BULLETIN OF STOMATOLOGY AND MAXILLOFACIAL SURGERY
Volume 21, Issue 12

DOI: 10.58240/1829006X-2025.21.12-90

ORIGINAL RESEARCH

# THE DEGREE OF KNOWLEDGE AND ATTITUDE OF EGYPTIAN PHYSICIANS REGARDING EMERGENCY TREATMENT OF TRAUMATIC DENTAL INJURIES: CROSS SECTIONAL STUDY.

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***Received:*** *Oct 29. 2025;* ***Accepted:*** *Nov27, 2025;* ***Published:*** *Dec. 27, 2025*

## Abstract

**Background:** Traumatic dental injuries (TDIs) continue to be a significant oral health concern in children. The prognosis of a tooth following trauma is influenced by factors such as injury severity, the quality and time of initial treatment, subsequent care and adequate knowledge among physicians. Therefore, this study aimed to evaluate physicians fundamental knowledge and attitude regarding the management of TDIs in Egypt.

**Methods:** This observational cross-sectional study surveyed a sample of 290 physicians including family medicine, pediatricians and emergency doctors in Egypt using an online questionnaire. Participants completed a three-part questionnaire (four questions covering demographic, professional, and personal data; nine questions in the form of 2 cases scenarios to assess their knowledge and four questions to assess their attitude regarding TDIs). Data were analyzed with descriptive statistics, Categorical and binary data were presented as frequency and percentage; intergroup comparison was performed using the Chi-Squared test. The confidence limit was set at 95% with 80% power and all tests were two tailed with statistical significance level set at ($P \leq 0.05$).

**Results:** Pediatricians and Family medicine doctors had a statistically significant higher knowledge score regarding immediate management of fractured tooth and the immediate emergency action regarding avulsion compared to emergency physicians ($P = 0.0279$, $P = 0.0272$ respectively). No statistically significant difference in the rest of the knowledge question and attitude question.

**Conclusion:** The present study demonstrated gap of knowledge and lack of confidence among medical physicians in diagnosing and managing traumatic dental injuries in emergency department. There is a clear need to enhance dental trauma education for emergency doctors.

***Keywords*:** Traumatic Dental Injuries, Family Medicine, Pediatricians, Emergency Doctors, Knowledge Assessment, Attitude Assessment, Questionnaire Survey.

## INTRODUCTION

Injuries among children represent a significant global public health concern. In 2011, the World Health Organization (WHO) estimated that over 630,000 children under the age of 15 died as a result of injuries. Childhood injuries were associated with a high burden of morbidity, with thousands of children who survived injuries but experienced varying degrees of disability(1)

Dental traumatic injuries continue to be a significant oral health concern in children, ranging from minor enamel chips to severe maxillofacial damage

affecting supporting structures and leading to tooth displacement or avulsion. The frequency of tooth avulsion following traumatic injuries ranged from 0.5% to 16% in permanent dentition and 7% to 13% in primary dentition[(2)].

Falls, collisions, sports, violence, and traffic accidents are common causes of traumatic dental injuries (TDIs). TDIs can be physically distressing, affecting emotional and psychological well-being. Physical impacts may include pain, loss of function, and adverse effects on developing occlusion and aesthetics. Psychosocial impacts vary among individuals, influencing treatment preferences, resilience, and overall recovery. These situations can have a negative impact on children's lives[(3)].

The prognosis of a tooth following trauma is influenced by factors such as injury severity, the quality and timeliness of initial treatment, and subsequent care. The timely management of dental trauma is critical for determining the outcome and prognosis of injured teeth. Immediate intervention following dental trauma can significantly impact the final result. For example, the treatment of avulsed teeth varies depending on the duration of displacement and the developmental stage of the root. Early and rapid intervention, along with proper preservation of the avulsed tooth, are crucial for successful treatment outcomes in these cases[(4)].

Traumatic dental injuries should be treated as emergencies, and emergency departments of hospitals often serve as the initial point of contact for patients following such incidents. Emergency physicians often play a crucial role in managing traumatic dental injuries as dentists may not be readily available in emergency departments. These healthcare professionals, including emergency medicine specialists, residents, and general practitioners, frequently encounter complex trauma cases, including head and neck injuries that may involve dental trauma. Additionally, individuals with isolated dental trauma may also seek treatment at the hospital[(5)].

Studies have indicated that a significant number of emergency physicians are not adequately informed about the management of traumatic dental injuries. Previous studies have revealed that a significant number of physicians lack formal education on the management of traumatic dental injuries[(6,7)]. Given the crucial role of emergency departments as the initial point of contact for trauma patients and the importance of adequate knowledge among emergency physicians for effective dental trauma management, and considering the absence of relevant research in Egypt, this study aimed to address this knowledge gap. Therefore, this study intended to evaluate physicians' fundamental knowledge and attitude regarding the management of TDIs in Egypt.

The aim of this study was to evaluate the physicians' fundamental knowledge and attitude regarding the management of TDIs in Egypt.

## METHODS

### Study design:

This observational cross-sectional study was conducted through the pediatric dentistry department, Faculty of Dentistry, Cairo University in Egypt, an online questionnaire was employed, and the survey was conducted from November 2024 to August 2025. Participation was voluntary, and there were no rewards or penalties for participating. The University's IRB/ECs (institutional review boards/ethical committee) approved the protocol of this study (approval number: 10-24) and was registered at ClinicalTrials.gov with Identifier: NCT06437275.

### Questionnaire

The questionnaire of this study was guided from similar previous study questionnaire (Modified Raoof` et al., 2022)[(8)], which included binary question (yes/no) and categorical multiple choice question (Supplementary file). The first section of the questionnaire include sociodemographic data section which gathered participants' name and phone number (optional), gender, age, first aid training, and dental trauma experience. The second and third sections were designed to assess two primary area: Knowledge which evaluated participants' comprehension of TDIs management and emergency treatment (contained nine closed ended questions in the form of two cases) and Attitude which explored participants' attitudes regarding TDIs assessment and management (consisted of four closed ended questions). This pre-structured online questionnaire created in google forms and was disseminated through email and various media channels**.**

### Eligibility criteria

Family medicine, pediatricians, and emergency doctors in Egypt, males and females older than 25 years with bachelors, master, and doctorate education level were selected. The inclusion criteria were physicians with the previous criteria who accepted to participate. The exclusion criteria were physicians with the previous criteria who refused to participate.

**Sample size**

Sample size was calculated according to the results of the study done by **Iyer et al.** [9] in which the physician awareness was (74.7%)- by adopting a confidence interval of (95%), a margin of error of (5%) with finite population correction; The predicted sample size (n) was a total of (290) cases. Sample size was calculated by using EPI INFO version 7.2.5.0.

**Statistical Method**

Descriptive analysis was performed using Medcalc software, version 22 for windows (MedCalc Software Ltd, Ostend, Belgium). Figures were generated using Microsoft Excel for Windows version 2404 (Microsoft 365, Microsoft Egypt, Giza, Egypt). Categorical and binary data were presented as frequency and percentage; intergroup comparison was performed using the Chi-Squared test. The confidence limit was set at 95% with 80% power and all tests were two tailed with statistical significance level set at ($P \leq 0.05$).

## RESULTS

**Participants' demographic characteristics:**

In the present study, 53.30% of participants were emergency doctors, 30.7% were specialized in family medicine, and 16.0% were pediatricians. Females represented 60.8% of the sample, while males accounted for 39.2%. Most participants were aged ≤35 years (91.8%), followed by those aged 36–45 years (7.8%) and >45 years (0.3%). 68.6% of participants received first aid training and 73.5% had prior dental trauma experience.

**Knowledge results:**

In Case 1, 90.5% of participants correctly identified the tooth as permanent, while 8.8% believed it was deciduous and 0.7% were unsure. Regarding immediate management of the broken tooth, 87.6% advised the patient to save the tooth pieces or fragments and refer her to a dentist, 12.1% recommended referral without advising to keep the fragments, and 0.3% suggested extraction.

Within emergency medicine doctors, 84.0% of respondents advised saving the tooth fragment and referring the patient to a dentist, while 16.0% referred without such advice. Among pediatricians, 93.9% gave the correct advice, and only 4.1% referred without recommending preservation; 2.0% suggested extraction. Family medicine practitioners showed similar patterns, with 90.4% advising preservation and 9.6% referring without it. The difference in responses across specialties was statistically significant ($P = 0.0279$). These data are illustrated in **Table (1).**

**Table 1. Distribution of responses within each specialty in case 1 (Your immediate management of the case is).**

| Your immediate management of the case is | Specialty | | | Total |
|---|---|---|---|---|
| | Emergency | Pediatricians | Family medicine | |
| Refer the patient to a dentist without advising her to keep the tooth fragment | 26 | 2 | 9 | 37 (12.1%) |
| | 16.00% | 4.10% | 9.60% | |
| Advise the patient to save the tooth pieces or fragments and refer her to a dentist | 137 | 46 | 85 | 268 (87.6%) |
| | 84.00% | 93.90% | 90.40% | |
| Suggest the patient to have the tooth extracted | 0 | 1 | 0 | 1 (0.3% |
| | 0.00% | 2.00% | 0.00% | |
| P value | P = 0.0279 | | | |

In case 2 for Q1, 48.7% of participants reported that they would stop bleeding by applying gentle pressure with a cloth over the injury and advise the patient to rest. Other responses included: searching for the tooth after stopping bleeding (18.6%), looking for the tooth and replanting it immediately (25.2%), and placing the tooth in a handkerchief before referral (7.5%). In Q2, 96.4% indicated they would investigate whether the child had received a tetanus vaccine. For Q3, 82.0% considered immediate replantation essential, 15.0% suggested replantation within a few hours, and 2.9% within the same day. In Q4, 65.7% reported they would care if a primary tooth was knocked out, whereas 34.3% would not. For Q5, 58.8% selected rinsing the tooth gently under tap water and replanting it if it had fallen on dirty ground, 23.9% chose cleaning it with a toothbrush under tap water, 17.0% preferred rubbing dirt away with tissue, and 0.3% opted to discard the tooth. In Q6, 92.8% stated they would hold the tooth by the crown, 3.3% by the root, and 3.9% reported it was not important. These data are illustrated in **Table (2).**

**Table 2. Distribution of responses within case 2 (Q1-Q6).**

| Case 2 (Q1-Q6) | | Frequency | Percentage |
|---|---|---|---|
| **Q1- The immediate emergency action you would take is:** | Stop the bleeding by applying gentle pressure with a cloth over the injury and advise the patient to rest | 149 | 48.70% |
| | Stop the bleeding and then search for the tooth | 57 | 18.60% |
| | Look for the tooth and put it back in its socket | 77 | 25.20% |
| | Place the tooth in a handkerchief and refer the child to a dentist | 23 | 7.50% |
| **Q2- Would you investigate if the child had a tetanus vaccine?** | Yes | 295 | 96.40% |
| | No | 11 | 3.60% |
| **Q3- How urgent do you think it is to replant an avulsed tooth?** | Immediately | 251 | 82.00% |
| | Within a few hours | 46 | 15.00% |
| | Within the same day | 9 | 2.90% |
| **Q4- Would you care if a primary tooth is knocked out?** | Yes | 201 | 65.70% |
| | No | 105 | 34.30% |
| **Q5- If the tooth has fallen on the dirty ground, what would you do?** | Rub away the dirt with a paper tissue and put it back into its socket | 52 | 17.00% |
| | Clean the tooth with a toothbrush under tap water and put it back into its socket | 73 | 23.90% |
| | Rinse the tooth gently under tap water and put it back into its socket | 180 | 58.80% |
| | Discard the tooth | 1 | 0.30% |
| **Q6- How would you hold the tooth?** | By the crown | 284 | 92.80% |
| | By the root | 10 | 3.30% |
| | Not important (crown or root) | 12 | 3.90% |

Emergency physicians most commonly advised stopping the bleeding and allowing the patient to rest (54.6%), followed by reinserting the tooth (19.6%), searching for it (17.8%), and placing it in a handkerchief (8.0%). Pediatricians were more likely to reinsert the tooth (42.9%), with fewer advising rest (30.6%) or searching for the tooth (16.3%). Family medicine practitioners showed a balanced distribution: 47.9% advised rest, 25.5% reinsertion, 21.3% searching, and 5.3% handkerchief placement. These differences were statistically significant (P = 0.0272). These data are illustrated in **Table (3).**

**Table 3. Distribution of responses within each specialty in case 2 (The immediate emergency action you would take is).**

| **The immediate emergency action you would take is** | **Specialty** | | | **Total** |
|---|---|---|---|---|
| | Emergency | Pediatricians | Family medicine | |
| Stop the bleeding by applying gentle pressure with a cloth over the injury and advise the patient to rest | 89 | 15 | 45 | 149 (48.7%) |
| | 54.6% CT | 30.6% CT | 47.9% CT | |
| Stop the bleeding and then search for the tooth | 29 | 8 | 20 | 57 (18.6%) |
| | 17.8% CT | 16.3% CT | 21.3% CT | |
| Look for the tooth and put it back in its socket | 32 | 21 | 24 | 77 (25.2%) |
| | 19.6% CT | 42.9% CT | 25.5% CT | |
| Place the tooth in a handkerchief and refer the child to a dentist | 13 | 5 | 5 | 23 (7.5%) |
| | 8.0% CT | 10.2% CT | 5.3% CT | |
| P value | P = 0.0272 | | | |

When the physicians were asked whether it matters if a primary tooth is knocked out, 67.5% of emergency physicians, 63.3% of pediatricians, and 63.8% of family medicine practitioners responded affirmatively. The remaining 32.5%, 36.7%, and 36.2%, respectively, did not consider it significant. The variation in responses was not statistically significant (P = 0.7768). These data are illustrated in **Table (4).**

**Table 4. Distribution of responses within each specialty in case 2 (Would you care if a primary tooth is knocked out?).**

| Would you care if a primary tooth is knocked out? | Specialty | | | Total |
|---|---|---|---|---|
| | Emergency | Pediatricians | Family medicine | |
| Yes | 110 | 31 | 60 | 201 (65.7%) |
| | 67.5% CT | 63.3% CT | 63.8% CT | |
| No | 53 | 18 | 34 | 105 (34.3%) |
| | 32.5% CT | 36.7% CT | 36.2% CT | |
| P value | P = 0.7768 | | | |

When asked if the tooth has fallen on the dirty ground what would you do? Among emergency physicians, 55.8% chose to rinse the tooth gently under tap water and reinsert it, 23.9% cleaned it with a toothbrush, 19.6% rubbed it with a tissue, and 0.6% discarded it. Pediatricians preferred gentle rinsing (69.4%), followed by toothbrush cleaning (24.5%) and tissue rubbing (6.1%). Family medicine practitioners responded similarly: 58.5% rinsed gently, 23.4% used a toothbrush, and 18.1% used a tissue. No pediatricians or family medicine practitioners opted to discard the tooth. The differences were not statistically significant (P = 0.3995). These data are illustrated in **Table (5).**

In Q7 when participants asked about appropriate storage media for an avulsed tooth, 63.1% considered tap water an appropriate medium for storing an avulsed tooth, 7.5% selected cold water, and 4.6% selected hot water. Salt water was chosen by 89.9% of participants, coconut water by 86.6%, and ice by 18.3%. Milk was considered appropriate by 97.2%, disinfectant solution by 66.3%, patient's saliva by 97.4%, and egg white by 91.2%. Only 1.6% selected coke, whereas 98.0% selected normal saline. Alcohol was chosen by 18.6%, contact lens solution by 87.3%, plastic foils by 84.6%, and cell culture media by 91.5%. Finally, 56.5% indicated that wrapping the avulsed tooth in paper tissue was an acceptable option. These data are illustrated in **Figure (1).**

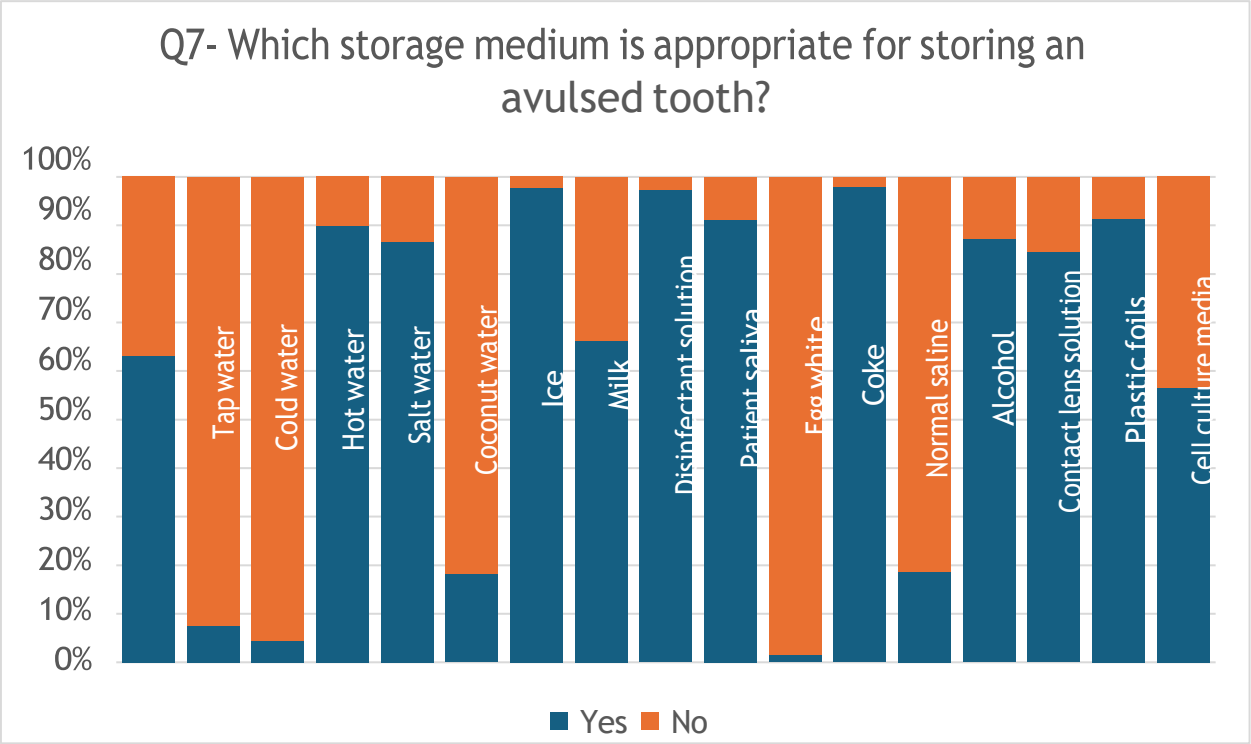


**Figure 1.** 100% stacked column chart showing distribution of responses within Q7 for different storage media.

**Table 5. Distribution of responses within each specialty in case 2 (If the tooth has fallen on the dirty ground what would you do?).**

| If the tooth has fallen on the dirty ground what would you do? | Specialty | | | Total |
|---|---|---|---|---|
| | Emergency | Pediatricians | Family medicine | |
| Rub away the dirt with a paper tissue and put it back into its socket | 32 | 3 | 17 | 52 (17.0%) |
| | 19.6% CT | 6.1% CT | 18.1% CT | |
| Clean the tooth with a toothbrush under tap water and put it back into its socket | 39 | 12 | 22 | 73 (23.9%) |
| | 23.9% CT | 24.5% CT | 23.4% CT | |
| Rinse the tooth gently under tap water and put it back into its socket | 91 | 34 | 55 | 180 (58.8%) |
| | 55.8% CT | 69.4% CT | 58.5% CT | |
| Discard the tooth | 1 | 0 | 0 | 1 (0.3%) |
| | 0.6% CT | 0.0% CT | 0.0% CT | |
| P value | P = 0.3995 | | | |

**Attitude results**

Regarding confidence in diagnosing different TDIs affecting children, 51.3% neither agreed nor disagreed, 42.2% agreed to strongly agreed, and 6.5% disagreed to strongly disagreed. Similarly, regarding confidence in providing emergency treatment for TDIs, 53.9% neither agreed nor disagreed, 35.3% agreed to strongly agreed, and 10.8% disagreed to strongly disagreed. Satisfaction with knowledge level regarding TDIs and their management was expressed by 31.4%, while 60.1% neither agreed nor disagreed and 8.5% disagreed to strongly disagreed. Finally, the majority (79.1%) agreed to strongly agreed on the need for further education on TDIs and their management, 19.6% neither agreed nor disagreed, and 1.3% disagreed to strongly disagreed. These data are illustrated in **Figure (2).**

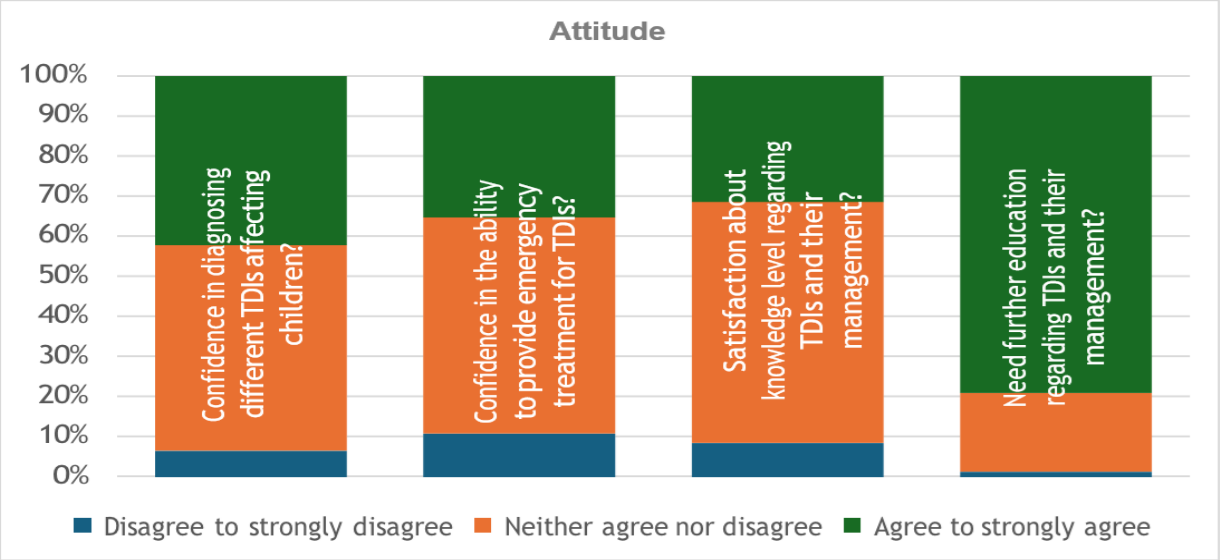


**Figure 2** 100% stacked column chart showing distribution of responses within attitude questions.

Among emergency physicians, 42.3% agreed or strongly agreed they were confident in diagnosing TDIs, 52.1% were neutral, and 5.5% disagreed. Pediatricians showed slightly higher confidence (44.9% agreed, 46.9% neutral, 8.2% disagreed), while family medicine practitioners reported 40.4% agreement, 52.1% neutrality, and 7.4% disagreement. These differences were not statistically significant (P = 0.9177). These data are illustrated in **Table (6).**

**Table 6. Distribution of responses within each specialty in attitude (Confidence in diagnosing different TDIs affecting children).**

| Confidence in diagnosing different TDIs affecting children | Specialty | | | Total |
|---|---|---|---|---|
| | Emergency | Pediatricians | Family medicine | |
| Disagree to strongly disagree | 9 | 4 | 7 | 20 (6.5%) |
| | 5.5% CT | 8.2% CT | 7.4% CT | |
| Neither agree nor disagree | 85 | 23 | 49 | 157 (51.3%) |
| | 52.1% CT | 46.9% CT | 52.1% CT | |
| Agree to strongly agree | 69 | 22 | 38 | 129 (42.2%) |
| | 42.3% CT | 44.9% CT | 40.4% CT | |
| P value | P = 0.9177 | | | |

## DISCUSSION

Traumatic dental injuries (TDIs) are a common problem in emergency rooms (ERs). TDIs in various forms account for up to 66% of ER visits related to dental injuries. Approximately one-fifth of permanent teeth and one-third of primary teeth experience traumatic injury at some point in their lifetimes. Medical professionals must have sufficient knowledge of TDIs because they play a crucial role in the initial management of these injuries. Physicians are frequently the first medical professionals to evaluate patients in emergency situations, including assaults, sports injuries, falls, and traffic accidents. The prognosis can be greatly impacted by doctors' ability to identify and appropriately treat dental trauma because access to dental care is not always immediate particularly in emergency rooms and rural areas. However, a number of studies reveal that emergency physicians around the world have inadequate knowledge and skills**(10)**.

Therefore, this study aimed to evaluate physicians' fundamental knowledge and attitude regarding the management of TDIs in Egypt.

Relatively quick and inexpensive to conduct

The present study designed as an observational cross-sectional, the main strength of cross- sectional studies is that they are relatively quick and inexpensive to conduct, data on all variables are only collected at one time point, no ethical difficulties, easy for generating hypotheses; Furthermore, They are the best way to determine the prevalence and can study the associations of multiple exposures

and outcomes. Therefore, it was the most suitable type of study for evaluating knowledge and attitude among Egyptian medical practitioner**(11,12)**.

This study used a pre-structured online questionnaire as it allows for an effective and consistent collection of data from a large number of physicians with little disruption to their clinical duties. The use of binary questions and fixed format provides consistency in the questions asked, participants' knowledge and attitudes can be measured consistently and reliably. Additionally, due to their flexibility and privacy, honest responses are encouraged, which enhances the overall quality and completeness of the data gathered**(13)**.

The study sample represents the frontline of pediatric emergency care because we surveyed doctors from family medicine, pediatrics, and

emergency departments, who are commonly the first medical professionals to deal with pediatric trauma cases. When a child presents with a traumatic injury, these doctors provide the initial evaluation, stabilization, and decision-making process[14].

Cairo University and Ain Shams University hospitals were chosen for this study because they have a considerable and varied workforce of physicians with a wide range of specializations and clinical backgrounds. Since these hospitals are significant tertiary medical centers and frequently handle emergency and trauma cases, choosing these hospitals guarantees a representative sample of doctors with suitable clinical experience[15].

Performing bias were reduced by administered the same structured questionnaire to each participant in the same way. This strategy reduces systematic variations in participant data collection methods, ensuring that response variation reflects actual differences rather than variations in data collection methodology. Additionally, all collected data whether favorable, neutral, or conflicting was included in the final analysis and presented transparently to prevent reporting bias[16]. The questionnaires were evaluated by a single operator, which reduced examiner-related variability and guaranteed consistency in scoring. This method narrowed the possibility of performance bias resulting from various evaluators' differing interpretations[17].

The findings of the present study provide valuable insight into the characteristics and awareness of healthcare providers who may face dental trauma in clinical practice. Emergency physicians made up the majority of participants (53.3%), with family medicine specialists coming in second (30.7%) and pediatricians third (16.0%). The majority of emergency physicians in the sample may be explained by the fact that emergency rooms, in particular, are frequently the initial point of contact for patients with severe dental injuries. One noteworthy feature of the sample was the high percentage of female participants (60.8%), which is consistent with an increasing number of women working in healthcare field. Furthermore. This tendency is consistent with previous research by Otufowora et al.[18] who stated that female physicians may be more likely than their male counterparts to participate in survey-based studies.

Most participants were relatively young, with 91.8% aged 35 or younger. this younger demographic may suggest that study sample consist largely of early career physicians, that may indicate that early career doctors generally participate in survey research more readily than older and more experienced practitioners. This finding comes with accordance with **Alamri**[19] which stated that older or busier practitioners may be discouraged from participating due to time restrictions and workload.

The effective management of dental emergencies depends heavily on training and prior experience. 73.5% of participants in this study had prior experience treating dental trauma, and 68.6% of participants reported having received first aid training. While these percentages are positive, they also show that a significant percentage of healthcare professionals still lack formal education or practical experience in this field. This was in accordance with **Mathew et al.**[20] who emphasized the importance of education of dental traumatology which is clinically significant because prognosis can be significantly impacted by appropriate treatment of dental trauma.

Regrading case 1, 90.5% of participants correctly identified the tooth as permanent this comes with accordance with **Yousuf et al.**[21] who reported that medical practitioners were more likely to have better knowledge about permanents teeth this was explained by that older children are more often coming to emergency department that increase familiarity of permanent teeth. On contrary 8.8% of participants believed that it was deciduous tooth and 0.7% was unsure. this agreed with **Yeng et al.**[7] which showed gap in anatomical knowledge and dental trauma classifications, this was explained by absence of undergrad dental courses and postgraduation dental training.

Regarding immediate management of the case, 87.6% advised the patient to save the tooth pieces or fragments then refer to a dentist, this comes with compliance with **Sameni et al.**[22] who advised the patients to retain the fractured pieces, as reattachment may be a viable and aesthetic treatment options. In contrast **Al-Shahrani et al.**[23] reported that many emergency physicians lacked adequate knowledge regarding the management of crown fractures.

Regarding the effect of specialty on responses in case 1, among emergency medicine practitioners 84.0% correctly advised preserving the tooth fragment and referring the patient to a dentist, whereas 16.0% referred patients without providing this guidance. This suggests that while majority of emergency physicians recognize the importance of fragment preservation a notable minority may not fully appreciate its impact on treatment outcomes which was in accordance with Coşkun et al.[24].

Furthermore, about 93.9% of pediatricians recommended preservation prior to referral, indicating

the highest level of adherence to appropriate management. A minor percentage (2.0%) recommended extraction, indicating a slight over-treatment tendency, and only 4.1% referred without such advice. This high percentage of accurate answers among pediatricians probably indicates an improved knowledge of pediatric dental trauma protocols and their regular involvement in pediatric care including dental emergencies, these data agreed with **Sari et al.[25].**

Additionally, family physicians demonstrated high compliance, with 90.4% recommending preservation and 9.6% making referrals without it. This shows significant knowledge in primary care settings, although slightly less than that of pediatricians. This is probably due to exposure to pediatric patients and general trauma management, which also confirmed by **Cagay et al.[26].**

The differences in responses across specialties were statistically significant, highlighting the influence of clinical focus and training on emergency dental knowledge this comes in accordance with **Coşkun et al., Sari et al.** and **Cagay et al.[24-26]**, and in contrast with **Wolfer et al.[10]**.

In case 2 concerning the immediate management of the avulsed tooth, 48.7% of the participants in this study reported that they would stop bleeding by applying gentle pressure with cloth and advice patients to rest, other responses included: searching for the tooth after stopping bleeding (18.6%), looking for the tooth and replanting it immediately (25.2%), and placing the tooth in a handkerchief before referral (7.5%). This come with accordance with **Ali et al.[8]** this is clarified by their first aid training which recommend applying direct pressure to control bleeding in soft tissue before starting advanced treatment.

Concerning tetanus vaccination for the patient a significant majority of the participants (96.4%) indicated they would investigate if the child had tetanus vaccination, this is agreed with **(Kuru and Duruk[27],** this reflected an appropriate medical response to the potential risk of infection associated with traumatic dental injuries. This is in contrast to the results of **Liu et al.[28]** who found that many emergency physicians showed inconsistent behaviors and inadequate understanding on tetanus prophylaxis in trauma cases.

About 82% of the participants agreed with urgent immediate replantation of the avulsed tooth where, 15% suggested replantation within a few hours, and 2.9% within the same day, this result agreed with the results of **Wolfer et al.[10]** who stated that the high respond for immediate implant can indicate theoretical knowledge of the medical practitioners. In contrast Çalışkan et al.[29] reported that the majority of participants had not suggested tooth replantation, this may be due to participants lacking knowledge and confidence in terms of providing first aid in cases of traumatic dental injuries.

Regarding if the avulsed tooth was primary, 65.7% reported that they would care if a primary tooth was knocked out, whereas 34.3% would not, this is agreed with **Bahammam[30]** explained that participants was aware with the importance of primary teeth as function and aesthetic but lack of knowledge and experience in dental traumatology. These results disagreed with **Barkhati and Mullahi[31]** where most of participants don't care about primary teeth avulsion this is often caused by insufficient training.

Concerning if the tooth has fallen in dirty ground, more than half of participants 58.8% selected rinsing the tooth gently under tap water and replanting it if it had fallen on dirty ground, 23.9% chose cleaning it with a toothbrush under tap water, 17.0% preferred rubbing dirt away with tissue, and 0.3% chose to discard the tooth, this result are similar to **Çalışkan et al.[29].** About 92.8% stated they would hold the tooth by the crown, 3.3% by the root, and 3.9% reported it was not important, this result come in accordance with **Bahammam[30]** and can be explained by ability of emergency physicians to distinguish the crown of the tooth due to the increased exposure to trauma cases, in contrary **Assadi et al.[14]** which stated that participants shows indifferent in holding the tooth with crown or root, this indicate a gap of knowledge and practice.

Regarding the appropriate storage medium most of participants correctly choose milk (97.2%), patient saliva (97.4), normal saline (98%) and cell culture media (91.5%) as suitable storage media, this comes with agreement with **Akhtar et al.[32]**.
Many of participants chose Egg white (91.2%), coconut water (86.6%) and 89.9% salt water, this indicating knowledge of new natural storage alternatives which was in accordance with **Khan and Sharma[33].**

Regarding the effect of specialty on responses in case 2: when asked about the immediate management of tooth avulsion, emergency physicians was advised to stop the bleeding and let the patient rest (54.6%), with fewer suggesting that the tooth be reinserted (19.6%) or searching for it (17.8%). This pattern probably reflects the priorities in emergency situations, where long-term dental outcomes are

frequently less important than immediate patient stabilization and hemostasis, this come in agreement with **Kuru and Duruk**[27].

In contrast, pediatricians were more likely to advise reinserting the tooth (42.9%), with a smaller proportion recommended rest (30.6%) or searching for the tooth (16.3%). This results recognizes the value of early intervention for long-term dental health and line with pediatric guidelines that emphasize the preservation of permanent teeth in children. Pediatricians' continued relationships with patients and families enable follow-up care and monitoring following side effects, this may also have an impact on their treatments approach, these data are in accordance with **Tadin et al.**[34].

Family medicine practitioners showed a more balanced distribution of management strategies, with 47.9% advising rest, 25.5% reinsertion, 21.3% searching, and 5.3% handkerchief placement. This pattern likely reflects the general nature of family medicine, balancing acute management with preventive and long-term care considerations. These data are in agreement with **Cagay et al.**[26].

This variation in responses across different specialty was statistically significant this identified significant knowledge gaps, particularly in immediate management of tooth avulsion this findings comes in agreement with **Çalışkan et al., Özalp and Özbulur** and **Yousuf et al.**[21,29,35] and in contrast with **Kuru and Duruk** and **Tadin et al.**[27,34].

The study also explored attitudes toward confidence in diagnosing traumatic dental injuries only 42.2% of respondents agreed or strongly agreed that they may felt confident ,while majority of 51.3% were neutral and 6.5% disagreed .this indicate that more than half of physicians are uncertain about their ability to recognize TDIs Similarly, regarding confidence in providing emergency treatment for TDIs, confidence drop further only 35.3%felt confident, over half (53.9%) were neutral and (10.8%) disagreed, this results in accordance with **Gallichan et al.**[36] and **Wolfer et al.**[10] who reported that low confidence are common due to lack of dental trauma teaching programs. In contrast **Assadi et al.**[14] demonstrated that participants were more confident because they had continuous education courses.

When assessing satisfaction with their knowledge level, only 31.4% were satisfied, whereas 60.1% were neutral and 8.5% were dissatisfied, notably there is broad agreement that additional education is necessary: Just 1.3% disagreed, 19.6% were undecided, and 79.1% agreed or strongly agreed that more TDI training is required. This consistent with **Wolfer et al.**[10] this explained by deficiency in dental trauma courses in undergrade and post grade educational programs.

There was statistically non-significant difference regarding attitude of medical practitioner from different specialty regarding diagnosis and treatment of traumatic dental injuries, this findings emphasized the urgent need to enhance dental trauma education for emergency department clinicians[37].

The low knowledge and self- reported confidence in the management of dental trauma reported in our study could be due to several reasons such as the lack of a clinician's prior adequate training and experience in managing dental trauma cases, in addition to the low exposure specifically with more complex cases. In terms of training and education, additional dental trauma education has been reported as a significant positive influence[38].

Knowledge provides clinicians with the scientific understanding and technical skills needed to make accurate decisions, apply evidence based practices, and ensure patient safety. Attitude shapes how this knowledge is delivered, influencing communication, understanding professionalism and responsiveness to patient needs. Therefore, both knowledge and attitude are essential components of competent and holistic clinical practice

**LIMITATION OF THE STUDY:**

While this study offers valuable insights, several limitations should be acknowledged:

- The current study can't be generalized to Egyptian physicians as the study focused on practitioners from only two hospitals this may limit the generalizability of the results to broader contexts, particularly in regions with different healthcare infrastructures, educational systems, and cultural attitudes toward dental trauma management.
- The use of self-reported data introduces the potential for response bias, with participants possibly overestimating or underestimating their actual knowledge and clinical practices.
- The findings shed light on current knowledge and attitudes among medical practitioners, they cannot determine whether these knowledge and attitudes influence one another or how they evolve over time.

## CONCLUSIONS

- The present study demonstrates gaps of knowledge and lack of confidence among medical physician in diagnosing and managing traumatic dental injury in emergency department.

- There is a clear need to enhance dental trauma education for all emergency department (ED) healthcare professionals who may encounter traumatic dental injuries (TDIs). Improving training in this area will help increase clinicians' confidence and competence, enabling them to triage cases effectively and provide appropriate initial advice to patients and families.

## CONCLUSION

**ACKNOWLEDGMENTS**

Not applicable.

**FUNDING**

This research was self-funded and did not receive funding from public, commercial or non-profit sectors.

**CONFLICTING OF INTERESTS**

There is no conflict of interests in connection with this article.

**ETHICALAPPROVAL**

This study was conducted in accordance with the recommendations and permission of the Research Ethics Committee at the Faculty of Dentistry, Cairo University, Egypt. It was approved on 29/10/2024, with approval number 10-24.

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