

Primary School Teachers' Knowledge Regarding Emergency Management of Avulsed Permanent Incisors in Ahvaz, Iran

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Background: Traumatic dental injuries can have a significant impact on the life of a child, since it causes both physiological and physical pain.

Objectives: The current study aimed to evaluate the primary school teachers' knowledge about emergency management of avulsed teeth in Ahvaz, Iran.

Patients and Methods: The study was conducted in twenty randomly selected primary schools of Ahvaz. The 269 teachers in the schools were selected and asked to fill out the self-report questionnaires for data collection. The questionnaire was inspired from one used by Mori et al. and consisted of the three parts: teacher's demographic data, their knowledge about importance of emergency management, and emergency method that they used. The data were analyzed using chi-square test.

Results: A total of 269 teachers, 41.6% male and 58.4% female, answered the questionnaire. The results showed that 15.2% of the teachers had an experience of avulsed tooth at school, all of them knew the importance of emergency management and 36.4% would look for a dentist for treatment of the cases. Only 6.3% reimplanted the tooth themselves. Regarding the storage media, 6.7% would keep the avulsed tooth in milk. There was no significant difference between gender and education level ($P > 0.05$).

Conclusions: The results of the current study showed that school teachers' lacked knowledge regarding dental trauma and especially tooth avulsion.

Keywords: Knowledge; Tooth Avulsion; Dental Trauma

1. Background

Dental trauma due to physical activity is highly prevalent among the children and adolescents and it is a main concern for public health. Physical activity is a basic requirement for children, since the World Health Organization statement in 2002, move for health, refers to the role of physical activity in individual health (1). Sport activities are known as a factor for dental trauma and most part of the injuries occurring during an exercise class at school. The most affected groups are 8 to 11-year-old children (2). The prevalence of dental injuries is 60% and more than 48% of the cases involved the maxillary teeth. More than 16% of the cases occur in the school environment and 19% happen during accidents (3). Dental trauma actually causes damage to the teeth, alveolar bone and periodontal tissue. Avulsion, falling of the tooth out of its socket, forms 0.5% to 16% of the damage to the teeth (4). Prognosis of avulsion depends on the immediate first emergency care. In order to obtain the desired results, the tooth should be replaced 15 to 20 minutes after the accident, to avoid the loss of

periodontal ligament cells (5). Awareness of parents and teachers is very important in these cases. Studies show that sport instructors have insufficient knowledge about these injuries and how to control them (6). In order to replace the teeth; they must be placed in an appropriate solution to teach the dental office. The appropriate solutions that can be used for this purpose include normal saline, hank, milk, and saliva. The Hank salt solution is the best and has the highest capacity in the survival of periodontal fibers. However, this solution is not easily available (4). The first emergency care is possibly given by teachers at school. Therefore, their knowledge about dealing with these cases is very important for the better prognosis (7).

2. Objectives

The current study aimed to evaluate primary school teachers' knowledge and consider the emergency management of dental trauma in Ahvaz, Iran.

Table 1. Demographic Data

Demographic Data
Sex: 1, Male; 2, Female
Age: 1, under 20; 2, 20-40; 3, 41-60 years
Level of education: 1, high school; 2, superior education
Seniority: 1, <1 year; 2, 1-5 years; 3, 6-10 years; 4, 10-15 years; 5, 16-20 years

Table 2. Importance of Emergency Management

Importance of Emergency Management
Experience with tooth avulsion: 1, Yes; 2, No
Importance of emergency management: 1, Yes; 2, No
What would you do with the child in case of tooth avulsion: 1, would look for a dentist; 2, would contact the dental hospital; 3, would call the child's parents; 4, would not do anything

Table 3. Concern About the Emergency Procedure

Concern About the Emergency Procedure
Would you reimplant the avulsed tooth? 1, Yes; 2, No
Would you wash the avulsed tooth? 1, Yes; 2, No
If you would wash it, which solution would you use?
If you would not reimplant the tooth, would you maintain it in any storage containers or storage media? 1, Yes; 2, No
What would you use? 1, ice; 2, tissue papers; 3, plastic; 4, gauze; 5, place in the child mouth; 6, some liquid
If you would maintain the tooth in any liquid, what would it be?

3. Patients and Methods

The current study performed in Ahvaz, twenty schools with 269 teachers were randomly selected. All the teachers in the selected schools filled out the questionnaire. The questionnaire inspired by the one Mori et al. used (8); consisted the three parts: part one included demographic data as age, sex, education level, and seniority (Table 1); part two was related to the knowledge about the importance of traumatic injuries (Table 2), and part three was related to the management methods that teachers used (Table 3). The questionnaires were collected after 14 days for data analysis and SPSS software version 19.0 was employed. The chi-square test was used to compare the results according to gender, level of education, age groups and seniority. The level of significance was $P \leq 0.05$.

4. Results

A total of 269 teachers, 112 males (41.6%) and 157 females (58.4%) answered the questionnaire. The 20 to 40-year-old and the 41 to 60-year-old age groups represented 75.5% and 24.5% of the teachers, respectively. All the teachers had a high level of education. Regarding seniority, 50.6%, 35.7% and 13.8% had 1 to 5, 5 to 10 and 10 to 15 years of seniority, respectively. Among the participants, 15.2% had an experience of tooth avulsion in their schools. The difference was not significant between the genders ($P > 0.05$). Tooth avulsion was considered as a dental emergency

Table 4. Liquids Applied for Washing Teeth^a

Option	Results
Water	56.5
Milk	29
Normal saline	13.8

^a Data are presented as %.

Table 5. Storage Media^a

Option	Results
Ice	17.1
Tissue papers	14.1
Plastic	13
Gauze	29
Replace in the child mouth	4.8
Other liquids	21.9

^a Data are presented as %.

by all of the teachers. No difference was observed regarding emergency between the gender and level of education ($P > 0.05$). In case of tooth avulsion, 45% of the teachers would contact dental service, 36.4% would send the child directly to a dentist, and 18.6% would call the child's parents. The tooth was systematically rinsed by 27.5% of the teachers, no difference was found between the gen-

ders ($P > 0.05$). The solutions most often used were tap water 56.5% (Table 4). Reimplantation was chosen by 6.3% of teachers. The differences between gender, education level and age were not statistically significant ($P > 0.05$). The tooth was stored in gauze by 29%, tissue paper 14.1% and other solutions 21.9%. The commonly used solution was water, 14.5% (Table 5).

5. Discussion

The present study was conducted on 269 teachers and showed that 15.2 % of the teachers had an experience of avulsed tooth at their schools; all of them knew the importance of emergency management. Immediate reimplantation and storage media are the most important factors for avulsion of permanent teeth (9). Although the current study found no statistically significant difference between the genders and the level of education regarding tooth replantation, the percentage of teachers who would perform an immediate reimplantation was very low (6.3% of the teachers). Similar results were found in the studies carried out in Brazil (8). Andreasen stated that prognostic is better when the extra alveolar time incredibly short. The current study showed that the reimplanted teeth after 18 minutes had lower root resorption than the ones after 2 hours (10). Mesgarzadeh performed a study on the emergency management of traumatic dental injuries in Iranian schools and his study showed only 50% of the teachers realized that they should replant an avulsed tooth and they had little knowledge of the correct procedures; less than 20% of the participants were acquainted with the urgent need for action (11). Chan et al. reported that only 5.4% of the teachers knew the possibility of reimplantation (12). When there is no possibility of reimplantation, teeth should be preserved in a suitable medium to maintain cell vitality. In the current study, a wet media was cited by 26% of participants. However, 74% of the teachers would keep the avulsed tooth in a dry medium which was not appropriate to preserve the cellular vitality. Milk was chosen by 6.7% of the teachers. Chan et al. at reported that only 3.6% of the teachers in Hong Kong preserved the avulsed tooth in milk (12). In the Czech Republic and Brazil, milk was chosen by 4% and 7.6% of the teachers respectively (8, 13). Blakytyn et al. reported that 45.6% of the teachers chose milk as the transfer medium (14). Oswald et al. concluded that moist storage for 90 minutes, even in saliva, creates more protection for the teeth compared to a dry medium (15). Lindskog et al. showed that saliva contains microorganisms that can have negative effects on survival of the cells (16). Among the various wet media, milk is better than saliva, because of high osmolarity, better composition and relatively easy access at the location of trauma. Maintaining the avulsed tooth in milk for six hours contributes to a good prognosis. Hank's Balanced Salt Solution (HBSS) and Viaspan showed better results with longer storage time, but they are not readily available (16-18). In the present study, 27.5% of teachers sys-

tematically rinsed the tooth. The most commonly used solutions were tap water (56.5%) and milk (29.7%). In the study by Mesgarzadeh, only 38% knew about appropriate washing mediums and about a third were familiar with proper storage media (11). There is a great lack of knowledge in the management of dental trauma between teachers. A set of guidelines for the management of the avulsed tooth was developed by the International Association of Dental Traumatology in 2007 (19). These studies showed that school teachers had little knowledge regarding the emergency management for tooth avulsion.

The results of the present study showed that teachers had inadequate information regarding tooth avulsion. The poor performance of the teachers may be justified by the lack of information, inadequate training and low ability of the teachers in this issue. Therefore, it is necessary to provide emergency management programs concerning traumatic injuries especially tooth avulsion, for teachers in all teaching institutions of Ahvaz, Iran.

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Authors Contributions

Dr. Basir: concepts, guarantor, manuscript editing; Dr. Hashemy: definition of intellectual content, data acquisition; Dr. Khataminia: literature search; Dr. Ghasemzadeh: data analysis, manuscript review; Dr. Ansarifard: design, manuscript preparation.

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