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Audio visual aid an effective tool of health education for dental trauma

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Abstract
Background: Injury to both, primary and the permanent dentitions and their supporting structures is one of the most common dental problems seen in children. Studies on dental trauma have shown that most dental accidents in children occur at home, followed by school. The prognosis of traumatised teeth depends on prompt and appropriate treatment, which often relies on lay people such as the children's parents and their school teachers who are present at the site of accident, prior to the initial dental contact.
Objective: To assess the knowledge of upper primary and secondary school Physical Education instructors in Bareilly (U.P) city about emergency management of dental trauma.
Methodology: A total of 104 physical education instructors from 82 upper primary and secondary schools were included in the questionnaire based survey.
Results: Majority of the respondents said that their teachers training included first aid training. Only 7.6% recalled that their course covered management of dental trauma. Although about 70% of the respondents were aware about management of fractured tooth, the knowledge regarding avulsed tooth was poor. Vast majority of the respondents felt that they required further training to manage such trauma cases. Over 70% of teachers indicated that it was urgent to seek professional help for tooth avulsion, but they had little knowledge regarding correct procedures for replanting and storing avulsed tooth.
Conclusion: Although the upper primary and secondary school physical education teachers in Bareilly(UP) city had good knowledge of first aid, the knowledge on management of dental trauma remained inadequate.

Keywords: Dental trauma, tooth avulsion, replantation, tooth fracture

Introduction

Playgrounds were originally developed during the 19th century to offer children play opportunities [1]. They provide a recreational refuge for children, away from traffic and other outdoor hazards. In addition, playground activities can enhance children's cognitive, physical, and psychosocial skills. However, playground safety and the prevention of injuries in playgrounds are of concern to physicians, parents, and others [2]. In school, teachers can play an important role in improving the prognosis of avulsed permanent teeth of school children after they are informed about the immediate and proper dental first aid steps to be taken at the time of an accident [3]. Injury to both, primary and the permanent dentitions and their supporting structures is one of the most common dental problems seen in children. Dental trauma may exceed dental caries and periodontal disease as the most significant threat to dental health among young people and will be accompanied by significant economic consequences. It has been shown that when a child reaches school age, accidents in the school environment, in the form of falls are very common and are the main cause of traumatic tooth injuries [4, 5, 6].

The most serious tooth injury is an avulsed (exarticulated) tooth. An avulsed tooth should be replanted in its socket as soon as possible to avoid further damage to the periodontal membrane. The prognosis is related to the injury of the periodontal membrane during the time the tooth is out of its socket. Dry storage of the tooth will cause irreversible injury to the periodontal membrane, resulting in loss of the replanted tooth over time [7, 8].

Epidemiological studies of dental trauma have shown that most dental accidents in children occur at home, followed by school. It was reported that sport and school injuries accounted for 60% of dental trauma [4]. Within the dental profession, it is generally accepted that the prompt and appropriate management of traumatic dental injury is an important determinant of prognosis.

The prognosis of traumatised teeth depends on prompt and appropriate treatment, which often relies on lay people such as the children's parents and their school teachers who are present at the site of accident, prior to the initial dental contact. Most studies on lay knowledge of tooth avulsion indicate that the level of knowledge is low [5].

Since sports have been implicated in the aetiology of dental trauma, and a high proportion of dental injuries at school occurred during classes in physical education, it would be desirable for coaches and teachers of physical education to be capable of managing such injuries when they occur [4, 5].

School teachers can play an important role in improving the prognosis of avulsed permanent teeth of school children after they are informed about the immediate and proper first-aid steps to be taken at the time of accident. Brief information in the form of a lecture given to school teachers could be way to increase their knowledge level. However, we must learn more in how to inform the public and to improve the efficiency of our modes of information [3].

We have not found any studies measuring Hence, the study was conducted in Bareilly (UP) region to assess the Knowledge of Upper Primary and Secondary school Physical Education instructors about emergency management of dental trauma.

Methodology

The target population was upper primary and secondary school teachers involved in physical education (PE) classes. The list of schools with PE teachers was obtained from the Block Education Officer of Bareilly City, Uttar Pradesh. The schools in Bareilly city are divided into eight clusters. A total of 104 PE teachers from 82 upper primary and secondary schools, from all the eight clusters, who gave an informed consent to participate in the study, were included in the questionnaire based survey.

The questionnaire was divided into three parts. The first part consisted of questions on personal and professional data including age, sex, teaching experience and first aid training background. The second part contained four questions based on two imaginary cases of dental injuries. The first case depicted a mild accident of uncomplicated crown fracture, while the second was a more severe scenario that involved an avulsion. The third part of the questionnaire had eight multiple-choice questions on the knowledge regarding management of avulsed teeth. All questions in the questionnaire were close-ended.

To help the respondents make quick decisions, they were given alternative choices, which resemble real situations with dental trauma. All returned questionnaires were coded and analyzed. Results were expressed as a number and percentage of respondents for each question and were analyzed using the SPSS Version 17 software. Chi-square test was performed and the level of significance was set at $p = 0.05$.

Results

Part I: Respondent's profile

Of the 104 respondents, 74.88% (n=72) were males and 33.28% (n=32) were females. 32.1% (n=38) were aged between 20 and 30 years and 37.6% (n=41) were aged between 31 and 40 years. 32.1% (n=35) of the respondents had less than five years of teaching experience and 7.3% (n=8) had more than 20 years.

Majority of the respondents, 88.4% (n=92) said that their teachers training included first aid training while 36.5% (n=38) had formal first aid training on their own. Only 7.6% (n=8) recalled that their course covered management of dental trauma and 22.1% (n=23) attended course on management of dental trauma on their own after graduation.

Part II: Case Study

In this section, teachers were questioned about their knowledge on the emergency management of two imaginary cases of dental trauma. The first case was on fractured teeth and the second one on tooth avulsion.

Case I: Fractured teeth

In the first question, teachers were asked whether the damaged teeth of a 9 year old child were primary or permanent teeth. Of the respondents only 33.6% (n=35) gave the correct answer and 16.3% (n=17) were not sure. Fig 1

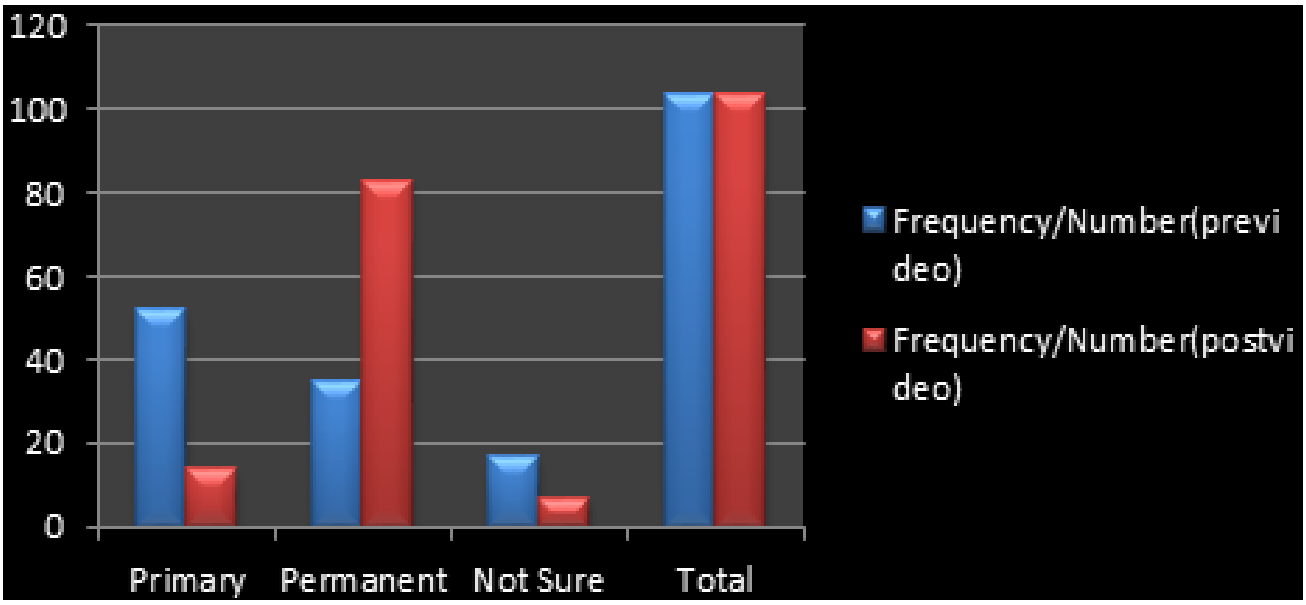

Fig 1: Response When Asked Whether Damaged Front Teeth In Case I Were Primary or Permanent

In the second question the teachers about their action towards the above case. Among them 19.2% (n=20) would take her to the dentist immediately and 23.0% (n=24) would contact her parents and ask them to take her to dentist. There was statistically significant difference among sexes (p=0.04) and age (p=0.002).FIG 2

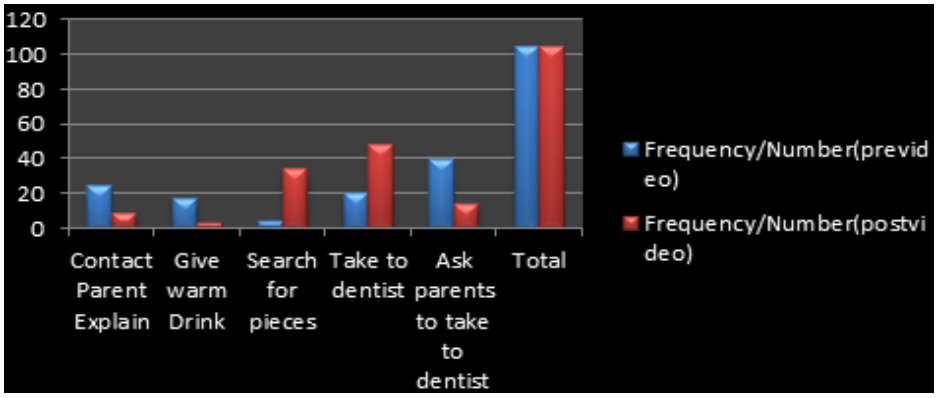

Fig 2: Response When Asked What Actions They Would Consider Appropriate In Case I

Case II: Tooth avulsion

In the first question, teachers were asked to imagine a case in which a 14 year old boy got hit in his mouth by his colleague in a football game and his mouth was bleeding and upper front tooth was found to be missing.

50% (n=52) would sideline the injured boy and make him bite on a handkerchief to prevent bleeding. There was a statistically significant difference among the teachers who attended and did not attend the course on management of dental trauma (p=0.02).fig 3

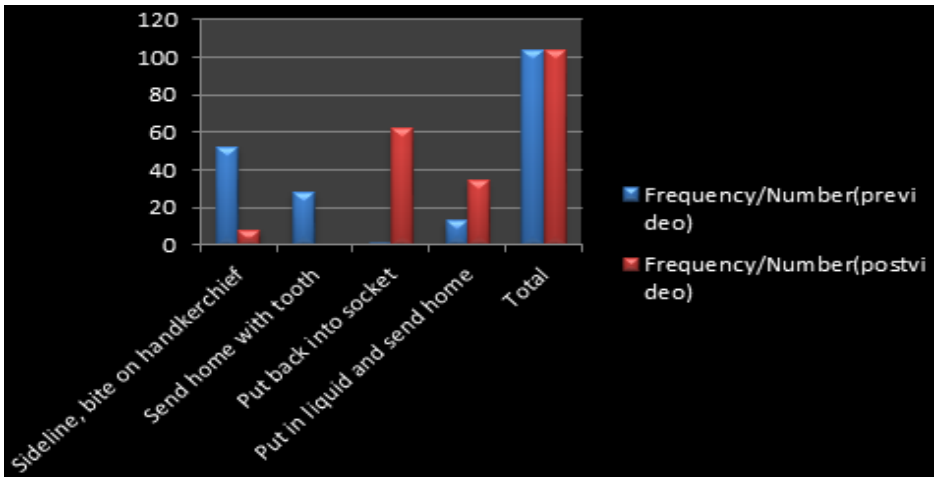

Fig 3: Response When Asked What Would They Do In Case Ii

Part III: Knowledge on management of avulsed teeth

Teachers when asked about the first place of contact following dental trauma, 47.1% (n=49) would take the child to dental hospital and 38.4% (n=40) would take the child to dentist. The rest opted to take the child to general hospital (n=12) or medical doctor (n=3) fig 4

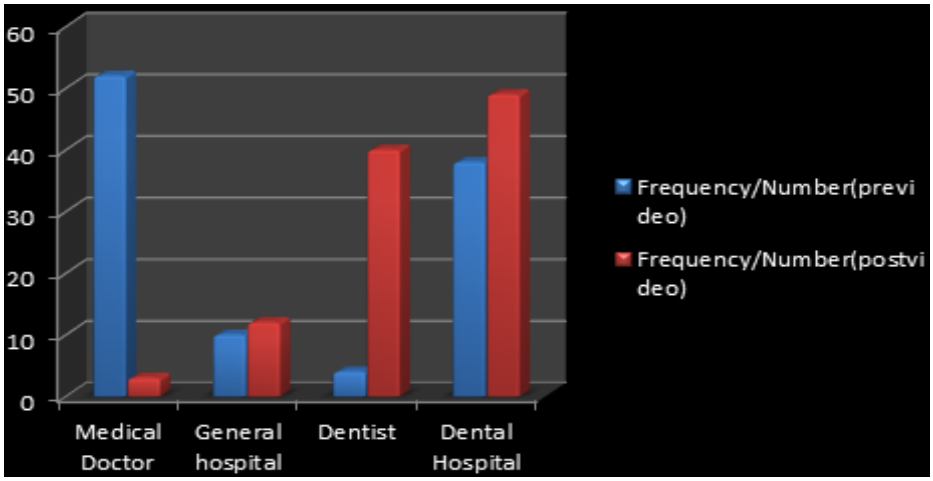

Fig 4: Response When Asked Whom They Would Contact If Their Child/Student Came To Them With A Knocked Out Tooth

Teachers when asked regarding the urgency in seeking professional help for a tooth avulsion injury, 80.7% (n=84) considered it necessary to seek professional help immediately. There was a statistically significant difference with teaching experience (p=0.01) fig 5

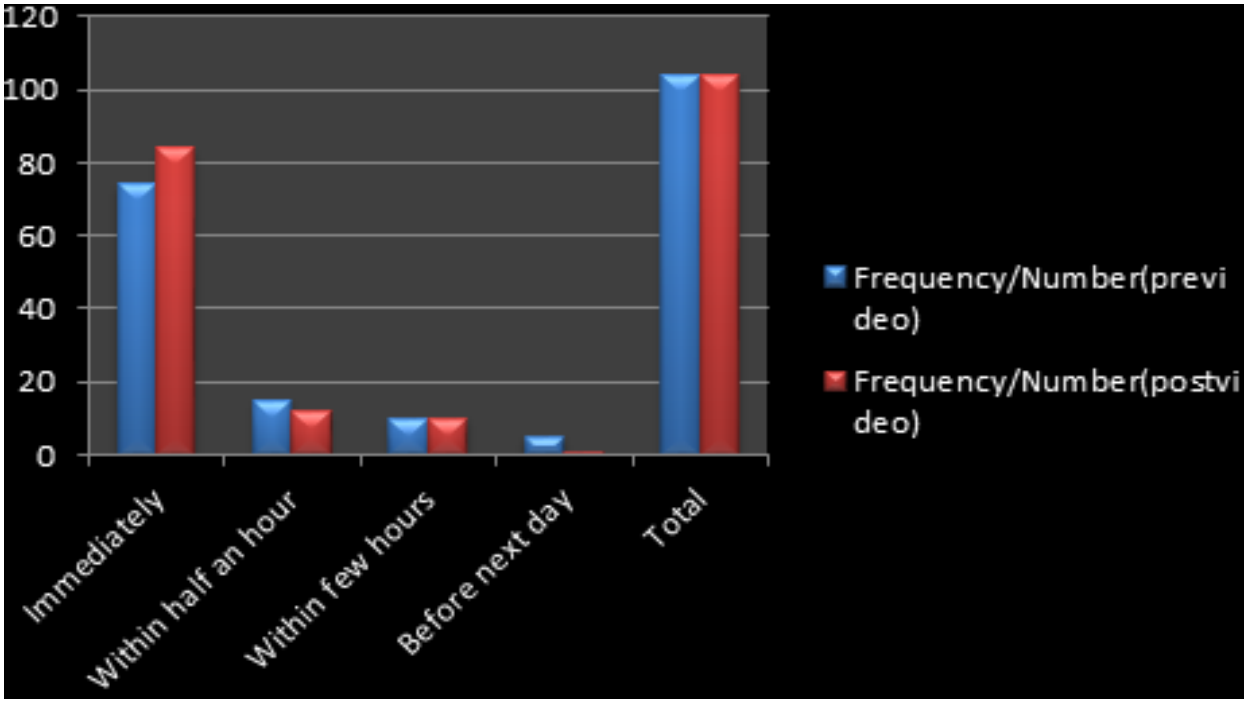

Fig 5: Response When Asked About the Urgency in Seeking Professional Help If a Permanent Tooth Was Knocked Out

Respondents who 24% (n=25) would rinse the tooth under tap water and 7.6% (n=8) would scrub the tooth gently with the tooth brush prior to replantation. There was a statistically significant difference among the teachers who attended and did not attend the course on management of dental trauma (p=0.05).fig 6

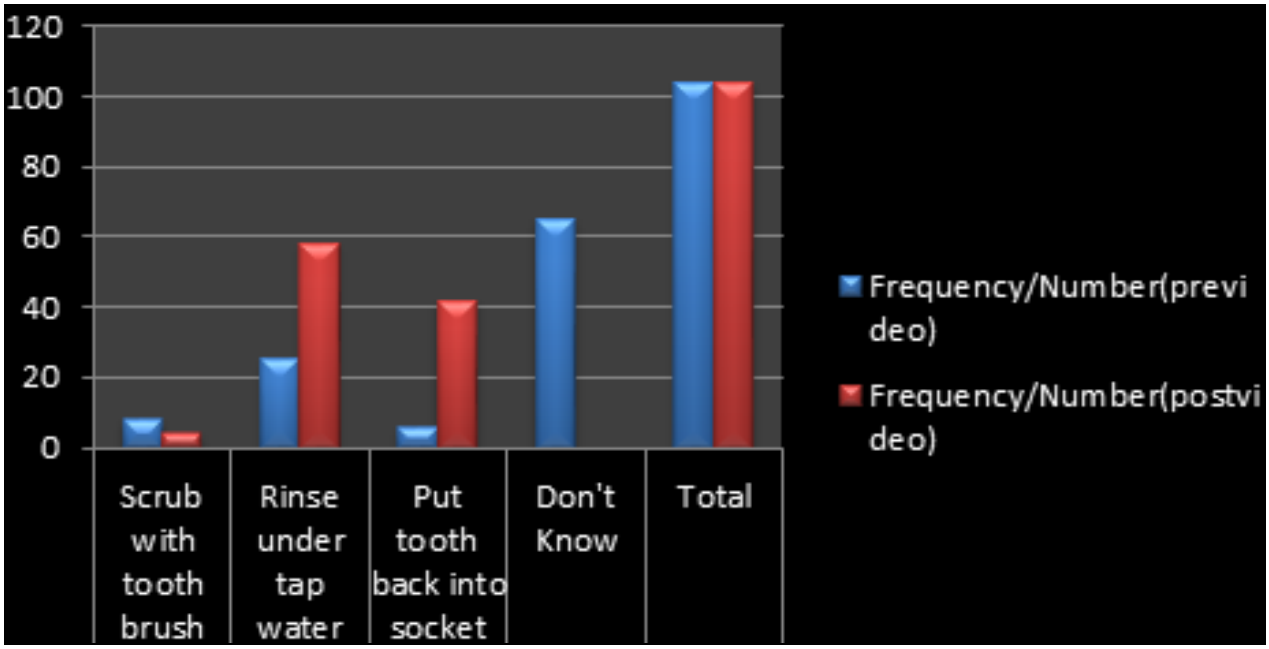

Fig 6: Response of the Teachers Who Would Attempt To Replant the Tooth When Asked What They Would Do To Replant the Tooth

When the transport medium was narrowed down to liquid, 29.8% (n= 31) chose antiseptic solution, 21.1% (n=22) chose ice water. Only 9.6% (n=10) chose either fresh milk or normal saline. There was statistically significant among the teachers who attended and did not attend the course on management of dental trauma (p<0.001).fig 7

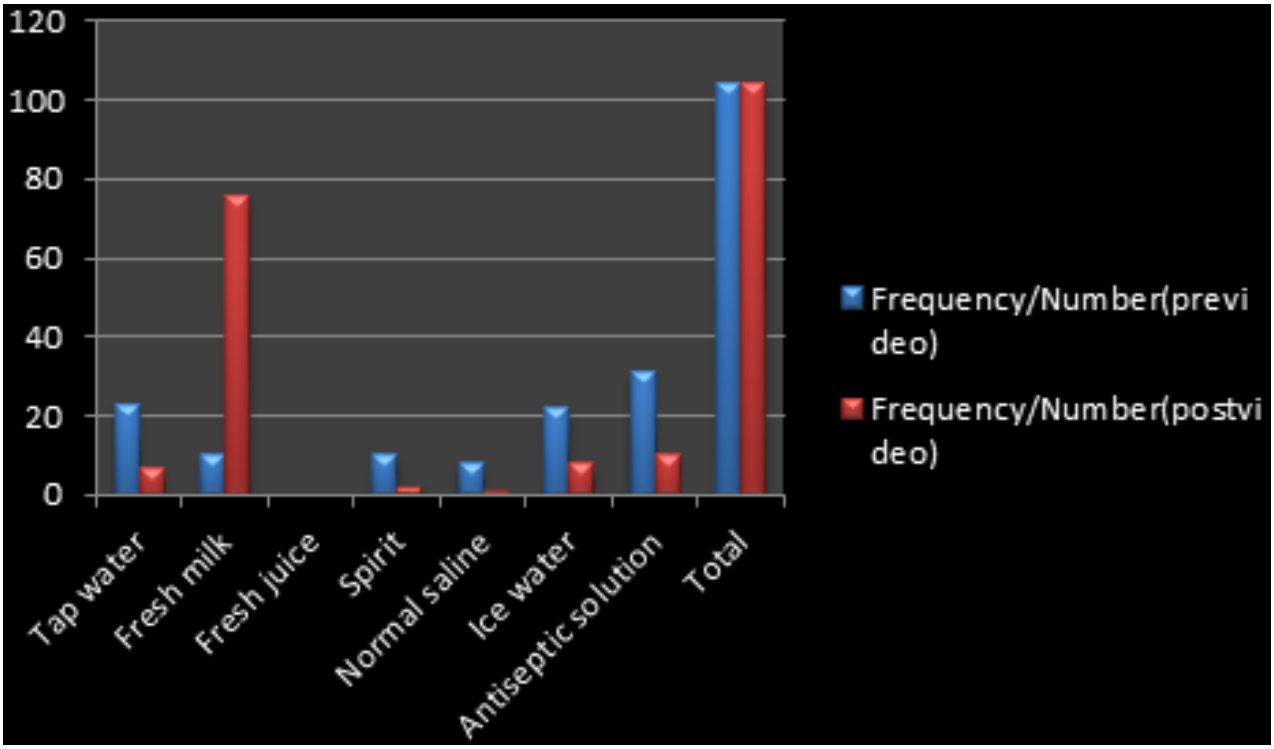

Fig 7: Response When Asked Which Liquid They Would Use To Transport the Avulsed Tooth to the Dentist

Discussion

The result of our study co relates with the current trend in India, young children spend a large proportion of their time in school. Hence, in addition to parents and/or guardians, teachers assume responsible roles both in their daily activities and in health related issues, including immediate management of traumatized teeth. There is therefore an urgent need to increase the dental awareness of teachers for the younger generations.

For children and adolescents, parents and teachers are usually nearby when the accidents occur. In this connection, their knowledge about the management of traumatic dental injuries is vitally important for the prognosis of injured teeth and in helping the injured person to receive appropriate first-aid treatment as soon as possible Some studies have shown that the level of knowledge of avulsed teeth and first aid is generally inadequate in school teachers, which is in tandem with the findings of our study [3, 9].

As shown in previous studies by Mohandas U and Chandan GD most of the physical teachers were male (74.88%).Around 7.3% had more than 20 years of teaching experience.

The two imaginary cases in Part II of the questionnaire were designed to test the respondent's general knowledge of the two different types of dental injuries. The ages of the injured children were intentionally selected as 9 and 14 years, respectively because children between these ages carry the greatest risk of sports related dental injuries.

In Case I, (33.6%) of the respondents recognized that the maxillary incisor is a member of the permanent dentition in a 9 year old. This indicates that the general dental knowledge of the surveyed group was inadequate. The results are comparable to the study conducted in Hong Kong and England [10] and in contrast to the studies conducted in Porto and Istanbul [11].The prognosis of a fractured incisor depends on the extent of involvement and the patient's age. It is unreasonable to expect a PE teacher to make appropriate diagnosis or make decisions about the injury. Thus the most appropriate response was to take the child to the dentist or contact her parents and ask them to take their child to dentist.

For case II, the ideal treatment for avulsed teeth is immediate replantation. About 50% of the respondents would sideline the injured boy and make him bite on a handkerchief to prevent bleeding, suggesting that they were more concerned with controlling the bleeding first. In the study conducted in Bangalore by Mohandas U and Chandan GD [12], the corresponding figure was 57.5%. This may be a reflection of basic life support provided in first aid training. Unfortunately, the child would not benefit from this maneuver because undue delay in replanting the tooth.

It was revealed in Part III of the questionnaire that over 37% of the respondents had previous direct or indirect experience of avulsive injury. The results were in tandem to Istanbul study [11].

When confronted with an accident involving an avulsed tooth, half of the respondents told would contact a dental hospital and about 40% would contact a nearby dentist. The rest of the respondents (9%) preferred contact a medical doctor or general hospital. These results are in striking contrast with the results obtained in the Bangalore study [12] in which the 34.9% of the respondents preferred to contact a medical doctor or a general hospital. The higher percentage of those seeking help from dental hospital may be related to the inexpensive but accessible quality dental care in dental hospitals of Bareilly (UP) city.

It is similar to the study conducted in Bangalore and in contrast to study conducted in Hong Kong, of them 60%

teachers would rinse the tooth under tap water and 32% would scrub the tooth gently with a toothbrush before replantation. In the Bareilly city study, the corresponding figures were 25% and 8%. Majority of the respondents who had attended course on management of dental trauma would rinse the tooth under tap water before replantation.

When questioned about the ideal storage media for transport of avulsed tooth, one third of teachers chose paper tissue or handkerchief. One fifth of respondents preferred ice/ice water. This may be related to the popular use of ice for transportation of human organs and accidentally detached limbs. One third of the respondents suggested the use of antiseptic solution. Their intention was to kill the germs on the root surface but they do not realize that the viable cells of the tooth would also be damaged simultaneously. Only teachers who had attended course on management of dental trauma suggested carrying the avulsed tooth in child's mouth or in milk highlighting the effectiveness of such programmes. Many such programmes and seminars regarding dental trauma management will definitely have an impact on the teachers as concluded by a study conducted in United Kingdom, Israel and Kuwait.

Conclusions

First-aid training with dental content and acquisition of dental injury information from other sources positively correlated with the level of appropriate knowledge. An educational campaign dedicated to this topic is recommended for primary and secondary schools teachers are very much needed. Dental trauma emergency management is recommended to be added to first-aid publications and as teaching for school teachers and health professionals.

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