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Parent and caretaker knowledge about avulsion of permanent teeth

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Abstract – Traumatic dentoalveolar injuries are frequent in children and adolescents, affecting teeth, their supporting structures and adjacent soft tissues and contributing to the appearance of major psychosocial and economic problems. Tooth avulsion, the most severe dentoalveolar lesion, is a dental emergency. The prognosis of avulsed teeth significantly depends on prompt and efficient action at the site of the accident, thus requiring that parents or caretakers be knowledgeable about the correct management of this situation. The objective of the present study was to assess the level of knowledge of parents or caretakers concerning the management of tooth avulsion and to investigate the association between level of knowledge and schooling, monthly family income and age. We interviewed 107 parents or caretakers using a 12-item questionnaire comprising objective questions whose answers received a score from 0 to 3. The results show that 99% of those interviewed would immediately seek professional help; however, 71% did not know what avulsion was. Only 3% would use milk as storage medium and 16% would attempt replantation of the avulsed tooth. The distribution of final means for the overall level of parent or caretaker knowledge was 44.63% for score 3, 15.88% for score 2, 17.99% for score 1 and 21.47% for score 0, showing a low level of knowledge concerning tooth avulsion. Schooling, monthly family income and age were not associated with the knowledge scores for any of the 12 questions. The level of parent and caretaker knowledge concerning the management of tooth avulsion is low, without association with age, schooling and monthly family income.

Dentoalveolar traumatic injuries might soon surpass caries and periodontal disease as the most significant problem in oral health, with major esthetic, functional, psychologic, and economic consequences (1, 2). The prognosis of avulsed teeth depends on prompt and adequate action still at the site of the accident: minimizing the time during which the tooth remains outside of the alveolus, using an adequate storage and transportation medium, protecting the root surface and periodontal ligament from aggression – factors which are usually outside the control of professionals (3–6). Thus, it is essential that the lay population, including parents and caretakers, teachers and coaches, among others often present at the site of the injury know how to manage this situation (7, 8).

Several studies show that the population at large, as well as many professionals involved in the treatment of dentoalveolar injuries, has little knowledge concerning this subject (8–15). The objective of the present evaluation was to assess, using a questionnaire, the level of parent and caretaker knowledge concerning the emergency management of avulsed teeth and to investigate the association between level of knowledge and socioeconomic factors including age, schooling and monthly family income.

Material and methods

The study population consisted of 107 parents or caretakers in charge of children aged between 6 and 12 years receiving care at the Pontifícia Universidade Católica do Rio Grande do Sul School of Dental Science between March and June 2006. Based on a hypothetical dentoalveolar injury with avulsion of a permanent anterior tooth, a 12-item questionnaire was applied by three trained investigators to assess the level of parent and caretaker knowledge through multiple choice, objective questions (Chart 1). The interviews aimed at collecting information concerning the variables gender, age, schooling, monthly family income and specific knowledge concerning avulsed teeth. The protocol was approved by the Research Ethics Committee at Pontifícia Universidade Católica do Rio Grande do Sul.

Each question had five possible answers (A, B, C, D and E), with increasing scores indicating more knowledge concerning the topic: 0 = lack of knowledge; 1 = basic knowledge; 2 = good level of knowledge; 3 = full knowledge. Alternative 'E' (I don't know/wouldn't do anything/no answer) was repeated in all the questions. The score attributed to this choice was '0.'

The results obtained were expressed as frequency distribution and degree of correctness. The percentage of answers receiving each of the scores used to determine the level of knowledge was calculated, as well as a final mean for each score. Statistical analysis was carried out with SPSS. Fisher's exact test was used to investigate the association between degree of correctness and the variables age, schooling and monthly family income. $P \leq 0.05$ was considered to be significant.

Results

The demographic data obtained using the questionnaire applied to 107 parents or caretakers appear in Table 1. The results show that 21.47% of the answers received score 0, 17.99% score 1, 15.99% score 2, and 44.63% score 3 (Table 2). No significant association was observed between level of knowledge and the variables monthly family income, schooling and age, except for question 11, which was associated with schooling ($P = 0.009$).

Discussion

Considering that a favorable prognosis for avulsed, replanted teeth significantly depends on the triad minimal time outside of the socket, adequate storage and transportation medium and minimal aggression to the root surface and periodontal ligament, the knowledge concerning the management of this situation was assessed in a lay population (3–5, 16).

Concerning the first measure to be taken in the event of an accident where a tooth was avulsed, 49% of the individuals interviewed would correctly help the child calm down, stop the bleeding and look for the avulsed tooth. However, it should be considered that this represents only half the interviewees, and that 7% answered that they would be frightened and not take any action.

Table 1. Demographic data

Variables	No	%
Gender		
Male	8	7.5
Female	99	92.5
Income (R$)		
Mean ± SD	997.20 ± 851.71	
<500	25	23.4
500–800	38	35.5
800–1100	18	16.8
>1100	26	24.3
Schooling*		
Elementary school	52	50.5
High school	41	39.8
Higher education	10	9.7
Age (years)		
Mean ± SD	37.66 ± 11.20	
<25	11	10.3
25–50	83	77.6
>50	13	12.1

SD, standard deviation.
*Information about schooling was not available for four interviewees, thus, 103 individuals were assessed in terms of this variable.

In case the avulsed tooth were found, 86% of the parents or caretakers answered that they would carefully wash the lost tooth and save it for evaluation by a professional (score 2). Nevertheless, only 5% would replant the tooth in the alveolus after carefully washing it (score 3), as reported by other studies (13, 17, 18). On the other hand, when inquired about the correct intervention in case the avulsed tooth were not found (question 3), about 94% of the sample received the highest knowledge score. This suggests lack of information concerning the importance of keeping the tooth in the dental arch, and also shows that the lay population is mostly worried with controlling bleeding and pain.

The correct cleaning procedure to be followed in case the tooth were found was mentioned by only 19% of the parents or caretakers. Four percent did not know what to do, or even stated that they would scrub the tooth with soap and a sponge, whereas most (64%) would use tap water. A previous study reported that 52% of those interviewed would manipulate the tooth holding it by the crown and 59% would clean the tooth with water or other fluids (12).

Lack of knowledge about the storage medium and replantation of avulsed teeth has been reported by previous studies (9, 12, 13, 19). In this study, only 3% of the interviewees knew that milk is the best storage medium; 54% would employ a dry storage medium. Even more worrisome is the fact that 83% would not replant the tooth in its socket, or would somehow force the tooth into the socket.

Despite the anxiety involved in seeking emergency care for an injured child, 73% of the parents or caretakers are aware that their first choice should be a hospital or specialized dental office, vs only 19% who would go to a general dental office. These results reflect two assumptions – first, that dental offices and hospitals (especially trauma and emergency institutions) are prepared to handle this type of patient; and secondly, that a specialist will provide better care than a general dentist (15). Added to that, 59% of those interviewed expect a specialist oral surgeon to be the first to examine the child. As many as 27% of parents or caretakers expect that a child who has suffered dentoalveolar trauma will receive care from dental science students, 10% more than those who expect the first examination to be made by a general oral surgeon and 4% more than those who expect a physician to perform the first examination. This can be explained by the academic setting in which the present study was carried out; these parents are aware that care is provided by individuals in training, although with optimal supervision and technical skill.

Procedures carried out immediately after a traumatic injury or in an emergency unit are not in themselves sufficient to ensure success if good quality long term follow up is not available. Usually, in emergency units, the oral surgeon provides primary care with replantation, containment, bleeding and pain control, antibiotic therapy and antitetanus immunization. The patient is then advised to undergo regular outpatient follow up with a clinician (specialist or not) who will perform specific radiographic examinations, replace fixation

Table 2. Distribution of mean percentage of scores for each question and association with monthly family income, schooling, and age

	Score (%)				Income	Schooling	Age
	0	1	2	3	*P*	*P*	*P*
Question 1	6.5	20.6	23.4	49.5	0.724	0.640	0.264
Question 2	0.9	8.4	86	4.7	0.235	0.524	0.527
Question 3	1.9	2.8	0.9	94.4	0.482	0.525	0.687
Question 4	3.7	64.5	13.1	18.7	0.542	0.604	0.364
Question 5	54.2	18.7	24.3	2.8	0.984	0.150	0.433
Question 6	83.1	0.9	0	15.9	0.850	0.373	0.730
Question 7	6.5	1.9	0.9	90.7	0.276	1.000	0.699
Question 8	0	8.4	18.7	72.9	0.461	0.844	0.397
Question 9	3.7	27.1	10.3	58.9	0.417	0.387	0.853
Question 10	25.2	10.3	2.8	61.7	0.257	0.066	0.098
Question 11	0.9	29.9	3.7	65.4	0.322	0.009*	0.056
Question 12	71	22.4	6.5	0	0.437	0.085	0.667
Final mean	21.47	17.99	15.88	44.63	0.499	0.434	0.481
Standard deviation	30.31	17.68	23.74	34.62	0.240	0.316	0.257
Minimum	0	0.9	0	0	0.235	0.009	0.056
Maximum	83.1	64.5	86	94.4	0.984	1.000	0.853

*$P < 0.05$.

devices, test pulp vitality, and carry out the appropriate endodontic therapy for as long as required (14, 20, 21). This is the course that 69% of those interviewed would follow in the presence of this type of injury. Although most are aware of the importance of specialized care, 31% would not look for it, assuming that primary care would be sufficient to resolve the problem.

Our overall results show that the level of parent and caretaker knowledge was not high, with a mean of 44.63% for score 3, 15.88% for score 2, 17.99% for score 1 and 21.47% for score 0 (Table 2). An important finding was that the level of knowledge was satisfactory in some of the questions, whereas in others it was beyond that expected. Of note, oral surgeons around the world have also been shown to have little knowledge concerning dentoalveolar injuries (8, 11, 12, 14, 15).

We did not observe an association between the scores obtained and the three variables – monthly family income, schooling and age. The only exception was question 11, which was significantly associated with schooling ($P < 0.05$), as previously reported by a study carried out in Singapore (22), in which the management of dentoalveolar injuries was influenced by schooling ($P = 0.08$). In addition, those authors observed that most people, especially those with more schooling, had a positive and enthusiastic perception concerning educational policies related to dentoalveolar injuries. Age, as a synonym for experience, has been shown to influence significantly the level of knowledge of athletes concerning tooth avulsion (23). Those authors concluded that adults are better informed than youngsters concerning replantation ($P = 0.004$) and storage medium for avulsed teeth ($P = 0.001$).

Regardless of the absence of a significant association between the level of knowledge and the variables under study, we believe that information and education programs targeting the general population would improve the management of tooth avulsion (9, 10, 13, 18, 22). In addition, oral surgeons and professionals in training should improve their level of knowledge through continued education, graduate programs, seminars, and other types of programs focused on hospital emergencies (8, 14, 15).

In conclusion, the level of parent and caretaker knowledge concerning the management of tooth avulsion is low, without association with age, schooling, and monthly family income. These important epidemiologic findings serve as a warning; they are also a useful source of information to support education and prevention strategies and to reduce the overall cost of emergency and rehabilitation treatments.

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Chart 1. Questionnaire

Research project – tooth avulsion

Name: _____ Age: _____ Sex: _____
Address: _____ Phone: _____
Income (R$): _____ Schooling: _____ No. children: _____
Adult in charge of child: _____ Child age: _____

Imagine the following situation: your child is playing in the yard or schoolyard and suddenly slips and falls face first into the ground. The injury is very upsetting to the child due to the bleeding and pain, and causes the loss of a permanent upper incisor tooth. Having this in mind, please answer the following questions, choosing the item you believe to be the correct answer:

1. What would you do first?
A. You become frightened and don't do anything.
B. Try to calm down the child, washing the injury.
C. Calm down the child and stop the bleeding by compressing a cloth over the injury.
D. Calm down the child, stop the bleeding and look for the tooth.
E. Don't know/wouldn't do anything/no answer.

2. Once you find the tooth:
A. You wash it carefully and save it so that you can later show the tooth to a health professional.
B. Discard the tooth.
C. Carefully wash the tooth and put it back in its socket.
D. Simply save the tooth without cleaning it to show it to a health professional.
E. Don't know/wouldn't do anything/no answer.

3. If you don't find the tooth:
A. You wash the child's mouth, apply pressure to the wound and look for professional help.
B. Simply wash the child's mouth and apply pressure to the wound, without looking for professional help.
C. Look for professional help even if you didn't do anything before that.
D. Cry desperately and don't do anything.
E. Don't know/wouldn't do anything/no answer.

4. When you wash the tooth:
A. You use delicate water or saline jets.
B. Use delicate water or saline jets, holding the tooth strictly by the crown, not touching the root.
C. Use a sponge and soap.
D. Use tap water.
E. Don't know/wouldn't do anything/no answer

5. To store the tooth you use:
A. A container with water.
B. An empty container, or you wrap the tooth in a napkin or piece of paper.
C. A container with milk.
D. You place the tooth in the child's mouth, in contact with saliva, or in a recipient with saline.
E. Don't know/wouldn't do anything/no answer.

6. If trying to replant the tooth:
A. You would force it back into position without paying attention to how you do it or in which direction.
B. You try to align the tooth with the neighboring teeth, gently handling it and holding it by the crown, without touching the root.
C. You try to align the tooth with the neighboring teeth.
D. You try to align the tooth with the neighboring teeth, gently handling it and holding it by the crown, without touching the root, and look for professional help.
E. Don't know/wouldn't do anything/no answer.

7. What do you think is the best moment to look for professional help?
A. Up to 2 h after the accident.
B. Immediately after the accident.
C. Up to 1 h after the accident.
D. On the following day, when the child is calmer.
E. Don't know/wouldn't do anything/no answer.

8. Which type of health service would you seek first?
A. Dental office (general).
B. Any hospital.
C. A pharmacy.
D. Hospital or specialized dental office.
E. Don't know/wouldn't do anything/no answer.

9. When you arrive at the health service, who do you expect to examine your child?
A. Dental science student/intern.
B. A dentist (general).
C. A specialist dentist.
D. A physician.
E. Don't know/wouldn't do anything/no answer.

10. How long do you think the tooth can remain outside the alveolus without harm?
A. Up to 2 h.
B. As little as possible.
C. Up to 1 h.
D. As long as necessary.
E. Don't know/wouldn't do anything/no answer.

11. After the first emergency interventions, you:
A. Consider that sufficient treatment has been provided.
B. Follow the recommendations and continue to see a specialist dentist for follow-up care.
C. Follow the recommendations and continue follow up with a general dentist.
D. Follow the recommendations provided by the professional who took care of the child, but do not seek follow-up care.
E. Don't know/wouldn't do anything/no answer.

12. Have you ever received any guidance concerning dentoalveolar injuries?
A. I have received guidance from my dentist and/or saw guidelines in flyers and/or radio or TV advertisement.
B. I have never received guidance or I have no idea what it is.
C. I sometimes receive guidance from my dentist.
D. I have heard about it.
E. Don't know/wouldn't do anything/no answer.