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PRIMARY SCHOOL TEACHERS' KNOWLEDGE, ATTITUDE AND EXPERIENCE REGARDING TRAUMATIC DENTAL INJURIES AND ITS EMERGENCY MANAGEMENT IN ASSIUT, EGYPT: CROSS - SECTIONAL STUDY

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ABSTRACT

Purpose: To assess the knowledge, attitudes and previous experience of primary school teachers in Egypt, Assiut city toward traumatic dental injuries (TDI).

Methods: The data was collected from 143 teachers who are working in public and private schools in Assiut using a self-administered questionnaire. The questionnaire gathered information on demographics, teaching experience, expertise, and opinions toward TDI and its management. Data was entered and analyzed using the SPSS software.

Result: The general level of school teachers' understanding of TDI management was judged to be inadequate. 95% of those surveyed said they hadn't taken a first aid course. Compared to hard tissue injuries, soft tissue injuries were more prevalent (71.4% vs. 28.6%), particularly in the lip or chin regions (52.4%). In regards to treating broken teeth, 76.2% of participants thought it was helpful to bring the fractured crown to the dentist. In regards to treating avulsed teeth, 76.2% of participants thought it was an emergency, and 81% of participants said that permanent teeth, not primary teeth, could have their teeth replanted into their sockets.

Conclusions: School teachers in Assiut City, Egypt lack adequate training programs that focus on how to manage dental emergencies with children in primary schools.

KEYWORDS: Child, School Teachers, Health Knowledge, Attitudes, Tooth Injuries

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INTRODUCTION

Traumatic dental injuries are common the period of infancy to puberty and can have an influence on goodness of life. The highest incidence of dental trauma recorded normally occurs between 2-4 and 9-10 years of age in males and 2 and 3 years of age in females, implying that boys have three times the prevalence of dental trauma as girls. That may be owing to males' active participation in sports and games[1]

TDI range from small enamel fractures to significant dentoalveolar damage, which can include tooth displacement, crown or root fracture, looseness, fissures, or even avulsion[2]. The most common causes of dental trauma according to many researches are falls and accidents[3]. TDI can occur at home, school, or play areas, but it has been stated that half of all dental trauma happens in schools[4].

These injuries can cause cosmetic, functional, and psychological issues, affecting the injured child's quality of life[5]. The prognosis for certain TDIs is determined by the decisions and activities done to address the trauma during the event[6].

Understanding the first management of dental trauma may help a school teacher, who may be the first person to care for a kid immediately following an incident, improve the prognosis for dental injuries and minimize unpleasant sequelae[7].

Thus, the purpose of this study was to evaluate the knowledge, attitudes and previous experience of primary school teachers in Egypt, Assiut city toward TDIs, in regard to these injuries.

METHODS

Ethical considerations and study design

This study was cross-sectional descriptive-analytical design, was confirmed by the ethics committee of the Faculty of Dental Medicine, Al-Azhar University, Assuit branch and its reference no. (AUAREC20230010-2) and Central Agency for Public Mobilization and Statistics. Permission letters have been taken from the Ministry of Education and sent to the school's managers.

The self-administered questionnaire was designed as an online Google form based on Alsadhan et al. (2018)[8] and Khan et al. (2020)[9]; however, the questionnaire was translated to Arabic, the native language of the teachers, to ensure clear understanding and distributed via WhatsApp groups, Facebook groups, linked-in, and emails.

We asked teachers to participate in this study via a questionnaire. Filling out the questionnaire indicated consent to participate in the study. To ensure our participants' anonymity, we followed the ethical principles mentioned in the World Medical Association Declaration of Helsinki[10]. The current study focused on teachers working in Assiut's governmental and private schools between December 2023 and February 2024.

All of the questions were closed-ended. The questionnaire included four main sections. The first section consisted of personal information. The second section of the questionnaire contains questions that assessed general knowledge concerning dental injury. The third section involved evaluating general information on soft tissue damage. Finally, the fourth section was measuring their understanding of dental trauma.

Sample size

It was estimated using the Epiinfo software program version 7.2 based on the total number of teachers being 25000 and the teacher's knowledge from prior studies being 32.3%[8]. At power of 80%, the significance level is less than 0.05. So, 143 teachers were the chosen sample size.

Validity and reliability of questionnaire

To determine the questionnaire's validity, professionals in the area assessed its content to ensure that it was Sufficient enough for capture all of the information required to fulfill aim of the study.

A statistician evaluated the questionnaire to determine the association between measurement level and data analysis eligibility. A pilot research was conducted on 20 teachers to ensure that participants understood the questionnaire and reported feedback. Questionnaire changes were made accordingly. To estimate the questionnaire's reliability. Cronbach's alpha value was utilized to assess the questionnaire's reliability (a = 0.58).

Data analysis

Data were input and analyzed with the SPSS software. Qualitative data displayed as a frequency distribution. Relationships and significant differences found using the chi-square and Fisher exact tests with a p-value of less than 0.05 were regarded cut-off significant.

RESULTS

Questionnaires were circulated using several social media platforms, including WhatsApp and Facebook groups. The distributed surveys were returned.

Questions about basic demographic information findings were showed in Table 1 (demographic data of the studied teachers) Male teachers constituted frequent 29.5% of the total sample, while on the opposite side female teachers constituted 70.5%, with the highest percentage in ages between 30 and 40 years old (47.6%). Most of the participants were from government schools, the majority of them with bachelor's degrees. Participants had the highest level of experience; their experience ranged between 6 and 19 years.

Answers to the second section of the questionnaire (Having first aid treatment courses and history for dental injury) are shown in Table 2. (Having first aid treatments and history of dental injuries among the studied teachers) 90.5% of the respondents answered did not have first aid treatment courses; at the same time, most of the respondents saw dental injuries.

TABLE (1) Demo graphic data of the studied teachers

Data	Frequency	Percent
Sex		
Male	31	29.5%
Female	74	70.5%
(Age (years		
30>	10	9.5%
-30-40	50	47.6%
-40-50	40	38.1%
50<	5	4.8%
School type		
Government	65	61.9%
Private	40	38.1%
Academic qualification		
Bachelor's	70	66.7%
Diploma	20	19%
Master's	15	14.3%
Service span (years)		
Less than 6 years	10	9.5%
years 6-19	35	57.1%
More than 19 years	60	33.3%

TABLE (2) Having first aid treatments and history of dental injuries among the studied teachers

Data	Frequency	Percent
Having first aid courses		
No	85	90.5%
Yes	10	9.5%
Seeing cases with tooth injury		
No	40	38.1%
Yes	65	61.1%

In Table 3 (General knowledge of teachers regarding tooth injury), we have been informed that most of the participants had no experience dealing with dental injuries (76.2%); at the same time, they were not satisfied with their degree of knowledge about dental traumatic injury management (90.5%). Throwing the received answers, the soft tissue injuries were more common than hard tissue injuries (71.4%: 28.6%), especially in lip or chin areas (52.4%).

TABLE (3) General knowledge of teachers regarding tooth injury

Data	Frequency	Percent
General knowledge about dental injures		
experience in dealing with dental injures		
no	80	76.2%
yes	25	23.8%
Type of injury you most often came across in children		
Soft tissue injury	75	71.4%
Hard tissue injury	30	28.6%
Common type of dental injury you came across in children mobility		
Knocked out of tooth	10	9.5%
Broken tooth	5	4.8%
Toothache	35	33.3%
Soft tissue (lip or chin)	55	52.4%
Satisfaction with the level of the knowledge you are having in managing traumatic injury		
No	96	90.5%
Yes	10	9.5%

In Table 4 (Knowledge of teachers regarding soft tooth injury), **most of the participants** confirmed that lip tears were the most common injuries (47.6%), and most of the participants considered them emergency cases that needed treatment (76.2%).

Table 5 (knowledge of teachers regarding hard tooth injury (Fracture crown)) explained the knowledge of teachers regarding hard tooth injury (fracture crown), in which most of the participants had no idea about the management of a fractured crown (76.2%); at the same time, they said that bring the fracture segment of the crown to the dentist is advantageous. 61.5% of participants suggested sending the traumatized child to a school nurse/physician if available. Otherwise, less than 10% had no idea what to do, however 28.6% advised contacting parents and recommending a dentist.

According to knowledge of teachers regarding hard tooth injury (knocked-out teeth), it was shown in Table 6 (Knowledge of teachers regarding hard tooth injury (knocked-out teeth)). It shows that the majority of respondents considered that an avulsed tooth is an emergency case (76.2%) and should be treated immediately. Most of them suggest that replantation of a tooth into a socket can be done for permanent teeth, not for primary teeth (81%). However, they did not receive guidance on what to do and what not to do in the event of an accident in which a tooth was avulsed (85.7%).

TABLE (4) Knowledge of teachers regarding soft tooth injury

Soft tissue injury	Frequency	Percent
Most common type of soft tissue injury		
Lip tear	50	47.6%
Chin injury	20	19%
Tongue biting	35	33.3%
Frequency of coming across these injury		
Once in 3 m	30	28.6%
m 6	5	4.8%
m 9	10	9.5%
m 12	60	57.1%
it is an emergency treatment		
no	25	23.8%
yes	80	76.2%

TABLE (5) Knowledge of teachers regarding hard tooth injury (Fracture crown)

	Frequency	Percent
How frequently do you encounter this condition?		
Once in 3 m	5	4.8%
6 m	15	14.3%
9 m	10	9.5%
12 m	75	71.4%
Any idea in management of such cases?		
No	80	76.2%
Yes	25	23.8%
What's your management in such case?		
Send child to school nurse/physician if available	50	47.6%
Contact parents and advise them to send to dentist	45	42.9%
Not sure what to do	10	9.5%
Do you think that carrying the fracture segment of the crown to the dentist is beneficial?		
No	25	23.8%
Yes	80	76.2%
Does it have any impact on child appearance?		
No	5	4.8%
Yes	100	95.2%
Any idea in management of child came to you with his/her teeth was mobile?		
Send child to school nurse/physician if available	65	61.5%
Contact parents and advise them to send to dentist	30	28.6%
Not sure what to do	10	9.5%

TABLE (6) Knowledge of teachers regarding hard tooth injury (knocked out tooth)

Hard tissue injury	Frequency	Percent
Frequency of coming across these injury		
Once in 3 m	25	23.8%
6 m	10	9.5%
9 m	10	9.5%
12 m	60	57.1%
it is an emergency treatment		
no	25	23.8%
yes	80	76.2%
If your student came to you with a knocked-out tooth in the hand after an accident, which would be the first place you would contact and seek treatment.		
Private dentist	40	38.1%
General hospital	20	19%
Dental hospital	45	42.9%
how urgent do you think it is to seek professional help if permanent tooth has been knocked out		
Immediately	50	47.6%
Within 30 minute	35	33.3%
Within few hours	20	19%

Do you replant the tooth into socket from which it came		
No	100	95.2%
Yes	5	4.8%
Do you think that baby tooth that has knocked out should be replant		
No	85	81%
Yes	20	19%
If you decide to replant knocked tooth back to its socket but it has fallen into the ground and ground and covered with dirt, what would you do		
Scrub the tooth gently with a tooth brush	10	9.5%
Rinse the tooth under the tap water	45	42.5%
Don't know	50	47.6%
If you don't replant the tooth, how would you transport it to the dentist?		
Ice	20	14.3%
Any liquid	15	19%
Child's mouth	5	4.8%
Paper / tissue clean handkerchief	65	61%
Have you ever received advice on what to do and what not to do in event of accident where tooth has been knocked out?		
No	90	85.7%
Yes	15	14.3%

DISCUSSION

The present study was conducted over 143 primary school teachers in Assiut City to consider the knowledge, awareness, and attitude toward the emergency management of dental trauma. The objective of this search was to assess the knowl edge, attitudes, and previous experience of primary school teachers in Egypt, Assiut City, toward TDIs in regard to these injuries.

Teachers were encouraged to cooperate willingly in this questionnaire-based study. It was found that social media was the easiest method for distribution of questionnaires and could reach a large number of teachers.

Primary school teachers were selected keeping in mind the age at which the children are highly active and carry the highest hazard of sports-related traumas. It is realistic to predict that these teachers will be put in dental trauma situations of children and, as a result, may be required to give the proper emergency management.

However, in the current study, 65% of school teachers had witnessed cases of dental trauma, but only 9.5% had undergone first aid training, demonstrating the importance of information in shaping behavior toward dental trauma treatment. This is exacerbated by a general lack of awareness about particular dental first aid practices.

The number of teachers (9.5%) in this study who attend first aid courses is lower than that mentioned in the same previous research in other countries as Saudi Arabia, UAE, India and Brazil[11-14]. Comparable results were also mentioned in studies achieved by Bhandary and Shetty[15], Nirwan et al.[16] and Sharma et al.[17], in which 75.3%, 85.7%, and 96.3% of teachers had not been trained for managing dental trauma, respectively.

These findings underscore the need for a nationwide awareness program aimed at enhancing teachers' understanding and attitudes concerning dental injuries. Similarly, a standardized yearly first aid training concentrating on medical and/or dental emergencies might be implemented. Standardized first aid training course concentrating

on medical and dental emergencies might be implemented yearly. Although, according to a 2015 study by the International Federation of Red Cross and Red Crescent Societies, only a handful of nations globally have such missions in areas[18]. However, providing that educational programs can improve teachers' knowledge and attitudes, measures like compulsory yearly first aid training need to be explored. Since educational interventions can improve teachers' knowledge and attitudes, measures such as mandatory yearly first aid training need to be explored[19].

This is particularly significant given that recent local and international research has found disparities in the emphasis on oral trauma in teaching courses for healthcare professionals[20, 21].

In the present study, only 65% of school teachers had witnessed cases with dental trauma, which was greater than what seen in previously studies as in Saudi Arabia, El- Madina city (6.2%) and Riyadh city (23%)and Samsun city in Turkey(40%)[8, 22, 23]. This might be due to a dangerous environment at school or uncontrolled sports activity on school grounds. Activities at school should entail establishing safe sports spaces and making the use of protective sporting equipment for example, helmets and mouthguards mandatory[24].

According to the current study, 76.2% of participants had no experience dealing with dental injuries, and at the same time, 90.5% were not satisfied with their degree of knowledge about dental traumatic injury management. This is convenient with the findings of previous local and international studies[8, 25, 26].

In the third part of the questionnaire, which examined participants' knowledge and awareness of appropriate treatment of soft tissue trauma, about 71.4% stated that soft tissue injuries were more prevalent than hard tissue injuries. Participants agreed that a lip tear is the most common. 47.6% and **76.2%** considered it an emergency case that needed treatment. These results are similar to those of Kretlow et al. and Alsadhan et al.[8, 27], who found soft-tissue injuries were among the most popular traumatic craniofacial injuries met by hospital emergency department staff.

The participants in the current study respond that the common type of dental injury to hard tissue they witnessed was 9.5% avulsion and 4.8% broken tooth. This results was similar to the search performed with Nirwan et al.[16] Regarding the treatment of tooth fractures, 76.2% of teachers thought the fractured portion was useful. However, these findings contrasted those of Nirwan et al. and Alsadhan et al.[8, 16], who found that 1.4% and 61.2% of teachers, respectively, believed the fracture component was valuable. A research study done in 2013 indicated that bonding the tooth fragment was more cost-effective, aesthetic, and conservative than a resin-based composite. In addition, taking less time[28].

Despite the limited number of teachers who received first aid courses, 76.2% of participants considered that an avulsed tooth was an emergency case, and 47.6% of participants considered it needed immediate intervention. This finding goes with the Al-Khalifa and AlYousef[29] study, but this different from the search of Prasanna et al.[30] where 14% of participants answered that it needed rapid intervention within 30 minutes.

Furthermore, when asked if reimplantation was for avulsed primary or permanent dentition, 81% of teacher respondents answered correctly, which is similar to Nourwali et al.'s 74%[31] Furthermore, when participants were asked whether reimplantation was for avulsed primary or permanent teeth, 81% of them respond the correct answer. This different from the search of Young et al.[26], where the majority of participants (70%) lacked confidence in distinguishing between the two types of teeth.

In the majority of avulsion cases, the avulsed tooth falls to the ground and becomes unclean. The ability to clean an unclean avulsed tooth is also essential. In the current survey, 42.5% of teachers

said they would clean the teeth using tap water. However, 9.5% said they would brush the tooth root and crown to keep it clean. A similar result was mentioned in research prepared by Blakytny et al. and Prasanna et al.[30, 32], where 2.2% and 6% of respondents, respectively, desired to scrub the teeth before replantation. According to Raphael and Gregory[33], in their search, 15% of respondents would scrub an unclean tooth before transplanting it, unaware that this would significantly reduce the chances of successful replantation.

According to the literature, milk, saline water, and saliva are suitable storage media for periodontal and pulpal healing. However, in most cases, saliva is the only fast medium accessible. In the current survey, a total of 61% stated that they will put the avulsed teeth in a tissue-clean handkerchief since the avulsed tooth will certainly get contaminated with blood and 4.8% will put it in a child's mouth. This finding is similar to the study of Khan et al[9]. where participants lack the importance of storage medium, but in contrast, the study by Raphael and Gregory[33] had a more correct answer for transportation media for avulsed teeth. Only 5% of respondents knew that 'milk' was suitable medium for both washing and transporting avulsed teeth 5% of respondents suggested that milk is best media for transportation. According to research, dry storage during transportation would have a significant impact on normal ordinary healing and repair following replantation.

CONCLUSIONS AND RECOMMENDATIONS

According to the study, school instructors in Assiut, Egypt, are unaware of dental emergencies and how to handle them. The participants do not understand how to deal with avulsed teeth. They also had not been given any information regarding addressing dental damage. A large number of teachers expressed a desire to take a dental trauma management course in the future. Thus, methods for increasing public awareness of dental trauma must be devised. The dentists should increase understanding by including this issue in school curriculum. Programs may also be created, and the general public can be educated using engaging platforms that allow for the use of audiovisual aids. However, remind teachers that there is a local language educational website on how to handle dental trauma, such as dentaltraumaguide.org.

List of abbreviations

TDI: Traumatic dental injury

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