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Knowledge of tooth avulsion and its emergency management among physical education teachers in Chennai.

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Abstract: Objective. *: The aim of the study was to evaluate the knowledge of Physical education (PE) teachers in Chennai regarding tooth avulsion and its emergency management.* ***Materials and methods:*** *The study was conducted among 131 Physical education teachers from randomly selected schools in Chennai using self-administered questionnaires.* ***Results:*** *A total of 131 PE teachers, in which 120(91.6%) male teachers and 11(8.4%) female teachers answered the questionnaire. The results showed that only 15.3 % had a previous experience of avulsed tooth in a child; 64.1% of them knew the need for "immediate" emergency management. Only 38.9% would replant an avulsed tooth and regarding the storage media and only 5.3% chose milk as a suitable media.* ***Conclusion:*** *This study shows lack of knowledge regarding tooth avulsion and its emergency management among physical education teachers in Chennai. Therefore, educational programmes are necessary to improve their level of knowledge.*

Keywords: *Dental Trauma, Knowledge, Physical education teachers, Storage medium, Traumatic injuries*

I. Introduction

Traumatic dental injuries (TDIs) remain as one of the most common dental problems in children and adolescents throughout the world [1]. Dental trauma mainly affects the upper permanent central incisors. As a result there is a negative impact on quality of life due to loss of function, psychological and social discomfort, lowered self- esteem, embarrassment upon smiling and financial burden .[2]

Avulsion of permanent teeth is one of the most serious of all dental injuries. Tooth avulsion is the complete displacement of the tooth of tooth from its socket due to trauma. It comprises of 0.5 to 16 % of all TDIs [3]. The prognosis depends on the prompt care, which is a determinant factor for the successful treatment of the traumatized tooth. Skill, knowledge and immediate act are important in this situation. Immediate replantation of the permanent teeth is the treatment of choice, if it can be performed at the time and place of the accident [4, 5].The peak age for dental traumatic injuries has been found to be between 7 to 12 yrs, an age group when children spend most of their time at school. Thus, it is said that school children are more prone for such injuries mainly due to falls and collisions during competitive sports such as cycling, soccer etc. [6, 7, 8]. Physical education teachers generally supervise such activities and are mostly present at the time when any traumatic injury occurs during such activities. However, they have few /limited knowledge regarding the recommended course of action [9, 10, 11]. It is therefore of fundamental importance that physical education teachers are prepared to intervene when such emergencies arise.

Thus, the present study has been undertaken to assess the awareness and knowledge among physical education teachers in schools of Chennai city regarding tooth avulsion and its emergency management.

II. Materials And Methods

The present study is a cross-sectional survey conducted among teachers involved in physical education classes in Chennai city. Physical education teachers from 131 randomly selected schools in Chennai were interviewed by giving a questionnaire proforma. The permission for the study was obtained from the concerned authorities in the participating schools. The objective of the study was explained to all the participants and also an informed consent was obtained from all of them. The questionnaire for this study was inspired from a similar study done among PE teachers in Hong Kong [9]. The questionnaire consists of 18 questions, divided into two parts. The first part consisted of six questions on personal and professional data including age, sex, teaching experience and first aid training background. The second part consists of 12 questions on management of avulsed teeth. All the questions were close-ended. To help the respondents make quick decisions, they were given alternative choices. All the returned questionnaires were coded and analyzed. The results were expressed as a number and percentage of respondents for each question.

III. Results

3.1. Respondent's profile

A total of 131 teachers completed the questionnaires and were considered valid for the study. The respondents consisted of 120(91.6%) men and 11 women (8.4%). The majority of the respondents (65, 49.6%) were between 30- 39 years. With the exception of 11(8.4%), majority (120, 91.6 %) of them had received formal training and most (109, 83.2 %) of them had been teaching physical education for more than 5 years. A total of 93 (71 %) PE teachers claimed to have received first aid training, but the remaining 38 (29.0 %) did not. Despite that, only 44 (33.5 %) PE teachers had ever received any advice regarding the management of a "knocked-out" tooth and 87 (66.4%) did not.

3.2. Knowledge of management of avulsed teeth

The questionnaire consisted of 12 questions in the second part of it from which they were to select from a list of advice or management options for an avulsive injury to assess their knowledge of management of an avulsed tooth.

3.2.1. Question 7: Previous experience of avulsive injury.

Only 20 (15.3 %) teachers had ever experienced a case of an avulsive injury either in their own child or a school student whereas the remaining 111 (84.7%) teachers had never experienced a similar scenario in their lifetime.

3.2.2. Question 8 : First action after an avulsive injury.

When asked about their first step in case of an incident of avulsion 58 (44.3%) of them would calm down the child and try to stop the bleeding by compression and the 73(55.7%) of them would do the same but in addition also look for the tooth. None of the teachers felt that they would be frightened and not take any action as a result.

3.2.3. Question 9: First place of contact after an avulsive injury.

Regarding the first place of contact after an incident of a "knocked-out" tooth 74 (56.5%) of them would go to a general dentist, 27(20.6%) to a pediatric dentist, 22 (16.8%) to a general doctor and 8(6.1%) of them to a hospital nearby.

3.2.4 .Question 10: Urgency in seeking treatment.

When asked about how urgently they would provide professional help for an avulsive injury for which 84(64.1%) of them felt that it should be managed immediately, while 22(16.8%) of them felt it should be done "within 30 minutes", 13(9.9%) of them felt "within a few hours" was acceptable, 12(9.2%) of them thought they could seek help before the next day.

3.2.5. Question 11-13: Replanting a "knocked-out" tooth.

When they were asked if they would replant a "knocked-out" tooth into its socket only 51 (38.9%) of them felt they would whereas the others (80, 61.1%) felt that they would not.

When asked if they would replant the tooth if it was a milk tooth, majority of them (109, 83.2%) rightly said that they would not whereas 22 (16.8%) teachers thought they would.

Further they were asked if they would replant a "knocked –out" tooth if it was broken, a vast majority(118, 90.1%) of the teachers preferred going to a dentist for help while the others either did not know what to do(9 ,6.9%) or would try replanting the broken tooth (4,3%).

3.2.6. Question 14-17: Cleaning methods and storage medium.

When asked how they would clean a soiled tooth before replanting it, 69 (52.7%) of them preferred rinsing under tap water, 43 (32.8%) of them were not aware of what to do, 12 (9.2%) of them thought they could scrub the tooth with the tooth brush to get rid of the dirt while 7(5.3%) of them said they would replace the tooth without doing anything.

Regarding the cleaning of a soiled tooth before replanting it with a liquid, rinsing with tap water was the most common (79,60.3%) option second to normal saline (28,21.4%). Other considerable options were antiseptic solution (11, 8.4%) ice water (9, 6.9%) and milk (2, 1.5%).

When asked how they would transport a "knocked- out" tooth to a dentist if they decide not to replant it, **(Fig 1)** the two most common options were ice (48, 36.6%) and a paper tissue (47, 35.8%).

When asked for a suitable liquid medium for transporting the "knocked-out" tooth, **(Fig 2)** only 7(5.3%) of them chose milk as a suitable medium.

3.2.7. Question 18: Need for advice regarding the management

Lastly, when asked if they would like to receive advice on how to manage a child with a "knocked-out" tooth , majority (127,96.9%) of them were interested whereas 14 (10.6%) of them were not so keen.

IV. Figures

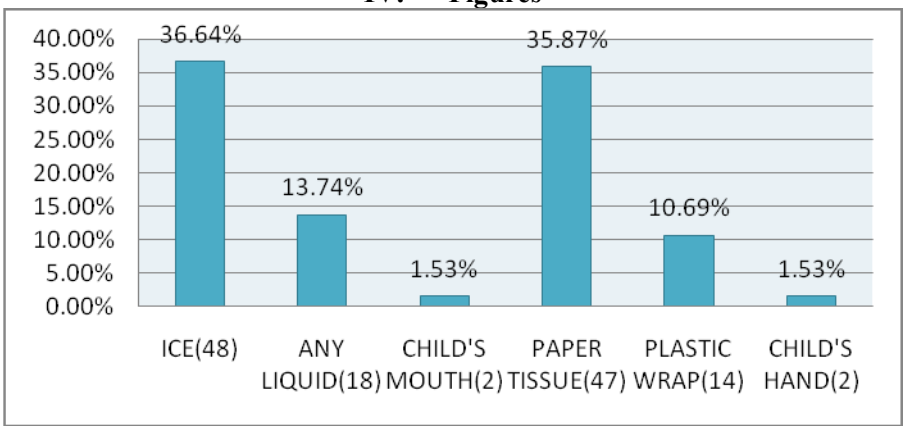

Fig 1. Question 16- If you did not replant (put back) the tooth, how would you transport it to the dentist?

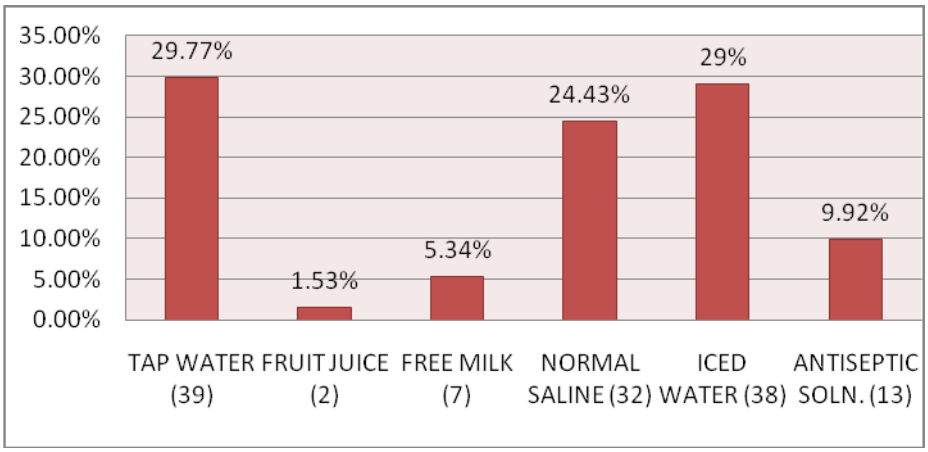

Fig.2.Question 17: If you use a liquid as a medium to transport the "knocked-out" tooth to the dentist what would you choose?

V. Discussion

The results of the study showed insufficient knowledge regarding tooth avulsion and its emergency management among physical education teachers in Chennai. Similar results were demonstrated by other studies done in various other places [9, 10, 11]. The survey done revealed that the great majority of physical education teachers had never received any advice on management of an avulsed tooth despite 71.1% of them receiving a first-aid training as a part of their teacher training program. This reflects that the first aid training given to these teachers does not include management of an avulsed tooth as a part of their curriculum. Compared to the study done in Hong Kong [9], where 99.4% PE teachers had received first aid, fewer PE teachers had undergone first aid training in Chennai.

Only few of them in this study have had a previous experience of an avulsive injury and it has been indicated that past experience does not seem to have any correlation with advanced knowledge of correct emergency procedures [6, 9, 11] .The PE teachers had claimed that they would not be frightened when a student came to them with a "knocked- out" tooth rather all of them would calm down the child and try to stop the bleeding. As most of the PE teachers in the study population had an experience of more than 5 years it explains the confidence in dealing with children during times of crisis by not panicking and rather comforting the child. Also it was a relief to know that most of them (64.1%) recognized the importance of immediate reaction to dental trauma as prolonged extra alveolar duration is detrimental for long term success rate [3]. Compared to other studies, where 75 % [6], 56 % [12] of them would not replant an avulsed tooth, 61.1% of them not replanting an avulsed tooth was not a surprise. This may be due to lack of sufficient training and expertise, or concern of frightening the child or inflicting pain or causing further damage [13].Their lack of knowledge was apparent as 22 (16.8%) of them said that they would replant a milk tooth not knowing that they would be

damaging the underlying permanent successor. However on a positive note 90.1% would not attempt to replant a broken tooth and would rather take the child to seek professional help.

The prognosis of an avulsed tooth is largely dependent on the status of the periodontal ligament cells at replantation. The tooth should either be replanted immediately or as quickly as possible [5]. Since certain situations causes a delay in immediate replantation of the avulsed tooth, in such cases the tooth needs to be stored in a medium that can maintain periodontal ligament cell viability. Studies have evaluated that 0.9% isotonic saline, milk, HBSS and visapan are the best possible storage media. Among these HBSS was found to be most effective followed by milk and saline [14]. Dry storage during transportation would severely prejudice normal healing and repair and that is why it was disappointing that majority of the PE teachers chose dry storage media like Paper tissue (35.9%), Ice (36.6%), Plastic wrap (10.6%) while only a fraction of them chose a liquid medium. These results were almost similar to that demonstrated by Chan et al [9] among PE teachers in Hong Kong. When only a liquid medium was asked in particular 24.4 % chose normal saline; but also a majority chose water either in the form of Ice water (29%) or Tap water (29.8%). Tap water is possibly the worst liquid storage media due to its low osmolarity, which causes rapid cell death of PDL similar to dry storage [15]. The proportion choosing the most appropriate media from the given options, milk, was very low (5.3%) but similar results were also seen in various other studies done previously [9, 10, 11].

A vast majority of the teachers expressed an interest in receiving more information on management of an avulsed tooth and similar response has also been shown in other studies. It has also been shown that informative campaigns have been effective in increasing the knowledge of dental trauma and how it can be treated by which teachers can be better prepared in cases of traumatic injuries [16, 17].

VI. Conclusion And Suggestions

Based on the results of the study it can be concluded that there is lack of knowledge regarding tooth avulsion and its emergency management among physical education teachers in Chennai. Although the study mainly concentrated on tooth avulsion, physical activities like competitive sports increase the risk of TDIs and other facial injuries. Thus, PE teachers who usually supervise these activities must be better prepared and have adequate knowledge regarding management of all kinds of TDIs. The first aid curriculum should necessarily include the management of all kinds of TDIs and dental avulsion in particular. Thus, PE teachers must be aware of the importance of the matter and also be motivated to seek more information on their own.

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