

DEFINING THE COMPREHENSION LEVEL OF THE TEACHING STAFF IN PRIMARY SCHOOLS REGARDING FIRST AID PROCEDURES FOR DENTAL TRAUMA

ОДРЕДУВАЊЕ НА СТЕПЕНОТ НА ПОЗНАВАЊЕ НА ПОСТАПКИТЕ ПРИ ДАВАЊЕ ПРВА ПОМОШ КАЈ ДЕНТАЛНИ ТРАУМА НА НАСТАВНИОТ КАДАР ВО ОСНОВНИ УЧИЛИШТА

Talimdzioska K.¹, Sotirovska-Ivkovska A.², Najdenoska-Bojchinoska S.³, Arsova Apostolovska M., Ailii Sh.⁴

¹PHI Health Center - Prilep, ²Department of Pediatric and Preventive Dentistry, Faculty of Dentistry, Ss. "Cyril and Methodius" University in Skopje, Republic of North Macedonia, ³PHI Health Center - Krushevo, ⁴University Dental Clinical Center "St. Panteleymon" Skopje, Republic of North Macedonia

Abstract

Introduction: Dental trauma is a significant functional and aesthetic issue. The prognosis of the traumatized tooth depends on the first aid provided to the child by those present at the moment of the injury. **The aim** of our research is to determine primary school teachers' capacity in administering first aid for dental trauma. **Material and method:** Our study included 61 teachers from two primary schools. The teachers have been chosen randomly. A questionnaire was used to collect data for the research. **The results:** According to their level of dental knowledge, 67.2% (n=41) of the teachers are aware that children have permanent incisors by the age of 10; this difference is statistically significant (p<0.001). When questioned whether the tooth fragments can be reattached, only 21.31% (n=13) of respondents are aware that the tooth fragments could be reused to repair damaged teeth, while 42.62% (n=26) responded that they cannot be reattached and 28.57% (n=22) do not know, with the difference between the groups being statistically significant (p<0.001). 62.8% (n=38) of respondents are unaware of the ideal storage conditions for tooth fragments. Only 6.56% (n=4) are aware that teeth should be preserved in moist conditions, whereas 31.14% (n=19) believe that dry environment is required, which is statistically significant. **Conclusion:** As a result of our research, we have concluded that primary school teachers lack the necessary degree of knowledge and expertise to provide adequate first aid to children who have sustained traumatic injuries. **Key words:** dental trauma, students, teachers, first aid, permanent dentition.

Апстракт

Вовед: Денталната траума претставува значаен функционален и естетски проблем. Во зависност од првата помош на детето од страна на присутните во моментот на повредата, зависи прогнозата на повредениот заб. **Цел** на нашето истражување беше да се утврди колкаво е познавањето на наставниците од основните училишта за давање прва помош при дентална траума. **Материјал и метод:** Во нашата студија беа вклучени 61 наставник од две основни училишта. Наставниците беа одбрани по случаен избор. Истражувањето беше спроведено со помош на прашалник. **Резултатите:** Според степенот на познавање на видот на забите 67,2% (n=41) од наставниците знаат дека на 10 годишна возраст децата имаат трајни инцизиви, а разликата е статистички сигнификантна (p<0.001). На прашањето дали скршените делови од забот можат да се искористат, само 21,31% (n=13) знаат дека деловите можат да се искористат за реставрирање на повредените заби, 42,62% (n=26) одговориле дека не можат да се искористат, а 28,57% (n=22) - не знаат, а разликата помеѓу групите е статистички сигнификантна (p<0.001). Во однос на познавањето во каква средина треба да се чуваат скршените делови на забите 62,8% (n=38) не знаат во каква средина, 31,14% (n=19) мислат дека треба сува средина, а само 6,56% (n=4) знаат дека забите треба да се чуваат во влажна средина, што е статистички сигнификантно. **Заклучок:** Од нашето истражување дојдовме до заклучок дека нивото на знаење и способност за пружање соодветна прва помош на деца кои имаат трауматска повреда од страна на наставниците во основните училишта е на незадоволително ниво. **Клучни зборови:** дентална траума, ученици, наставници, прва помош, трајна дентиција.

Introduction

Trauma can occur anywhere, at home, on the street, in the kindergarten, at school, and it disproportionately affects the younger population, children and students.

Injury-prone areas include places where children play, run, and engage in sports¹.

Although dental injuries can occur anywhere, young children and adolescents are most frequently injured at home and at schools². Young children frequently fall and

hurt themselves in the facial area, specifically the surrounding soft tissues and the hard dental tissues, as a result of gait instability and their lack of self-criticism regarding their abilities during the early stages of walking. Additionally, schoolchildren spend significant portion of their day at school participating in sports, play games, and run, which is a significant factor in orofacial injuries. Written sources indicate that 16% of dental injuries among children occur during school hours³.

All over the world, dental trauma is a significant functional and aesthetic issue. Dental trauma can range from a minor, barely perceptible cracks in the tooth enamel that do not affect the child's physical or mental well-being, to a crown fracture or avulsion that also affects the periodontal structures and the dentin-pulp complex in teeth. The prognosis of the injured tooth depends on the first aid provided to the child by those present at the time of the injury, including whether it will heal once more with the surrounding tissue or develop complications such as necrosis of the pulp tissue, ankylosis of the tooth's root, and finally resorption of the root and its expulsion from its position in the mouth occur^{4,5,7,9}.

Due to the aforementioned, children suffer psychological consequences while the parents and the health-care system become incur costs. The outcome of the therapy and the prognosis for the traumatized tooth would be improved by a suitable and prompt intervention by those present at the site of the incident, more specifically by the teachers. They should have sufficient theoretical and practical training for the procedure for various types of tooth injuries in order to respond quickly and appropriately following the injury.

Research has been conducted in various countries, revealing that teachers often lack fundamental knowl-

edge necessary to treat injuries to the surrounding soft tissues and hard dental tissues^{8,9,10,11}.

In light of this, the aim of our research was to determine the level of primary school teachers' knowledge regarding first aid for dental trauma.

Material and method

Our research included 61 teachers from two primary schools. The teachers have been chosen randomly. A questionnaire was used as an instrument of our research. The questionnaire was personally distributed to the project participants. The data were statistically processed using Microsoft Excel and the statistical program PSPP, and the results were as follows.

Results

The study involved 61 teachers from two primary schools, of which 22.95% (n=14) were male and 77.05% (n=47) were female (Chart No. 1). All of the teachers come from urban areas.

The majority of the teachers who responded to our questionnaire do not teach physical education, and 95%

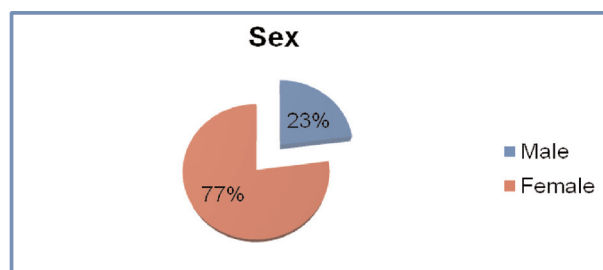


Figure 1. Figures by sex

Table 1. Figures by subjects taught

Subjects taught								
	P.E.		Other subjects		Total		p	X ²
	N	%	N	%	N	%		
Male	1	7.14	13	92.86	14.00	100	0.66	0.10329
Female	2	4.26	45	95.74	47.00	100		
Total	3	4.99	58	95.01	61.00	100		

Table 2. Figure of teachers who have/have not helped a student suffering a traumatic dental injury

Have you ever helped a student/child suffering a traumatic dental injury?								
	Yes		No		Total		p	X ²
	N	%	N	%	N	%		
Male	2	14.29	12	85.71	14.00	100	0.40566	0.52418
Female	4	8.51	43	91.49	47.00	100		
Total	6	9.84	55	90.16	61.00	100		

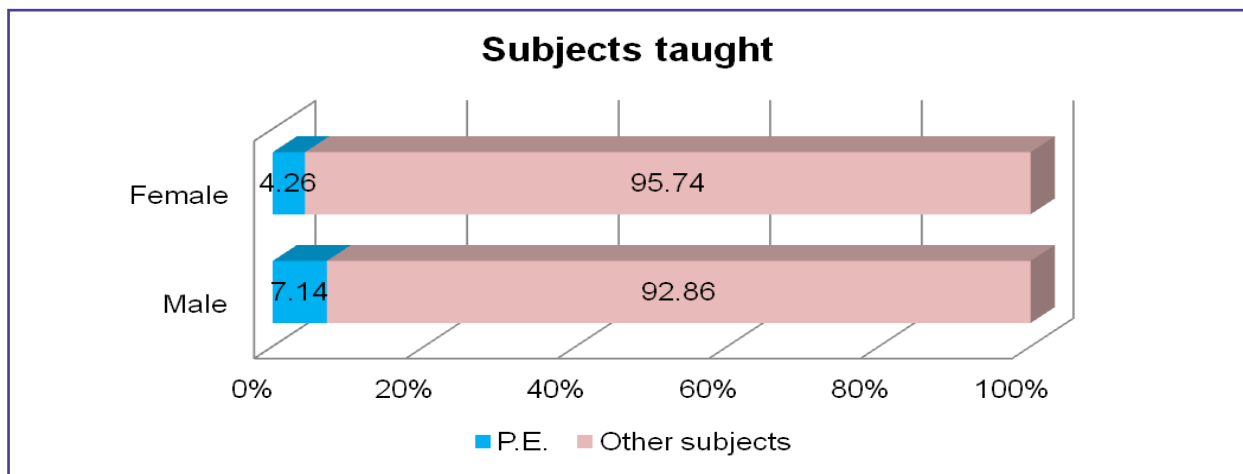


Figure 2. Figures by subjects taught

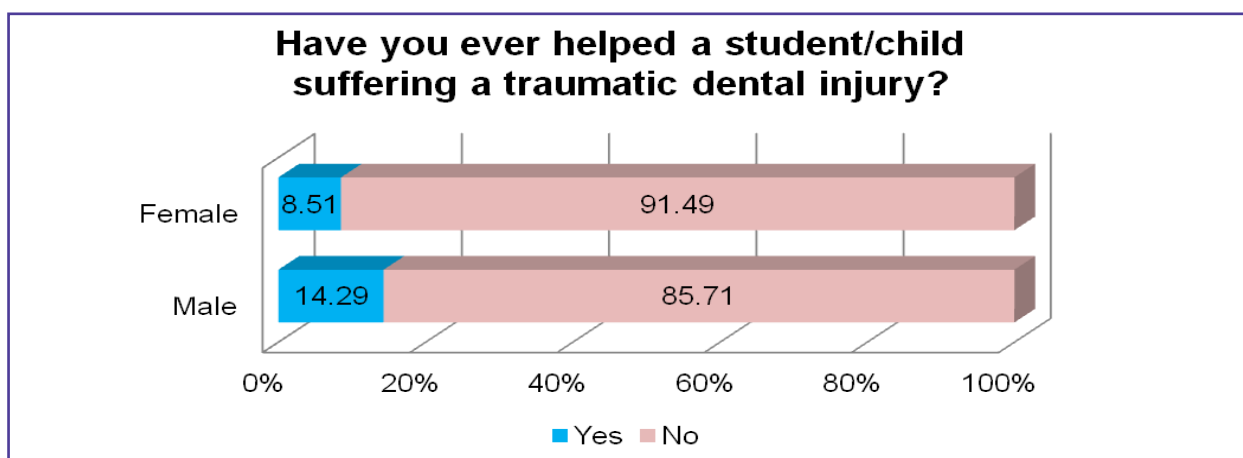


Figure 3. Figure of teachers who have/have not helped a student who has sustained a traumatic dental injury

(n=58) of them teach other subjects. Approximately 5% (n=3) of them are P.E. teachers. They are divided into 7.14% (n=1) males and 4.26% (n=2) females. While females make up 95.74% (n=45) and males who teach other subjects are 92.86% (n=13).

With $p > 0.05$ ($p = 0.66$, $X^2 = 0.10329$), the difference between male and female teachers who teach P.E. and other subjects is statistically insignificant. (Table 1 and Figure 2).

9.84% (n=6) of the teachers have been helpful compared to 90.16% (n=55) who have not provided any help. 14.29% (n=2) of the male teachers have helped compared to 85.71% (n=12) who haven't. With the female teachers the percentage is the following: 91.49% (n=43) haven't helped, 8.51% (n=4) helped the student in need of treatment.

The difference ($p = 0.40566$, $X^2 = 0.52418$) (Table 2 and Figure 3).

According to this categorization, 67.2% (n=41) of the teachers know that at the age of 10, children have perma-

nent front incisors. 16.4% (n=10) of respondents state they had primary teeth, and the same number state they don't know what kind of teeth children had at that age. 71.43% (n=10) of the male teachers think they are permanent teeth, 14.29% (n=2) believe they are primary teeth, and the same number do not know what kind of teeth 10-year-old children have. While 65.96% (n=31) of the female teachers know that the students' teeth are permanent, 17.02% (n=8) believe they are deciduous, and the same number 14.29% (n=8) do not know the type of teeth in 10-year-old children.

With $p < 0.001$ ($p < 0.001$, $X^2 = 155.92204$), there is a statistically significant difference between the groups in terms of their knowledge of the kind of teeth 10-year-old children have (Table 3 and Figure 4).

Only 21.31% (n=13) know that the fragments can be reattached to the fractured tooth. 28.57% (n=22) have responded that they do not have the knowledge, while 42.62% (n=26) state that fractured parts cannot be reattached. Male teachers' responses range from 42.86%

Table 3. Level of teacher comprehension of tooth type in children

Injured front teeth in a 10-year-old student are as follows:										
	Primary teeth		Permanent teeth		You Do not know		Total		p	X ²
	N	%	N	%	N	%	N	%		
Male	2	14.29	10	71.43	2	14.29	14	100	p<0.001	155.92204
Female	8	17.02	31	65.96	8	17.02	47	100		
Total	10	16.40	41	67.20	10	16.40	61	100		

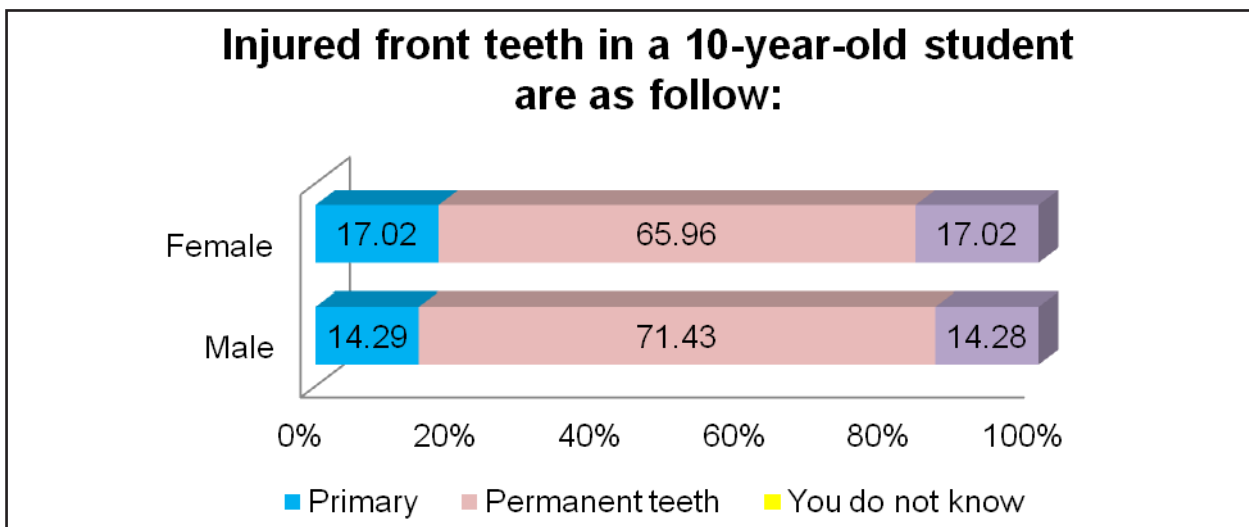


Figure 4. Level of teacher comprehension of tooth type in children

(n=6) saying the fractured fragments cannot be used again to 28.57% (n=4) saying they can. The same is the number of those lacking the knowledge in reference to the aforementioned. 42.55% (n=20) of the female teachers have responded that the fractured fragments of the tooth cannot be reattached. Only 19.5% (n=9) of respondents (n=18) state the opposite, compared to 38.30% (n=18) who don't know whether the fractured tooth can be used.

With p<0.001 (p<0.001, X²=74.0233), the difference between the groups is statistically significant (Table 4 and Fig. 5).

Regarding this issue, 62.8% of the respondents (n=38) cannot provide the answer. Only 6.56% (n=4) of the respondents are aware that moist environment is required for the fractured fragment until professional dental treatment is provided, compared to 31.14% (n=19) who believe that a dry environment is required.

Table 4. Teachers' opinion if fractured teeth fragments can be reattached

Found fractured teeth fragments:										
	Can be reused		Cannot be reused		You Do not know whether they can be used or not		Total		p	X ²
	N	%	N	%	N	%	N	%		
Male	4	28.57	6	42.86	4	28.57	14	100	p<0.001	74.0233
Female	9	19.15	20	42.55	18	38.30	47	100		
Total	13	21.31	26	42.62	22	36.07	61	100		

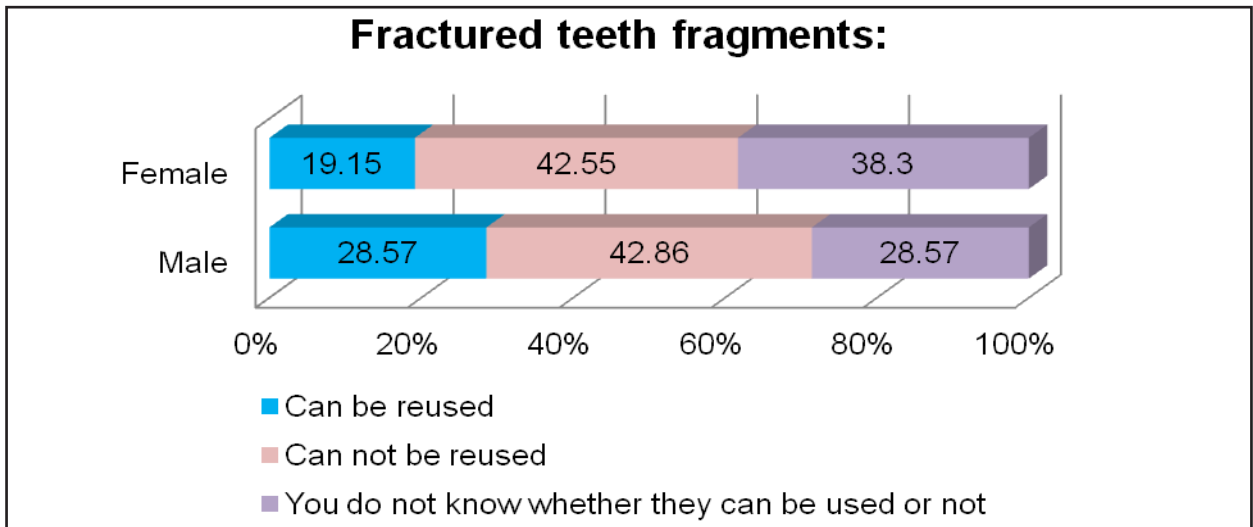


Figure 5. Teachers' opinion if fractured teeth fragments can be reattached

50% (n=7) of the male teachers lack knowledge on the issue, 28.57% (n=4) selected dry environment, 21.43% (n=3) voted for moist environment, compared to 65.96% (n=31), 31.91% (n=15) and 2.13% (n=1) of the female teachers, respectively.

With a p-value of 0.05 ($p=0.036742$, $X^2=6.607683$), the percentage difference between the groups is statistically significant (Table 5 and Fig. 6).

The child must be subject to additional medical procedures following the traumatic dental injury. 3.28 per-

Table 5. Environment in which the fractured tooth after the trauma should be kept before treated by a dentist

Storage environment of fractured tooth fragments										
	Dry environment		Moist environment		You Do not know		Total		p	X ²
	N	%	N	%	N	%	N	%		
Male	4	28.57	3	21.43	7	50.00	14	100	0.036742	6.607683
Female	15	31.91	1	2.13	31	65.96	47	100		
Total	19	31.14	4	6.56	38	62.30	61	100		

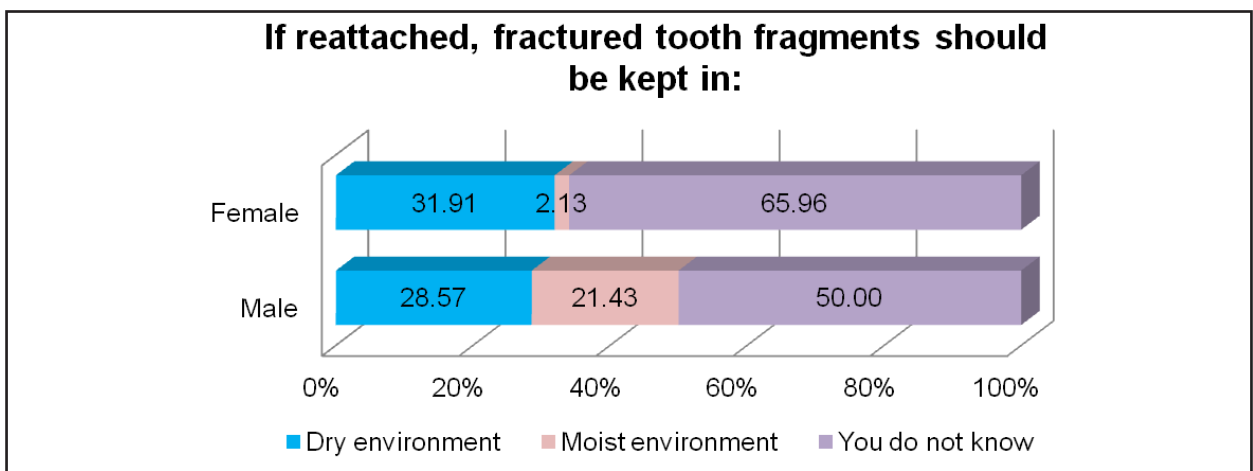


Figure 6. Environment in which the fractured tooth after the trauma should be kept before treated by a dentist

Table 6. Type of medical care teachers will seek following tooth injury in a child

Type of medical care required following dental trauma:														p	X ²	
	General practitioner		Hospital		Primary care physician		The nearest dentist		Faculty of dentistry		Pedodontist		Total			
	N	%	N	%	N	%	N	%	N	%	N	%	N			%
Male	1	7.14	1	7.14	1	7.14	5	35.72	0	0	6	42.86	14	100		
Female	1	2.13	2	4.25	1	2.13	29	61.70	0	0	14	29.79	47	100		
Total	2	3.28	3	4.92	2	3.28	34	55.74	0	0	20	32.78	61	100		

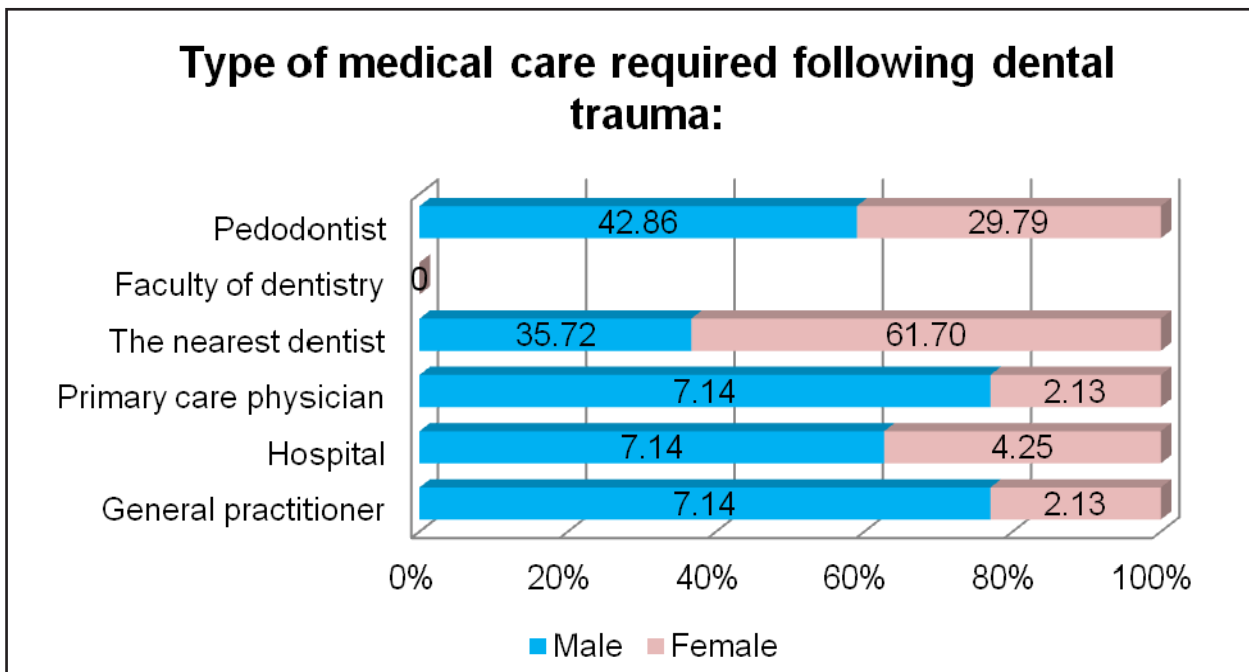


Figure 7. Type of medical care teachers will seek following tooth injury in a child

cent (n=2) of the teachers will send the injured child to the general dentist, 4.92% (n=3) will take him/her to hospital, 3.28% (n=2) will take him/her to the primary care dentist, 55.74% (n=34) of the respondents will take the child to the nearest dentist and 32.78% (n=20) will take the child to a pedodontist. None of the respondents would take the child to the Faculty of Dentistry.

7.14% (n=1) of male teachers will take the child to a general practitioner, 7.14% (n=1) will take the child to a hospital, 7.14% (n=1) to a primary care physician, 35.72% (n= 5) will take the child to the nearest dentist, 42.86 % (n=6) will take the child to a pedodontist.

2.13% (n=1) of the female teachers will take the child to a general practitioner, 4.25% (n=2) will take the child to a hospital, 2.13% (n=1) will take the child to a primary care physician, 61.70% (n=29) will take the

child to the nearest dentist, 29.79% (n=14) will take the child to a pedodontist.

With $p < 0.001$ ($p < 0.001$, $X^2 = 119.1026144$) the difference between the groups is statistically significant (Table 6 and Fig.7).

Discussion

Dental trauma is a major global health issue and a common occurrence among the young population. Data on the prevalence of dental trauma varies by country and ranges from 4.9% to 59%. It is estimated that at least half of children have suffered some form of trauma. Dental trauma is more common in young children and adolescents overall, and more frequently in boys than in girls. Girls tend to sustain injuries during their second and third

years of life, while boys typically sustain injuries between the ages of 2-4 and 9-10.

Students spend the majority of their time in class, but they occasionally run, play, or take part in some sports. It is possible for any type of trauma to happen during those activities, especially trauma to the orofacial area. Therefore, it is imperative that all members of the teaching staff, especially those who teach physical education, are trained and prepared to administer first aid in the event of any injury, including dental trauma. The majority of injuries happen in these classes.

Written materials have shown that numerous countries lack this type of training for their teaching staff. A small percentage of teachers have minimal, but unsatisfactory knowledge of dental trauma. These teachers haven't received proper training; instead, they have accidentally learned about dental trauma procedure from brochures and the Internet. Others lack any knowledge thus their comprehension of dental trauma is insufficient^{1,2,11,13,14,15,16,17}.

Out of a total of 61 teachers, only 6 (9.84%) have attended and provided aid to an injured student. In contrast to our findings, obtained data show that 20–60% of teachers have witnessed dental trauma and have been asked to provide first aid on the spot^{2,6,8,11,12,13,14,15}. Due to the large number of students in schools, there are numerous traumatic cases and teacher interventions. As a result, there are proportionally more dental injuries as there are more children.

67.2% of the respondents are aware that teeth in the front are permanent in 10-year-old children, 16.4% believe they are primary teeth, and the same number are unaware of the dentition type present at that age. This indicates that people lack general awareness of tooth physiology as a result of the low health culture. Consequently, little attention is paid to dental health, which in turn increases the risk of caries in our population. According to Fares S Al-Sehaibani et al.¹¹, 66.3% of their respondents are unaware that 10-year-old children have permanent front teeth. Costa Fabio Wildstone et al.¹⁵, has found results comparable to ours, showing that 58.7% of teachers are aware that an 8-year-old child's teeth in the front are permanent, while 29.4% believe they are primary teeth.

Only 21.31% of teachers are aware that the fractured fragment found following a traumatic injury can be reattached. The remaining 36.07% are not aware about its usability, while 42.62% believe it cannot be used. Our findings correlate with other written data, where 31% of mothers would take the fractured fragment, 46.1% would not use it, and 22.9% do not know what to do with it^{8,17}. This information is crucial because providing the fractured tooth fragment not only saves time but also gives a second chance to the fractured tooth to attain perfect aesthetics.

Only 6.56% of respondents have correctly identified a moist environment as the one in which the fractured tooth fragment should be transported to a dentist; 31.14% responded that it should be in dry environment; and 62.3% don't know the answer. Our data correlate with those obtained from other sources. According to research by Fajlinda Baharin et al, 2.5% of the teachers who were questioned would take the fractured tooth in moist environment, in some liquid^{6,10,15}.

In case of a dental injury when the child feels fine apart from the orofacial tissues, 55.74% of the teachers have correctly responded to the question about the type of medical assistance they would seek if a dental injury occurred without other symptoms, choosing the nearest dentist. 32.78% would refer him/her to a pedodontist. The remaining 11% would take the child to a general practitioner or hospital. Obtained data from written sources correlate to ours in relation to the type of medical aid provided after dental trauma¹⁴. Most teachers will also seek assistance from a dentist, whether it be the nearest dentist, a primary care dentist, or a pedodontist.

Conclusion

Traumatic injuries to the orofacial area and dental traumas are prevalent all around the world, particularly among the young population who have a low level of self-criticism regarding their physical and dynamic capabilities which consequently results in high incidence of traumatic injuries, including to their teeth.

Our research has led us to the conclusion that primary school teachers lack the necessary knowledge or capability to adequately provide first-aid to children who have sustained traumatic dental injuries.

It is imperative that all participants in the educational process receive sufficient instruction in first aid for traumatic dental injuries from professionals due to the existence of a real possibility that any child attending the school could suffer from a traumatic injury, whether it occurs in physical education class or over the holidays. This would prevent complications caused by inappropriate and untimely reaction to an injury in its earliest stages.

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