

Knowledge of physical education teachers' toward tooth avulsion in Tehran, Iran

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Original Article

Abstract

BACKGROUND AND AIM: Teeth are always faced with different traumas and all those traumas, which cause teeth to exit their sockets, are classified as avulsion. Avulsion most commonly occurs in 7-11 year olds. If sports tutors have enough information regarding replantation, they could play a significant role in prognosis of treatment. The purpose of this study was to assess physical education teachers' level of knowledge regarding avulsion of teeth in Tehran's Primary Schools, Iran, in 2012.

METHODS: This was a cross-sectional study which used a questionnaire consisting three parts including 21 questions. The first part was about demographic information; the second part was about traumatic lesion to tooth and the third part was about process of avulsed teeth protection. The questionnaire was completed by a random sample of volunteer sports tutors in Tehran Primary Schools. Collected data were analyzed using the SPSS software using the chi-square test.

RESULTS: About 160 subjects participated, 67.1% of the tutors had mid-level knowledge regarding the second part of the questionnaire, and 64.1% had a low level of knowledge regarding the third part. In relation to the second and third part of the questionnaire, a statistically significant relationship was observed between the age of the tutors and their level of information ($P < 0.050$). There was also a significant relationship between the level of information about the third section of the survey and the amount of experience the tutors had about avulsion ($P < 0.050$).

CONCLUSION: The results indicate a low level of knowledge in sports tutors in dealing with avulsed teeth and suitable media for transferring the teeth. Suitable educational programs for these tutors could be very useful in enhancing their knowledge and pertaining traumatized teeth.

KEYWORDS: Dental Trauma, Knowledge, Physical Education Teachers, Iran

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All traumatic experiences which lead to the separation of a tooth from the alveolar socket are defined as avulsion¹ that often occurs in the central maxillary teeth.² In an avulsion the periodontal membrane is separated, half of which is attached to the root and the other half is attached to the alveolar socket.³ Studies have shown that 10% of the population have experienced tooth traumas during their childhood, and 16.1% of them are faced with avulsed teeth.^{4,5}

One of the main etiological factors for

avulsion in a permanent dentition is sports activities and in the deciduous dentition is falling on hard objects.¹ Owing to insufficient information regarding management of this matter in non-specialized personnel, when such instances occurs suitable treatment is not readily given.⁶ Healing after the incident depends highly on the immediate actions and procedures, which carried out to protect the avulsed teeth.^{7,8} Replantation was first mentioned in the 11th century by Abu Classis as a means for replacing a tooth that had come out of its socket.^{9,10}

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Avulsion mainly occurs in 7-11 year olds whose central incisors are starting to erupt, and the prognosis of replanting the avulsed tooth depends highly on preoperative factors such as time duration being out of oral cavity, substances applied to root surface and transferring media of the teeth, before the final treatment by dentists.¹¹ So far, many different studies are done about the level of knowledge of the dentist, athletic trainers and schools teachers in rural and urban areas in a different region of the world and also in Iran.¹²⁻¹⁵ These studies can be effective for planning in this field. The best treatment for avulsion is immediate replantation within 15 min.^{2,10} Due to the fact that most incidents occur during school time^{16,17} and 13-39% off all dental traumas occurs during sports period,¹⁸ it is important to evaluate the level of information that tutors, especially sports tutors have regarding this matter. If these individuals have a scientific and practical approach in dealing with avulsion incidents, the avulsed tooth can be saved more successfully, which could results from losing a tooth, in the future. Therefore, the aim of this study was to assess the knowledge of physical education teachers in Tehran, Iran, regarding managing of avulsed teeth.

Methods

The study was a cross-sectional investigation across a random sample of public primary schools located in 19 areas of Tehran. Sample size was calculated 160 for a descriptive design, considering previous studies.^{19,20} Participation to the study was on volunteer base after providing information to target group and reassurance of confidentiality of providing information. Data collection was continued to reach the required sample size. The questionnaire was designed using questionnaires in similar studies.^{14,15,20,21} Moreover, the validation was carried out in a panel expert and among 10 experts in the subjects. Cronbach's alpha was calculated ($\alpha = 0.70$) and the questionnaire was

modified after a pilot study among 20 subjects before the main study and their data were excluded from the analysis. The questionnaire completed by participants in the selected schools. As did the questionnaire has three sections, including demographic data (sex, age, work experience, experience of tooth avulsion), in the first part. Information regarding types of traumas to teeth was answered in the second part. The questions included two case of trauma to teeth.

Questions for Case 1 were: "A Maxillary anterior tooth of an 8-year-old girl was broken, but does not lose his consciousness: Is it a milk tooth? What is the most appropriate action for this event? And, the questions for case II (tooth coming out from the alveolar socket) was: "a maxillary anterior tooth of a 13-year-old boy was broken on event, what is the most appropriate for this event? And they had two correct answers. So if both right answers were chosen, the level of information was considered as good level, if one of the right answers was chosen, the level of information was moderate and if no correct answers were given the level of information was considered as poor. The third section of the questions was about the best time for replantation of avulsed teeth, the method of replantation, the method of cleaning the avulsed root surface and transferring media of the teeth. In this section, there were nine questions and each correct answer was considered one score.

The scores accumulated for each respondent, and they were categorized to three groups. Scores 0-3 were classified as low information, those with a score of 4-6 had moderate information and those who scored 6-9 had a good level of information. The participants were categorized into two groups on the basis of their age for analyzing data. The data were analyzed using the SPSS software (version 18, SPSS Inc., Chicago, USA, IL) using the chi-square method.

Results

The data were analyzed for 156 subjects

(86 male and 70 female) with response rate of 99%. The mean age of the subjects was 32 years, and the respondents have a mean of 8 years work experiences. Only 23% of teachers had experiences of a case of trauma to children teeth. Majority (67.1%) of teachers had moderate information regarding the second part of the questions, and 64.1% had a low level of information regarding questions in the third part (Figure 1). The chosen best materials for rinsing an avulsed tooth by the tutors were normal saline with 29% and alcohol with 19% consecutively (Figure 2). There was no significant difference between male and female teachers in relation to the second and

third set of questions, ($P > 0.050$). Regarding relationship between age and awareness in the second and third parts of questions a statistically significant difference was observed ($P < 0.050$) (Table 1). This study indicated a positive effect on the level of knowledge about avulsion among people older than 40 years. There was also a statistically significant relationship between the level of knowledge regarding the third group of questions and having experience with avulsed teeth ($P < 0.050$) (Table 2). There was no significant relation between the years of work experiences and the level of awareness in the second and third group of questions ($P > 0.050$).

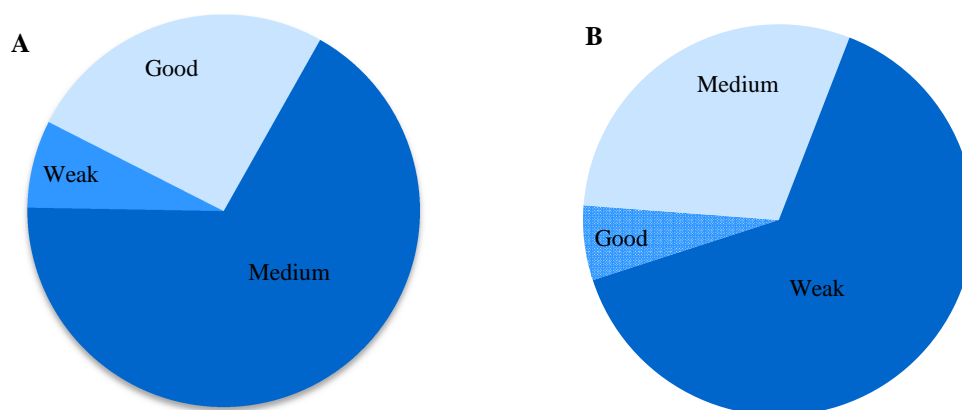


Figure 1. Level of participants' knowledge about type of dental trauma and management of avulsed teeth, A: Second part questions and B: Third part questions

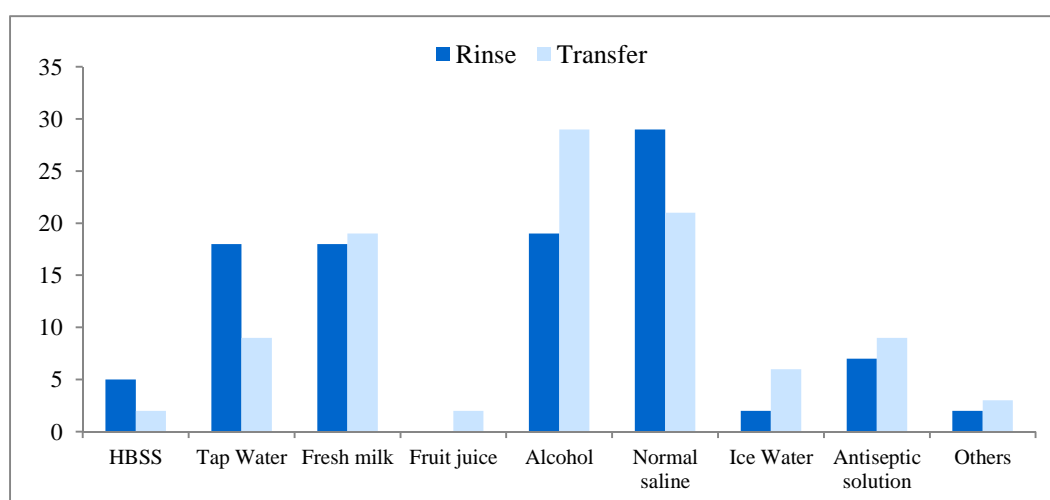


Figure 2. The best substance chosen by the tutors for protecting an avulsed tooth
HBSS: Hanks balanced salt solution

Table 1. Relationship between age and level of participants' knowledge about type of dental trauma and management of avulsed teeth

Questions	Knowledge of people			P
	Weak	Moderate	Good	
Questions regarding type of trauma				
Under 40 years old	5.5	63.6	30.9	0.018*
Above 40 years old	20.0	80.0	-	
Questions regarding management of avulsed teeth				
Under 40 years old	61.8	29.1	9.1	0.167
Above 40 years old	86.7	13.3	-	

*Significant

Table 2. Relationship between experience of avulsion and level of participants' knowledge about type of dental trauma and management of avulsed teeth

Questions	Knowledge of people (%)			P
	Weak	Moderate	Good	
Questions regarding type of trauma				
With experience of avulsion	4.8	61.9	33.3	0.440
Without experience of avulsion	10.2	69.4	20.4	
Questions regarding management of avulsed teeth				
With experience of avulsion	47.6	47.6	4.8	0.023*
Without experience of avulsion	75.5	16.3	8.2	

*Significant

Discussion

It has been reported that replanted teeth could survive around 40 years and they can last from a few decades to a lifetime, and the average lasting period is around 5-10 years.^{22,23} Nevertheless, replantation (intentional replantation) after avulsion has received much attention²⁴ in recent years, and it is important to prevent spending much money and time on lost teeth. The physical education teachers are one of the first people who are confronting traumatized teeth, and their role is important in preserving these teeth. Therefore, the purpose of this study was to help the matter by assessing the teacher's knowledge. In fact, if the tooth is not replanted within 5 min, it should be kept in a storage media in order to maintain the vitality of the periodontal ligaments.^{7,25}

The study results showed there is some shortness in the knowledge of physical education teachers regarding traumatized teeth. In the study Newman and Crawford carried out in England to analyze the level of awareness of sports instructors, based on 66 candidates from this group, 43% had an adequate level of information regarding

crown fractures.²⁶ As the study results showed the level of adequate knowledge concerning how to deal with avulsed teeth in sports teachers in Tehran included 67.1% of the sample, which higher than the report of Kaur et al.'s study.¹³

In study of Moieni et al. the level of knowledge of female sport instructors regarding avulsed teeth, has been reported 17.1% with low level of knowledge⁹ whereas in this study, only 8.6% of sports instructors had a low level of awareness. This difference is probably due to the lack of educational programs for target group, which leads to lack of knowledge in how to deal with such situations. In another study aimed at evaluating the level of awareness in dealing with avulsed in teeth in male sport instructors, the same results as above were shown.¹⁴ Furthermore in study of Sharifi et al. in analyzing the level of knowledge of primary school teachers in Kermanshah, Iran, in dealing with avulsed teeth was not enough which is in line with the results of this study.²⁷

In the study carried out by Vahhabi and Khoshsar on hygiene instructors in Tehran, 12.5% had medium awareness, 87.5% had a

good level of awareness and none had a low level of awareness. This difference in results is probably due to the different population being studied in this study¹⁵ and variation in the questions of the survey. Comparing the level of knowledge between male and female tutors, there was no significant difference and this goes to show that demographic factors have no effect on how much information the tutors have and it has also been reported in similar studies.^{17,28} The significant relation between the score of the tutors in the second and third section questions and their age in such a way showed an increase in age could likely increase in their knowledge and ability in dealing with avulsion. This finding is similar to study of Young et al. in Hong Kong.²⁹ Hence, it showed how the experience can be the effect of on the knowledge of teachers. When comparing the knowledge of teachers in relation to avulsion, based on their experience in the past with this incident, the results showed that those with experience in dealing with avulsion have more information those without it. These results is in line with study of Fux-Noy et al. results,³⁰ but differ from results of Moieni et al.⁹ and this may be due to the fact that less of population in that study had experience in dealing with this trauma.

Normal saline and alcohol were the most commonly chosen substances by teachers for rinsing and transferring the avulsed tooth. However, Hanks balanced salt solution (HBSS) is the best media available for storage of teeth after avulsion, but, unfortunately, is sparsely available in health centers in Iran.^{6,31}

Milk has a suitable pH and osmotic pressure and can keep the tooth alive and free of infection.³² Approximately, 19% of people in this study chose milk as the rinsing and transferring media, but in study of Blakytyn et al.³³ in England, 60.2% and in study of Touré et al.³⁴ in Senegal 21.95% of people choose milk as transferring media.

However, the study results confirmed previous studies findings, but it need to assess the teacher's knowledge in periodical surveys at national levels due to supply of information from different sources specially mass media nowadays. There is also a big variation across the country, which the participated sample could not be a representative of the whole country.

Conclusion

The results of this study confirmed a low level of information among teachers in dealing with avulsion and about suitable storage media. Therefore, educational courses to promote the level of their knowledge could be very helpful, and it is recommended that this course be added to their academic teaching course or even professional education courses.

Conflict of Interests

Authors have no conflict of interest.

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