Original Article

Level of Knowledge, Attitude and Self-Reported Practice of Yasuj Primary School Teachers Regarding Avulsed Permanent Teeth

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Abstract

Background and Aim: Avulsion of anterior teeth has a negative impact on the quality of life, performance and facial esthetics of children, decreases the children's self-confidence and imposes a financial burden on their families. School staff have a significant role in management and timely referral of children with avulsed anterior teeth to health centers. The aim of this study was to determine the level of knowledge, attitude and self-reported practice of Yasuj primary school teachers regarding avulsed permanent teeth.

Materials and Methods: This descriptive cross-sectional study was conducted on 250 male and female elementary school teachers in Yasuj using cluster random sampling. Data were collected via a researcher-made questionnaire including questions on teachers' knowledge, attitude, and self-reported practice of teachers on management of children with avulsed teeth. Data were analyzed via the Chi-square test, Odds ratio and multiple linear regression analysis.

Results: About 20% of teachers had good knowledge, 59% had good attitude, and only 1.2% and 8% of teachers had good practice and efficiency to manage traumatic injuries of permanent teeth, respectively. Among the study variables (age, gender, educational level, teaching experience, and teaching course), the strongest relationship was found between the teachers' educational level and age with their knowledge, attitude, performance and efficiency using generalized linear multivariate analysis. Only the relationship between age and scores of knowledge (P=0.009) and efficiency (P=0.03) was statistically significant.

Conclusion: In the current study, the knowledge level of Yasuj primary school teachers about avulsed permanent teeth was poor, and their attitude and performance were moderate and very poor, respectively.

Key Words: Awareness; Attitude; Tooth Avulsion

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Introduction

In pediatric dentistry, avulsion refers to complete displacement of a tooth from its socket which is a type of injury that occurs in deciduous and permanent teeth. The etiology of this problem is mainly trauma due to accident caused during driving or a sudden fall. The prevalence rate of avulsion in permanent teeth is 0.5-0.3% (1). The maxillary anterior teeth are the most commonly involved teeth. The highest

incidence of avulsion is at the age of 7-9 years because the anterior teeth have developed by these ages, and the loose and immature periodontal ligament fibers surrounding the roots have little resistant to external forces (1,2).

Although these injuries account for a relatively low percentage of dental injuries and traumas, owing to the fact that they occur at an early age, they lead to many psychological, esthetic, and functional problems in children. This condition should be treated as soon as possible to minimize its consequences (2, 3).

One of the most successful treatment options for avulsion is replantation of the avulsed tooth back in the socket. Many factors play a role in prognosis of replantation. The most important factor is immediate placement of tooth back in the socket; if not possible, the tooth should be stored in a storage medium. The storage medium and the time lapse until replantation are among the most critical factors in determining the prognosis of the avulsed tooth (2, 4, 5).

Immediate replantation with a maximum of 60 minutes of extraoral dry time will have the best prognosis. Therefore, the avulsed tooth should be immediately replanted back in the socket by parents, teachers, or any other persons present at the scene (6). Occasionally, immediate replantation is impossible; in such cases, the avulsed tooth should be stored in physiological media (milk, saline, and saliva) until replantation.

This physiological media provide an environment for pulpal and periodontal repair (7). Considering the importance of immediate management and timely treatment of such injuries, and the prevalence of these injuries among primary school children (8), the aim of this study was to assess the knowledge, attitude, self-reported practice, and efficiency of Yasuj primary school teachers regarding the management of avulsion.

Materials and Methods

All primary school mangers and health teachers (n=1010) working in Yasuj city were included in this cross-sectional study. The sample size was calculated according to a study by Blakytny et al, (9) using the following sample size calculation formula:

$$n = \frac{4 * 0.175 * 0.825}{(0.05)^2} = \frac{0.5115}{0.0025} = 204$$

Due to cluster sampling, the calculated sample size was multiplied by 1.2 and the final sample size was estimated to be 250 individuals.

Based on two confounding variables in the studied estimates, the gender of students and type of elementary school (public or private) were considered as clusters, and the sample size was selected using random cluster sampling.

Regarding the number of public and private schools, 6 private schools (4 boys and 2 girls schools) and 10 public schools (3 boys and 7 girls schools) were randomly selected.

A researcher-made questionnaire (Table 1) was used in this study which was designed by combining two Persian (10, 11) and two English (12, 13) questionnaires. The reliability score of most questions was higher than 0.6.

The study was approved by the Ethics Committee of Yasuj University of Medical Sciences (REC.YUMS.1396.187). After selecting the schools, the researcher presented to the schools, obtained the consent form from the teachers, and finally distributed the questionnaire among them.

The questionnaire consisted of four sections including: (I) personal and demographic characteristics of each individual, (II) four questions regarding their knowledge about tooth avulsion with three one-point questions and one two-point question (due to its importance) with a total score of five for this section, (III) three questions for assessing the teachers' attitude, and the last section assessed their practice in case of avulsion. In this section, four questions were asked: one question was assigned two points because of its importance and each of the other three questions were allocated one point; in total, this section had five total points.

Data were collected and analyzed using SPSS via the Chi-square test, odds ratio, and multiple linear regression analysis.

Table 1. Description of Knowledge, Attitude and Self-Reported Practice of Teachers Regarding Avulsed Permanent Teeth

Part1 : personal and demographic characteristic

Age: Degree: Diploma Associate Master Bachelor Sex: Male Female

1-Teachers' period of graduation in terms of year: 1-9 10-19 20-29 30-50

Experience in dental avulsion: Yes No Experience in training course completion: Yes No

Part2: primary school teachers' knowledge about avulsion of permanent teeth

1-How long is the optimal time to replant the avulsed tooth?

a. During the first 30 min b. During the first 60 min c. less 90 min after trauma d. Don't know

2-In an 8-year-old boy, one of the maxillary teeth is avulsed from the socket due to the hit of a ball.
Is this a primary or permanent tooth?

a. permanent tooth b. primary tooth c. Don't know

3-What does being permanent or primary tooth affect in required measures and treatment if a tooth is avulsed from the socket owing to the trauma? Yes NO I don't know

4-When is the best time to replant the avulsed tooth from its socket?

a. Immediately b. During the first 30 min c. During the first 24 hours d. After school time e. Don't know

Part3: primary school teachers' attitude about avulsion of permanent teeth

1-What is your assessment of your information on avulsed tooth? Low High

2- How do you assess your interest in training dental traumas? Low High

3- How do you assess your satisfaction with the need of skill in dental avulsion management? Low High

Part 4: primary school teachers' self-reported practice on the avulsed permanent teeth

1- What is the best treatment if a student's tooth is avulsed from its socket?

a. Replacement by yourself b. Replacement by a dentist c. Referral to a physician
d. Referral to the emergency room e. Don't know

2-What is the first step when the tooth is avulsed from its socket and simultaneously the mouth and lips are bled?

a. Attempting to replacement before referral b. Delay replacement by the bleeding control
c. Immediately Referring with do nothing d. Emergency hospital or physician to control bleeding

3-What is the best performance if it is decided to replant the avulsed tooth

a. Rinse with tab water before replacement b. Rinse with salt serum before replacement
c. Gently scrub by hand and water d. Spray alcohol on teeth
e. Would do nothing before water before replacement f. Don't know

4-What is the best performance until the patient with avulsed tooth is referred to the dentist?

a. Keep it in a clean napkin b. Keep it in water c. Keep it in serum
d. Keep it in a disinfection agent e. Keep it in child́ s mouth f. Don't know

Results

Both male and female teachers participated in this study. Table 2 presents the demographic information of teachers participating in the study.

The teachers' answers to each of the knowledge, attitude and performance questions are presented in Tables 3, 4, and 5.

The mean score of attitude, self-reported practice, efficiency, and knowledge of teachers about tooth avulsion was 1.56 (0-3), 36 (0-5), 6.81 (0-23) and 1.62 (0-5), respectively.

The generalized linear multivariate analysis showed a non-significant relationship between the teachers' knowledge score and their educational level and age among the predicting factors, but there was a statistically significant relationship only between knowledge score and age (P= 0.009).

The generalized linear multivariate analysis showed the highest relationship between the teacher's educational level and age with the attitude score among demographic variables and predicting factors, which was not statistically significant (P>0.05).

The generalized linear multivariate analysis revealed the strongest relationship between teachers' educational level and age with self-reported practice score among demographic variables and predicting factors, which was not statistically significant (P>0.05).

The generalized linear multivariate analysis showed the strongest relationship between teacher's educational level and age with efficiency, but only the relationship with age was significant (P= 0.034).

In the present study, only 1.2% of teachers had an acceptable performance. Overall, less than 8% of teachers had the necessary efficiency in management of avulsed teeth (Table 6).

Discussion

In the current study, the knowledge, attitude and self-reported practice of Yasuj primary school teachers regarding tooth avulsion were poor, moderate and very poor, respectively. Although only about one-fifths of teachers had good knowledge, and nearly two-thirds of them had a positive attitude toward the need for addressing oral health and for skill-based training.

On the other hand, only 1.2% of teachers had an acceptable practice in the areas of behavioral skills in dental management. In total, less than 8% of the teachers had the necessary efficiency in managing dental problems, indicating that the primary school teachers did not have adequate knowledge and practice regarding avulsion.

Unlike the study by Kamali et al, (10) in the present study, only the teachers' age and knowledge had statistically significant relationships with the predictive factors, which is consistent with the study by Mehrabkhani et al, (11) who expressed that increased experience and exposure to such incidents were associated with age. However, in the present study, the teachers' educational level had no statistically significant relationship with the knowledge, attitude, and performance scores, which was similar to the studies by Megalamanegowdru et al, (12) Mehrabkhani et al, (11) and Razeghi et al (13). Andreasen et al. (5) found that the teeth replanted within 15-20 minutes had a favorable prognosis. Some other studies showed that the tooth replanted within 5 minutes had the best prognosis (5,14,15).

In the present study, only 14% of teachers knew the optimal replantation time. The knowledge of teachers participating in the current study was almost similar to the knowledge of those in studies by Prathyusha et al, (15) and Hamilton et al, (16). In their studies, 38.2% and 38.6% of teachers, respectively, were aware of the fact that the best replantation time is immediately after the incident. Moreover, 30% of teachers in the present study compared with 76.7% and 61.7% of teachers in the studies by Mehrabkhani et al, (11) and Abuelqomsan et al. (17) knew that the best replantation time was immediately after the incident.

If replantation of the tooth is impossible, the avulsed tooth should be kept in a physiological solution such as milk, saline, egg whites, coconut water, balanced solution or saliva until replantation (1,18).

Table 2. Frequency distribution of demographic information of primary school teachers

Variable	Level (value)	Frequency (percentage)
Time passed since graduation (years)	1-9	104(41.6)
	10-19	64(25.6)
	20-29	65(26)
	30-50	17(6.8)
Participation in a training course	No	210(84)
	Yes	40(16)
Teacher's educational level	High-school diploma	6(2.4)
	Associate	74(29.6
	Bachelor's	137(54.8)
	Master's	33(13.2)
Experience with dental avulsion	No	177(70.5)
	Yes	73(29.5)

Table 3. Frequency distribution of primary school teachers' knowledge score about avulsion of permanent teeth

Number	Question	Low	High
1	How long is the optimal time to replant the avulsed tooth?	36(14.4)	214(85.6)
2	In an 8-year-old boy, one of the maxillary teeth is avulsed from the socket due to the hit of a ball. Is this a temporary or permanent tooth?	158(63.2)	92(36.8)
3	What does being permanent or temporary tooth affect in required measures and treatment if a tooth is avulsed from the socket owing to the trauma?	126(50.4)	124(49.6)
4	When is the best time to replant the avulsed tooth from its socket?	75(30.0)	175(70.0)

Table 4. Frequency distribution of primary school teachers' attitude score towards the avulsed permanent teeth

Number	Question	Low	High
1	How do you assess your interest in receiving training on dental traumas?	42(16.8)	208(83.2)
2	How do you assess your need to acquire skills in dental avulsion management?	227(90.8)	23(9.2)
3	What is your assessment of your knowledge regarding avulsion?	91(36.4	159(63.6)

Table 5. Frequency distribution of knowledge, attitude, self-reported practice and efficiency of primary teachers about avulsed teeth

N	Question	Frequency of response (percentage)	
1	What is the best treatment if a student's tooth is avulsed from its socket?	233(93.2)	17(6.8)
2	What is the first step when the tooth is avulsed from its socket and simultaneously the mouth and lips are bled?	219(87.6)	31(12.4
3	What is the best performance if it is decided to replant the avulsed tooth?	238(95.2)	12(4.8)
4	What is the best performance until the patient with avulsed tooth is referred to the dentist?	234(93.6)	4(1.4)

Table 6. Frequency distribution of knowledge, attitude, self-reported practice and efficiency of primary teachers about avulsed teeth

Variables		Frequency (Percentage)
Knowledge	Poor	201(80.4)
	Good	49(19.6)
	Total	250(100.0)
Attitude	Poor	103(41.2)
	Good	147(58.8)
	Total	250(100.0)
Self-Reported Paractice	Poor	247(98.8)
	Good	3(1.2)
	Total	250(100.0)
Efficiency	Poor	230(92.0)
	Good	20(8.0)
	Total	250(100)

prolonged extraoral time of avulsed teeth in dry storage or in tap water can reduce the living cells of the periodontal ligament and resultantly increase the external root resorption and enhance the resorptive process as time passes (5). In some situations, there might only be saliva at the scene. However, some studies suggested that milk was a better and more suitable storage medium than saliva (18,19). In the present study, less than 2% of the participants stated that milk was an appropriate storage medium for avulsed teeth. In general, only 4% of teachers used milk, saliva or saline for storage of avulsed tooth until referring the patient to a dentist.

Totally, 22%, 28%, 46%, and 21.7% of teachers in the studies by Toré et al, (20) Prathyusha et al, (15) Zakirulla et al, (21) Blakytny et al, (9) and Abuelqomsan et al, (17) respectively mentioned that milk was an appropriate medium for tooth storage so that knowledge of the participants was poorer in this study than previous studies.

If the tooth is obviously contaminated, root surface in addition to the area around the root apex should be gently washed with saline. No

attempt should be made to sterilize the root surface, as this would damage the living periodontal tissue and cementum (22). In a study by Mehrabakhani et al, (11) 36% of teachers washed the contaminated tooth with milk or water before replantation. However, in the present study, only 5% of teachers washed the contaminated tooth with saline, indicating the poor performance of our participants.

Accordingly, it seems that the success of treatment of avulsed teeth depends on the knowledge of the patient's companions about the treatment. Since the children spend most of their time at school with teachers and at home with parents, greater knowledge level of parents and school teachers about how to treat the avulsed permanent teeth can result in better prognosis of treatment (23).

In the present study, although 63% of the participating teachers assumed that their knowledge about the emergency treatment of avulsed teeth was adequate, their knowledge and self-reported practice in this regard were poor and very poor based on their answers to the questions, respectively. It seems that it is necessary to inform the teachers in this regard. Because of the fact that only 16% of teachers had passed these training courses and 28% of them had never experienced such an incident, it is essential to hold mandatory training courses for teachers via educational departments and health centers and increase the public knowledge via the media, training brochures and educational posters in dental clinics and health centers.

In studies by Grewal and Shangdiar (24) and Al-Asfour et al, (25) training courses increased the teachers' knowledge about the treatment of avulsed teeth; therefore, a training program is proposed to improve the management of such incidents as an emergency.

Conclusion

The findings of this study indicated a low level of knowledge, attitude, self-reported practice and efficiency of Yasuj elementary school teachers regarding tooth avulsion. Hence, it is necessary to pay more attention to develop a curriculum for teachers at elementary schools given the importance of this topic.

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