



Investigation of the knowledge level of allied health professionals in a faculty of dentistry about dental avulsion*

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Cite this article as: Akleyin E, Yeniçeri Özata M. Investigation of the knowledge level of allied health professionals in a faculty of dentistry about dental avulsion. *Dicle Dent J.* 2024;25(1):6-9.

Received: 04/03/2024

Accepted: 23/03/2024

Published: 28/03/2024

ABSTRACT

Aims: Dental avulsion, complete dislocation of the tooth from its socket, is an injury that requires emergency intervention. The aim of this study was to evaluate the level of knowledge about dental avulsion among dental school allied health professionals who may encounter dental avulsion trauma in the first moment.

Methods: A 14-question “Avulsion Questionnaire” designed by the researcher was administered to 54 allied health professionals at Dicle University Faculty of Dentistry by face-to-face interview technique. In this study, frequency (n) and percentage (%) values were given as descriptive statistics. Chi-square analysis was used to analyze the relationships between groups of nominal variables.

Results: Of the participants, 48.1% were oral and dental health technicians, 22.2% were nurses, 11.1% were X-ray technicians, and 18.5% were medical secretaries. Those who thought that avulsion injuries constituted an emergency were significantly more likely ($p < 0.05$). Forty-eight percent of the healthcare providers were informed about the injuries, and they obtained this information from dentists. Medical secretaries had never been informed about dental trauma ($p < 0.05$). The level of knowledge about the placement of an avulsed tooth at the scene was low ($p > 0.05$). However, all healthcare providers were aware that in cases of permanent tooth avulsion, a health institution, especially dental hospitals, should be consulted immediately. X-ray technicians and medical secretaries preferred a dry environment as the ideal storage environment, while nurses and dental assistants preferred milk.

Conclusion: In this study, we found that the basic knowledge of dental avulsion was not sufficient for all allied health personnel, especially in a dental school, who may encounter parents in the first instance or be consulted by their relatives. Regular training programs for dental trauma management will increase the knowledge of dental assistants in managing avulsion injuries.

Keywords: Allied health personnel, dental avulsion, questionnaire

* This study was presented as an oral presentation at the “11th International Hippocrates Congress on Medical and Health Sciences”.

INTRODUCTION

Traumatic dental injury (TDI) have been reported to affect more than one billion people worldwide and are the fifth most common injury in the world.¹

Avulsion of permanent teeth occurs in 0.5-16% of all dental injuries. This injury is one of the most serious dental injuries, and its prognosis largely depends on the interventions performed at the scene of the accident. Replantation of the tooth is the preferred treatment method in most cases, but it cannot always be performed immediately.²

Proper management, rapid repositioning and splinting, and prevention of infection during replantation and handling procedures for avulsed teeth are extremely important to improve the long-term prognosis and reduce future problems for all trauma victims.³

Patients with TDI are likely to present at healthcare facilities, including general dental practices, emergency medical services, and pharmacies. Consequently, every health professional should have the appropriate knowledge, skills, and training to manage TDIs, but studies have reported a lack of knowledge among ordinary people and health professionals about managing TDIs.^{3,4}

In this study, basic information about dental avulsion was investigated for all auxiliary healthcare personnel, especially those working at the faculty of dentistry and who first encountered the parents or were consulted by their relatives.

METHODS

“Avulsion Questionnaire” was administered face-to-face individually to 54 allied health personnel working at Dicle

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University Faculty of Dentistry. The necessary ethics committee decision was obtained for the study (Date: 22.02.2023, Decision No: 2023-10). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. In this study, Dicle University Faculty of Dentistry; oral and dental health personnels (OHP), medical secretaries, nurses, X-ray technicians, and emergency medical technicians were surveyed as allied health professionals. A questionnaire consisting of 14 questions about demographic information, personal experience in the treatment of dental injuries, ways of accessing theoretical knowledge about dental injuries, and the interventions to be performed in the first emergency intervention was applied to the volunteers after obtaining the necessary consent form. The necessary statistical analyses were performed for the answers obtained.

Statistical Analysis

In this study, frequency (n) and percentage (%) values were given as descriptive statistics. Chi-square analysis was used to examine the relationships between groups of nominal variables. The confidence interval was set at $p < 0.05$. SPSS 20 (IBM Corp., Armonk, NY, USA) package program was used for statistical analyses.

RESULTS

Of the participants, 48.1% were OHP, 22.2% were nurses, 11.1% were X-ray technicians, and 18.5% were medical secretaries. 51.85% of the participants were male, and 48.15% were female. Those who thought that oral, dental, and surrounding tissue injuries constituted an emergency were significantly higher in all occupational groups ($p < 0.05$) (Table 1). Medical secretaries were less knowledgeable about oral, dental, and surrounding tissue injuries ($p < 0.05$) (Table 2). Those who had information about injuries were 48% of the participants. And they mostly obtained this information from dentists (Table 3). The level of knowledge about immediate tooth replacement at the scene was significantly lower ($p > 0.05$) (Table 4). The majority of the participants knew that a health institution should be consulted without waiting for the result of an avulsion of a permanent tooth (Table 5). The employees were aware of the need to apply to the OHP and the Faculty of Dentistry (Table 6). X-ray technicians and medical secretaries were more likely to be aware of transporting teeth in a dry environment and had a low level of awareness (Table 7). Nurses and OHP had a good awareness of transporting avulsed teeth in milk and saline (Table 8). OHP were more aware of not replacing avulsed deciduous teeth (Table 9).

Table 1. Distribution of the answers to the question “Do you think injuries to the mouth, teeth, and surrounding tissues constitute an emergency?”

Question 4	Yes	No
OHP	22 (40.8)	0 (0)
Nurse	10 (18.5)	1 (1.9)
X-ray technician	13 (24.1)	1 (1.9)
Medical secretary	5 (9.3)	2 (3.7)

OHP: Oral health personnels

Table 2. Distribution of the answers to the question “Have you ever been informed about injuries to the mouth, teeth, and surrounding tissues?”

Question 5	Yes	No
OHP	14 (26)	12 (22.2)
Nurse	6 (11.1)	6 (11.1)
X-ray technician	3 (5.6)	3 (5.6)
Medical secretary	3 (5.6)	7 (13)

OHP: Oral health personnels

Table 3. Distribution of the answers to the question “If yes, where did you learn?”

Question 6	Internet/ TV	Training program/ brochure	Dentist	First aid course	Previously encountered
OHP	2 (3.7)	2 (3.7)	5 (9.3)	2 (3.7)	1 (1.9)
Nurse	0 (0)	1 (1.9)	4 (7.4)	0 (0)	0 (0)
X-ray technician	2 (3.7)	0 (0)	1 (1.9)	1 (1.9)	0 (0)
Medical secretary	1 (1.9)	1 (1.9)	3 (5.6)	0 (0)	0 (0)

OHP: Oral health personnels



Table 4. Distribution of the answers to the question “Would you consider replacing the permanent tooth if it is completely dislocated as in the image above?”

Question 10	Yes	No	No opinion
OHP	9 (16.7)	12 (22.2)	5 (9.3)
Nurse	7 (13)	4 (7.4)	1 (1.9)
X-ray technician	3 (5.6)	3 (5.6)	0 (0)
Medical secretary	3 (5.6)	4 (7.4)	3 (5.6)

OHP: Oral health personnels

Table 5. Distribution of the answers to the question “Which health institution do you first apply to when your tooth is completely dislodged as a result of trauma as in the image above?”

Question 8	Emergency Service	ODHC	Family Physician	Faculty of Dentistry	Private Dental Office
OHP	3 (5.6)	14 (25.9)	0 (0)	7 (13)	2 (3.7)
Nurse	2 (3.7)	6 (11.1)	0 (0)	4 (7.4)	0 (0)
X-ray technician	1 (1.9)	2 (3.7)	0 (0)	1 (1.9)	2 (3.7)
Medical secretary	1 (1.9)	3 (5.6)	0 (0)	6 (11.1)	0 (0)

OHP: Oral health personnels

Table 6. Distribution of answers to the question “If a permanent tooth is dislodged (avulsed), when do you go to a dentist or health care provider for help?”

Question 9	Right now	In a few hours	The next day	No opinion
OHP	23 (42.6)	1 (1.9)	0 (0)	2 (3.7)
Nurse	10 (18.5)	1 (1.9)	0 (0)	1 (1.9)
X-ray technician	6 (11.1)	0 (0)	0 (0)	0 (0)
Medical secretary	8 (14.8)	1 (1.9)	1 (1.9)	0 (0)

OHP: Oral health personnels

Table 7. Distribution of answers to the question “You could not place the dislodged tooth. How do you take it to the dentist?”

Question 13	In any liquid	Wrapped in cotton or napkin	In the ice	In the mouth	In plastic container
OHP	15 (27.8)	3 (5.6)	1 (1.9)	3 (5.6)	4 (7.4)
Nurse	7 (13)	1 (1.9)	1 (1.9)	2 (3.7)	1 (1.9)
X-ray technician	1 (1.9)	2 (3.7)	0 (0)	2 (3.7)	1 (1.9)
Medical secretary	4 (7.4)	3 (5.6)	0 (0)	0 (0)	3 (5.6)

OHP: Oral health personnels

Table 8. Distribution of answers to the question “Which liquid do you prefer to wash or carry the tooth?”

Question 14	Alcohol	Tap water	Physiological serum	Milk	Antiseptic solution
OHP	3 (5.6)	1 (1.9)	7 (13)	12 (22.2)	3 (5.6)
Nurse	0 (0)	2 (3.7)	4 (7.4)	6 (11.1)	0 (0)
X-ray technician	0 (0)	3 (5.6)	0 (0)	3 (5.6)	0 (0)
Medical secretary	0 (0)	1 (1.9)	4 (7.4)	4 (7.4)	1 (1.9)

OHP: Oral health personnels

Table 9. Distribution of answers to the question “Do you think deciduous teeth should be replaced if they are dislodged?”

Question 11	Yes	No
OHP	3 (5.6)	23 (42.6)
Nurse	4 (7.4)	8 (14.8)
X-ray technician	0 (0)	6 (11.1)
Medical secretary	1 (1.9)	9 (16.7)

OHP: Oral health personnels

DISCUSSION

This cross-sectional study was conducted to evaluate the level of knowledge of all ancillary personnel (OHP, X-ray technician, nurse, medical secretary) working in a dental school about dental avulsion, its management, and its relationship with their educational background. An avulsion of permanent teeth is considered the most serious dental injury. The success of treatment depends on the correct intervention after trauma and emergency management and treatment plans have been established with international guidelines.²

In the literature, attempts have been made to evaluate the knowledge of various populations (including dentists, physicians, school teachers, parents, students, dental students and athletic trainers) regarding emergency management of avulsed teeth. Most of these studies have emphasized the need for better communication between dental professionals and the community and the effective implementation of educational campaigns.⁵⁻¹⁰ Dental assistants, who are an integral part of the auxiliary dental team, can be consulted directly or by telephone during the first emergency intervention after

trauma. Studies evaluating dental assistants’ knowledge of dental avulsion and its treatment have been found to be rare.¹¹ In this study, all dental assistants who have not been consulted much before but who can be consulted directly or by telephone during the treatment of avulsed teeth because they work in the faculty of dentistry were selected as the target population.

In a study conducted in Chile among healthcare personnel, including doctors, nurses, and other support ambulance staff, 90.2% of participants had no formal training on how to act in the event of dental injuries.¹² Halawany et al.¹¹ reported that in their study of dental assistants, the likelihood of answering most knowledge-based questions correctly was significantly higher among respondents who had received advice or training on tooth avulsion. In our survey, 26% of OHP with 2 years of dental education reported having received information about injuries to the mouth, teeth, and surrounding tissues. This rate was even lower among other allied health professionals. Most of the allied health personnel stated that they obtained information from dentists, not from official sources.

Loh et al.¹³ reported that all dental therapists (school dental nurses) agreed that avulsion requires 100% immediate action, and 94.6% agreed that intervention should be done within 30 minutes. In Halawany’s¹¹ survey, dental assistants reported that 65.3% of avulsed teeth should be implanted immediately, and 81.3% reported that a professional referral should be made as soon as an avulsion occurs (within 30 minutes). In our study, 92.7% of the participants agreed that oral and dental injuries constitute an emergency. 40% of the participants emphasized that they could immediately reimplant the avulsed tooth. 87% of the participants agreed that they should immediately contact an aid organization, especially oral and dental health care providers.

Current IADT guidelines mention HBSS, milk, saline, and saliva as examples of osmolality-balanced media suitable for storage of avulsed teeth.² In a study by Halawany et al.¹¹, 70.9% of the participants recommended storage of avulsed teeth in fresh milk, 58% in saline, and 43.8% in saliva. In the survey by Loh et al.¹³, 54.8% of the participants were not sure about the most appropriate storage medium for avulsed teeth. In our study, 46.3% of the participants recommended milk, 27.8% serum, and 13.1% tap water as the transport solution for avulsed teeth.

Regarding avulsed deciduous tooth replantation in accordance with the current IADT guidelines,¹⁴ the majority (85.2%) of the participants in this study reported that they would not perform avulsed deciduous tooth replantation. In the Halawany et al.¹¹ survey, the

majority of respondents (72.5%) were of the opinion that they would not perform deciduous tooth reimplantation.

Limitations

As the study was cross-sectional, participation depended on the availability and willingness of volunteers. The fact that there was only one dental school in the city prevented us from reaching more employees. We consider these limitations of our study.

CONCLUSION

The educational qualifications of allied health workers were associated with their level of knowledge about dental avulsions and their management. It was observed that the basic knowledge of dental allied health professionals about dental avulsion was not sufficient. It was thought that regular in-service training for dental assistants may be useful for the first emergency intervention approach to dental trauma.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of Dicle University Faculty of Dentistry Local Ethics Committee (Date: 22.02.2023, Decision No: 2023-10)

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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