

# Knowledge of Mothers with Different Education Levels about the Emergency Management of Avulsed Teeth

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## Abstract

**Purpose:** The present study was undertaken to evaluate and assess, through questionnaire, the knowledge of mothers with different education levels regarding the emergency management of avulsed permanent teeth.

**Background:** The replantation is the preferred treatment for avulsed tooth. The prognosis depends upon the handling of the periodontal ligament and speed of replantation. Mothers are commonly taking care of children and are around them when such injuries can occur. Their knowledge about emergency management of avulsed tooth is important; that can vary upon the level of education of mothers.

**Methods:** The 800 mothers were divided into two groups of 400 each depending upon two different educational levels- primary and higher/technical education. After obtaining the consent, they filled 10 item questionnaire containing both correct and wrong answers related to emergency management of avulsed teeth. Collected data was statistically analyzed.

**Results:** The results indicated highly significant difference in the knowledge of mothers of two groups regarding emergency management of avulsed teeth with better knowledge and awareness in mothers with higher/technical education.

**Conclusion:** Mothers with technical school education had better knowledge than mothers with primary school education. However, mothers of both the groups were severely lacking in the complete and accurate knowledge.

*Key Words: Dento-alveolar injuries, Avulsion injuries, Knowledge, Replantation, Transport media*

## Introduction

Dento-alveolar traumatic injuries are becoming the most important public health problem, surpassing caries and periodontal diseases. In children dental trauma may occur during various activities like running, playing, etc or even at home. This may result in loss of anterior primary or permanent tooth/teeth causing pain, distress, esthetic, functional, psychologic and mental health problems.

The teeth most commonly avulsed in both the primary and permanent dentition are the maxillary central and lateral incisors [1]. Usually a single tooth is involved but occasionally multiple avulsions may occur. The frequency of tooth avulsion because of dental trauma ranges from 0.5 to 16% of all the traumatic injuries in the permanent dentition and from 7 to 13% in the primary dentition [2-5].

Tooth avulsion is three times more frequent in boys than girls because of active participation of boys in sports and games. This commonly occurs between 7 to 9 years of age (eruption time of permanent anterior) because of the loosely structured periodontal ligament surrounding the erupting teeth and elasticity of alveolar bone as suggested by Andresen et al. [6].

The treatment of choice for the avulsed permanent teeth is immediate replantation [7,8]. Replantation of primary teeth is contraindicated because of the risk of damaging the permanent successor. The ultimate prognosis of traumatized teeth depends on prompt and appropriate initial treatment and care of the periodontal ligament of avulsed tooth so as to maintain its vitality which in turn depends on various factors such as extra-alveolar period, storage medium and contamination and protection of the periodontal ligament. Therefore, the knowledge about managing the avulsed tooth,

of the non-dental people, particularly parents, teachers and caregivers who usually are present at the site of accident plays the most important role in the overall prognosis of such cases. Studies have shown that the population at large has little knowledge concerning this subject. This also depends upon the level of education the mothers have received as education plays important role in every sphere of life. Therefore, the present study was undertaken to evaluate and assess, through questionnaire, the knowledge of mothers with different education levels primary school education and technical school education/graduates regarding the emergency management of avulsed permanent teeth.

## Materials and Methods

The study population consisted of mothers of children aged between 6 and 12 years from different schools of western regions of the Uttar Pradesh, India. The purpose and nature of the study were explained to the mothers in local language. Participation in the study was completely voluntary and strict confidentiality was maintained.

A 10-item questionnaire based upon Raphael and Gregory's study was prepared in both Hindi and English language for data collection regarding the knowledge about emergency management of avulsed tooth [9]. Mothers were randomly selected according to their educational levels and were categorized into two groups of 400 each. Group I consisted of mothers who had received only primary / elementary school education. Group II included mothers with technical school education / graduates. Each selected mother was given the prepared questionnaire. The mothers were asked to tick the most appropriate correct answer from the given list of options which included both correct and incorrect ones.

Completed questionnaires were collected from them on the same day. This was followed by distribution of leaflets containing information and guidelines for emergency management of avulsed tooth. The survey was completed in about 58 day's period. The responses obtained were tabulated and expressed as frequency distributions and calculated in percentages. Statistical analysis was done with SPSS; Chi-square test and p values were calculated. P values  $\leq 0.05$  were considered significant.

## Results

800 mothers with different educational levels were analyzed for their knowledge regarding the emergency management of avulsed permanent teeth. The tabulated data was analyzed statistically using Chi-square test and presented in *Table 1* and *Figures 1-10*.

40.5% of group I and 47.2% of group II mothers had previously experienced/heard/seen the avulsion injuries (*Table 1 and Figure 1*). A highly significant ( $<0.0001$ ) difference was observed among mothers of different education levels answering yes (22.7% mothers of group I and 47.5% mothers of group II) when possibility of replantation of an avulsed tooth was questioned (*Table 1 and Figure 2*).

Highly significant results were obtained regarding the importance of time for initiating the replantation by both groups with 40.5% of group I and 34.8% of group II, responded that tooth could be replanted within few hours. 6.1% and 8.8% of group I and 26.4% and 17.7% of group II would replant the tooth within 30 minutes and immediately after trauma, respectively (*Table 1 and Figure 3*). Only 5.3% of group I and 20.4% of group II mothers could attempt the replantation by themselves (*Table 1 and Figure 4*). A highly significant number of group II mothers 73.3%, compared to only 16.8% of group I mothers were aware of the dentistry services, and would contact the dentist for further treatment of avulsed tooth (*Table 1 and Figure 5*).

A highly significant difference was observed among two groups of mothers when questioned about holding and cleaning procedure of the avulsed tooth. 60.4% and 28.7% of group I and 46.6% and 26% of group II mothers have chosen either of the crown or root and root only for holding the tooth respectively (*Table 1 and Figure 6*). 58.9% of group I and 65.9% of group II mothers preferred water to clean the dirty avulsed tooth while 17.3% of group I and 23.2% of group II mothers would use brush to clean it (*Table 1 and Figure 7*).

When questioned about preferred transport media for

**Table 1.** Comparison of mother's responses for emergency management of avulsed permanent teeth according to their educational levels.

Questions	Responses	Group I (%)	Group II (%)	Chi- Square Test (X)	P Value
Previous experience	Yes	40.5%	47.2%	9.12	< 0.005
	No	59.5%	52.8%		
Possibility of replanting	Yes	22.7%	47.5%	135	< 0.0001
	No	77.3%	52.5%		
Importance of time for replantation	Immediately	8.8%	17.7%	254	< 0.0001
	Within 30 min.	6.1%	26.4%		
	Within hours	40.5%	34.8%		
	Within few days	28.4%	10.6%		
	Don't know	16.2%	10.5%		
Attempting replantation	Themselves	5.3%	20.4%	102	< 0.0001
	By professionals only	94.7%	79.6%		
First contact person	Dentist	16.8%	73.3%	759	< 0.0001
	Doctor	38.5%	3.2%		
	Hospital	32.4%	22.1%		
	Seeking no professional help	12.3%	1.4%		
Holding the avulsed tooth	By crown only	10.9%	27.4%	90.2	< 0.0001
	By root only	28.7%	26%		
	By any crown/root	60.4%	46.6%		
Cleaning procedure	Brush	17.3%	23.2%	70.3	< 0.0001
	Tap Water	58.9%	65.9%		
	Salt water	2.2%	0.8%		
	Soap	8.8%	2.2%		
	Do nothing	12.8%	7.9%		
Preferred Transport media	Water	20.2%	29.2%	31.4	< 0.0001
	Milk	1.4%	3.0%		
	Child's mouth	0.3%	0.5%		
	Paper/gauze/Napkin	54.5%	48.3%		
	Cotton	23.6%	19%		
Source of information/advice	Dentist	0.6%	10.4%	338	< 0.0001
	Physician	0.1%	2%		
	Media	0.8%	2.4%		
	Friends	4%	24.8%		
	No information/advice	94.5%	60.4%		
Interest in further and complete knowledge	Yes	79.4%	93.8%	89.3	< 0.0001
	No	20.6%	6.2%		

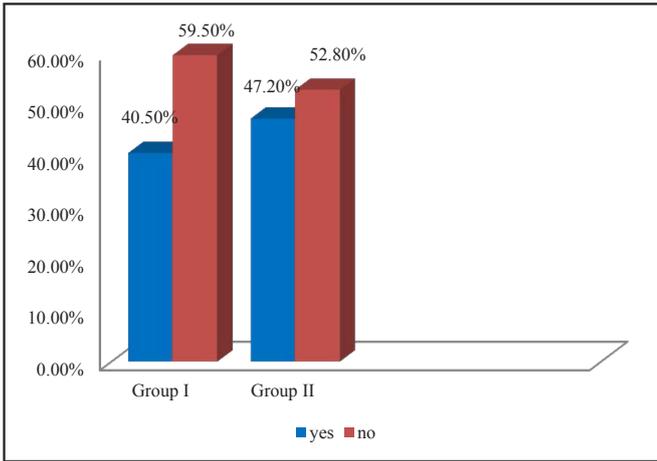


Figure 1. Previous experience.

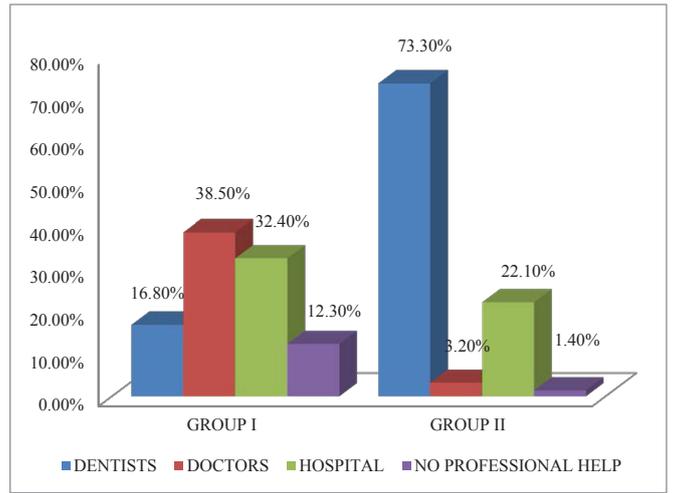


Figure 5. First person to contact.

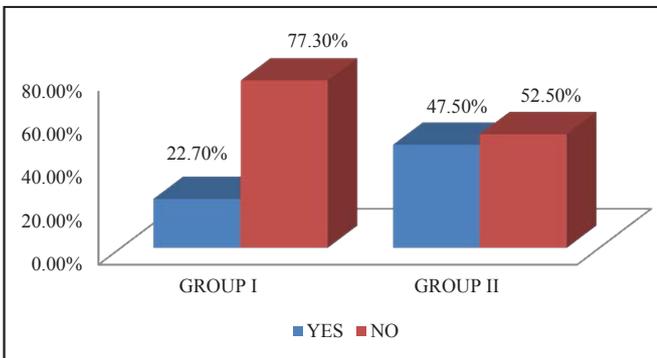


Figure 2. Possibility of saving the tooth.

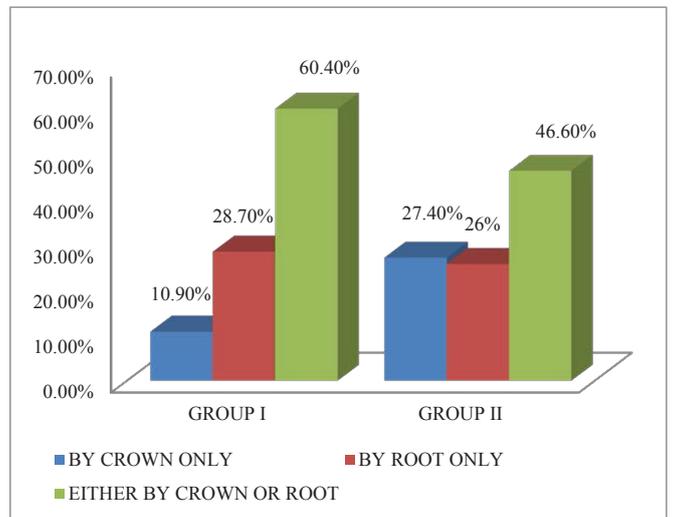


Figure 6. Holding the avulsed tooth.

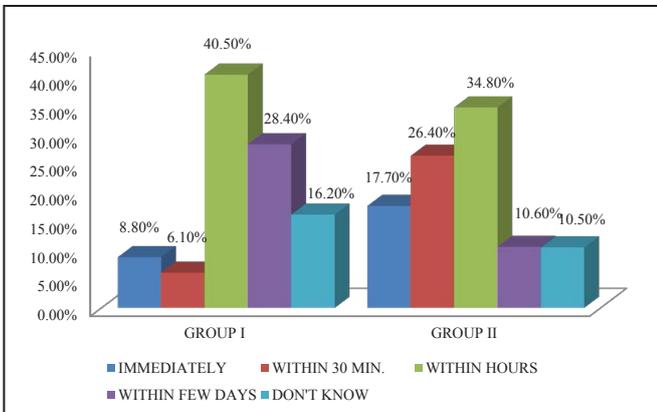


Figure 3. Urgency of replantation.

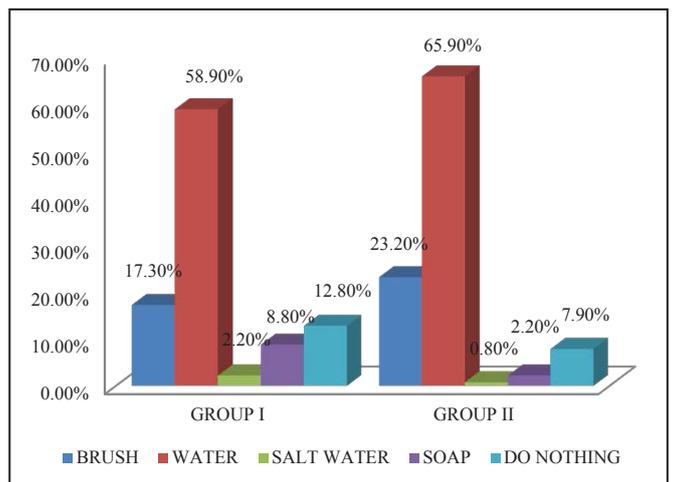


Figure 7. Cleaning procedure.

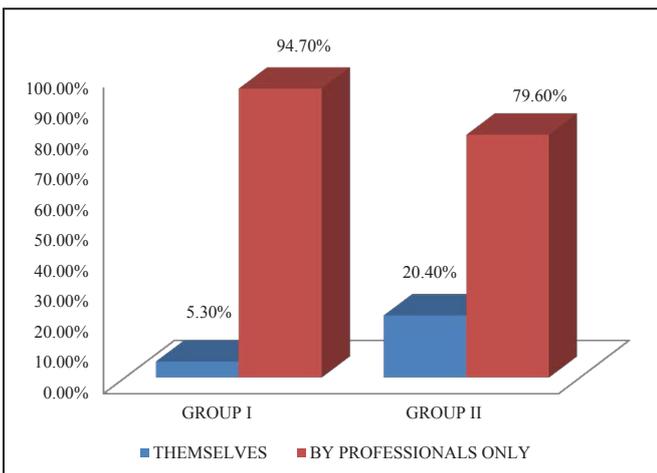


Figure 4. Attempting replantation.

transportation of avulsed tooth only 1.4% and 0.3% of group I and 3% and 0.5% of group II mothers choose milk and child's mouth for transportation respectively while significant number of mothers, 54.5% of group I and 48.3% of group II, preferred paper, gauze or napkin. 23.6% and 19% of group I and II mothers respectively, opted cotton for transportation (Table 1 and Figure 8). Again the result between two groups of mothers was highly significant.

Regarding the source of information for the management

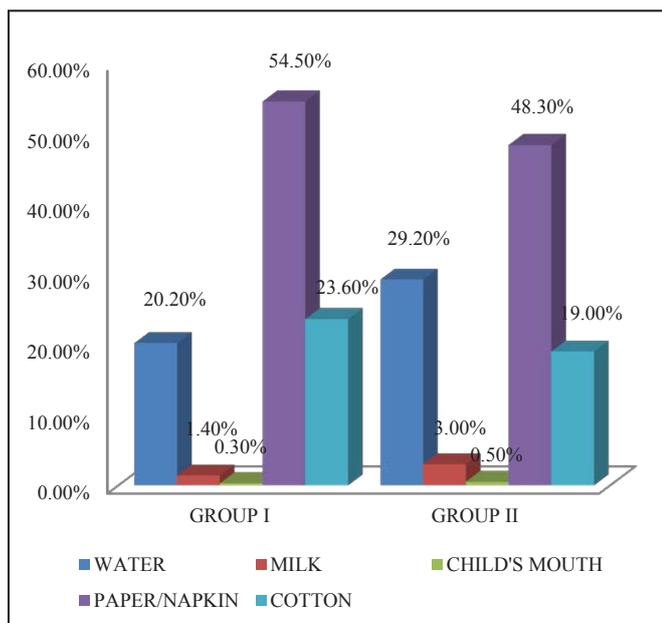


Figure 8. Transport media.

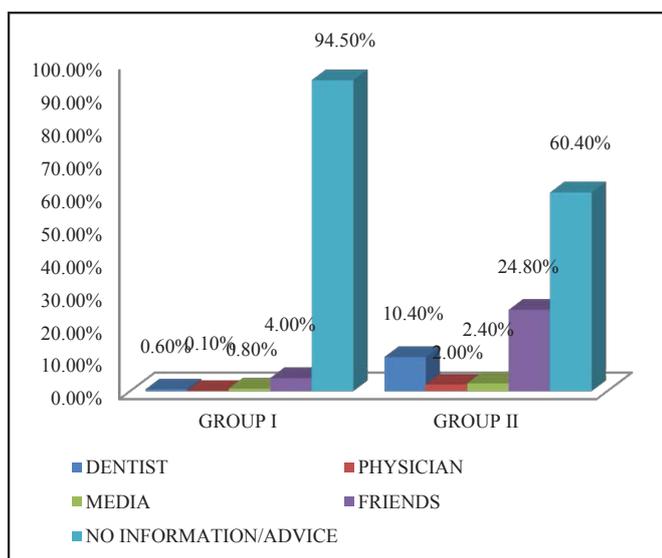


Figure 9. Source of information/advice.

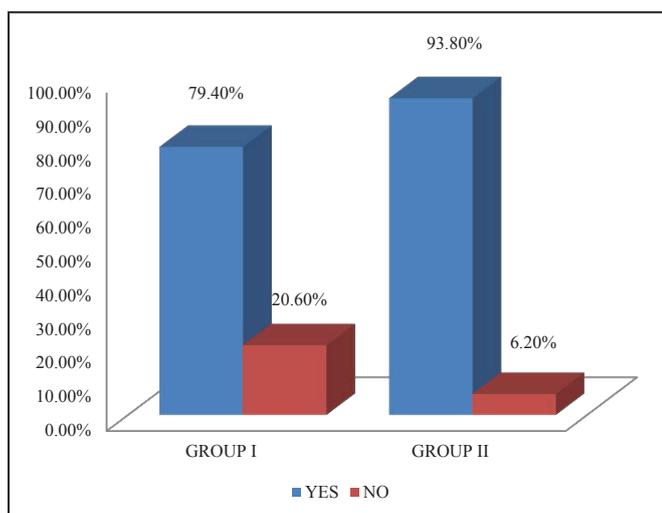


Figure 10. Interest in improving knowledge.

of avulsed tooth major number- 94.5% of group I and 60.4% of group II mothers have never received any information or advice from dentist, physician, media or friends. 10.4% and 24.8% of group II mothers have received information from

dentist and friends respectively (Table 1 and Figure 9).

93.8% of group II mothers and 79.4% of group I mothers showed interest in knowing about the emergency management of avulsed tooth (Table 1 and Figure 10). The highly significant results were obtained for all the 10 questions between two groups of mothers with different education levels.

### Discussion

The carefully designed questionnaires are good tools to evaluate and analyze the knowledge of mothers about avulsion and its emergency management. We used a well-designed questionnaire by Raphael and Gregory [9] translated into local language, both Hindi and English that incorporates all the possible options both correct and incorrect ones that could be used by our study population for the emergency management of the avulsed tooth.

The previous experience of mothers with avulsion injuries found in the study was comparable to other studies [10]. The mothers reported these injuries either in their own children, or other children in their community or heard about them from others. With high percentage of previous experience, a good knowledge of emergency management of avulsed tooth is expected from mothers. But the results revealed that the proper management was not done due to lack of precise knowledge that probably resulted in loss of avulsed tooth; which could be saved in the light of proper emergency management methods.

One fourth of the primary school educated mothers and almost half of the technical school graduated mothers were aware of the possibility of the replantation of the avulsed tooth. The highly significant difference between two groups of mothers indicates that with higher education the mothers become more aware and confident about replantation of avulsed tooth. But very few mothers from both the groups showed desirability of replanting the avulsed tooth by themselves. This could be due to the lack of knowledge about the exact procedure of replantation, fear of hurting the child and causing more pain, desirability of stopping the bleeding from mouth and less consideration of the importance of dental health by Indian population. This necessitates the extreme requirement of educational programmes on large scale by the dental community for all groups of mothers regarding the immediate emergency steps to be taken in case their children met some dental trauma.

Compared to the technical school educated / graduated mothers most of the primary school educated mothers were not aware of the requirement of replanting the avulsed tooth immediately or within half an hour. This could be due to the difference in their education levels, resulting in group II mothers insisting more on the time factor which is a very important factor for successful outcome in case of any trauma. The time of replantation is the proven most important factor for successful outcome of avulsion injuries. This is in accordance with the studies of Abdellatif et al. [11]. This differs from studies of Raphael and Gregory, Hamilton, Hill and Mackie who observed 92% and 38.6% of respondents opting immediate replantation [12].

When asked whether they would contact any health service or not after such injury, only 1.4% of technical school graduated mothers responded no compared to 12.3%

of group I mothers. Moreover, major percentage (73.3%) of group II mothers was aware of the dental services in their community and the need for contacting the dentist for further management of avulsed tooth. Very few (16.8%) of primary school educated mothers would contact the dentist, rather more were contacting the physicians. This was because of unawareness of the dental specialists, who are trained to give a more accurate and effective treatment compared to physicians [13,14]. Hashim also observed that mothers of United Arab Emirates were unaware of the availability of emergency services [15]. Also, there is a lack of dental specialty services for every economic and educational sections of population including the rural areas of Western India where the mothers usually are less educated. Further a good number of mothers were seeking hospital care, therefore, all the government and private hospitals should be equipped with best and advanced dental care facilities and can be used as a platform for spreading the awareness and knowledge for avulsion injuries and their management.

One tenth and almost one fourth of group I and group II mothers respectively, preferred holding the avulsed tooth by crown only. Rest large number of mothers either had no idea, whether to hold it with crown or root, or with root only. This indicated that more mothers with only primary school education would be damaging the periodontal ligament of avulsed tooth, thereby, decreasing the chances of success of replantation.

A higher number of group I and group II mothers wanted to clean the tooth under tap water before replantation which is an ideal method but still a considerable number of mothers preferred use of brush, salt water and soap for the same. This showed that mothers actually did not have the knowledge of cleaning procedure and its requirement and also importance of saving the vitality of periodontal ligament at the same time.

Almost half of the mothers (54.5% and 48.3%) of both the groups selected dry storage media like paper and napkin. Further 23.6% and 19% of mothers selected cotton which again was a dry media. This could be due to the easy availability of these media. This was followed by selection of tap water for storage or transport, which again is not preferred because of low osmolality causing periodontal ligament cell rupture, thereby causing loss of replanted tooth over a period of time.

Very less number of mothers had chosen milk, a second most ideal media for storage of avulsed tooth [16]. This was in accordance with many studies where very less number of study samples selected milk as transport media, like that of Raphael and Gregory Sashikiran et al. [9,10]. Similarly in other studies on school teachers and dental therapists knowledge of proper transport media was found very poor [17,18]. However, Abdellatif et al. observed that milk as a transport media was chosen by higher (24.3% and 15.6%) number of candidates in both groups. Still the mothers of technical school education / graduates showed more awareness and knowledge about above.

Almost all (94.5%) except for few (5.5%) of primary school educated mothers and 60.4% of technical school educated mothers did not received any information pertaining to emergency management of avulsed tooth. Very few mothers were getting the information from dentists, indicating the poor approach and availability of dental services to them or it could be vice versa. The mothers of group II were more aware about the dental services. Fewer were receiving information from physicians and media. One quarter (24.8%) of group II and 4% of group I got information from friends. Therefore the use of means like leaflets, posters, advertisements and campaigns are needed to be enhanced to spread the knowledge of emergency measures for avulsed tooth at community levels.

Vast numbers of mothers, though comparatively less (79.4%) of group I mothers were interested in gaining accurate and precise knowledge about first aid measures and management of avulsed tooth. This indicated the role and importance of education; hence more confidence and enthusiasm among technical school graduated mothers. Shashikiran et al. also suggested that educated parents were more interested in learning emergency management of avulsed tooth [10].

Many reports showed better prognosis of avulsed tooth if properly managed, time and speed of replantation were taken care off. Within the limitations of the study, we found that mothers of both the educational groups were very deficient in the knowledge of replantation, handling, cleaning, saving, transporting the avulsed tooth and consulting the dentist. This was in accordance with many studies in other parts of world where mothers are lacking in adequate knowledge of prevention and management of avulsed tooth [10,11,15,19]. This was due to that they never had received any information in their schools, colleges and by health professionals particularly dentists. However, technical school graduated mothers still showed better knowledge with regard to possibility of replantation, time factor and were aware of specialized dental services, but large number of group II mothers were also lacking in the knowledge of the desired procedure and many barriers are still required to be crossed. Studies in others countries were indicating the lack of knowledge among parents their also and education do play some role in improving it [11,12].

## Conclusion

Most of the mothers were lacking in the knowledge of emergency management of avulsed tooth; though mothers with higher education showed significantly better knowledge, attitude and awareness and desirability in improving their knowledge. The need for educational programmes with the help of dentists, parents, caregivers, teachers and physicians through leaflets, posters, presentations and media campaigns is suggested. Further studies are needed to evaluate the knowledge of mothers, parents, caregivers, teachers and physicians related to emergency management of avulsed tooth on a large scale with a broader perspective.

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