Knowledge on Emergency Management of Avulsed Tooth among Dental Students

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Abstract

Tooth avulsion is the most common dental trauma.The prevailing society considers the undergraduate preclinical students as dentists and so it becomes essential to possess knowledge and to be aware of the first aid and emergency management of dental trauma. The aim of the study is to assess and compare the knowledge of emergency management of tooth avulsion among dental students of different years. A descriptive cross sectional study with 160 students as sample size was conducted. The participants were grouped into three as Group A (Preclinical BDS students), Group B (Clinical BDS students) and Group C (Interns). A self structured questionnaire was distributed among the population and the data were collected and analysed with SPSS software. Comparison between the groups was done by Chi square test with the significance $p<0.05$. The results were mostly statistically significant. The preclinical students showed active participation and had quite knowledge (63.7%) on emergency management of tooth avulsion. Knowledge and awareness on emergency management of tooth avulsion was average among preclinical students, whereas good in clinical students and better among interns.

Keywords: *Dental trauma, tooth avulsion, emergency management, Dental students, awareness and knowledge.*

Introduction

Tooth avulsion is one of the critical forms of dental trauma. Tooth avulsion is the absolute displacement of a tooth from its socket due to accidental and non accidental injury [1] .These types of dental injuries occur chiefly between the ages 8 and 11 years when the child is exposed in a school environment and thus falling accidents leading to dental trauma is a natural happening [2]. The Injury of tooth avulsion when occurring on permanent dentition, it mainly involves the upper front teeth [3]. The growth of teeth is much influenced by genetics, race and ethnicity [4]. The clinical condition of such dental trauma is found to be that the socket is found to be empty and filled with coagulum and it can be extended to further complications involving pulp necrosis and periapical inflammation [5]. Being one of the serious dental trauma, emergency management becomes an essential criteria. The management of avulsed teeth depends on whether it is primary or permanent dentition. The management of avulsed teeth in terms of primary dentition, only clinical and radiographical following is necessary as far as the permanent successor is erupted and replant is not advisable[6]. In case of permanent dentition, the tooth is picked from the crown and cleaned under cold running water prior to repositioning and even the individual can bite on a handkerchief to clasp it to the socket. The management of tooth avulsion grants a paramount importance to the storage medium used. It should be a physiological media such as milk solution or saline and should not be water [7]. Also saliva is considered as the good storage medium beside milk and saline as it is the

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product of oral mucosa and salivary glands[8].This form of dental injury frequently found in individuals having active participation in sports [9].

In the prior studies, with a similar population of students from nine universities in Khartoum state, accommodated nearly 1575 participants. That study concluded that most of the second year students do not have sufficient knowledge on emergency management of avulsed teeth [10] . Another survey study on knowledge of emergency management of tooth avulsion with the population of 102 general dental practitioners in Kathmandu district, concluded that the observed population does not have sufficient knowledge on management of avulsed teeth[11] . In addition, a study undertaken with the population of 182 general dental practitioners attending the annual Malaysian Dental Association conference, reported that the knowledge of the population on managing avulsed teeth needs to be improved [12]. These studies have been limited within the factors that the response rate is low; the framed questionnaire was not circulated among the common category and also due to lack of guidelines.

General dental practitioners have the responsibility of diagnosing and treating dental trauma and thus they should be well educated and aware of emergency management [13]. The new and freshly undergraduate dental students are generally considered as dentists in the community and they might be called for any dental trauma emergency for which the students should process the knowledge of management. Thus all dental professionals including students must possess the knowledge of first aid in case of dental injuries [14–16]

This awareness benefits the patient with good prognosis and better treatment according to the legal ethics followed by dentists [17] . Better treatment also depends on empathy which is a healthcare provider-patient relationships[18]. The present study involves only undergraduate students which is exclusive and lacking in previous studies. Previously our team had conducted a similar survey [19] and now we are focusing on epidemiological surveys. The idea for this survey stemmed from the current interest in our community. The aim of the study is to assess the knowledge on emergency management of avulsed teeth among dental students.

MATERIALS AND METHODS:

The present study was conducted among dental students in 2020. This questionnaire based cross sectional study which was approved by the institutional review board which has undertaken many successful studies [20]. Number of participants took part in the survey was 160 which were distributed among three groups as group A consists of Pre clinical BDS students (1st and 2nd year), group B consists of clinical BDS students (3rd and 4th year) and group C comprises interns. The current study was undertaken with a convenient sampling method.

The questionnaire was self structured and modified from the previous similar study questionnaire[10–12] with demographic information and nine knowledge and awareness based close ended questions. The questionnaire validity checking was done by the faculty members of the institution. The questionnaire was circulated and data were collected using data collection software, Google forms. From the data obtained it was analysed and cleaned up to excel sheet. Then the data for each question is represented in the form of pie charts and bar charts.

Analysis of data was carried out by SPSS by IBM, statistical software. Descriptive statistics was done to summarise demographic data and chi square test to analyse the survey data. The p value less than 0.05 was considered as statistically significant and the confidence level is 95% .

Results and Discussion

The data was analysed and it was obtained that 45% of the population are male and 55% were female. 63.7% were pre clinical students, 20.6% were clinical students, 15.6% were interns. 83.13% were aware of dental trauma and 16.8% were unaware of it. When experience on avulsed teeth was questioned, 51.8% had experience on avulsed teeth and 48% had not experienced it. 68.13% of the observed population stated avulsion occurs mostly in primary dentition while 31.88% stated as permanent dentition. 56.25% were aware of emergency management whereas 43.75% were unaware. About 48.75% were unaware of proper medium of storage of avulsed teeth while 15.63% answered milk. 80.6% of the population considered time as an important factor while 61.8% were unaware of it. 59.38% of the considered

population lack knowledge on carrying out RCT in replanted avulsed permanent tooth. Similarly 57.5% of the respondents were unaware of commencement of RCT after replantation while 10.6% answered as 6 months after replantation. (Table 1)

Table 1: Table showing percentage of responses:

1. Are you aware of dental trauma and it's complications	• Yes	83.13%
	• No	16.87%
2. Do you have any experience of avulsed tooth	• Yes	51.88%
	• No	48.13%
3. Avulsion occurs mostly in	• Primary dentition	68.13%
	• Permanent dentition	31.88%
4. Are you aware of emergency management of tooth avulsion	• Yes	56.25%
	• No	43.75%
5. What is the proper medium for storage	• Milk solution	15.63%
	• Saline	4.38%
	• Hold the tooth in mouth itself/saline	6.88%
	• Any of the above	8.75%
	• Water	5%
	• Pack the tooth in ice	6.25%
	• Seal the tooth in plastic wrap	4.38%
	• Don't know	48.75%
6. If an avulsed tooth is covered with dirt and you would like to replant it, how would you prepare the tooth?	• Wash tooth in water	21.25%
	• Scrub the tooth gently with a toothbrush	12.50%
	• Rinse tooth in saline	10%
	• Put tooth straight back into socket, with no Pre treatment	6.88%
	• Don't know	49.38%

Cont.. **Table 1: Table showing percentage of responses:**

7. Do you think that time is an important factor for management of avulsed tooth	• Yes	30.63%
	• No	7.5%
	• Don't know	61.88%
8. Would you carry out RCT (Root canal treatment) after replantation of the avulsed permanent tooth?	• Yes, if tooth was immature with an open apex	13.75%
	• Yes, if tooth was fully formed with closed apex	6.25%
	• Yes, only after the patient develops signs and symptoms	10%
	• No	10.63%
	• Don't know	59.38%
9. If you were to carry out RCT on replanted tooth, when would you start the treatment?	• Immediately after replanting the tooth	18.75%
	• 7-10 days after replantation and before splint removal	13.13%
	• 6 months after replantation	10.83%
	• Don't know	57.50

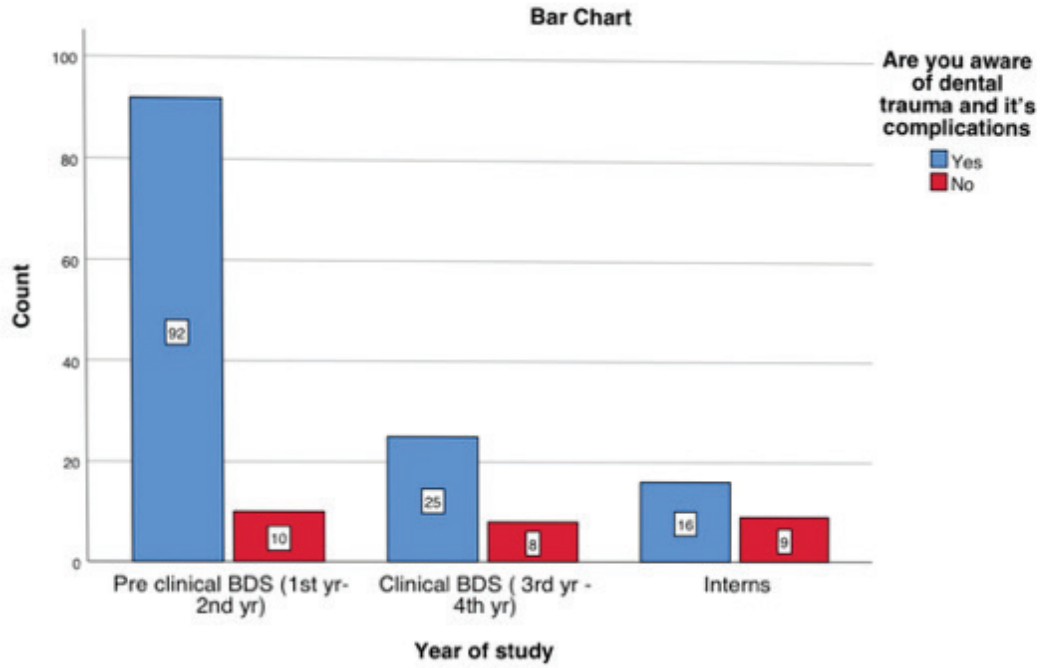

Figure 1: Bar graph showing association between different years of study and awareness on dental trauma and its complication. X axis represents different years of study and the Y axis represents the number of students. Blue denotes yes and red denotes no. Pre clinical BDS (1st year- 2nd year) students (92) show more awareness on dental trauma than students of other year and was statistically significant. (Chi square test showing, p= 0.03 - Indicating statistically significant).

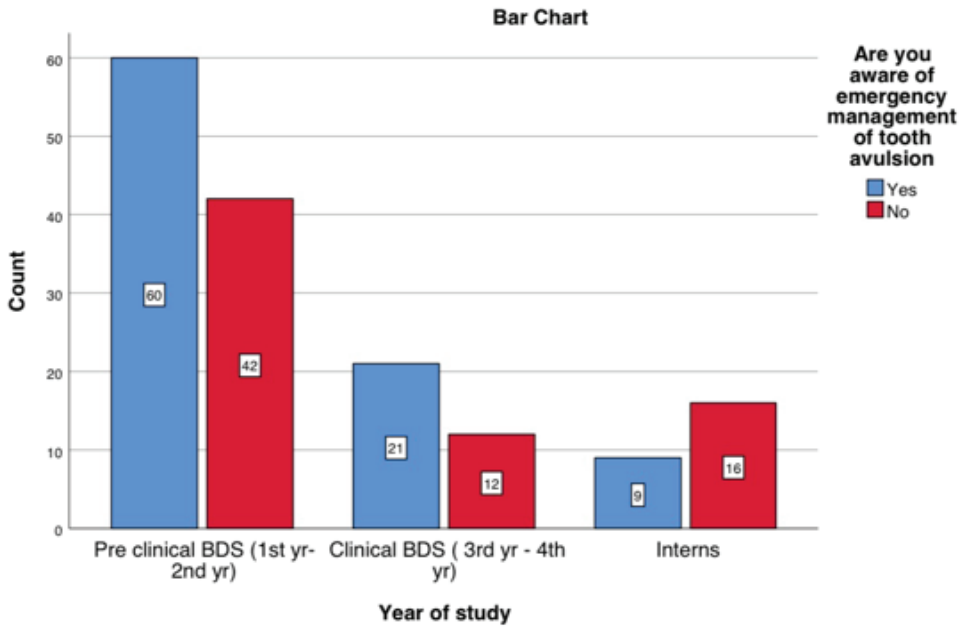

Figure 2: Bar graph showing association between different years of study and awareness on emergency management of tooth avulsion.X axis represents different years of study and the Y axis represents the number of students. Blue denotes yes and red denotes no. Pre clinical BDS (1st year- 2nd year) students (60) show more awareness on emergency management but it was statistically not significant. (Chi square test showing,p= 0.07- Indicating statistically not significant).

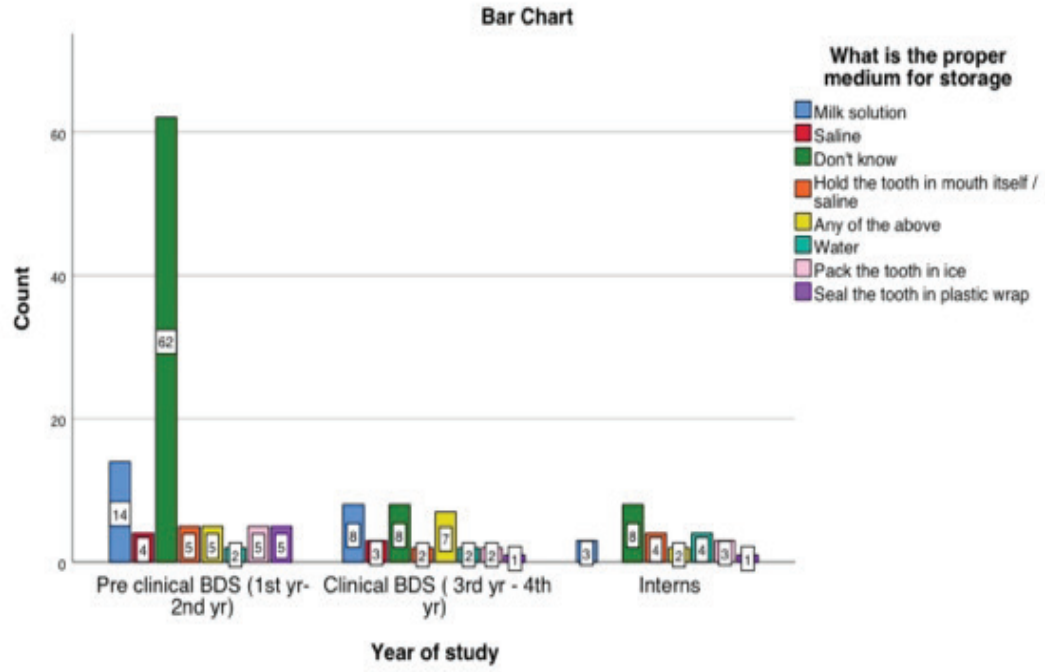

Figure 3: Bar graph showing association between different years of study and knowledge on proper storage medium of avulsed teeth.X axis represents different years of study and the Y axis represents the number of students. Blue denotes milk solution, red denotes saline, dark green denotes don't know, orange denotes hold the teeth in mouth itself/saline, yellow denotes any of the above, light green denotes water, pink denotes pack the tooth in ice and violet denotes seal the tooth in plastic wrap. Pre clinical BDS (1st year- 2nd year) students (62) showed more response as don't know on the proper storage medium and was statistically significant. (Chi square test showing,p=0.002- Indicating statistically significant).

Figure 4: Bar graph showing association between different years of study and methods of cleaning an avulsed teeth before replanting. X axis represents different years of study and the Y axis represents the number of students. Blue denotes washing teeth in water, red denotes scrub the teeth gently with toothbrush, green denotes don't know, orange denotes rinse teeth in saline, yellow denotes put the teeth into the socket without any pretreatment. Pre clinical BDS (1st year- 2nd year) students (62) showed more response on don't know option for different methods of cleaning an avulsed teeth before replanting and was statistically significant. (Chi square test showing, p= 0.002 - Indicating statistically significant).

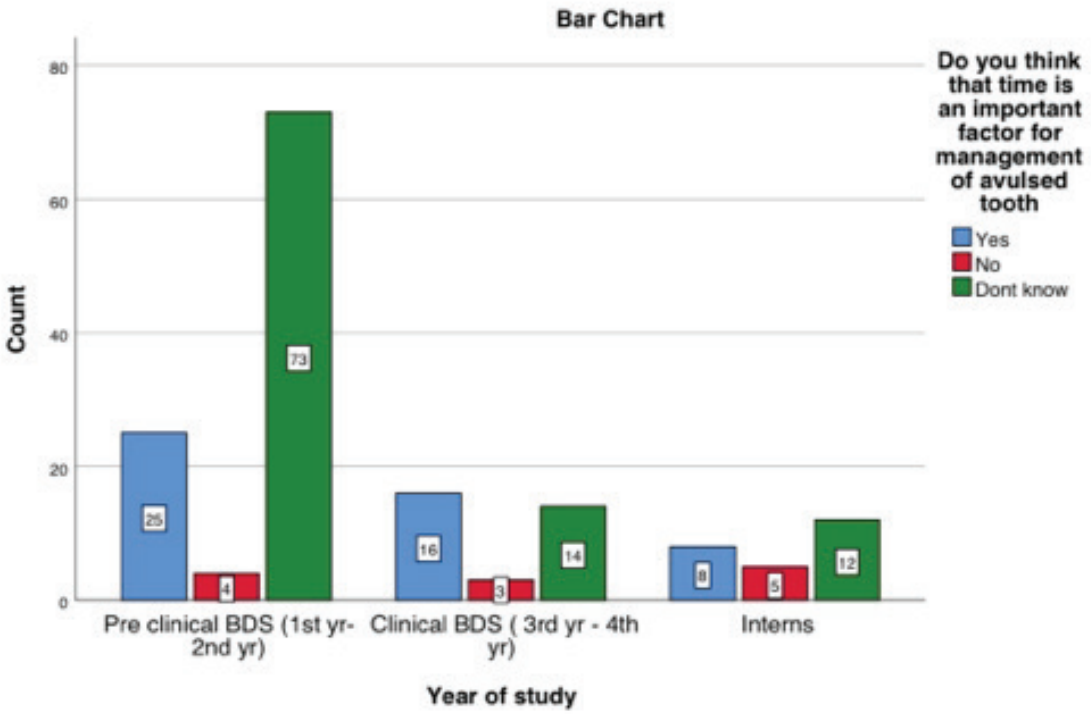

Figure 5: Bar graph showing association between different years of study and knowledge on time is an important factor for management of tooth avulsion.X axis represents different years of study and the Y axis represents the number of students. Blue denotes yes and red denotes no and green represents don't know. Pre clinical BDS (1st year- 2nd year) students (73) showed more response to the don't know option for time being an important factor in emergency management and was statistically significant. (Chi square test showing,p= 0.003- Indicating statistically significant).

In our study, the participants were questioned whether they were aware of any dental trauma and its complications 83.13% of the population gave a positive answer of yes. 92 out of 102 pre clinical students, 25 out of 33 clinical students and 16 out of 25 interns gave positive response [Fig.1]. A comparison between different years of study showed (p)= 0.03; p<0.05 and thus it is statistically significant. There exists an opposite study by Fujita.Y et.al., in which the interns gave a more positive response of 91.2% [1] . This difference is because the pre clinical students belonging to our population have awareness on dental trauma which is necessary.

Tooth avulsion was experienced by 51.88% of our population in which 55 out of 102 pre clinical students, 18 out of 33 clinical students and 10 out of 25 interns established positive response. The comparison between years of study about their experience of tooth avulsion showed (p)=0.43;p <0.05 which is statistically significant. In the similar study by Fernandes A.V et.al., with a similar population, the response showed that 81.4% of them had not witnessed tooth avulsion [21]. This opposite finding is due to the exposure of students to clinics which creates more awareness.

The participants were enquired about the type of dentition in which avulsion is mostly seen, 68.1% of population gave a positive response of primary dentition. 82 of 102 pre clinical students, 19 of 33 clinical students and 8 of 25 interns responded positively. This when compared between years of study showed (p)=0; p<0.05 and thus it is statistically significant. An opposite finding by Fernandes A.V et.al., in which 60.4% of the population stated response as permanent dentition [21]. This contrast result is due to the lack of knowledge on avulsion in the observed

population the opposite study.

The awareness on emergency management of avulsion were questioned for which 56.25% responded positively. 60 out of 102 pre clinical students, 21 out of 33 clinical students and 9 out of 25 interns gave yes as an answer [Fig.2]. Comparison between different years of study showed (p)=0.07; p> 0.05 and thus statistically insignificant. In a previous study by Azmi M A et.al., 89.8% of interns were aware and not preclinical students [10]. This difference between the studies adds an evidence that the preclinical students of our population possess quite knowledge on avulsion.

The population was investigated about the proper medium of storage and only 16.5% of our population gave positive responses as milk. 14 out of 102 preclinical students, 8 out of 33 clinical students and 3 out of 25 interns reacted positively as milk which is an accurate storage medium [Fig.3]. The comparison between years of study showed (p)= 0.002; p<0.05 which is statistically significant. There exists opposite findings by Azmi MA et.al., in which 64.3% gave positive response and in another study by Fujita Y et.al., in which 57.4% responded positively. These positive responses were given by interns [1,10]. This again indicates that preclinical students of our population were aware of important guidelines.

When the population were questioned about the cleaning of dirt and tooth preparation, 21.25% of them responded that it should be cleaned under water which is a positive response.19 out of 102 preclinical students,11 out of 33 clinical students and 4 out of 25 interns answered positively [Fig.4]. Comparison between years of study showed (p)= 0.002; p<0.05 which is statistically significant. In the study by Fujita Y et.al., 64.7% and in another study by Fernandes AV et.al., 67.8% of similar populations have the same positive response [1,21]. This shows that preclinical students of our population learnt the necessary guidelines for a tooth to be replanted.

The participants were asked about their awareness on time as a factor for treatment of avulsion and 30.6% of responses were positive as yes in which 25 out of 102 preclinical students, 16 out of 33 clinical students and 8 of 25 interns gave an affirmative answer [Fig.5]. Comparison between the year of study showed (p)= 0.003; p<0.05 which is statistically significant. A supportive study by Fernandes A V et.al., establishes 88.5% positive response. Yet another supportive study by Azmi M A et.al., in which 38.4% of preclinical students showed positive response [10,21] . Thus the population was aware of one of the necessary guidelines for replantation.

The participants were enquired about the possibility of carrying out RCT after replantation in an avulsed tooth. Only 10% of respondents gave an affirmative response that RCT is advisable only if there are any signs and symptoms developed. 8 of 102 preclinical students, 5 of 33 clinical students and 3 of 25 interns stated positive responses. This result is supported by the study by Dalia Abdullah et.al., in which 53% of the population were aware that RCT can be done only after the development of signs and symptoms [12]. Comparison between the year of study showed (p)=0.05; p<0.05 which is statistically significant.

The participants were asked about the significant period to commence RCT on a replanted tooth for which 13.3% of respondents answered as 6 months after replantation and is a positive response. 8 of 102 preclinical students, 5 of 33 clinical students and 4 of 25 interns reacted positively.Comparison between years of study showed (p)= 0.06; p>0.05:and thus statistically significant. The similar response of 54.5% in a similar population was observed in the previous study by Dalia Abdullah et.al., [12].

Limitation And Future Scope:

Limitations of the current study include less sample size, homogeneous population i.e., consideration of only dental students and restriction of sample to specific local regions. Everyone cares about their systemic health more than oral health, so it is our duty to make them aware of dental injuries also [22,23]. The knowledge and awareness of emergency management of any dental trauma should be conducted as classes or any activities to improve the prognosis and better treatment. During treatment, it is better to carry out evidence based dentistry like photographing the before and after treatment conditions,etc., which would also enhance the awareness of patients and knowledge of the dentists [24,25] . Also dentists should be careful about molar incisor hypomineralisation, ethical issues and other factors during replant [26,27]. However, this treatment of dental

trauma involves RCT and replantation and not any complications like biopsy implant [28]. But the curing process involves the nutrition they intake from dietary sources [29]. Since a tooth is a weapon secretly besides masticatory work, it becomes of paramount importance to protect it [30] .

Conclusion

Knowledge and awareness on emergency management of tooth avulsion was average among preclinical students, whereas good in clinical students and better among interns. Being a dental professional, knowledge of first-aid and emergency management of dental injuries is an essential and thus awareness programs should be conducted.

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Ethical Clearance- Not required

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