

Knowledge, Attitude and Practice towards Tooth Avulsion among the School Teachers of Nagpur Region -A Questionnaire Study

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ABSTRACT

Background: Children usually encounter minor accidents in their routine activities and hence, it is of utmost importance to provide emergency care. Permanent anterior teeth are frequently traumatized in children of age group 7-9 years, and the school teachers are the first one to witness. School teachers play an important role in improving the prognosis of traumatized teeth of school children through immediate on-site management or on time referral to healthcare providers. Thus, they should be well prepared to intervene when such dental emergencies arise.

Aim: To assess the knowledge, attitude and practice regarding tooth avulsion among school teachers of Nagpur District.

Material & Methods: The study was performed by distributing a self-designed 18 questionnaire to 180 school teachers of region. It includes questionnaire-based survey including demographic data, attitude, knowledge and practice towards tooth avulsion. Questionnaire was framed in English as well as local language (Marathi). Following this the questionnaire were distributed to school teachers through Google forms and responses were recorded for further statistical analysis, subjected to chi-square test and represented in the form of pie charts.

Results: It has shown that poor knowledge in the management of the avulsed tooth among the school teachers of Nagpur district.

Conclusion: School teachers, being one of the child managers, need to have the basic knowledge to recognize and manage oral emergencies avulsed teeth to prevent its consequences in the child's development.

Key words: Pediatric dentistry, Tooth avulsion, Physical activity, Dental trauma.

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INTRODUCTION

Physical activity is a basic need for a child's growth. WHO theme for the year 2002 says, "eMove for Healthy", which emphasizes on the role of physical activity in the healthy living of an individual [1, 2]. Childhood is a social construction whose boundaries change over time and place, and this has implications for vulnerability to injury. There is a strong correlation between stage of life and the type of injury a child has sustained. During these physical activities, injuries to the face are the risks associated [3, 4].

Dental trauma is one of the most serious health problems in childhood, causing pain, anxiety and dysfunction accompanying the injury [5]. Schools and homes are the most common places for traumatic dental injuries to occur [6]. School teachers are likely to be the first to see a child immediately after an injury and thus sound knowledge about managing traumatic tooth avulsion is essential for effective dental treatment. Traumatic Dental Injuries (TDI) is currently ranked fifth in the list of world's most frequent acute/chronic diseases and injuries [7]. A recent major study has shown that approximately one billion people have suffered from dental injury and the worldwide prevalence in permanent dentition is about 15 % [8]. Traumatic dental injuries pose significant consequences related to health of children, which can be functional, psychological, and social.

The most traumatic injuries to permanent teeth occur between the ages of 9-12 [9]. The knowledge of dental trauma management is of critical importance to decrease the consequences and improve the prognosis of dental trauma. TDI are very frequent in the mixed and permanent dentition with an incidence rate ranging between 1.25-4. In children, sports were found to be responsible for 13% of overall oral traumas [10]. Traumatic injuries can thus, have a significant effect on a child's quality of life [10, 11].

Tooth avulsion is the complete displacement of the tooth from the socket. It leads to desiccation, ischemia and bacterial contamination of the tooth pulp and the periodontal ligament which supports the tooth in the tooth socket. Even after short extra-alveolar time outside the tooth socket, permanently damaged of the periodontal ligament and pulp cells appears. Therefore, in case of eruption, the permanent tooth should be reinserted into the alveolus as soon as possible [12, 13]. If the extra-alveolar time is less than an hour, complete or partial repair of the periodontal ligament is possible. If this time is longer, periodontal tissue cells are destroyed. Replantation during this period often leads to progressive resorption of the tooth root. The time between injury and treatment is the most important factor in the success of therapy [14]. Successful replantation of an avulsed tooth depends only on the extra oral drying time and storage medium of the avulsed tooth [15].

School occupies a significant portion of children's daily routine. Accident in the school environment resulting from falls is very common and is the main etiological factor of traumatic tooth injury at school. Such injuries are unplanned and often urgent events, both for the child and for the teacher who is the first to be contacted when a child suffers such an injury. The time following traumatic injuries is critical with regards to the prognosis of the tooth. For this, it is necessary that the first persons contacted by the child after an accident have the appropriate knowledge and awareness to help them carry out expedited procedures in time. Hence, it is crucial to assess the level of understanding and awareness among individuals present during an accident regarding the proper handling of dental injuries in emergency situations [16].

Numerous studies conducted across various regions worldwide have consistently revealed insufficient knowledge among teachers and other non-experts regarding traumatic dental injuries, leading to ineffective responses and a lack of reduction in dental trauma incidents [17].

The prognosis quite often depends on the child's parents and teachers present at the accident site prior to referral to a dentist, who has a minor role if the optimal urgent care were not initiated in the location of the injury.

Therefore, appropriate action and effective emergency treatment are crucial for the achievement of a favorable prognosis of a traumatized tooth, and this might prevent further complications. Especially in cases where avulsion has occurred, quick and on-site emergency treatment is critical to the long-term outcome [18].

In the last 20 years, Traumatic Dental Injuries management of first aid in schools has received increasing attention worldwide. A systematic approach from the literature showed that a total of 70 studies have been conducted so far that evaluated the level of knowledge of school teachers regarding the provision of first aid after a tooth injury.

This study aimed to evaluate via a questionnaire the knowledge level of primary school teachers in Nagpur, Maharashtra regarding dental trauma, its management and to enlighten them about the importance of immediate attention and prompt treatment in cases of traumatic dental injuries.

MATERIAL AND METHOD

Participants

This study has a cross-sectional design. It was undertaken to assess the knowledge of teachers in public and private schools in Nagpur Region in 2022. Questionnaires were personally handed to 200 school teachers from various schools in Nagpur Region. Systemic sampling randomization technique was used to select schools.

Procedure

Questionnaires were handed only to school teachers who wished to participate in research. The survey was conducted between April to August 2022. Questionnaire was framed in English as well as local language (Marathi). Following this the questionnaire were distributed to school teachers through Google

forms and responses were recorded for further statistical analysis

Questionnaire

The questionnaire consisted of 18 questions and was divided in four parts. The first part was comprised of six questions concerning personal and professional data i.e. name, gender, educational level, years of employment and personal background.

The second part consisted of seven questions that revealed school teachers experience with dental trauma and assessed the knowledge on tooth avulsion.

The third part consisted of two questions regarding the attitude of school teachers towards avulsed tooth.

The fourth part contained 9 questions about tooth replantation, rinsing, storage and transport media of the avulsed tooth and teachers wish to learn more about the topic.

Statistical analysis

All submitted surveys were coded and analysed. The results were obtained in numerical order and expressed in pie chart (percentages). The data were organized into files (Microsoft Excel, Microsoft Inc., USA) and processed by JMP7 module from the software package SAS (SAS Institute Inc., Cary, NC, USA). Fischers test was applied to test the hypothesis.

RESULTS

Out of 160 a total of 146 school teachers returned the questionnaire, thereby achieving a response rate of 91.25% the statistics of the respondent’s information are shown in Pie Diagram. Sample description by sex is presented in Percentage.

Significantly slightly more female respondents were included in this study, out of this 63 of participants in the study were male and 82 were female [Figure 1-9] and as per their teaching experience, most participants school teachers have more than 6 years of experience.

Most of the teachers who were included in the study were from private school (74 school teachers) and only few of the participants were from government (44 school teachers) and semi government school (27 school teachers) in which more percentages have been seen in the urban area location of school.

The knowledge regarding the position of holding the tooth was very poor. Around more than half of the participants answered 59% that they hold the tooth from anywhere in such a condition. Similar around only 27% of the participants said only correct answer for position of holding tooth [Figure 10].

The findings regarding teachers' knowledge about the ideal timeframe for replanting an avulsed tooth indicated that 43% of teachers were not aware of this information, while 17% of teachers correctly responded that the optimum time for replantation is within 24 hours [Figure 11].

A small number of school teachers were aware of the correct solution to clean a dirty avulsed tooth with. Most of them preferred antiseptic solution to clean a dirty avulsed tooth rather than that other participants said they wash it with tap water and few are saying do not wash. Data shows that majority of school teachers more than 50% do not have any information to Immediate Management of Displaced Teeth [Figure 12]. Overall Results shows that that lack of poor information regarding the preservation and management of avulsed tooth observed among school teachers.

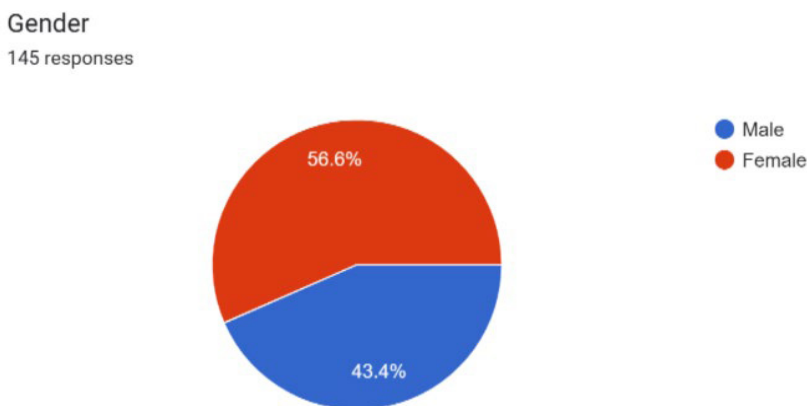


Figure 1: Gender Response among participant’s school teachers.

School Type:
145 responses

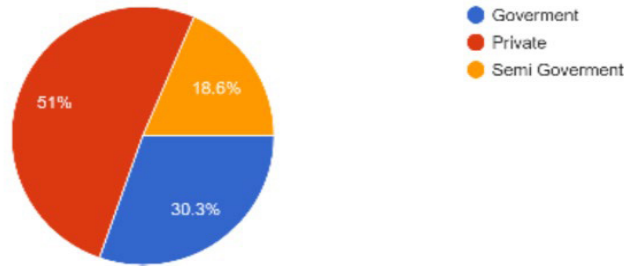


Figure 2: Response School Type among participant's school teachers.

Do you know, what is knocked-Out Tooth?/तुम्हाला माहित आहे का, नॉक-आउट टूथ (निघालेला दात)म्हणजे काय?/

146 responses

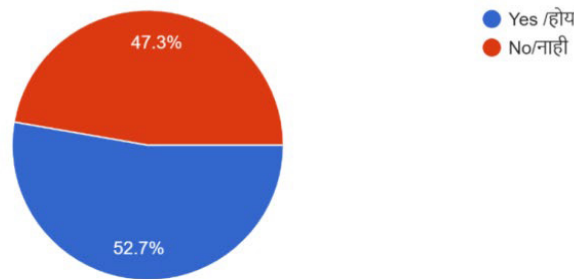


Figure 3: Slightly similar results showed that when teachers were asked about knocked-out tooth teachers knew what it meant as.

Do you have any experience of previous dental trauma training / information ? /तुम्हाला दंत आघात विषयी काही माहिती आहे का ? किंवा प्रशिक्षण झाले आहे का ?

146 responses



Figure 4: More than 62% teachers have no information regarding dental trauma training.

Have You Witnessed Any Knocked out Tooth Incidence due to trauma? / कधी तुम्ही अपघाती निघालेला दात कोणाचा बघितलेला आहे का ?

146 responses

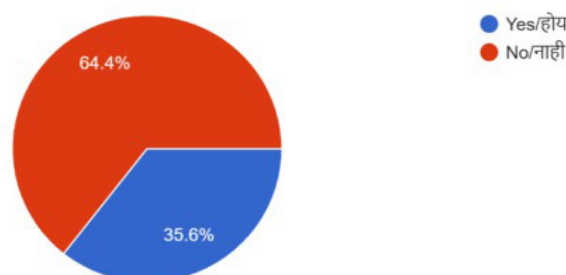


Figure 5: Total respondents more than 65% of teachers have no any witnessed regarding knocked out tooth.

If the tooth is knocked out and falls on the ground, do you know what should be done? /जर कोणाचा दात इजा मुढे खाली जमिनीवर पडला,तर काय करावे हे तुम्हाला माहिती आहे का ?
146 responses

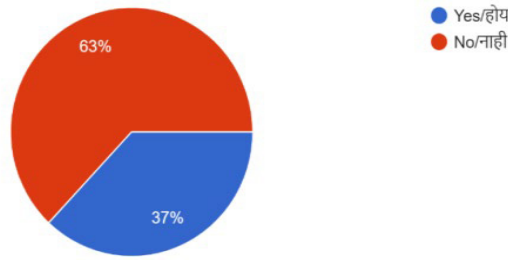


Figure 6: Approximately 63% of teachers lack information.

Have you ever heard about knocked out permanent tooth can be placed back to its original position ?/बाहेर पडलेला कायमचा दात त्याच्या मूळ स्थितीत ठेवता येतो याबद्दल तुम्ही कधी ऐकले आहे का?
146 responses

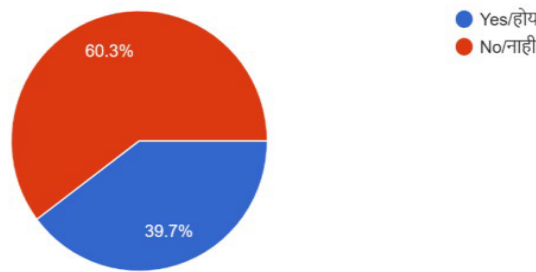


Figure 7: Original position of teachers has no information regarding that.

What are we supposed to do with the tooth that is knocked out of the socket? /खाचा मधून बाहेर पडलेल्या दाताचे आपण काय करावे?
146 responses

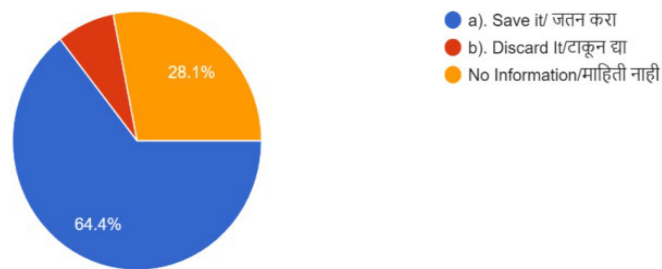


Figure 8: More than 80% have positive dental attitude towards tooth avulsion.

Is it important to seek emergency dental treatment for dental trauma/knocked out teeth ? /दातांच्या दुखापतीसाठी / बाहेर पडलेल्या दातांसाठी आपत्कालीन दंत उपचार घेणे महत्वाचे आहे का?
145 responses

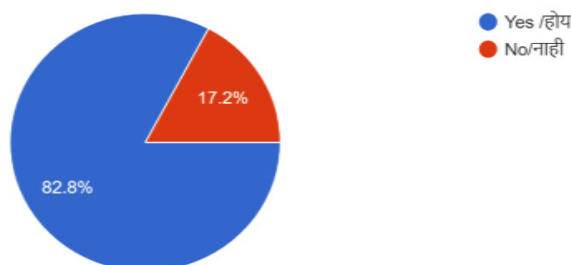


Figure 9: 64% shows that attitude of school teachers gave opinion that save the tooth after knocked out from the socket.

How are you supposed to hold the Avulsed Tooth ?/ इजामुढे दात पडल्यास तुम्ही कुठे पकडणार ?
146 responses

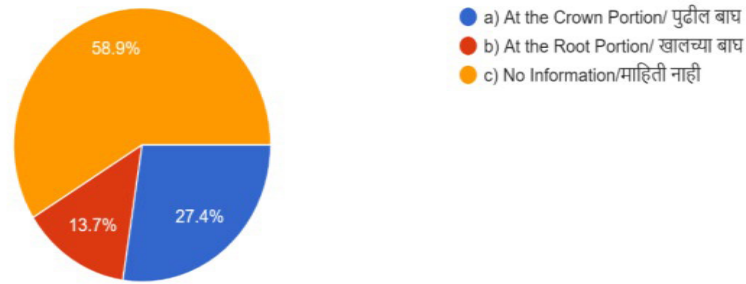


Figure 10: 27%of the participants said only correct answer for position of holding tooth

How urgently do you think you should seek professional help if a tooth is knocked out? /इजामुढे दात पडल्यास तुम्ही किती तातडीने दंतचिकित्सकाची मदत घेणार ?
146 responses

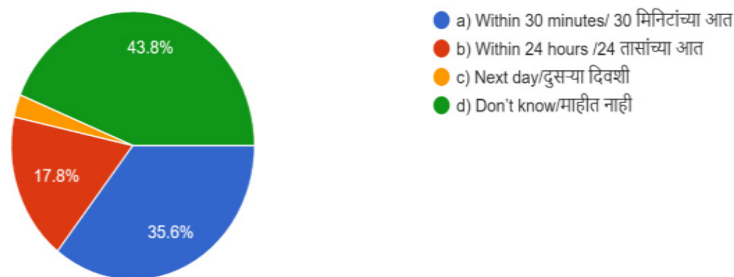


Figure 11: 43% of teachers were not aware of this information.

Immediate Management of Displaced Teeth/विस्थापित दातांचे त्वरित व्यवस्थापन
146 responses

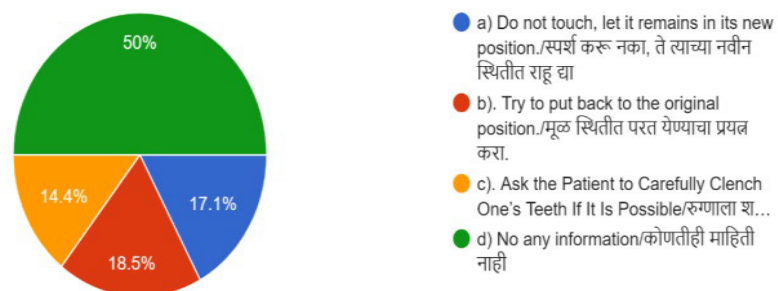


Figure 12: More than 50% majority of school teachers does not have any information to Immediate Management of Displaced Teeth.

DISCUSSION

Effective management is crucial for the future outcome of teeth impacted by traumatic injuries, particularly in young children. School-aged children and teachers are often present at the injury site, underscoring the necessity for teachers to possess essential knowledge of emergency procedures. This knowledge is vital in ensuring that proper care is provided to an injured child.

The implementation of a proper emergency management and treatment plan plays a

vital role in achieving successful outcomes and favorable prognosis for dental trauma cases [19]. Unfortunately, due to insufficient knowledge among non-experts who typically administer initial care before the child receives dental attention, the appropriate immediate treatment is often not provided. By promptly following the recommended guidelines immediately after a traumatic injury, both short-term and long-term outcomes can be significantly enhanced. It has been observed that delaying evaluation by a dentist negatively impacts the prognosis of an avulsed tooth [20].

The study findings revealed a lack of adequate knowledge among school teachers in the Nagpur district regarding tooth avulsion and its appropriate first aid treatment. These results were consistent with previous studies conducted on a similar topic. Surprisingly, a significant number of teachers in both areas were unfamiliar with the concept of a knocked-out tooth or tooth replantation. This lack of awareness is particularly concerning given that tooth avulsion is a common occurrence among school children aged 7 to 11 years. However, it is important to note that the teachers themselves cannot be solely held responsible for this knowledge gap, as there has been a limited effort in Nagpur district to promote awareness or provide education on tooth avulsion.

Among the 146 participants in the study, 63 individuals (43%) were male and 82(56%) were female. Singh et al.'s study [21] consisted of a sample population with 51.1% males. Similarly study revealed a composition of 52% males. Consistent findings were observed when participants were queried about the concept of a knocked-out tooth [22].

In this study, there was a notable lack of awareness concerning the appropriate position for holding a tooth. Approximately 58% of the participants indicated that they would hold the tooth from any area in such a scenario. Results revealed that only about 13% of school teachers were familiar with the correct method of holding an avulsed tooth. Previous research findings highlighted that approximately 79% of participants lacked knowledge regarding appropriate actions to take in such circumstances [23].

According to the study, it was found that out of the respondents, only 35% had encountered dental trauma in children. The most frequently observed types of trauma were crown fractures, followed by tooth avulsion. However, it is alarming that the majority of teachers had insufficient knowledge regarding the emergency management of traumatic dental injuries. Furthermore, 63% of the teachers had not received any first-aid training for managing dental trauma. These findings align with a study where they reported that 75.3% of teachers had not received training in managing dental trauma [24].

Several studies conducted in various countries, such as China, Jordan, Brazil, and others, have

yielded comparable findings to our own research. These studies have highlighted a significant lack of understanding regarding the management of dental trauma. The study involved the participation of over 200 school teachers from the Nagpur region, aiming to evaluate their knowledge, awareness, and attitude regarding the emergency management of dental trauma. Results revealed that merely 29.77% of the school teachers had undergone first aid training; while a mere 26.6% had encountered a case of dental trauma throughout their teaching careers.

The ideal storage medium should be capable of preserving cell vitality, adherence and clonogenic capacity and should be readily available at the site of the accident or easily accessible for the transport of avulsed tooth most of the school teachers (58.5%) opted for tissue paper as the preferred transport medium rather than physiological media.

Alarming, a very small percentage of teachers, namely 3.72% and 3.10%, respectively, favored using milk and the child's mouth as storage mediums for an avulsed tooth. This aligns with the studies conducted where only 5% and 4.3% of school teachers, respectively, demonstrated awareness of the correct storage medium. In contrast, significantly higher percentage of teachers, ranging from 35.7% to 49.6%, who were aware of the appropriate storage medium.

Regarding the cleaning solution for an avulsed tooth, a majority of teachers preferred using an antiseptic solution, possibly aiming to eliminate germs from the soiled tooth. However, they seemed unaware that this action could potentially compromise the viability of periodontal ligament cells. Similar outcomes were noted only a minority of teachers were knowledgeable about the correct solution for cleaning a soiled avulsed tooth, In contrast, studies indicated a higher awareness level among teachers (ranging from 36.6% to 62.5%) regarding the appropriate solution for cleaning a dirty avulsed tooth. The identification of causal factors and high-risk group patients proves beneficial for design of appropriate preventive measures.

Additional findings indicate that 63% of teachers reported encountering incidents involving tooth avulsion, while 49% were aware that in cases of an avulsed tooth, it is necessary to refer the child to a dentist. A comparable study in Brazil

revealed that 88.5% of school teachers would promptly seek professional assistance after a tooth avulsion incident. Among them, 13% attempted to reinsert the tooth into the socket before rushing the child to the dentist, while the remainder mentioned placing the tooth in a moist cloth, washing the child's mouth with tap water, and subsequently referring them to a dentist.

Approximately 59% of the participants expressed a lack of sufficient knowledge about managing an avulsed tooth. A majority of participants expressed an interest in an educational program focused on the management of avulsed teeth, aiming to enhance their understanding and enable them to take prompt actions in such scenarios. Impressively, 87% of the participants affirmed their willingness to attend such an educational program if offered.

In the current study, 22% of the participants mentioned that they would transport an avulsed tooth using a wet handkerchief. Contrarily, a study conducted in Brazil indicated that 39.3% of participants would opt to store the avulsed tooth in water, with an additional 18% uncertain about the suitable medium for transporting an avulsed tooth.

In contrast to these findings, revealed that substantial proportion of school teachers, ranging from 35.7% to 49.6%, were aware of the correct storage medium for an avulsed tooth. Lots of other mediums were used like 15% ice, 3% tape water as the study done that lots of storage medium are there which can be used for an avulsed tooth, e.g., saliva, milk, saline solution, and water.

Due to a lack of awareness, many teachers remain unfamiliar with the ideal storage mediums for avulsed teeth. A study conducted by Oswald et al. indicated that 15% considered saline, 16% preferred a cotton pad, and 3% opted for milk as potential storage media. This knowledge is crucial as research has suggested that a wet medium is far more advantageous than a dry one for preserving an avulsed tooth. Moreover, Oswald et al.'s study highlighted that milk is a superior medium compared to water due to its osmolality. However, a mere 2% suggested the use of an antiseptic solution, and 1% proposed transporting the avulsed tooth in the child's mouth exclusively. The teachers'

awareness regarding tooth cleaning materials was moderate. Sixteen percent of participants mentioned they take no action, while 30% stated they wash the avulsed tooth with sterile saline after it has been avulsed. In a study the majority of school teachers favored a gentle cleaning of the soiled avulsed tooth under tap water as opposed to using a toothbrush or reinserting the tooth into the socket without any prior treatment.

In contrast to these findings, studies conducted indicated a majority of school teachers (54.2% and 36.6%, respectively) being knowledgeable about the correct solution for cleaning a dirty avulsed tooth. However, in this current study, only 42% of teachers were aware of the urgency of visiting a dentist following an avulsed tooth incident, while 29% mentioned having no idea and thus taking no action with the avulsed tooth. Conversely, in the study conducted a significant majority of teachers (78.33%) were inclined towards seeking immediate professional help in such situation.

Awareness levels among Indian school teachers regarding dental trauma management varied significantly, ranging from 4% to 87%. The study found that a considerable portion (66.5%) of parents might attempt to re-implant an avulsed tooth, indicating insufficient knowledge about immediate management of such cases. This underscores the critical need for educating parents and caretakers on this aspect. In the current study, only 2% of parents or caretakers appropriately preserved the avulsed tooth in media such as saline or saliva.

Furthermore, a striking majority of teachers (85.7%) in this study had not received any first-aid training for managing dental trauma. Similar results were noted in a study conducted by Bhandary and Shetty, where 75.3% of teachers had not undergone training for handling dental trauma cases. These findings highlight the substantial gap in training and education regarding dental trauma management among both parents/caretakers and teachers, emphasizing the necessity for comprehensive educational programs in this domain.

The study findings indicated a significant lack of adequate knowledge concerning tooth avulsion and its initial treatment among school teachers in Nagpur District. These results mirrored similar findings observed in previous studies.

It was revealed that a considerable number of teachers in Nagpur District were unfamiliar with the concept of a knocked-out tooth or tooth replantation. This lack of awareness is surprising, particularly considering that tooth avulsion commonly occurs in school children aged between 7 and 11 years old.

However, it's essential to note that the teachers themselves cannot solely be held responsible for this lack of knowledge. The study highlighted that there had been minimal campaigning or exposure efforts related to tooth avulsion in Nagpur District. This absence of educational initiatives or awareness programs might have contributed significantly to the limited understanding among teachers regarding this critical aspect of dental trauma management [25].

CONCLUSION

The findings underscore the need for educational initiatives and dental camps to address the inadequate knowledge among school teachers in Nagpur District regarding tooth avulsion and its first aid treatment. Implementing campaigns through posters, leaflets, and media outreach can play a pivotal role in educating teachers about dental trauma management. Introducing programs aimed at updating teachers' knowledge on managing dental trauma, coupled with first aid training, should be incorporated into basic teacher training programs.

Additionally, conducting further studies to assess and compare the knowledge and attitudes regarding emergency management of dental trauma would provide a more comprehensive perspective on the existing gaps and requirements.

It's important to note that the study revealed a lack of understanding among many teachers in Nagpur District regarding concepts like knocked-out teeth or tooth replantation, despite the common occurrence of tooth avulsion in school children aged between 7 and 11 years old. However, it's crucial to recognize that the teachers themselves cannot be held solely responsible, as there had been minimal campaigning or exposure regarding tooth avulsion in Nagpur District. Addressing this lack of awareness through educational campaigns and training programs is imperative to enhance teachers' preparedness in managing dental trauma incidents effectively.

APPENDIX

QUESTIONNAIRE

Part I

Demographic Details

Name

Gender

Qualification

Location of School Area: Rural /Urban

Years of Teaching Experience

School Type: Government /Private.

Part II

Knowledge of School Teachers With Regards to Dental Avulsed Teeth

1. Do you know, what is Knocked-Out Tooth?

a) Yes

b) No

2. Do you know what tooth replantation is

a) Yes

b) No

3. Have you ever received any kind of information on management of knocked-out tooth?

a) Yes

b) No

4. Have You Witnessed Any Knocked out Tooth Incidence due to trauma?

a) Yes

b) No

5. Previous dental trauma training / information

a) During first aid course training

b) Formal expert training / Information

c) Informational leaflets

d) Internet sources

e) No information or training

6. If the tooth is knocked out and falls on the ground, do you know what should be done?

a) Yes

b) No

7. Should the knocked out permanent tooth be placed back into the socket?

a) Yes

b) No

8. Should knocked-out baby teeth be put back to their original position?

a) Yes

b) No

Attitude of school teachers towards avulsed teeth

9. Do you think It Is important to seek Emergency Management for Dental Trauma?

a) Yes

b) No

10. What would you do with the tooth that is knocked out of the socket?

a) Save it

b) Discard It

c) No any Information

Practice of school teachers with regard to avulsed teeth

11. If a child falls down and one of the top front teeth gets knocked out of the mouth, what would you do?

a) Try to stop the bleeding by placing a napkin in the mouth and asking the child to bite on it

b) Take the child and the tooth to the nearest dentist

c) Look for the tooth and put it back into the socket

d) Contact parents and let them take the child to the dentist

12. If the tooth is fallen in the ground, what would you clean it with before putting it back into the socket?

a) Tap water

b) Antiseptic liquid

c) Saline water

d) Do not wash at all

13. If you don't reimplant the tooth, how would you store and transport the tooth to the dentist?

a) In water

b) In milk

c) In napkin

d) In hand

14. How urgently do you think you should seek professional help if a tooth is knocked out?

a) Within 30 minutes

b) Within 24 hours

c) Next day

d) Don't know

15. Where Should You Hold the Avulsed Tooth

a) At the Crown Portion

b) At the Root Portion

c) No Any Information

16. What would you do if the tooth was in child's mouth, however, out of place?

a) Put It Back Into the Alveolus

b) Remove It from Child's Mouth

c) Discard It Completely

17. Immediate Management of Fractured Teeth:

a) Ignore It

b) Try to find the fractured piece, wrap it with gauze or tissue and bring it for examination and treatment.

c) Put it in liquid and bring it for examination and treatment.

d) No any information

18. Immediate Management of Displaced Teeth:

a) Do not touch, let it remains in its new position.

b) Try to put back to the original position.

c) Ask the Patient to Carefully Clench One's Teeth If It Is Possible

d) No any information

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