

# Knowledge of general dentists about of treatment dental avulsion, Bandar Abbas, Iran

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## Original Article

### Abstract

**Introduction:** An appropriate emergency management and treatment plan are important for good prognosis of avulsed teeth. Extra alveolar dry time and the storage media used to transport the tooth are critical factors for successful and long-term outcomes. Knowledge of dentists for appropriate treatment plan and good prognosis is important. The Purpose of this study was to evaluate the knowledge of general dentists working in Bandar Abbas about the management of avulsed teeth.

**Methods:** During this descriptive-analytic and cross-sectional study, which was performed in 2013, knowledge of general dental practitioners working in Bandar Abbas about treatment of dental avulsion was evaluated. 110 dentists were participated for inclusion in the study. Data collection was performed through a researcher made questionnaire and included two parts; demographic data and questions about knowledge which validity and reliability was verified. The Knowledge level of the participant dentists in this study were divided into three categories poor (scores between 0-4), intermediate (scores between 5-9) and good (scores between 10-14). Data obtained were entered into an SPSS 16 and analyzed using the Mann-Whitney and Kruskal-Wallis test. A level of 0.05 was accepted as statistically significant.

**Results:** This study showed the knowledge level of majority of dentists (59.3%) is moderate. The association between knowledge scores and gender, previous experience in the treatment of avulsion and postgraduate education in dental trauma were not statistically significant.

**Conclusion:** Due to the level of knowledge of dentists in this study, dentists need to be regularly educated in order to reduce or prevent inadequate care of traumatic dental injuries.

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### Introduction:

Avulsion means getting the teeth out from the alveolar cavity (1) that includes 5-16% of all dental

injuries (2-4). This damage occurs in Boys three times more than girls between the ages of 9-7 years that the permanent incisors are growing. Andreasen said that the lack of strength in the periodontal

ligament structures supporting the erupting teeth and alveolar bone elasticity will help to get out the teeth (5,6). The most common teeth with avulsion are maxillary incisors. These teeth for their normal labial prominence are more prone to injury than the mandibular teeth (7). Since most of the time, the complete withdrawal of teeth will happen before completion of the face growth, keeping the tooth and its supporting bone is critical before the completion of growth (8). The replacement of teeth is an optional treatment, most of the time. However, its immediate treatment is not always possible (9). Dental implant in the shortest time possible is the only factor that led to the desired outcome of treatment (8). The dryness duration of outside alveoli and the keeping environment to deliver tooth, are critical factors for long-term success (10). Storage environment aimed at reducing the inflammatory response after dental implant, preventing the dryness of teeth and preserving periodontal ligament cells (2). Since incorrect actions of dentist may lead to the loss of dental implant, the dentist's awareness in implementing the correct process of treatment to obtain a favorable prognosis is very important. Knowing the proper treatment of the dental avulsion can reduce stress and anxiety of dentists and patients (11). According to S Upadhyay et al, study in 2012 in Kathmandu that a survey was done among 102 general dentists regarding the knowledge of general dentists about tooth avulsion emergency management, the knowledge of dentists was not sufficient (1). In a similar study conducted in Germany in 2009 by Gabriel Krasti and his colleagues, the knowledge of general dentists about dental trauma was poor. In their study, there was no significant difference between the experience of these dentists with the scores (12). In another study in Poland in 2013 by J. Baginska and his colleague, the dentists' knowledge was evaluated at a low level. The study in Poland showed that the education system for Dentists, after the graduation, has flaws in the field of avulsion and it is necessary that dentists become familiar with the latest methods of avulsion treatment, thus, to help reducing treatment failures and upgrading the patient's quality of life (13). Due to the lack of this study of the region and the importance of this issue, we decided to study the knowledge of general dentists

working in Bandar Abbas on the treatment of dental avulsion. Our aim of this study is to assess the knowledge of general dentists working in Bandar Abbas in the treatment of dental avulsion.

### Methods:

During this descriptive, analytical and cross sectional study that was conducted in July and August 2014, the knowledge of general dental practitioners working in Bandar Abbas about the dental avulsion treatment was evaluated. The study population was all general dentists working in Bandar Abbas. Choose the number of samples in this study was Census and the sample size was 110 respondents. Instrument for data collection was the questionnaire that was adapted from similar articles in this field (references 1, 12), the questionnaire questions of these articles were translated from English to Persian, and necessary terms were reformed in terms of transparency, simplicity and understandability based on the professors' opinion. Finally, Persian phrases were compared in terms of English concepts and were confirmed from the perspective of English language specialists and Dentistry fluent in two languages. After setting the questionnaire, its validity was confirmed by three Endodontic specialists and two of Dentistry for children. To determine the reliability of the questionnaire, a pilot study was conducted between ten general dentists and the Cronbach's alpha coefficient was obtained 0.8.

The adjusted questionnaire was in the form of multiple-choice questions and consisted of two parts:

The first part consisted of 5 questions about personal information, such as gender, work experience, previous experience in the treatment of avulsion and training records in this area and the second part involved 14 questions to assess the knowledge about the treatment of dental avulsion. These 14 questions were multiple-choice, and each had only one correct answer.

In the scoring of the questionnaire for each correct answer, scoring one was assigned and for the wrong answers and I am not sure, zero was assigned. The knowledge of dentists participating in the research based on scores was divided in three categories: poor (scores between 0-4), middle

(scores between 5-9) and good (scores between 10-14).

According to the Medical Council statistics, it was indicated that 110 dentists were already working in Bandar Abbas. By visiting the dentists' workplace, the questionnaires were given to them and they were asked to complete it in the presence of the researcher. For ethics and integrity, the questionnaires had no information about the expletory and the information was collected and was maintained confidentially at all stages of research. In collecting research data, the principle of free choice for individuals was considered to answer. Due to the lack of exact address in order to access, dentist's office was closed or refusing the dentist to complete the questionnaire in the presence of the researcher, only 89 of them were accessed that 86 of them have worked with us to complete the questionnaire.

After data collection, the relation between the knowledge of dentists and their personal characteristics are analyzed by statistical Kruskal-Wallis and Mann-Whitney tests and SPSS16 software and the significance level of 0.05 was considered statistically significant.

## Results:

Among 86 dentists who participated in this study, 35 people (40.7%) were female and 51 cases (59.3%) were male, according to their average scores, there was no significant difference between their awareness ( $P=0.793$ ). More subjects (66.3%) had over 5 years and 29 cases (33.7%) had less than 5 years of work experience. More experienced people had lower scores that in our study, this difference was not significant ( $P=0.351$ ). 44 cases (51.2%) of dentists had the experience of treating patients with avulsion and 42 cases (48.8%) of them had not this experience. Despite lower scores of dentists with a history of treatment, there was no significant difference between the level of awareness between the two groups ( $P=0.803$ ). 20 (45.5%) of dentists with experience of treating patients with avulsion, have cured 1 to 3 patients among 8 people (18.2%), 3 to 5 patients among 16 people (36.4%) and more than 5 patients. There

was no significant difference between the level of knowledge in dentists with a different number of treatments ( $P=0.174$ ). 35 (40.7%) of the study group had a history of participation in training courses for dental injuries and 51 cases (59.3%) did not participate in these courses. Despite lower scores of dentists with a history of participation in training courses, there was no significant difference in their level knowledge ( $P=0.098$ ). In Table 1, the impact of various factors on the mean score of dentists is specified.

**Table 1. Factors influencing the dentists' knowledge**

Factors	Average score	
Gender	Female	2.151±8.82
	Male	2.687±8.62
Work experience	More than 5 years	2.290±8.60
	Less than 5 years	2.562±9.10
Treatment history of avulsion	With a history of treatment	2.174±8.70
	Without a history of treatment	2.584±8.83
The number of patients treated	1-3 patients	2.182±9.19
	3-5 patients	2.330±7.50
Participation in the training course	More than 5 patients	1.974±8.81
	Yes	2.105±8.26
	No	2.491±9.12

Based on these results, the knowledge level of 2 (2.3%) general dentists in Bandar Abbas was poor, 51 dentists (59.3%) was average and 33 dentists (38.4%) were good.

Frequency and answer percentage of dentists to the questions related to awareness are shown in Table 2. The Most dentists' level of knowledge was about in the field of the kind of drug used inside channel, different treatment between avulsed teeth with varying dry times out of the alveolar and the ability to implant the permanent teeth. The least amount of dentists' knowledge was about implanted critical time, splint time and the best environment to maintain the avulse teeth.

**Table 2. Frequency and percentage of dentists' answer to each question**

Questions	Frequency	Percent	
Can be avulsed permanent teeth be implanted in all cases?	Yes	16	18.6
	No	70	81.4
What is the avulsed dental implants critical time?	In about 20 minutes (Correct)	31	36.0
	20-60 minutes (false)	42	48.8
	1-2 hours (false)	13	15.2
	Hong balanced salt solution (HBSS) (right)	41	47.7
What is the best environment for avulsed teeth?	Milk (false)	13	15.1
	Saliva (false)	21	24.4
	Water (false)	1	1.20
	Saline solution (wrong)	10	11.6
	Gently wash off with water (false)	22	25.5
	Use disinfectants such as alcohol, sodium hypochlorite and ... (wrong)	1	1.20
	Gently wash with normal saline (Correct)	62	71.2
Treatment of infected avulse teeth ...	Infected teeth cannot be implanted (false)	1	1.20
	Hard (false)	44	51.2
What kind of splint you use to keep the avulsed teeth fixed?	Flexible (right)	34	39.5
	None (false)	0	0.0
	I am not sure	8	9.3
	two weeks (right)	38	44.2
Splinting good time....	four weeks (false)	30	34.9
	six weeks (false)	18	20.9
	Correct(True)	68	79.1
The best time to start root treatment of teeth with closed apex that was implanted before reaching the dentist's office is about 7-10 days after implant.	Wrong(False)	18	20.9
	Correct(True)	45	52.3
The time to start root canal therapy in the closed apex that the outside alveolar time was More than 60 minutes, is before implanting or 7-10 days after the implant.	Wrong(False)	41	47.7
	Correct(True)	45	52.3
The best time to start treating the root of the tooth with an open apex is when there is clinical and radiographic evidence of pulp necrosis	Wrong(False)	41	47.7
	Correct(True)	59	68.6
If the drying duration outside alveolar will be more than 60 minutes, before Implanting, the teeth should be immersed in 2% sodium fluoride solution for 20 minutes	Wrong (False)	27	31.4
	Correct(False)	19	22.1
	Wrong(True)	67	77.9
	ZOE(wrong)	7	8.10
What type of inside channel drug do you use during the root treatment?	Calcium hydroxide (right)	74	86.1
	antibiotics Paste (wrong)	5	5.80
	Open apex teeth (immature) (right)	51	59.3
Which one has a better prognosis?	Close apex (adult teeth) (false)	35	40.7
	Yes (false)	12	14.0
Are avulse teeth treatment before implanting are cases which, the duration of drying time Outside alveoli was short with cases that drying time outside alveoli was long alveoli the same?	No (correct)	74	86.0

## Conclusion:

Avulsion is all the teeth removals from Alveolar Bone (1). Knowing the proper treatment of the dental avulsion can reduce stress and anxiety of both dentists and patients. An appropriate treatment protocol will improve the short-term and long-term outcome after the injury (11). The aim of this study is to assess the knowledge of general dentists working in Bandar Abbas on the treatment of dental avulsion.

In the current study, findings suggest that the level of awareness in more than half of general dentists in Bandar Abbas (59.3%) was average. However, the level of awareness was a very poor in a number of dentists. In Australia, in the study of Yeng.T and colleagues, knowledge of dentists about dental traumatic injuries was evaluated at a moderate level (14). However, in a study that Abu Dawood and colleagues was conducted, the level of awareness was high for most of dentists and a few of them had limited information about dental trauma (15).

In this study, various factors such as gender, work experience, previous experience in the treatment of patients with avulsion, the number of treated patients and training courses after graduation, had no significant effect on the amount of dentists' knowledge about emergency management of avulsion. In the research of Hu LW and colleagues, the knowledge of dentists who had experience in treating patients with dentoalveolar trauma and had a history of participation in training courses of dental injuries after graduation, was higher. However, the gender, age and work experience of a dentist had no effect on the dentist's knowledge (16). In the study of J.Baginska et al (2013), the knowledge of Polish dentists who had less working experience was more. However, gender, treating experience of avulsion and training about dental trauma after graduation was not significantly associated with dental practitioners' knowledge (13).

The important issue that arises from our study results is that the scores of dentists participating in training courses, despite the lack of significant difference, were less than the scores of dentists who had not participated in these courses. This result indicates that the method of running these courses is not suitable. Therefore, they did not bring the

desired effect and it has more the total scores approach from the participants.

Replacement of tooth is often the choosing treatment of avulsion. However, it is not always possible to do it immediately. In our study, such as a study of S Upadhyay et al in 2012 in Katmandu, most dentists were aware of this issue (1). Milk tooth implanting extracted from Alveolar bone is not recommended because of the risk of damage the permanent successor tooth (17). In our study, 77.9% of dentists were aware of the possibility of damage to the permanent tooth buds in the placement of permanent teeth. However, in Upadhyay S and colleagues' study, only 31.4% were aware of this issue (1).

Dental implants in the shortest possible time are the most important factor that led to the desired outcome of treatment. Full restoration can only be ensured when the teeth will be implanted in the first 5 minutes. However, from a practical point of view, all attempts should be in order to implant the teeth in the first 15 to 20 minutes (8). In our study, 36% of dentists were stated the critical time of teeth implant about 20 minutes. However, in the investigation of Sivakumar Nuvvula and colleagues in 2011 in Nellore, only 7.38% were aware of the critical time of teeth implant (11).

Drying time of the outside alveoli and the storage environment to deliver teeth are critical factors for long-term success (10). The best storage environment is HBSS. HBSS can sustain the life of PDL cells for several hours with the success level of 90% and it is the only environment that can replace the missing metabolites of the PDL cells (18, 19). In our study, 47.7% of dentists knew HBSS as the most appropriate environment. In the study of S Upadhyay and his colleagues, more dentists (61.8%) chose this solution (1).

For replacement, if the tooth is dirty, it can be cleaned with normal saline (7). In our study, like the study of S Upadhyay and his colleagues, the majority of dentists were aware of this issue (1).

The teeth must be put in the correct position to provide patient's comfort and improved the function. The tooth must be splinted. Splint technique should allow the physiological movement of the teeth over the restorations (7). So a flexible splint should be used (1,20,21). The percentage of dentists who chose a flexible splint in our study

(39.5%) was roughly the same as S Upadhyay et al. study (1). In the case of splint duration, the International Association of dental trauma (IADT) offers a 2 weeks that reduces the risk of ankylosis (22 and 23). According to our study, 44.2% of dentists were aware of the correct time splint. In the study of sphalenWe VPD and his colleagues, 36% of dentists chose 2 weeks (24).

Avulse dental treatment before implanting, in cases that the drying time of outside alveoli was short is not the same as cases that the drying time out of outside alveoli was long. In the closed apex tooth that is implanted before reaching the dentist's office, the root canal treatment begins 7 to 10 days after implanting the teeth (25). In our study, the majority of dentists (79.1%) knew about the root canal therapy time for implanted teeth that the percent was much higher than Baginska.J and his colleagues study (35.3%) (13). In cases that the implanting was delayed (over 60 minutes), the root canal treatment can be done both outside the mouth before implanting and 7 to 10 days after implanting (25). In a survey conducted by us, 52.3% of dentists knew about the correct time of the root canal treatment with closed in delayed implanting that was similar to the results of J.Baginska and colleagues (51.9%) (13). If the drying duration outside alveolar will be more than 60 minutes, root surface treatment with 2% sodium fluoride solution for 20 minutes is recommended (8). The connection of fluoride ions to Cementum layer will make the root surface resistance to the analysis (26). In our study, a greater number of dentists (68.6%) suggested the use of this solution in these cases more than the study of J.Baginska and colleagues (37.6%) (13).

The teeth with open apex (immature) due to contact potential of reperfusion, has a better prognosis than closed apex, and in the absence of radiographic and clinical evidence indicates pulp necrosis, root canal treatment should be avoided (25). In this study, 59.3% of dentists knew the prognosis of teeth with open apex better while in the study of S Upadhyay et al, only 11.8% of dentists knew about this issue (1).

Studies have shown that calcium hydroxide dough prevents the root inflammation erosion (1, 27). Calcium hydroxide as a root canal medicament is the first choice to limit bacteria in root canals that

the use of it is recommended for a month. In our study, most dentists (86.1%) offered the use of calcium hydroxide. In the research of S Upadhyay and colleagues, it was found that 68.6% of dentists used this drug (1).

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