Professional Knowledge Of Emergency Doctors On The Management Of Dental Injuries In Kanpur City, India–A Questionnaire Survey.

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Abstract: Background: Emergency doctors are often the first to assess dental and dento-alveolar injuries. Early diagnosis and appropriate management is essential for a good long- term prognosis of restored dental aesthetics and function. Objective: To evaluate knowledge, awareness, management of dental injuries and appropriate onward referral among emergency doctors in Kanpur city. Methods: A cross sectional descriptive study using a self administered structured questionnaire was conducted in 18 hospitals of Kanpur city. The survey was conducted in emergency hospitals where there were at least 5 emergency doctors posted. A total of 87 emergency doctors selected through convenient sampling technique responded to the questionnaire that consisted of 14 closed ended questions. Descriptive statistics were used for statistical analysis. Results: Eighty six percent of emergency doctors were aware of the significance of dental injuries. Majority of the respondents (70.1%) knew about the most accurate and sensitive method of identifying dental injuries. About half of the doctors were aware of the management of dental injuries for adult teeth while only 32.2% of the study population knew the correct definition of avulsion of tooth. The correct medium for preserving, holding and reimplanting an avulsed tooth was observed among 9.2%, 55.2% and 33.2% of the respondents respectively. Conclusion: The result shows that the emergency doctors have superficial knowledge which needs to be enhanced for better management of dental injuries. Appropriate learning and training is essential for increasing the knowledge and awareness among emergency doctors regarding dental injuries. [Abhishek A NJIRM 2017; 8(1): 71-76]

Key Words: Dental injuries, emergency doctors, management.

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Introduction: Dental trauma is the most common of all facial injuries and avulsion accounts for 1-16% of all dental injuries[1]. Most dental undergraduates spend a considerable period of time studying medicine and surgery, but most medical students receive no formal dental education. Dental problems are commonly encountered in the accident and emergency (A&E) department and in general medical practice. Many doctors in these specialties are exposed to patients whose primary problem is of dental origin[2].

The nature and degree of dental injuries range from dento-alveolar fractures, concussion, luxation injuries and complete avulsion. Dental-alveolar fractures may involve the crown or root with various combinations of involvement of enamel, dentine, pulp and cementum. Luxation injuries include subluxation, lateral luxation, intrusion and extrusion[3].

One of the most severe dento-alveolar injuries is avulsion where the tooth or teeth are completely knocked out of the mouth. The injury accounts for between 0.5 to 3% of dento-alveolar trauma to permanent teeth[4]. The peak age for avulsion is between 7 to 9 years and mainly involves maxillary anterior teeth. Tooth avulsion mainly occurs during sports, physical violence, road traffic accidents, fall and other physical impacts. Many patients with avulsed tooth visit medical doctors due to lack of awareness or unavailability of a dentist[5].

The ultimate prognosis of an avulsed tooth occurring in a child may depend on the parents and emergency doctor's knowledge of appropriate emergency measures[6]. Recent studies have shown that only 5.5% of the medical professionals know about management of avulsed tooth and none knew that the patients' mouth was the best transport medium. 90% of them accepted that they had no knowledge on dental trauma management[7]. According to one study, 83% emergency doctors in case of fractured teeth and 71% doctors in case of loose teeth would advise the patient to contact their dental practitioner. For avulsed tooth, 78% doctors suggested they would re-implant the tooth and follow this with a referral to an appropriate body[3].

Another study concluded that only 56.6% of the medical practitioners actually have an idea what an avulsed tooth is. Out of this only 41.3% of the doctors

know the meaning and the management of an avulsed tooth and remaining 58.6% of the doctors are not aware of its management. As to preserve an avulsed tooth 58.6% of them choose saline, 8.6% choose saliva and 4.3% choose milk. High number of medical practitioners did not know the ideal time for reimplantation of an avulsed tooth[8].

Most of the emergency doctors cannot manage dental injury cases properly. So to manage such cases they refer the patient to qualified dentists. But an avulsed tooth has a specified time to be replaced into the oral cavity. Due to the time taken by the patient to reach to the dentist because the emergency doctors could not manage it properly, the tooth cannot be saved.
Therefore, if appropriate interventions are planned for increasing knowledge of emergency doctors to manage dental injuries, many avulsed teeth can be saved timely and dental first aid be provided first hand. Thereby, as a first step, this study was undertaken to assess the knowledge of emergency doctors regarding management of dental injuries in Kanpur city.

This could serve as a baseline data required to plan appropriate measures for educating emergency doctors in this regard.

Methods: Study design and Sample selection: Professional Knowledge, Attitude and Awareness based cross sectional descriptive study was conducted in September 2014 among emergency doctors in Kanpur city. A total of 87 emergency doctors selected through convenient sampling technique responded to the questionnaire that consisted of 14 closed ended questions.

Ethical approval: The study protocol was reviewed and approved by the Institutional Review Board of Rama Dental College, Hospital and Research Centre, Kanpur. Permission to approach the emergency doctors was obtained from the concerned authority in the hospital and written consent was obtained from emergency doctors before scheduling the examinations.

Pre-testing of questionnaire: Self administered questionnaires were distributed amongst ten emergency doctors twice on successive days who were interviewed to gain feedback on the overall acceptability. As no modifications were needed, these questions were included in the final analysis.

Methodology: The structured questionnaire written in English validated through a pilot survey included 14 close ended questions based on the knowledge, attitude and awareness about the dental injuries, storage and treatment of an avulsed tooth, dental injuries in children along with their biographic data. Responding involved choosing the most appropriate response from each alternative. Confidentiality and anonymity of the respondents was assured.

Validity of the questionnaire: The content validity was assessed by a panel of 4 experts of dental educators. The purpose was to depict those items with a high degree of agreement among experts. Aiken's V was used to quantify the concordance between experts for each item. Aiken's was calculated using the formula:
Aiken's V = S/[n* (c-1))]
Where s= sum of the rating by an expert minus lowest possible validity rating by all the expert
n= number of expert
c= total number of responses on the likert scale
The Aiken's values thus obtained were 0.88
The panel of expert recommended modifying the wording of some question and addition of option in the question.
In order to assess internal validity and reability of question, similar question were grouped and Cranach's alpha was calculated was calculated.
The correlation between the item ranged from 0.73 to 0.80.

Inclusion Criteria: Doctors who were working at the emergency department of private/government hospitals were included.

Exclusion Criteria: Doctors not handling emergency cases were not included in the survey.

Statistical analysis: The data was analyzed using the Statistical Package for Social Sciences. Version 15.0 software. Descriptive statistics that included computation of percentages were analyzed using chi-square test.
Results: Out of 100 emergency doctors approached, only 87 (87%) doctors responded with the complete questionnaire. The remaining doctors who didn't respond were approached again after a week but their attitude suggested that they were not interested to

complete the questionnaire. The socio-demographic characteristics of the respondents are presented in Table 1.

Table 1: Socio-demographic variables (Sample size = 87).

		Frequency (n)	(%)
Gender	Male	85	97.7
	Female	2	2.3
Occupation	Academician	22	25.3
	Clinician	39	44.8
	Both	26	29.9
Experience	< 5 Years	32	36.8
	5-10 Years	40	46.0
	>10 Years	15	17.2

Only 39.1% of them had training regarding the management of dental injuries. Seventy one respondents (81.6%) did not have maxillo-facial unit at their hospital. Most of the doctors (86.2%) were aware of the significance of dental injuries but only 31% were maintaining dental records in their hospitals. (Table 2)

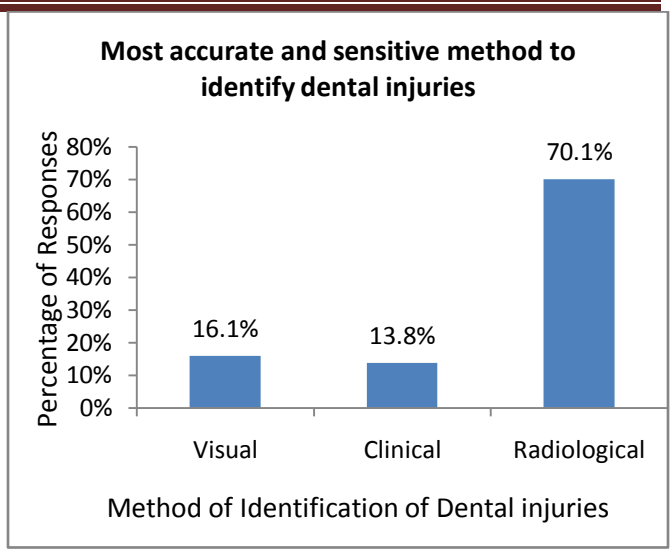
Table 2: Training and Knowledge about the dental injuries by the emergency doctors

		Frequency(n)	(%)
Dental Training received	Yes	34	39.1
	No	53	60.9
Max-fax Unit onsite	Yes	16	18.4
	No	71	81.6
Aware about dental injuries significance	Yes	75	86.2
	No	12	13.8
Maintenance of Dental Records	Yes	27	31.0
	No	60	69.0
Dental Injuries differ in children	Yes	61	70.1
	No	26	29.9

For the second part of questionnaire when asked about the method of identification of dental injuries 70.1% were right to choose radiological method. Majority (70.1%) of the emergency doctors knew that dental injuries differ in children.

Fig 1: Method thought most accurate and sensitive by Emergency doctors for identifying dental injuries.

respondents (59.80%) chose saline as the best medium to preserve avulsed tooth, very few (9.20%) chose saliva and even few (6.90%) chose milk as the



With regard to the management of common dental injuries in permanent teeth, Table 3 illustrates that 58.6% of the respondents think that no treatment is needed in case of chipped tooth, 95.4% think that treatment is needed in case of loose and pushed in tooth. Majority (93.1%) were willing to send the patient to dentist and (87.4%) were willing to send the patient to the local maxillo-facial unit.

Table 3: Response of Emergency Doctors according to actions taken for management of the common dental injuries in permanent teeth.

	Chipped		Loose Teeth		Pushed in Teeth	
Action taken	Yes	No	Yes	No	Yes	No
No treatment needed	41.4 %	58.6 %	95.4 %	4.6 %	95.4 %	4.6 %
Treatment needed, refer to dentist	50.6 %	49.4 %	95.4 %	4.6 %	93.1 %	6.9 %
Treatment needed, refer to local max-fax unit	31.0 %	69.0 %	52.9 %	47. 9%	87.4 %	12. 6%

For the third part of the questionnaire Figure 2 shows that only 32.2% of the participants knew the correct definition of avulsion of tooth. Figure 3 shows about half of the participating doctors (55.2%) knew the correct way of holding an avulsed tooth. Fifty two best medium. Only 33.3% knew that the ideal time for re-implantation of avulsed tooth is less than 2 hours.

Most of the participants (39.10%) did not know the ideal time for re-implantation of avulsed tooth.

Figure 2: Meaning of Avulsion of tooth chosen by Emergency Doctors.

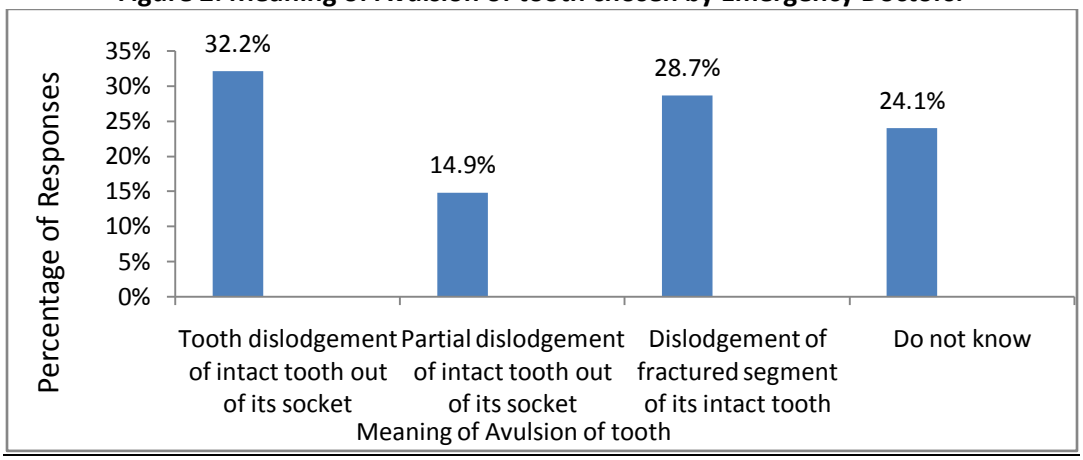


Figure 3: Response of Emergency Doctors regarding how to hold an avulsed tooth.

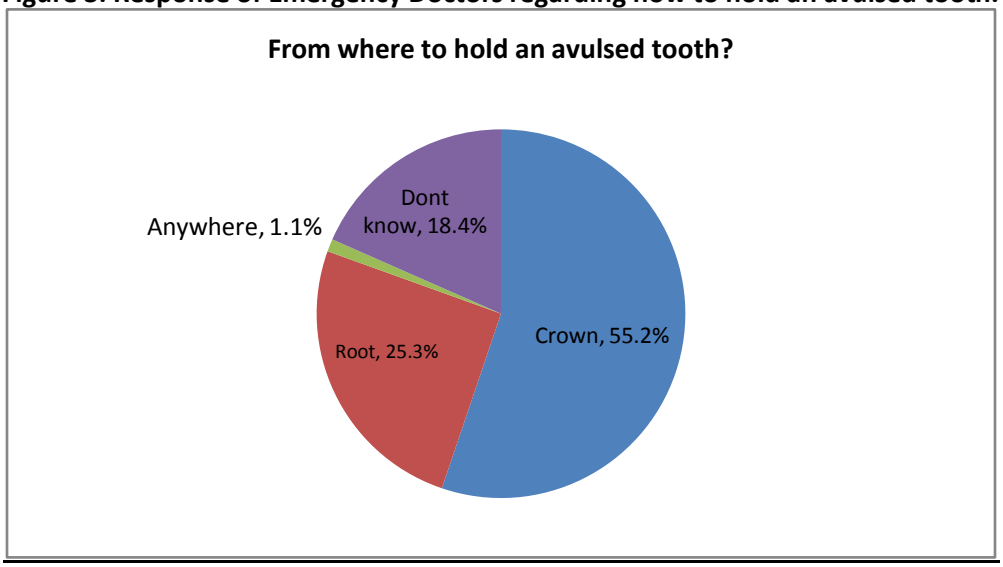


Figure 4: Response of Emergency Doctors regarding best medium to preserve an avulsed tooth

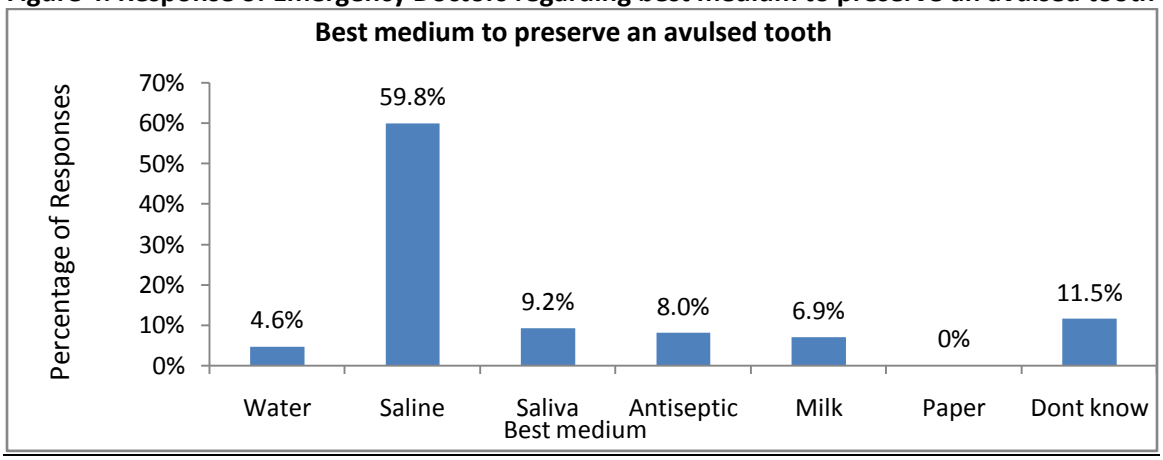
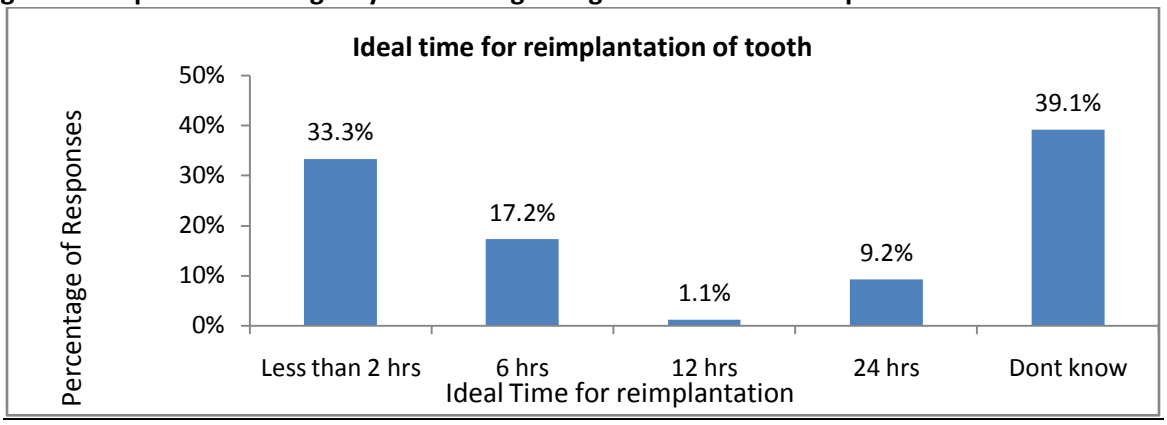


Figure 5: Response of emergency doctors regarding ideal time for re-implantation of avulsed tooth.



Discussion: The primary aim of this cross-sectional survey was to investigate the knowledge of the management of the common dental injuries amongst Emergency doctors in Kanpur City. The survey response rate was 87%. To improve response rate, those who did not respond initially were contacted again personally as suggested by Holan and Shmueli[9], but the response was same.

The percentage of males 85 (97.7%) was much higher than their female counterparts. Most of the physicians 55 (63.2%) have more than 5 years' working experience. Less than half of respondents (39.1%) had training regarding dental injuries.

At present there appears to be inconsistency in the level of training of emergency doctors in the management of dental injuries which may be due to the lack of clinical dentistry in the undergraduate medical curriculum. The current study revealed that 60.91% (n = 53) of doctors had no recollection of any training in the management of dental injuries. This agrees with Patel and Driscoll's[2] finding that only 6% of senior house officers recalled that they had training in dental management as part of their undergraduate education; with 52% stating they had no previous training in examination of the mouth. A recent study by Trivedy et al[10] also reveals the lack of appropriate training, with only 11% of doctors stating that they had received formal training in dental trauma management and 12% responding that they had not received any training at all.

More than half of the respondents (58.6%) think that chipped tooth do not require any treatment, but still majority of them (50.6%) would like to refer it to the dentist. For loose and pushed in tooth, however almost all of them (95.4%) suggested treatment and would refer to a dentist and even to a local maxillo-facial unit.

One of the vitally important factors for the success of re-implantation is the storage medium the tooth is kept in prior its re-implantation. Suitable storage media that have been suggested are Via Span (a cold organ transplant storage medium), Hank's Balanced Salt Solution, milk saline, saliva or water[11-13]. The study revealed that 59.8% (n=52) thought saline was an appropriate storage medium, only 9.2% thought of saliva, 6.9% chose milk and 11.5% (n=10) did not know the medium for storing avulsed tooth. A limitation of the study is that via Span and Hank's Balanced Salt Solution were not included as options for storage. These are considered the best storage media and have been shown to preserve the root surface periodontal ligament cell viability[14].

Another critical factor for the success of re-implantation includes the length of time the tooth is out of its socket[11]. Studies have advised that appropriate treatment during the initial 30 minutes provides the best prognosis for traumatically avulsed teeth[11-13]. Out of the 87 respondents, only 29 (33.3%) doctors stated that the tooth should be re-implanted within less than two hours following avulsion and most of these doctors were Academician suggesting their better theoretical knowledge. Taken together, these results highlight that the Emergency doctors surveyed only have partial knowledge on the management of dental injuries.

Conclusion: The findings from this study suggest that knowledge of the management of dental injuries among Emergency doctors is only partial; however appropriate training can significantly increase this knowledge. In the light of such results an important

implication from this study would include the need for an educational campaign to broaden the knowledge of the physicians about the emergency management of avulsed teeth. This can be done, for instance by incorporating a dental trauma management lecture into the compulsory continuing educational program offered for the physician. In addition, leaflets, posters about basic first aid treatment can be provided to professional care providers.

In addition, it is advisable to have a formal protocol relating to the management of dental trauma, perhaps as a poster or in a handbook for Emergency staff.

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