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## Preschool teachers' knowledge and attitudes about dental trauma in Rijeka, Croatia: a cross-sectional study.

Conocimientos y actitudes de los profesores de nivel preescolar sobre el trauma dental en Rijeka, Croacia: un estudio transversal.

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**Abstract:** **Introduction:** Traumatic tooth injuries often occur in childhood. They are not life-threatening, but they can cause a number of complications that can affect the quality of life. Proper first aid can significantly facilitate further dental treatment. The aim of this research was to evaluate preschool teachers' knowledge and attitudes about dental trauma and their motivation for further education. **Material and Methods:** This cross-sectional study included 54 preschool teachers. It was carried out in the form of a questionnaire consisting of 23 questions regarding traumatic tooth injuries, experiences and knowledge and teachers' interest in additional education. **Results:** Most of the preschool teachers, 68.51%, did not witness any dental traumas during their work experience. From the teachers who witnessed dental trauma, only 11.76% gave first aid and none of them called the dentist and followed their instructions. In case of dental avulsion 72.22% would keep the avulsed tooth in a dry gauze or tissue. Even though 81.49% consider themselves uninformed about dental, all of them are interested in additional education. **Conclusion:** Despite the insufficient knowledge about dental trauma, its management, and first aid it is encouraging that all of the preschool teachers included in this research are motivated to educate themselves more on this subject.

**Keywords:** *tooth injuries; tooth avulsion; emergency care; knowledge; school teachers; preschool education.*

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**Resumen:** **Introducción:** Las lesiones dentales traumáticas ocurren a menudo en la niñez. No ponen en peligro la vida, pero pueden causar una serie de complicaciones que pueden afectar la calidad de vida. Los primeros auxilios adecuados pueden facilitar significativamente el tratamiento dental posterior. El objetivo de esta investigación fue evaluar el conocimiento y las actitudes de los profesores de preescolar sobre el trauma dental y su motivación para la educación superior. **Material y Métodos:** Este estudio transversal incluyó a 54 maestros de preescolar. Se llevó a cabo en forma de un cuestionario que constaba de 23 preguntas sobre lesiones dentales traumáticas, experiencias y

conocimientos y el interés de los profesores en la educación adicional. **Resultados:** La mayoría de los maestros de preescolar (68,51%) no presenciaron ningún traumatismo dental durante su experiencia laboral. De los profesores que presenciaron traumatismos dentales, solo el 11,76% dio primeros auxilios y ninguno llamó al dentista y siguió sus instrucciones. En caso de avulsión dental, el 72,22% mantendría el diente avulsionado en una gasa o tejido seco. A pesar de que el 81,49% se considera desinformado

sobre odontología, todos están interesados en educación adicional. **Conclusion:** A pesar del conocimiento insu-

ficiente sobre el trauma dental, su manejo y primeros auxilios, es alentador que todos los maestros de preescolar incluidos en esta investigación estén motivados para educarse más en este tema

**Palabra Clave:** traumatismos de los dientes; avulsión de diente; primeros auxilios; conocimiento; maestros; educación preescolar.

## INTRODUCTION.

Dental trauma has a global prevalence of 10–15%.<sup>1</sup> It is highly prevalent in preschool-, school-age children, and young adults.<sup>2</sup> The incidence of dental trauma is highest between 1 and 3 years of age and 8 and 11 years.<sup>3-6</sup> In the age group 1 to 3 years old dental trauma is highly prevalent due to the increase of independent movements with lesser control on motor coordination and judgement.<sup>3-6</sup> The higher incidence of traumatic dental injuries in boys is related to their increased indulgence in contact sports and outdoor activities.<sup>4,5,7</sup>

Causes of dental trauma are falls, sport activities, play, bicycling accidents, traffic accidents, and physical violence.<sup>3,4,6</sup>

Appropriate and prompt diagnosis and first aid are very important in trauma management. Prognosis of injured teeth depends on correct measures taken immediately after the trauma occurs.<sup>2,3,5,6,8</sup> Complications of untreated dental trauma develop because of the injury effect on pulpal and periodontal tissue. Untreated traumatized teeth can develop ankyloses, root resorption, pulp necrosis, or infection, and also the root development can be arrested. All this has a negative impact on the social, functional, and emotional aspects of a child's life.<sup>9-12</sup>

Traumatic dental injuries generally occur while playing at home and in preschools/schools. Data showed that one-third of all preschool children have suffered dental trauma. This is why parents, preschool and school teachers and health workers, among others, should be informed about what to do in dental trauma situations.<sup>2-6</sup>

Hence, the purpose of this research was to:

1. Determine how much preschool teachers know about dental trauma and its management,
2. Evaluate management and first aid in previously occurred dental traumas among preschool teachers and their attitudes towards dental trauma,
3. Assess if they are interested in educating themselves more about dental trauma and its management.

## MATERIALS AND METHODS.

Since there is very little information about preschool teachers' knowledge in the Republic of Croatia, a cross-sectional questionnaire-based study was undertaken among preschool teachers in Rijeka. Data was collected in 2015 (February to May).

Cluster random sampling was used as a method of obtaining sample subjects for the study. Individuals were clustered in the groups based on the workplace-Preschool in which they work (only preschools in Rijeka, Croatia). Then, from a total of 31 preschools 5 were randomly chosen (Potok, Drenova, Mlaka, Rastočine, Topolino). Every preschool teacher from these preschools was included in the research. Each participant filled in the questionnaire.

A special questionnaire, written in Croatian, was designed and developed by the authors based on the questionnaire developed by Ozer *et al.*<sup>13</sup>

The questionnaire consisted of 23 questions and was divided into 4 sections:

Section 1: Personal data (questions 1 - 4);

Section 2: Education level and level of accountability in a workplace (questions 5 – 9);

Section 3: Previous dental trauma experience and

management (questions 10 - 13);

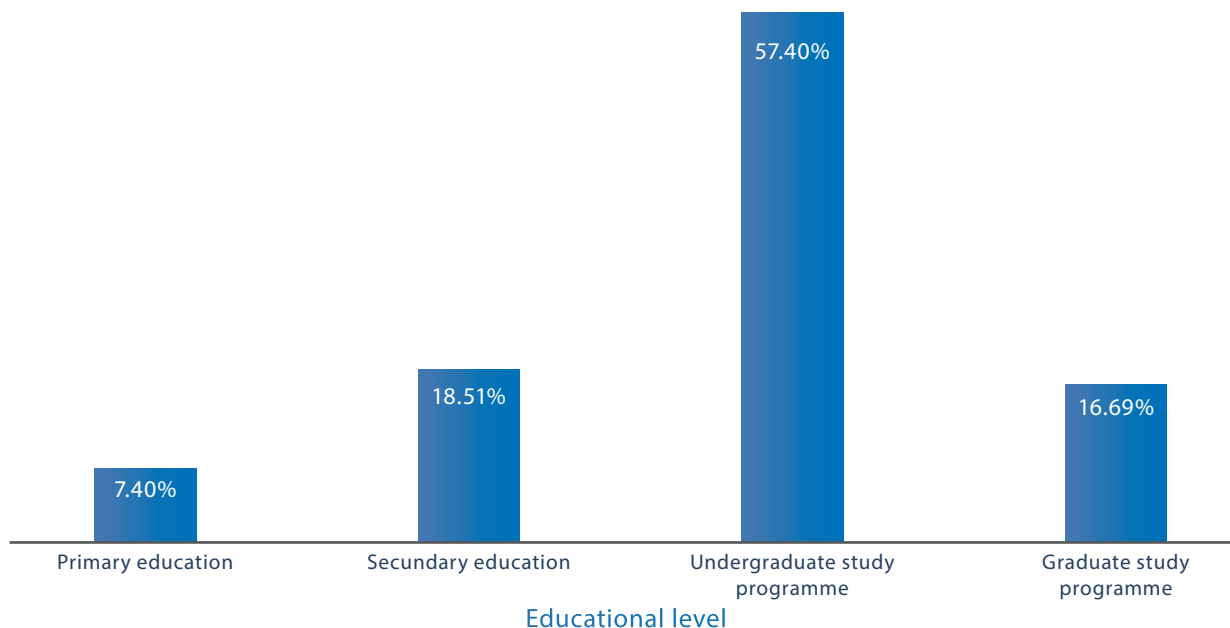
Section 4: Dental trauma knowledge and interest in further education (questions 14 - 23).

Filling in the questionnaire took about 20 minutes. The examination was anonymous and carried out solely with voluntary consent of the respondent.

Also, informed consent was obtained from study participants. Data was then summarized through descriptive statistics using Microsoft Excel 2010.

Study was approved by the Head of Preschools of the city of Rijeka, and the directors of each preschool that was involved in the study.

**Figure 1.** Educational level of participants.



**Table 1.** Previous dental trauma experience and management of preschool teachers.

Question	Answer	n (%)
Have you experienced traumatic dental injury? (N=54)	Yes	12 (22.22)
	No	42 (77.78)
Have you witnessed traumatic dental injury in your workplace? (N=54)	Yes, once	11 (20.37)
	Yes, several times	6 (11.11)
	No	37 (68.52)
When did the trauma occur (if you have witnessed it)? (N=17)	During play	12 (70.60)
	While cleaning up toys or making their beds	2 (11.76)
	During school play	1 (5.88)
	Due to the slippery bathroom floor	1 (5.88)
	Due to inadequate footwear	1 (5.88)
What did you do when the trauma occurred? (=17)	Contacted child's parents	14 (82.35)
	Contacted dentist and followed their instructions	0 (0)
	Kept children in preschool until parents arrived	1 (5.88)
	Gave some form of first aid (calming down the child, cleaning the wound and/or storing the avulsed tooth or the fractured part).	2 (11.76)

**Table 2.** Dental trauma knowledge and interest in further education (N = 54)

Question	Answer	n (%)
Are you familiar with the term Dental avulsion?	Yes	9 (16.67)
	No	45 (83.33)
In case of a completely dislodged tooth, how would you hold the tooth?	By the crown	54 (100)
	By the root	0 (0)
	Would hold the whole tooth (it is not important how)	0 (0)
	Would not touch it	0 (0)
In case of a completely dislodged tooth or fractured tooth, where would you store the tooth or the fractured part of a tooth?	In a dry tissue or gauze	38 (72.22)
	In saline	7 (12.98)
	In milk	4 (7.40)
	In disinfectant	0 (0)
	Would clean it with tap water	4 (7.40)
	Wouldn't keep/store the avulsed tooth or fractured part	0 (0)
Have you acquired any knowledge about dental trauma through your Formal and informal education?	Yes	12 (22.22)
	No	42 (77.78)
Have you finished emergency training which also covered dental trauma management?	Yes	9 (16.67)
	No	45 (83.33)
Where did you receive information on dental trauma if not through education?	From friends or children's parents	29 (53.70)
	Online	7 (12.96)
	On television and radio program	3 (5.56)
	In newspapers and magazines	5 (9.26)
	In professional literature	3 (5.56)
	Consulting with professionals	1 (1.85)
	Never received any information	6 (11.11)
Do you consider yourself informed about dental trauma?	Yes	10 (18.51)
	No	44 (81.49)
Do you think that education on dental trauma is important?	Yes	50 (92.59)
	No	4 (7.41)
Are you interested in participating in additional education and training?	Yes	54 (100)
	No	0 (0)
Which form of additional education would you rather choose?	First aid/emergency training	20 (37.03)
	Professional seminars	15 (27.77)
	Lectures held by dentists	3 (5.58)
	Online	6 (11.11)
	Through flyers	10 (18.51)

## RESULTS.

All of the 54 participants (100%) were female, aged between 28 (min) and 64 (max) years. Most of them (85%) have children.

At the current workplace all of the participants are working as preschool teachers (years of work

experience: minimum=3, maximum=41). 29.63% of them are working with children from 1 to 3 years old and 70.37% with children aged between 3 and 6. The average number of children in one group, for which each preschool teacher is responsible, is 20 (minimum=16, maximum=27). Results from sections 3 and 4 of the questionnaire are shown in Table 1 and Table 2.

## DISCUSSION.

Majority of participants (68.52%) have never witnessed dental trauma and thus were not in a position to give first aid. Others (31.48%) who witnessed dental trauma mostly did not react properly – did not give first aid, replant the avulsed tooth nor did they contact the dentist to follow his instructions.

Only 22.22% of participants acquired some knowledge on dental trauma through formal and informal (e.g. courses) education and only 16.67% finished the dental emergency training. 81.49% of preschool teachers think they have not acquired enough knowledge on this topic during their education and work. Mostly they gathered information from conversations with friends and children's parents. On the other hand, it is encouraging that 92.59% think that education on dental trauma is important and all of them are motivated to participate in additional education and training.

The majority of preschool teachers included in this research (83.33%) are not familiar with the term Dental avulsion. An avulsion is usually accompanied by soft tissue injuries and bleeding and represents a dramatic situation for many people. Due to fear and stress in these situations people rarely decide to replant the avulsed tooth immediately.

And, prognosis of the avulsed permanent tooth is most favorable if it is replanted within half an hour and if the periodontal ligament on the root surface was kept in the moist medium and was not disturbed. In case of an avulsion of deciduous tooth, the tooth must not be replanted.<sup>3,14-17</sup> All teachers would, in case of the avulsion, hold the tooth properly, by the crown.

An alternative to replantation is to store the avulsed tooth in suitable media and transport the patient and the tooth to a dentist for replanting. Milk is a great transport medium and is widely available. Other recommended storage media are HBSS (Hanks balanced storage solution), saline, and saliva.<sup>3,15-17</sup> But, only 7.4% would keep the tooth or the fractured part in milk and 12.98% in saline. Unfortunately, most participants, 72.22%, would keep it in a dry tissue or gauze.

This research showed a lack of knowledge on dental trauma and its management among preschool teachers. But, preschool teachers are not the only ones who are in close contact with children and are not familiar with

first aid procedures in dental trauma situations.

One research that was conducted on teachers in Malaysian primary school showed similar results: only 9.3% of participants had received training on dental injuries, 35.3% correctly answered the question about appropriate management on the avulsed tooth, only 4.7% were familiar with proper storage media but 93% of teachers are keen on further training.<sup>18</sup>

Similar research from Saudi Arabia showed that: only 6.2% of schoolteachers learned about dental injury management in first-aid training and that the knowledge among primary and intermediate school teachers in the management of dental traumatic injuries is unsatisfactory.<sup>19</sup>

Regarding parental knowledge; most parents (90.7%) do not feel capable of replanting the avulsed tooth in its socket and most of them are uninformed about the appropriate method for cleaning a dirty avulsed tooth or transporting it to a dentist.<sup>13</sup>

Also, teachers and students in physical education's faculties should be educated in dental trauma management since sports activities are one of the most common causes of dental trauma. Research conducted among them had disappointing results - the majority does not have adequate knowledge regarding first-aid measures for dental trauma.<sup>20</sup> Findings from other research also showed insufficient knowledge about traumatic dental injuries management among pediatricians in Croatia and emergency medicine physicians in Turkey.<sup>21,22</sup>

All mentioned research, including this one, reports a lack of knowledge and education on dental trauma first aid among people who work or spend a lot of time with children.<sup>17-22</sup> Inadequate management of dental trauma and insufficient knowledge of these people could have serious consequences on tooth prognosis and patient's quality of life.

The limitations of this study are small sample size and a lack of inferential statistics (data is just described with descriptive statistics).

To conclude, this research showed:

1. Insufficient knowledge regarding dental trauma among preschool teachers,
2. Low level of education on management of dental trauma and first aid among preschool teachers,
3. Preschool teachers' awareness on the impor-

tance of dental trauma and its management and their willingness to participate in additional courses and seminars. Thus, there is a need to provide additional education to preschool teachers on this subject during their educational programs, and to inform the policymaker in developing the guidelines or operating procedure regarding dental trauma in Croatian preschools. In order to have more accurate results it is needed to include more preschool teachers, not only from Rijeka but also from other cities in Croatia.

**Conflict of interests:** Authors have no conflict of interest to declare.

**Ethics approval:** Paper complies with the Declaration of Helsinki and the Ethics Statement of the journal. Informed consent was obtained from participants, and study protocol was approved by the Head of Preschools of the city of Rijeka.

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