

EVALUATION OF THE KNOWLEDGE OF TEACHERS ABOUT DENTAL TRAUMA IN A REGION OF  
SOUTHEASTERN ESPÍRITO SANTO IN BRAZIL

 AVALIAÇÃO DO CONHECIMENTO DOS DOCENTES DE UMA REGIÃO DO  
SUDESTE BRASILEIRO ACERCA DE TRAUMATISMOS DENTÁRIOS

 EVALUACIÓN DEL CONOCIMIENTO DE PROFESORES SOBRE EL TRAUMA DENTAL EN UNA REGIÓN DEL  
SURESTE DE ESPÍRITO SANTO EN BRASIL

 Jéssica Giovani da Silva <sup>1</sup>

 Maria Helena Monteiro de Barros  
Miotto <sup>2</sup>
<sup>1</sup> Departamento de Clínica  
Odontológica, Programa de Pós  
Graduação em Ciências Odontológicas,  
Universidade Federal do Espírito Santo,  
Vitória, Espírito Santo, Brasil. Orcid:  
0000-0002-3579-1514, E-mail:  
jessicagiovanids@gmail.com.

<sup>2</sup> Departamento de Clínica  
Odontológica, Programa de Pós  
Graduação em Ciências Odontológicas e  
programa de Pós Graduação em Saúde  
Coletiva, Universidade Federal do  
Espírito Santo, Vitória, Espírito Santo,  
Brasil. Orcid: 0000-0002-3227-7608, E-  
mail: mhmiotto@terra.com.br.

**Autor para correspondência**

Jéssica Giovani da Silva

 Rua Doutor Dido Fontes, nº 580,  
Edifício Guararema B, 301, Bl 6, Jardim  
da Penha, Vitória, ES, Brasil. 29060-  
280, Brasil. E-mail:  
jessicagiovanids@gmail.com,  
contato: +55(027) 99867-9961.

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**ABSTRACT**

**Introduction:** Dental injuries are a public health problem and are described as the second largest demand for dental emergencies, with the school being one of the most frequent places. **Objective:** To measure the knowledge of teachers about the immediate conduct needed in the face of traumatic events. **Materials and Methods:** An observational, quantitative, cross-sectional study was carried out. Descriptive analysis was performed using frequency tables with number and percentage for sociodemographic variables, functional variables, and knowledge about dental trauma. The statistical package IBM SPSS 20 were used for analysis. **Results:** The teachers showed an deficient degree of information and ability to conduct first aid in such situations, which predisposes to a worrying scenario that favors the sequelae and unfavorable prognoses, resulting in damage to the quality of life and early tooth loss. We found no statistically significant difference regarding location and time of work (rural or urban), level of education, age, and sex, since knowledge is absent in all scenarios. **Conclusion:** The worrying scenario of teacher unpreparedness to deal with traumatic dental situations justifies urgent need for health education actions and teacher training, as well as the inclusion of this theme in the curriculum of future professionals.

**Keywords:** Trauma; Teachers; Knowledge; Prognosis.

**RESUMO**

**Introdução:** Os traumatismos dentários são um problema de saúde pública e são descritos como a segunda maior demanda de emergências odontológicas, sendo a escola um dos locais mais frequentes. **Objetivo:** Medir o conhecimento dos professores sobre as condutas imediatas necessárias diante de eventos traumáticos. **Materiais e Métodos:** Foi realizado um estudo observacional, quantitativo e transversal. A análise descritiva foi realizada por meio de tabelas de frequência com número e porcentagem para variáveis sociodemográficas, variáveis funcionais e conhecimento sobre traumatismo dentário. O pacote estatístico IBM SPSS 20 foi utilizado para análise. **Resultados:** Os professores demonstraram um grau deficiente de informação e habilidade para realizar os primeiros socorros em tais situações, o que predispõe a um cenário preocupante que favorece as sequelas e prognósticos desfavoráveis, resultando em prejuízos na qualidade de vida e perdas dentárias precoces. Não encontramos diferença estatisticamente significativa quanto ao local e tempo de trabalho (rural ou urbano), escolaridade, idade e sexo, pois o conhecimento está ausente em todos os cenários. **Conclusão:** O cenário preocupante de despreparo dos professores para lidar com situações odontológicas traumáticas justifica a necessidade urgente de ações de educação em saúde e capacitação docente, bem como a inclusão dessa temática no currículo dos futuros profissionais.

**Palavras-Chave:** Traumatismo; Docentes; Conhecimento; Prognóstico.

**RESUMEN**

**Introducción:** Las lesiones dentales son un problema de salud pública y se describen como la segunda mayor demanda de emergencias odontológicas, siendo las escuelas uno de los lugares más frecuentes. **Objetivo:** Medir el conocimiento de los docentes sobre las acciones inmediatas requeridas ante eventos traumáticos. **Materiales y Métodos:** Se realizó un estudio observacional, cuantitativo y transversal. El análisis descriptivo se realizó mediante tablas de frecuencia con número y porcentaje para variables sociodemográficas, variables funcionales y conocimientos sobre traumatismo dental. Para el análisis se utilizó el paquete estadístico IBM SPSS 20. **Resultados:** Los docentes demostraron un deficiente nivel de información y capacidad para realizar primeros auxilios en este tipo de situaciones, lo que predispone a un escenario preocupante que favorece secuelas y pronósticos desfavorables, derivando en deterioro de la calidad de vida y pérdida prematura de dientes. No encontramos una diferencia estadísticamente significativa en cuanto al lugar y tiempo de trabajo (rural o urbano), educación, edad y género, ya que el conocimiento está ausente en todos los escenarios. **Conclusión:** El preocupante escenario de falta de preparación de los docentes para enfrentar situaciones traumáticas odontológicas justifica la necesidad urgente de acciones de educación en salud y formación docente, así como la inclusión de este tema en el currículum de los futuros profesionales.

**Palabras clave:** Trauma; Maestros; Conocimiento; Pronóstico.

## INTRODUCTION

Dental trauma is defined as injuries of different intensities and extensions that cause damage and injury to enamel, dentin, pulp, cementum, periodontal ligament, and bone tissue. These are essential structures that provide support and maxillofacial sustainability and may cause partial or total tooth loss, mostly as a result of violence or accident. Moreover, these injuries are a public health problem, being the second highest demand for dental emergencies<sup>1</sup>. Although preventable, they reach high prevalence in the permanent and deciduous dentition, especially in children. First aid is essential for the prognosis of cases, and teachers and school personnel are the first to deal with immediate care. However, many teachers have poor or inadequate knowledge about the necessary procedures, which may negatively affect the prognosis and compromise the maintenance of the element in function<sup>2</sup>.

Neglect of dental treatment in cases of traumatic events may have permanent consequences, such as altered color and positioning, mobility, painful symptoms, sensitivity, root and bone resorption, pulp necrosis, and even tooth loss<sup>3</sup>. Besides secondary functional and aesthetic damage, there may also be psychological damage, low self-esteem, a tendency to isolation, impaired affective relationships and social development<sup>2</sup>. Correct handling and time are essential variables for the first steps<sup>4</sup>; however, this information is not well

disseminated, making the adoption of the first steps difficult. Thus, teachers must have more knowledge about first aid in the face of different traumatic events<sup>4</sup>. Actions aimed at health education and promotion must be present in the school environment, since the dissemination of knowledge and training of teachers can prevent the onset of unfavorable prognoses and hinder the child's full development in the face of traumatic events<sup>4</sup>.

Therefore, this study aimed to answer the following question: what is the level of knowledge of teachers about the immediate care before traumatic injuries and its relationship with sociodemographic variables level of education, time, and place of work?

## MATERIALS AND METHODS

### Study Design and Sample

An observational study of quantitative approach was carried out, with cross-sectional design, in which all teachers from the 1<sup>o</sup> to 5<sup>o</sup> year of the municipal education network from rural and urban areas of the city of Brejetuba, in the state of Espírito Santo, were invited to participate, totaling 124 teachers. Previously, all of them received an informed consent form with all the pertinent information about the study. Those who agreed to participate voluntarily took part in the data collection.

### Data Collection

Data collection was done using validated questionnaires/scripts applied by the self-administered technique. The first one is the “Functional Questionnaire,” containing 15 open questions about age, place of work (rural or urban areas), level of education, time in the profession, as well as closed questions about traumatic experiences, and instructions and training received on how to deal with traumatic events.

The second is the “Trauma Questionnaire,” which is a script with images accompanied by closed questions, in which three scenarios with fictitious situations of dental trauma in permanent teeth<sup>5</sup> were presented, so that the teachers could mark the option they considered most appropriate. The first scenario presented an uncomplicated crown fracture affecting the permanent central incisor with mild bleeding, without other injuries or loss of consciousness. The second scenario illustrated a situation of extrusive dislocation of the central incisor without associated injuries or loss of consciousness. The third scenario included a situation of avulsion of the central incisor. Answers were considered correct or incorrect according to the IADT 2020 version, currently considered the best reference in scientific evidence for dental trauma. The third questionnaire applied is the Brazilian Economic Classification Criteria of the Brazilian Market Research Association – ABEP.

## Statistical Analysis

Statistical methodology was performed by descriptive analysis of the data by frequency tables with number and percentage for the socio-demographic variables, functional variables, and knowledge about dental trauma. Statistical tests were used to analyze the association between the independent and the dependent variables. A 5% significance level and the statistical package IBM SPSS 20 were used for this analysis.

## Ethical Aspects

This study was submitted to the Research Ethics Committee (CEP) of the Health Sciences Center (CCS) of the Federal University of Espírito Santo (UFES), and was approved under opinion no. 4.431.988 on December 1, 2020.

## RESULTS

The final sample had 117 teachers from urban (N = 62) and rural (N = 55) areas, totaling 14 schools, two urban and 12 rural.

Of the 124 teachers, 117 signed the informed consent form, agreeing to participate, but seven teachers refused. Most of the 117 teachers interviewed were aged between 40 and 49 years (41%), female (86.3%), from Middle Class C (50.4%), and worked in urban areas (53%).

According to Table 1, most of the

teachers interviewed (41%) have between 11 and 20 years of education, with 21 years or more of professional experience. Regarding the level of education, 64.1% have a specialization degree. All teachers accompany their students in some active extra-class activity.

Regarding knowledge about trauma, Table 2 shows that 79.5% never received any type of training on dental first aid, and 97.4% were never oriented on the subject. Based on a self-evaluation of their knowledge, 56.4% assume that they do not have any type of information on the subject, not feeling safe to perform first aid when faced with a situation (91.5%). Moreover, 82.1% believe that it is essential to have knowledge about dental trauma.

Table 3 shows the questioning about a hypothetical situation of trauma with fracture of the central incisor and what the teachers would do. In total, 45.2% answered that they would contact the parents, so that they would assume the situation. When asked about how they would store the fragment if it could be found, almost 60% believed that the correct way is to store it in a dry medium such as cloth, paper, gauze, or cotton.

Table 4 shows the second hypothetical situation: an extrusive dislocation, in which the teachers were asked what they would do when they found their student in this condition. In total, 72.6% said they would take the child to the dentist without touching the tooth that suffered the traumatic event.

However, Table 5 shows a situation of

tooth avulsion, in which the teachers were asked what actions they would take in this situation. Most of them would choose to look for the lost tooth and take it with the student to the dentist, in a storage medium, that is, wrapped in paper, cloth, gauze, or cotton (51.2%).

## DISCUSSION

A significant number of school accidents occur due to the students, involvement in recreational activities. This is the reason why the participation of teachers in the immediate emergency management of the child is essential for the success and prognosis of treatment.

In this study, 79.5% never received any training or guidance such as courses or lectures on dental trauma, not feeling able and safe to deal with these situations (91.5%). Data also confirmed by the literature reported that teachers do not have basic knowledge about dental trauma and do not feel prepared to give assistance to a child who suffered dental trauma, which enables the installation and maintenance of sequelae and/or early tooth loss<sup>1, 3, 6, 7</sup>.

Regarding the knowledge about emergency treatment of trauma, we observed that teachers considered it very important (82.1%) and important (17.9%). Thus, they are aware that minimum knowledge on the subject is necessary in their professional training. This need is corroborated by studies such as that of Vilela et al. (2019)<sup>7</sup>, in which 100% of survey participants said it is necessary to obtain this kind of

knowledge and that they would like to receive information and instructions on the subject. The immediate care or the first aid attitudes to the patient victim of dental trauma and especially to avulsed teeth can decide the prognosis of the case<sup>8, 9, 10</sup>. Thus, education professionals, who work directly with these children, need to be informed about means of prevention, management, storage, and emergency care when facing these types of injuries<sup>8, 9, 10</sup>.

Regarding clinical situations after a traumatic event, the study evaluated hypothetical situations that resulted in an uncomplicated crown fracture, where 59.8% would choose to look for the fragment and take it together with the student to the dentist, considered it correct to store it during transportation (73.5). However, regarding choosing the best means, dry storage wrapped in a gauze, paper, or cotton pad were the means judged as most correct by the respondents (57%). According to IADT, an uncomplicated fracture is characterized by the absence of pulp tissue exposure, and the missing fragments should be accounted for, since in the absence of any fragment associated with the presence of soft tissue lesions, lip, and/or cheek radiographs are recommended to locate them<sup>11</sup>. Fragments should be transported in a humid medium, and the most indicated medium is milk, due to its easy access and properties that favor vitality before they are put back in position<sup>11</sup>. According to IADT protocols, the fragment should be treated and kept immersed in water or saline solution for tissue hydration for at least 20

minutes prior to bonding, which increases the longevity of the tooth in function.

In a situation of extrusive dislocation, when asked about the need for immediate element repositioning, 72.6% would not touch the extruded element, thus corroborating methodologically similar studies, in which the respondents also did not believe the benefit of adopting this conduct<sup>3 7 9</sup>. Extrusive dislocations are characterized by a partial axial displacement of the element, which is clinically elongated. Thus, there is a consensus in the literature that these should be gently repositioned by means of digital pressure and stabilized, followed by periodic follow-up for up to five years, as unfavorable conditions may arise and new interventions may become necessary<sup>1, 2, 11</sup>. The variable “time” is essential, since the longer the time out of site, the more difficult and resistant it is to achieve the exact anatomical repositioning<sup>1, 2, 4, 6, 8, 11, 15-18</sup>.

In a more specific scenario of tooth avulsion, immediate reimplantation should be performed; however, studies have shown that parents and teachers have a low level of knowledge on how to conduct the case to maintain the tooth in function. There is a misconception that avulsed teeth should not be reimplanted, and the importance of immediate reimplantation for a good prognosis is not well disseminated<sup>7, 10, 8, 12</sup>. In this study, only four teachers (3.4%) would choose to reimplant the avulsed element, and if it could not be reimplanted for some reason, they would choose

to store it and take it to the dentist together with the student. However, when choosing the most suitable means for reimplantation, they thought that dry means were the most appropriate (cloth, paper, gauze, or cotton). There is a consensus in the literature that the moist medium is the most appropriate, since the remaining cells must remain hydrated, thus determining the success at the time of reimplantation. The dental element should preferably be stored in a container with milk because it is easily accessible, has a pH and osmolarity compatible with that of vital cells, and is relatively free of bacteria, which favors the maintenance of periodontal ligament cell vitality during the extra-alveolar period<sup>6, 12</sup>. These results corroborate with the findings of<sup>6</sup>, in which 23.7% stated that they did not know what to do and only 6% would store it in milk. The period between the tooth avulsion and its reimplantation is essential for the prognosis of the avulsed tooth element, since over time the periodontal ligament cells adhered to the tooth become rapidly necrotic and the percentage of success decreases vertically<sup>3, 6, 7, 8, 13</sup>. Extra-alveolar periods of more than two hours usually result in intense resorption and, consequently, dubious prognoses. Therefore, the time is the most important variable<sup>3, 6, 9, 10</sup>. In this study, 45.3% believed that immediate reimplantation should occur within half an hour. Although scientific literature evidences the efficiency of immediate reimplantation in permanent teeth, this fact is an exception<sup>6, 7, 8, 14, 13</sup>. Predominantly, teeth are lost or inadequately

maintained, favoring the installation of sequelae that imply severe consequences, leading to pulp necrosis, calcification, and root resorption, which is the main cause of loss of permanent teeth that have undergone traumatic events<sup>7, 15</sup>. In this scenario, success is inversely proportional to the extra-alveolar time, which the literature considers ideal, not exceeding a period of half an hour to avoid irreversible damage to the periodontal cells, which may culminate in tooth loss<sup>6, 15, 8</sup>. The results show that the lack of knowledge was widespread in all scenarios and variables studied, so that comparisons of this nature were unfeasible, which further justifies the need for training these professionals.

The creation and implementation of health legislation for the periodic training of teachers are effective means of continuity of care, making mandatory action as a fundamental basic item to the activities of teachers and school staff. Thus, in the long term, the prevalence of traumatic events can decrease, as well as their sequelae in the different fields of health. Furthermore, Ordinary Law 936/2022 was enacted, in effect in Brejetuba, characterizing the training of teachers on immediate procedures in the occurrence of dental trauma as a mandatory item at the beginning of each school year.

## CONCLUSION

We found no statistically significant difference between rural and urban areas, characterizing a generalized deficiency and inadequacy of knowledge by teachers regarding traumatic events, which predisposes the installation of sequelae and deleterious effects to the masticatory, aesthetic, and psychological functions, compromising the quality of life. Therefore, it is necessary to train teachers working in Brazilian education, create health legislation, and introduce the theme in the curriculum of future professionals, since the permanence of this scenario of lack of knowledge favors irreversible consequences.

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### **Declaração de conflito de interesses**

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**Editor Científico:** Ítalo Arão Pereira Ribeiro.

Orcid: <https://orcid.org/0000-0003-0778-1447>

**Editor Associado:** Edirlei Machado dos-Santos.

Orcid: <https://orcid.org/0000-0002-1221-0377>