Awareness of emergency management of dental trauma

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Abstract

Aim: Traumatic dental injuries frequently occur in society and may occur at home. The ultimate prognosis of an avulsed tooth occurring in a child may depend on the parents’ knowledge of appropriate emergency measures. This study is aimed at evaluating the awareness level of a sample of Indian (Rohtak, Haryana) parents in the management of dental trauma. Materials and Methods: A total of 1500 parents were surveyed using a self-administered structured questionnaire. The questionnaire was divided into three parts. The tabulated data were statistically analyzed using the Chi-square test. Result: This study indicated a low level of knowledge regarding tooth avulsion and replantation procedures to be followed in emergency. The residing area and age of parent did not affect the knowledge and awareness of parents. Moreover, well-educated parents also had very little or no information about dental trauma first-aid. The lack of significance in correct answers between those with and without such experience indicated that past experience did not seem to have increase the knowledge of the correct emergency procedures. Very little or no information about tooth avulsion and replantation had been given to most of them. Conclusion: Dental injury prevention and management should be recognized as a major public health issue and adequate resources to be allocated for research in this area. Educational programs to improve the knowledge and awareness among the parents have to be implemented.

Keywords: Awareness, dental trauma, emergency measures, tooth avulsion

Introduction

Dental trauma remains one of the important oral health problems in childhood and can cause much pain and distress. It can vary from a minor enamel chip to extensive maxillofacial damage involving the supporting structures and displacement or avulsion of teeth. There is perhaps no single dental disturbance that has greater psychological impact on the parents and the child than the loss or fracture of a child’s anterior teeth. Primary and permanent anterior teeth are not only important for aesthetics but also essential for phonetics, mastication, integrity of supporting tissues, psychological and mental wellbeing. Epidemiological studies of dental trauma have shown that most dental accidents in children occur at home, followed by school.

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Access this article online

Quick Response Code: [QR Code Image]
Website: www.contempclindent.org
DOI: 10.4103/0976-237X.142820

The most serious dental injury is avulsion of tooth. The most important factor determining the prognosis of a replanted tooth is the viability of the periodontal ligament left on the root prior to replantation. The clinical management can be complex and involves the use of numerous diagnostic aids and treatment modalities. Correct intervention can play an important role to improve the prognosis of a traumatized tooth. The prognosis highly depends upon correct and prompt emergency management and proper advice, which may frequently be the responsibility of lay people available at the accident site. Therefore, it is crucial to ascertain the knowledge and practice of the personnel at home and in school who are in close contact with young children. Many international reports have indicated the lacking knowledge of adults likely to be present at the emergency site regarding immediate management of dental trauma. These surveys have included parents, sport coaches, teachers and even medical doctors.

Providing information is a way to increase the knowledge of dental first-aid. Parents can play an important role in improving the prognosis of avulsed permanent teeth of children if they are informed about the first-aid steps to be taken at the time of an accident. Before planning information campaigns, it is important to assess the knowledge level of parents.

The purpose of this study was to evaluate parents’ awareness of the emergency management of traumatized primary and permanent teeth by means of a questionnaire in a sample of 1500 parents from rural/urban backgrounds and with different education levels.
Materials and Methods

This study was carried out in the Outpatient Department (OPD) of Pedodontics and Preventive Dentistry, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India. The awareness of the emergency management of dental trauma among 1500 parents attending OPD was assessed. A questionnaire [Table 1] was designed and modified from questionnaires used in earlier studies. It was prepared in English as well as in the regional language. The questionnaire was divided into three parts, Part I contained questions on personal information, Part II contained questions based on an imaginary case of trauma and Part III contained questions related to attitude towards dental trauma management education. Before distributing the questionnaire, a brief explanation about the objective of the study was given to the parents. Questionnaires were distributed to all those parents who agreed to participate in the study. The investigators were available throughout to make any required clarifications to the subjects. The questionnaires were analyzed to observe the correct and incorrect responses for Part II of the questionnaire. The results were tabulated and expressed as both number and percentage. In addition, Chi-square test was employed to evaluate the effect of residing area, age, level of education and previous dental trauma experience on each question.

Results and Observations

The demographic characteristics of the participating parents as shown in Table 2; indicate that 58.5% of parents were from

| Part I |
|--------|
| Gender | Male | Female |
| Age    | <30 years | >30 years |
| Residing area | Rural | Urban |
| Education level | Below graduate | Above graduate |
| Previous experience | Yes | No |

| Part II |
|--------|
| Imaginary question |
| During a game an 8-year-old boy got hit on his mouth, his mouth is bleeding and an upper front tooth is found to be missing/fractured |
| Question 1: Are the damaged front teeth likely to be? |
| Permanent |
| Primary |
| Not sure |
| Question 2: After control of bleeding will you search for the lost tooth? |
| Yes |
| No |
| Question 3: How urgent do you think it is to seek professional help if a permanent tooth has been knocked out? |
| Immediately |
| Within 30 min |
| Within a few hours |
| Before the next day |
| Question 4: If the child does not have any pain, would you still go for a professional advice |
| Yes |
| No |
| Question 5: Where will you take the child? (First place of contact) |
| General hospital |
| Dental hospital |
| Question 6: Would you replant (put back) the tooth into the socket? |
| Yes |
| No |
| Question 7: If you decide to replant a tooth back into its socket but it has fallen onto the ground and is covered with dirt, what would you do? |
| Scrub the tooth gently with a toothbrush |
| Rinse the tooth under tap water |
| Put the tooth straight back into the socket without doing other things |

| Part III |
|--------|
| Question 10: Do you think it is important to have an educational program regarding management of dental trauma? |
| Yes |
| No |
| Do not know |
| Question 11: Are you satisfied with your knowledge on the management of dental trauma? |
| Yes |
| No |
| Do not know |
| Question 12: Would you like to attend an educational program on management of dental trauma? |
| Yes |
| No |
| Do not know |

Contd...
rural area and 65.2% of parents belonged to >30 years age group. Also, 54.3% of parents were educated below graduate level and 36.7% of parents had previous experience of trauma to self or others.

Tables 3-6 show the number of correct and incorrect responses for Part II of questionnaire along with the P values.

For question 1, 67.3% \((n = 1010)\) of the participants were not able to recognize the damaged front tooth in an 8-year-old child.

For question 2, 57% \((n = 855)\) would not search for lost tooth and 43% \((n = 645)\) would search for it.

For question 3, 64.4% \((n = 966)\) would seek professional advice immediately and 35.6% \((n = 534)\) would seek professional advice within 30 min, few hours and before next day.

For question 4, 67.5% \((n = 1013)\) would not go for a professional advice if the child does not have any pain.

For question 5, 72.7% \((n = 1091)\) would take the child to dental hospital after dental trauma and 27.2\%(n = 409) would go to general hospital.

For question 6, 31.8\%(n = 477) would replant the tooth in its socket and 68.2% \((n = 1023)\) would not replant the tooth.

For question 7, 46.4\%(n = 697) would rinse the tooth under tap water for cleaning it before replantation, six parents would scrub the tooth gently with the tooth brush, 11 parents would place the tooth straight back to the socket without doing other things, 770 parents did not know how to clean and 16 parents would choose other methods like rinsing it with antiseptic solution or wiping it with wet cloth.

For question 8, milk was chosen as transport media by 24.3% \((n = 365)\) of parents, 35 parents would use ice, seven parents chose child’s mouth, 566 parents would use paper tissue or handkerchief, 500 parents would take the tooth in plastic wrap and 27 parents would use antiseptic or alcohol as transport media.

For question 9, follow-up by dentist was considered important by 726 (48.4%) parents.

| Table 2: Demographic characteristics of participating parents |
|-----------------|------------------|
| Variable        | Number of parents (%) |
| Area of residence |                  |
| Rural           | 877 (58.5)        |
| Urban           | 623 (41.5)        |
| Age (years)     |                  |
| <30             | 522 (34.8)        |
| >30             | 978 (65.2)        |
| Education       |                  |
| Below graduate  | 815 (54.3)        |
| Above graduate  | 685 (45.7)        |
| Previous experience |               |
| Yes             | 550 (36.7)        |
| No              | 950 (63.3)        |

| Table 3: Distribution of parents based on residing area |
|-----------------|------------------|
| Question                                    | Variable | Total (%) | Rural (%) | Urban (%) | \(\chi^2\) value |
| Are the damaged front teeth likely to be    | Correct  | 490 (32.6) | 277 (56.53) | 213 (43.47) | 1.123 (not significant) |
| After control of bleeding will you search for the lost tooth | Incorrect | 1010 (67.3) | 600 (59.41) | 410 (40.59) | 3.585 (not significant) |
| How urgent do you think it is to seek professional advice | Correct | 966 (64.4) | 554 (57.35) | 412 (42.65) | 1.394 (not significant) |
| If the child does not have any pain you would still go for a professional advice | Incorrect | 534 (35.6) | 323 (60.49) | 211 (39.51) | 0.280 (not significant) |
| Where will you take the child (first place of contact) | Correct | 1091 (72.7) | 640 (58.66) | 451 (41.34) | 0.063 (not significant) |
| Would you replant (put back) the tooth in its socket | Incorrect | 1013 (67.5) | 597 (58.93) | 416 (41.07) | 1.858 (not significant) |
| Method of cleaning | Correct | 697 (46.4) | 417 (59.83) | 280 (40.17) | 0.934 (not significant) |
| Transport media | Incorrect | 803 (53.5) | 460 (57.29) | 343 (42.71) | 1.093 (not significant) |
| Is the follow-up of the child by the dentist important | Correct | 726 (48.4) | 426 (58.68) | 300 (41.32) | 0.026 (not significant) |
Chi-square test indicated that there was no significant difference in the number of correct answers for any question in relation to age, residing area, education level and previous experience.

For question 10, 92.36% of parents felt that it is important to have an educational program in management of dental trauma.

For question 11, 93.45% of parents were not satisfied with their knowledge on the management of dental trauma.

For question 12, 95.13% of parents would like to attend an educational program on management of dental trauma.
Table 6: Distribution of parents based on previous experience

| Question                                                                 | Variable | Total       | Previous experience (%) | No previous experience (%) | $\chi^2$ value |
|--------------------------------------------------------------------------|----------|-------------|-------------------------|---------------------------|---------------|
| Are the damaged front teeth likely to be                                 | Correct  | 490         | 170 (34.69)             | 320 (65.31)               | 1.220 (not significant) |
|                                                                          | Incorrect| 1010        | 380 (37.62)             | 630 (62.38)               |               |
| After control of bleeding will you search for the lost tooth             | Correct  | 645         | 250 (38.76)             | 395 (61.24)               | 2.135 (not significant) |
|                                                                          | Incorrect| 855         | 300 (35.90)             | 555 (64.91)               |               |
| How urgent do you think it is to seek professional advice                | Correct  | 966         | 345 (35.71)             | 621 (64.29)               | 1.060 (not significant) |
|                                                                          | Incorrect| 534         | 205 (38.39)             | 329 (61.61)               |               |
| If the child does not have any pain you would still go for a professional advice | Correct  | 487         | 167 (34.29)             | 323 (65.71)               | 1.752 (not significant) |
|                                                                          | Incorrect| 1013        | 383 (37.81)             | 630 (62.19)               |               |
| Where will you take the child (first place of contact)                  | Correct  | 1091        | 390 (35.75)             | 701 (64.25)               | 1.457 (not significant) |
|                                                                          | Incorrect| 409         | 160 (39.12)             | 249 (60.88)               |               |
| Would you replant (put back) the tooth in its socket                     | Correct  | 477         | 180 (37.74)             | 297 (62.26)               | 0.344 (not significant) |
|                                                                          | Incorrect| 1023        | 370 (36.17)             | 653 (63.83)               |               |
| Method of cleaning                                                       | Correct  | 697         | 243 (34.86)             | 454 (65.14)               | 1.823 (not significant) |
|                                                                          | Incorrect| 803         | 307 (38.23)             | 496 (61.77)               |               |
| Transport media                                                          | Correct  | 365         | 126 (34.52)             | 239 (65.48)               | 0.957 (not significant) |
|                                                                          | Incorrect| 1135        | 424 (37.36)             | 711 (62.64)               |               |
| Is the follow-up of the child by the dentist important                   | Correct  | 726         | 257 (35.40)             | 469 (64.60)               | 0.973 (not significant) |
|                                                                          | Incorrect| 774         | 293 (37.86)             | 481 (62.14)               |               |

Discussion

The study included 1500 parents attending OPD of Pedodontics and Preventive Dentistry, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India who were assessed with the help of a questionnaire for their knowledge and awareness regarding emergency management of dental trauma in a child. The age, gender, education level, residing area and previous experience of dental trauma were recorded in Part I of questionnaire. In Part II of questionnaire, an imaginary case of dental trauma was presented and questions were designed to test the parents’ knowledge. Lastly, in Part III, attitude of parents towards education of dental trauma management was assessed. Out of 1500 parents, only 490 (32.6%) recognized that maxillary incisor is a member of the permanent dentition in an 8-year-old boy. This indicated that many parents don’t realize or notice the age of transition from deciduous teeth exfoliation to permanent incisor eruption. Many parents (43%) were willing to find the avulsed tooth. This showed parents are increasingly become aware about the possibility of replantation. Also, this might be related to make sure that the tooth is not swallowed or inhaled by the child.

Extraoral time is paramount in determining the success of tooth replantation. A delay in providing emergency dental treatment may jeopardize the prognosis of an avulsed tooth.\[^{15}\] More than half of the parents (63.17%) recognized the urgency of seeking professional help as immediately for avulsion injury. However, 36.83% of the parents did not realise the importance of seeking immediate professional help and were concerned primarily with bleeding and pain control measures.

Pain constitutes one of the major reasons for seeking professional help. Many parents (67.5%) did not feel the need to see a doctor if the child has no pain. This seems to be a common finding among Indian population. So parents should be asserted about significance of seeking professional advice after dental trauma irrespective of pain.

Regarding the important question of replantation, 31.8% of the participants would have tried to put the tooth back in its socket; although 68.2% of the parents were not confident about undertaking the tooth saving procedure or may not know how to do it. The reasons for reluctance to replant avulsed teeth could be related to lack of knowledge, hurting the child or to the felt urge to stop the bleeding, which is perceived by most people as life threatening. In cases with multi-injury trauma, the replantation of an avulsed tooth may require a low priority but in case of an isolated dental trauma, a simple procedure of replantation could make a huge difference not only in the prognosis of the tooth, but also influence the facial growth, function, esthetics and psychological impact on the patient.\[^{15}\] Six parents chose to clean a soiled avulsed tooth by scrubbing with a toothbrush which might disrupt the periodontal ligament cells on the tooth surface and severely decrease the chance of successful replantation. Seven hundred and seventy parents (51.3%) did not have any clue what to do and how to clean the tooth before replantation. There seems to be an urgent need to educate the public and correct the misconceptions.
Storing the avulsed tooth in a solution compatible with cell viability until replantation is a critical procedure however dry storage selection was prevalent among parents. For transport of an avulsed tooth, paper tissue or handkerchief was the favoured medium for 37.7% (n = 566) of parents followed by plastic wrap by 33.3% (n = 500). In a study on school teachers by Chan et al.,[10] a large number of respondents chose ice or iced water as the preferred storage medium; this may be related to the popular use of ice for transportation of human organs and accidentally detached limbs often reported in the mass media.

Although patient’s mouth may function well as storage medium, only seven parents were aware of that. The concept of dry storage among parents indicated the lack of knowledge on how avulsed teeth should be handled after an accident. They were not aware that dry storage during transport could seriously prejudice the normal healing process and the prognosis is related to injury to periodontal membrane during the time the tooth is out of its socket.[9] Dental trauma sequelle like pulp necrosis and root resorption may present later sometimes and therefore successive visits are instrumental in timely detecting and treating such problems. However, more than half (51.6%) parents did not understand the value of follow-ups.

The results of this study indicated low level of knowledge regarding tooth avulsion and replantation procedures to be followed in emergency. The findings are in accordance with other studies conducted on parents.[1,6,11,13,14,16-18] The residing area and age of parent did not affect their knowledge and awareness. Moreover, well-educated parents also had very little or no information about dental trauma first-aid. The lack of significance in correct answers between those with and without such experience indicated that past experience did not seem to have increase the knowledge of the correct emergency procedures. This is because very little or no information about tooth avulsion and replantation had been given to most of them.

Providing information is a way to increase knowledge of dental first-aid. It would be beneficial if instructions regarding how to manage dental injuries are more widespread in society. Efforts should be made through population based preventive measures to ensure uniform knowledge about dental trauma. Considering the frequency of dental injuries, it is remarkable that they are not included in general first-aid information. 95% of the participants in our study were willing to attend an educational program on dental trauma.

Most healthcare providers and educators would agree that prevention of injury is a more desirable course of action than dealing with the consequences, which usually means the treatment of injury. Many dentoalveolar injuries can be prevented by the use of well-fitted properly constructed mouthguard in any sports in which there is a risk of sudden impact to the face however, the use of mouthguard is limited due a lack of perceived need for them and lack of information provided to the parents of children who participate in contact sports. Unfortunately, even in the dental field, the prevention of accidental trauma to the teeth is perhaps overshadowed by the tremendous interest worldwide in the prevention and control of other dental diseases.[10] Dental injury prevention and management should be recognized as a major public health issue and adequate resources to be allocated for research in this area along with the development of prevention programmes.

**Conclusion**

The basal findings of this study suggest that there is a lack of proper knowledge on emergency dental first-aid among the study participants. In India, no attempt has been made by the government or other dental organizations to educate people on the management of dental trauma. Our findings emphasize a need for educational campaigns to broaden the knowledge of parents regarding emergency management of traumatic dental injuries apart from information on dental caries and brushing methods. Mounting posters, leaflets at public places along with media campaigns will educate people for managing avulsed permanent teeth.

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How to cite this article: Namdev R, Jindal A, Bhargava S, Bakshi L, Verma R, Beniwal D. Awareness of emergency management of dental trauma. Contemp Clin Dent 2014;5:507-13.

Source of Support: Nil. Conflict of Interest: None declared.