5 (1%)
Did you attempt to manage an emergency case of traumatic dental injuries?	Yes	0 (0%)
	No	500 (100%)

**Figure 3:** Column chart regarding the case of avulsed primary teeth in the study sample

splinted the tooth for 1-2 weeks, while to (44%) choose to extract the tooth. The International Association of Dental Trauma (IADT) and The American Academy of Pediatric Dentistry (AAPD) propose that for minor extrusion less than 3 mm, the management should be to either leave the tooth for spontaneous alignment or to reposition and splint the tooth, while severe extrusive luxation greater than 3 mm, mobility, the tooth is nearing exfoliation, the child's inability to cope with the emergency situation, the tooth should be extracted (*Council, 2009 & Lai, 2019*).

And nearly half of the participants decide not to replant the avulsed primary anterior tooth. These results may be due to the lack of knowledge gained during the undergraduate program.

The majority of the intern dentists (98%) agreed that time is important for improving the prognosis of the traumatized tooth, and regarding the management of TDI's (93%) intern dentist believed that this requires special education and training. Moreover, (96%) intern dentists agreed that management of dental trauma must become one of the educational priorities for intern dentists, and must be included as a part of their teaching curriculum to improve their knowledge, (95%) intern dentists interested in attending an educational program on dental trauma management. *Townsend et al., 2017* study proved that the traditional dental curriculum rarely allows students to evaluate and manage acute dental trauma because most of the traumatic dental injuries typically occur outside the hours of a normal dental school day. Most graduating dentists are undertrained and ill-prepared to manage dental trauma as a result of this lack of exposure.

Regarding the assessment of practice concerning TDI's, all intern dentists participate in this study (100%) reported that they hadn't previously attempted to manage emergency

cases of TDIs in primary anterior teeth. This result came in agreement with a previous study by *Melo et al., 2015* who reported that (81.3%) of the graduated dental students never treated TDI's cases. As the experience level of the dental interns was based on educational programs, previous knowledge, experience, and the months of the internship period which provide them with a lack of guidance and exposure to clinical cases (*Limbu et al., 2014*).

In the present study, there was a statistically significant correlation between the knowledge score, and the University of graduation ( $P=0.055$ ). Regarding the previous training, there is no statistically significant correlation between knowledge score in intern dentists with and without previous training for a dental assistant in the clinic ( $P=0.847$ ). The relationship between the ability to provide proper action when needed, and the knowledge score was insignificant ( $P=0.788$ ). These findings are in agreement with a previous study done by *Emhemmed, 2017*. The need for future education regarding dental trauma had an insignificant effect on the knowledge score as well ( $P=0.979$ ) these findings contradicted the previous study done by *Akhlagi et al., 2014*.

*Magno & Nadelman, 2019*, systematic review which included 31 studies, all of them evaluated TDI's knowledge through questionnaires, results showed that dentistry student and professional knowledge about treatment of TDI's in both deciduous and permanent dentition was not satisfactory.

## Conclusion

The present study shows an inadequate level of knowledge of intern dentists regard traumatic dental injuries. Knowledge regarding the appropriate treatment of intruded, extruded, and avulsed primary maxillary tooth was inadequate. Intern dentists show a high positive attitude towards early intervention in the management of traumatic dental injuries.

Practice regarding attempts to manage emergency cases of TDI's in the primary anterior tooth was inadequate.

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