

# KNOWLEDGE AMONG SCHOOL TEACHERS ABOUT THE CORRECT APPROACH TO CHILDREN SUFFERING FROM DENTAL TRAUMA

## CONHECIMENTO ENTRE PROFESSORES SOBRE A ABORDAGEM CORRETA DE CRIANÇAS VÍTIMAS DE TRAUMATISMO DENTÁRIO

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### ABSTRACT

The objective of the study was to assess the knowledge of teachers working in public schools regarding the proper management of orofacial trauma cases in children. The study was a cross-sectional survey conducted with 89 public school teachers. Data collection was carried out through a semi-structured questionnaire divided into two parts: the first addressed the characteristics of the sample, and the second evaluated the teachers' knowledge about the immediate care of dental trauma victims. Descriptive statistical analysis was performed using the Chi-square and Fisher's Exact tests. A p-value < 0.05 was considered statistically significant. The sample consisted of teachers aged between 30 and 50 years, the majority of whom were female. Among them, 80.9% were able to identify the affected tooth (whether primary or permanent); however, 95.5% would adopt an incorrect approach in the event of dental trauma, and 80.9% would not know how to properly store an avulsed tooth. It can be concluded that most of the teachers evaluated were not prepared to provide adequate first aid to children who were victims of dental trauma.

**KEYWORDS:** Dental trauma; School teachers; Knowledge

### RESUMO

O objetivo do estudo foi avaliar o conhecimento de professores que atuam em escolas públicas sobre o correto manejo de casos de trauma orofacial em crianças. O estudo trata-se de uma pesquisa transversal com 89 professores de escolas públicas. A coleta de dados foi realizada por meio de questionário semiestruturado dividido em duas partes: a primeira sobre as características da amostra e a segunda sobre o conhecimento dos professores sobre o atendimento imediato às vítimas de traumatismo dentário. A análise estatística descritiva foi realizada por meio dos testes Qui-quadrado e Exato de Fisher. Um valor de  $p < 0,05$  foi considerado estatisticamente significativo. A amostra foi composta por professores com idade entre 30 e 50 anos e a maioria era do sexo feminino. Destes, 80,9% conseguiram identificar o dente envolvido (se era decíduo ou permanente); entretanto, 95,5% adotariam comportamento incorreto diante de um trauma dentário e 80,9% não saberiam armazenar

corretamente um dente avulsionado. Pode-se concluir que a maioria dos professores avaliados não estava preparada para prestar primeiros socorros adequados às crianças vítimas de traumatismo dentário.

**PALAVRAS-CHAVE** Traumatismos Dentários; Professores Escolares; Conhecimento

### 1. INTRODUCTION

Orofacial trauma is an injury characterized by the involvement of dental elements, supporting periodontal tissues and/or soft and bony structures of the face. It can be classified from a crack in the enamel to a total displacement of the tooth from its socket in the alveolar bone (avulsion) and requires immediate emergency assistance as it is a dental emergency<sup>1</sup>. Dental traumas predominate in males, especially at school age and during the growth phase. Additionally, children with severe incisor inclination (overjet) and/or incomplete lip seal are at greater risk of dental traumas<sup>2</sup>.

In Brazil, the prevalence of orofacial trauma in the primary dentition is on average 26%, and a small number of children reach four years of age without suffering any type of trauma<sup>3</sup>. In most cases, unless severe tooth displacement occurs, injuries to the primary dentition can go unnoticed by both the family and school environment, potentially leading to future dental consequences<sup>4</sup>.

Dental trauma can in some cases cause irreparable tooth loss, whether at the time of the accident, during treatment or even years later. Thus, this condition can cause serious psychological, aesthetic and social impacts, in addition to causing significant costs. In children, these losses also affect their parents, as an adequate and definitive solution is not always simple and quick<sup>5</sup>.

As most types of dental injuries can occur during school, recreational and sporting activities of children and adolescents, professionals at these educational institutions will be the first responsible for the initial

treatment of the injured person, positively or negatively influencing the prognosis of the injuries, according to their level of preparation for treating victims of dental trauma<sup>1,3</sup>. Therefore, the objective of this study was to evaluate the knowledge of teachers who work in daycare centers and public schools in the city of Arcoverde-PE on the appropriate management of victims of orofacial trauma. The present study is justified due to the information gaps regarding the knowledge and behavior of the city's school and daycare center professionals in situations of orofacial trauma in children and adolescents.

## 2. MATERIALS AND METHODS

This is a descriptive, cross-sectional research, whose studied population consisted of teachers from public schools, of the city of Arcoverde-PE, located in the Northeast region of Brazil. The Municipal Secretary of Education in the city of Arcoverde provided data on a total of 245 teachers. The sample consisted of 89 teachers from six schools who participated in the actions of a joint university extension program. The professionals agreed to participate in the research and signed the Informed Consent Form. Teachers who were not present during the questionnaire were excluded. This study was approved by the Multicampi Garanhuns Research Ethics Committee of the University of Pernambuco (Protocol 4,751,164), following the ethical principles proposed in Resolution 196/96 of the National Health Council.

Data collection was carried out by two researchers using a semi-structured questionnaire, which was made available in printed format. The questionnaire was self-applied in the presence of the main researcher. It was divided into two parts: the first one consisted of questions about the characteristics of the sample (gender, age, professional experience, level of education, previous training in first aid, previous training in dental trauma and whether they have already witnessed cases of dental trauma at school). The second one is about teachers' knowledge regarding immediate care for victims of dental trauma<sup>6,7</sup>.

The answers to the second part of the questionnaire were categorized, according to Table 1, as "correct" or "incorrect". As a means of evaluating the level of knowledge of teachers, a classification was established regarding the number of correct answers, with "satisfactory" knowledge for teachers who answered 5 to 8 questions correctly and "unsatisfactory" for those who answered 0 to 4 questions correctly<sup>7</sup>.

After collecting, the data was tabulated and analyzed using SPSS software version 20.0 (Statistical Package for Social Sciences, USA). The frequency of responses was compared using the Chi-squared test and Fisher's exact test was used to analyze the association between the dependent variable (level of knowledge) and the explanatory variables (gender, age, professional experience, educational level, previous first-aid training, previous training in dental trauma and if they

have already witnessed an accident). A significance level of 5% ( $p < 0.05$ ) was considered.

**Table 1** – Answers considered correct to questions about the teachers' knowledge on immediate care for victims of dental trauma

Questions	Correct answer
Question 1 - If an 8-year-old girl hit her face during recess and her upper tooth fractured (broke). How would you behave?	Send the student immediately to the school's medical or dental care; and look for fragments of the fractured tooth
Question 2 - If a 13-year-old student punched another student during Physical Education class and arrived with a bloody mouth and a missing upper tooth. 2.1 - Is the tooth involved probably permanent or deciduous (baby tooth)? 2.2 - How would you behave?	- Permanent - Look for the tooth and reposition it in the dental socket;
Question 3 - What is the ideal time to seek care if a permanent tooth is avulsed?	Immediately
Question 4 - Do you think that the deciduous (baby) tooth should be repositioned where it fell out?	No
Question 5 - If you decided to reposition the tooth in its original location, but it was lying in a dirty place, what would you do?	I would rinse the tooth under running water
Question 6 - If you didn't reposition the tooth in the socket, how would you package it so it could be taken to the dentist?	In a liquid
Question 7 - If you had to use liquid to transport the tooth, which one would you choose?	Fresh Milk or Saline Solution

## 3. RESULTS

Females were predominant among teachers, with 89.9% of the sample made up of women. Regarding their ages, the majority were between 30 and 50 years old (73%). Around 66.3% had more than 10 years of professional experience and 77.5% had postgraduate education as their highest level of education. Only 24.7% had already received first aid training, 18% had received training on how to act in the face of dental trauma and only 9% had already witnessed cases of dental trauma (Table 2).

In the case of tooth fracture at school, just over half of the teachers (57.8%) were correct regarding their behavior, as they stated that they would look for the fragments of the fractured tooth, and take the student to the school's medical or dental care. Most teachers (80.9%) were able to differentiate a permanent or deciduous tooth, based on the child's age; however, 95.5% of teachers would not know the most appropriate behavior in cases of permanent teeth avulsion, as they would not attempt to immediately

reposition the tooth in the dental socket (Table 3).

**Table 2 – Sample characteristics**

Variables	N	%
<b>Gender</b>		
Female	80	89.9%
Male	9	10.1%
<b>Age</b>		
Up to 20 years old	0	0.0%
From 20 to 30 years old	6	6.7%
From 30 to 40 years old	26	29.2%
From 40 to 50 years old	39	43.8%
50 years old or older	18	20.3%
<b>Professional experience</b>		
Less than 10 years	30	33.7%
More than 10 years	59	66.3%
<b>Educational Level</b>		
High School / Teaching in Higher Education Certificate	13	14.6%
Complete Higher Education	6	6.7%
Postgraduate	69	77.5%
Did not answer	1	1.9%
<b>Have you had any first-aid training?</b>		
Yes	22	24.7%
No	67	75.3%
<b>Have you had any training in dental trauma?</b>		
Yes	16	18.0%
No	71	78.8%
Did not answer	2	2.2%
<b>Have you ever witnessed a case of dental trauma at your school?</b>		
Yes	8	9.0%
No	81	91%
<b>TOTAL</b>	89	100%

**Table 3 – Percentage of correct answers to questions on immediate care for victims of dental trauma**

Questions	Correct		Incorrect	
	N	%	N	%
If an 8-year-old girl hit her face during recess and her upper tooth fractured (broke), how would you behave?	16	57.8%	73	42.2%
If a 13-year-old student punched another student during PE class and arrived with a bloody mouth and a missing upper tooth: - Is the tooth involved probably permanent or deciduous (baby tooth)? - How would you behave?	72	80.9%	17	19.1%
What is the ideal time to seek care if a permanent tooth is avulsed?	72	80.9%	17	19.1%
Do you think that the deciduous (baby) tooth should be repositioned where it fell out?	61	68.5%	28	31.5%
If you decided to reposition the tooth in its original location, but it was lying in a dirty place, what would you do?	31	34.8%	58	65.2%
If you didn't reposition the tooth in the socket, how would you package it so it could be taken to the dentist?	17	19.1%	72	80.9%
If you had to use liquid to transport the tooth, which one would you choose?	27	30.3%	62	69.7%

Regarding the ideal time to seek care in cases of permanent teeth avulsion, the majority (80.9%) answered that the ideal would be to seek care immediately after the trauma, while 19.1% stated that they did not think the time for care was essential. Regarding deciduous tooth avulsion, 68.5% answered correctly that they would not reposition the tooth in the socket. When asked about a tooth that would be repositioned in the socket but was dirty, 65.2% reported that they would not rinse the tooth under running water (Table 3).

When asked about the best way to store elements that were avulsed but not immediately repositioned, 80.9% stated that they would place them in any other form of storage, and only 19.1% would place the tooth in a liquid until reaching the dentist's office. Regarding the choice of liquid, only 30.3% would store correctly in fresh milk or saline solution.

The percentage of teachers with an unsatisfactory level of knowledge on dental trauma was 85.4%. Fisher's exact test showed that there was no association between unsatisfactory knowledge and gender variables ( $X^2_{(1)} = 0.754$ ,  $p = 1.000$ ), age ( $X^2_{(3)} = 0.863$ ,  $p = 0.829$ ), professional experience ( $X^2_{(1)} = 0.695$ ,  $p = 0.755$ ), educational level ( $X^2_{(3)} = 0.502$ ,  $p = 0.465$ ), previous first aid training ( $X^2_{(1)} = 0.214$ ,  $p = 0.295$ ), previous training in dental trauma ( $X^2_{(1)} = 0.636$ ,  $p = 0.700$ ) and witnessed an accident ( $X^2_{(1)} = 0.860$ ,  $p = 1.000$ ) (Table 4).

**Table 4 - Teachers' knowledge level on immediate care for victims of dental trauma**

Variables	Knowledge level		p
	Satisfactory	Unsatisfactory	
<b>Gender</b>			
Male	1	8	1.000
Female	12	68	
<b>Age</b>			
Up to 20 years old	1	5	0.829
From 20 to 30 years old	5	21	
From 30 to 40 years old	5	34	
From 40 to 50 years old	2	16	
50 years old or older	0	13	
<b>Professional experience</b>			
Less than 10 years	5	25	0.755
More than 10 years	8	51	
<b>Educational level</b>			
High School	1	12	0.465
Higher Education	2	4	
Postgraduate	10	59	
<b>Prior first-aid training</b>			
Yes	5	17	0.295
No	8	59	
<b>Prior training in dental trauma</b>			
Yes	3	13	0.700
No	10	63	
<b>Witnessed an accident</b>			
Yes	1	7	1.000
No	12	69	

## 4. DISCUSSION

Face traumas are considered dental emergencies.

They generally occur at school, during recreational activities and have the educators present as the first responsible adult, and they must act quickly for a better prognosis of the trauma. However, several studies show little knowledge of these professionals on immediate care for victims of orofacial trauma.<sup>7,8,9,10</sup>

In the present study, the sample was mostly made up of female teachers (89.9%), with complete higher education (84.2%), over 40 years of age (64.1%) and with more than 10 years of professional experience (66.3%), data similar to those found in studies carried out in other Brazilian states.<sup>4,7,12,13,14,15</sup>. Despite having many years of teaching experience, 75.3% of educators reported not having received training in first aid and 78.8% also stated they had not received training in the management of dental trauma victims. A fact that coincides with present data in the literature, in which the authors state that the majority of educators have not received any prior guidance on how to deal with situations of orofacial trauma.<sup>12,14,15,16,17</sup> The lack of training of these professionals is a worrying factor, as this is a dental emergency in which time and adequate care influence the prognosis of the injury (American Association of Endodontists, 2002).<sup>18</sup>

Around 9% of teachers stated that they had already witnessed some type of dental trauma at school, a percentage close to that observed in the study by Hanan *et al.*<sup>19</sup>, carried out in Manaus, in which 12% of teachers stated that they had witnessed such a problem at school. However, most teachers (57.8%) answered correctly regarding the behavior of immediately referring the child to medical or dental care in case of dental trauma, similar to a study carried out in Patos-PB, in which 50% of teachers would have this behavior.<sup>10</sup>

Less than half of the teachers (34.8%) would rinse the teeth under running water before reimplanting it, had it avulsed and fallen in a dirty place. This data agrees with literature's findings, which showed that only 26.1% of teachers would quickly wash the teeth with running water before reimplanting it<sup>10</sup>. Regarding the ideal time to seek care in cases of avulsion, 80.9% of educators stated that this search should be immediate, as in the study by Vilela *et al.*<sup>20</sup>, carried out in Goiás, in which most teachers (78.1%) would seek immediate care. Few professionals would perform reimplantation; however, the majority would seek immediate care, and this behavior could improve the prognosis of the affected teeth.

An important and decisive fact in the prognosis of trauma is the proper packaging of the avulsed tooth after the accident<sup>18,21</sup>. In the present study, 30.3% of teachers would store the tooth in milk or saline solution. This situation is similar to what has already been found in the literature, such as in the study by Junges *et al.*<sup>12</sup>, in which only 11.8% of educators in the city of Porto Alegre - RS who participated in the study would store the tooth in appropriate solutions, and in the study by Jokic *et al.*<sup>22</sup>, in Croatia, where 7% would put it in saline solution and 4% in milk. It should be

noted that the saline solution (NaCl 0.9%) has adequate physiological pH and osmolarity, but does not provide essential ions or glucose to the cell. Therefore, milk is considered the most suitable, as it is easily available and can maintain the vitality of the periodontal ligament due to its basic pH and adequate osmolarity. Furthermore, in a school environment, milk is often part of the menu, making it an accessible choice for professionals<sup>15,23</sup>.

Finally, the teachers' knowledge level on immediate care for victims of dental trauma was considered unsatisfactory since the majority did not report knowing how to take appropriate action in this situation. This result is consistent with those of other studies, which showed that the management and knowledge of teachers during emergencies involving dental trauma is inadequate<sup>24</sup>, and highlights the importance of health education policies on the appropriate management of children victims of dental trauma, aimed at population groups that are routinely in contact with children, such as parents and teachers.

## 5. CONCLUSION

It can be concluded that most of the teachers evaluated were not prepared to provide adequate first aid to children victims of dental trauma. Therefore, there is a great need to train and provide information to teachers, so that with the knowledge acquired, there is a coherent initial approach to dental trauma, to contribute to the success of the treatment and a better injury prognosis.

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