

A Cross Sectional Study on Knowledge and Practices towards Dental Avulsion in Primary School Teachers in Lahore

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ABSTRACT

Introduction: Dental avulsion is very common in children and its timely management is often important prognosis of dentition. Primary school teachers are the one who frequently encounter dental avulsion and provide first aid and refer the child. This study was carried out with an objective to assess the knowledge and practices of primary school teachers situated in urban and rural parts of Lahore city, Pakistan and to see the impact of sensitization lecture on dental avulsion management.

Methods: This prospective descriptive study was carried out in primary schools of Lahore city from January 2020 to March 2020 on 208 primary school teachers of schools located in urban and rural areas of Lahore City, Pakistan. Total of 19 schools from Lahore were selected randomly and the study was done in three phases. Knowledge and practices towards dental avulsion were assessed before and after giving the sensitization lecture on dental avulsion management by questionnaire method.

Results: Out of 208 respondents, 123 (59.1%) were females primary school teachers and 85 (40.8%) were male teachers. Moderate levels of knowledge and practices were noted in primary school teachers of rural and urban areas with marginally good levels in primary school teachers from urban areas. After the sensitization lecture there was good improvement in almost all aspects of knowledge and practice levels barring few practices like cleaning the avulsed tooth before replanting and attempt to replant the avulsed tooth by themselves before referring to dentist.

Conclusion: Primary school teachers has inadequate knowledge for proper management of dental avulsion. Training of teachers by dental experts on primary management of dental avulsion had a great impact on practices of school teachers and this emphasizes the importance of inclusion of primary aid on dental avulsion as part of teacher's education programmes.

Keywords: Dental avulsion, primary school teachers, Pakistan, replanting of tooth.

INTRODUCTION

Tooth or Dental avulsion is the complete displacement of a tooth from its socket in alveolar bone owing to trauma. It accounts for 0.5-16 percent of permanent dentition traumatic injuries. Avulsion of permanent teeth happens more frequently in adolescents aged 7 to 9 years, where the comparatively robust alveolar bone gives only limited resistance to extrusive forces and the teeth are more typically impacted by the maxillary central incisors (1).

Although not life-threatening, tooth avulsion demands the most urgent management to prevent replacement resorption. Successful replantation of a avulsed tooth significantly depends upon handling, extra oral drying time, and storage media. Prognosis of the reimplanted tooth is greatly enhanced when replantation is performed immediately after tooth avulsion or when the avulsed tooth is stored in appropriate transport media (2).

Dental avulsion of permanent dentition also poses a problem. Healing after replantation of a regular periodontal ligament can only occur if necessary innermost cell layers around the root surface are present. Clinical trials have demonstrated that the prognosis for replanted teeth is highest within 5 minutes of avulsion, but adequate care is not always available (3). When avulsed, to reestablish functional normality, the tooth must be replanted into its socket. Maintenance of viable periodontal ligament cells present on the root surface is critical for replantation success. Thus, immediate replantation or storage (within 15 minutes after avulsion) of unarticulated tooth in

solutions compatible with cell viability until replantation is critical procedures

Tooth avulsion in children is a very common condition, and emergency treatment protocols are important for the prognosis of cases. Most of the accidents occur at school time and school teachers present at the time of the injury will offer first aid measures and experience of school personnel working with children is of utmost significance (4, 5). Therefore, the teachers' expertise and preparedness to handle these injuries play a key role in the tooth's prognosis. Low awareness of dental trauma treatment by school teachers is expressed in previous reports (6-9). The purpose of the study was to know the level of knowledge in primary school teachers regarding tooth avulsion and the importance of immediate treatment procedures before and after the sensitization lectures by dental experts.

METHODOLOGY

This prospective descriptive study was done in primary schools of Lahore city from January 2020 to March 2020. This prospective intervention study was conducted on 208 primary school teachers from 17 schools selected randomly. Lahore district has more than 500 primary schools with approximately 3000 primary school teachers. Initially, 7 schools were selected randomly in the urban pockets of the city and 104 primary school teachers were included in the study. For making the comparison easy same number of primary school teachers were selected from rural areas from 11 rural primary schools.

Anonymity was guaranteed to all participants and participation was voluntary with informed permission obtained from their respective school management. The study was conducted in three stages (preliminary survey) to evaluate the current knowledge of dental avulsion management in teachers using self-administered questionnaires prepared in both English and Urdu, given directly to respondents at their respective schools. The first stage of the study was carried out in January 2020 in which respondents were asked to fill the questionnaire and the respondents were then asked to tick the most suitable response from the given list of responses, in order to determine their awareness and attitude regarding the avulsed tooth and dental first aid care. In the second stage in February, a sensitization lecture was given to school teachers in order to improve the awareness among school teachers, information about tooth avulsion and its emergency management, as a health talk using power point presentation was given in both English and Urdu

language. Lastly, third stage was carried out in March 2020, the participants were asked to fill the same questionnaire.

The questionnaire was pretested by a pilot study on 30 primary school teachers and was modified accordingly. The Cronbach alpha was found to be 0.78. The primary school teachers who participated in in pilot study were excluded from the final sample size. The questionnaire consisted of two parts viz., the first part with questions related to the locality, gender, age group and education status. Whereas the second part of the questionnaire included questions evaluating the knowledge of primary school teachers and their behavior towards dental avulsion and injury. Before the study, requisite permission was obtained from the education office of Lahore.

The data was entered in Microsoft excel, frequencies and percentages were calculated. Appropriate statistical tests were applied wherever necessary.

RESULTS

Table 1: Distribution of respondents based on socio-demographic variables

| | | Urban | Rural | Total |
|---------------|--------------|------------|------------|-------------|
| Gender | Male | 39 (37.5%) | 46 (44.2%) | 85 (40.8%) |
| | Female | 65 (62.5%) | 58 (55.7%) | 123 (59.1%) |
| Age Group | <20 yrs | 6 (5.7%) | 1 (0.9%) | 7 (3.3%) |
| | 20-29 yrs | 31 (29.8%) | 40 (38.4%) | 71 (34.1%) |
| | 30-39 yrs | 33 (31.7%) | 28 (26.9%) | 61 (29.3%) |
| | 40-49 yrs | 23 (22.1%) | 27 (25.9%) | 50 (24%) |
| | ≥ 50 years | 11 (10.5%) | 8 (7.6%) | 19 (9.1%) |
| Qualification | +12 (PTC) | 49 (47.1%) | 63 (60.5%) | 63 (60.5%) |
| | Graduate | 40 (3.8%) | 34 (32.6%) | 34 (32.6%) |
| | Postgraduate | 15 (14.4%) | 7 (6.7%) | 7 (6.7%) |

Out of 208 respondents who participated in the study, 123 (59.1%) were females primary school teachers and 85 (40.8%) were males, in which 65 (62.5%) of females were from urban areas and 58 (55.7%) of females were from rural areas. Whereas majority of male respondents were from rural areas 46 (44.2%) and 39 (37.5%) of males were from urban areas. Most of the school teachers were in the age group of 20-29 years with 31 (29.8%) in urban areas and 40 (38.4%) in rural areas. very few of the respondents

were below the age of 20 years and above 50 years with 7 (3.3%) and 19 (9.1%) respectively. With regards to qualification of teachers, most of them 63 (60.5%), had completed +12 with primary teaching certificate (PTC) with more respondents from rural areas than urban areas. Only 7 (6.7%) of the teachers were postgraduate degree holders with 15 (14.4%) in urban areas and 7 (6.7%) in rural areas (Table 1).

Table 2: Knowledge of respondents towards tooth avulsion before and after lecture

| Knowledge of teachers | | Before lecture | | After lecture | |
|---------------------------|-----|----------------|---------------|---------------|---------------|
| | | Rural (n=104) | Urban (n=104) | Rural (n=104) | Urban (n=104) |
| Types of Dentition | Yes | 66 (63.4%) | 90 (86.5%) | 104 (100%) | 104 (100%) |
| | No | 38 (36.5%) | 24 (23.07%) | | |
| Previous Experience | Yes | 74 (71.1%) | 25 (24%) | 71 (68.2%) | 25 (24%) |
| | No | 30 (28.8%) | 79 (75.9%) | 33 (31.7%) | 79 (75.9%) |
| Possibility of replanting | Yes | 53 (50.95%) | 78 (75%) | 99 (95.1%) | 102 (98%) |
| | No | 51 (49%) | 26 (25%) | 5 (4.8%) | 2 (1.9%) |

Table 2 depicts the knowledge of primary school teachers with regards to dentition types, in which 66 (63.4%) and 90 (86.5%) of respondents knew about the types if dentition in rural and urban areas respectively before the sensitization lecture. Post sensitization lecture almost all respondents both in urban and rural areas were aware of the types of dentition in children. There was no

difference with previous experience encountering dental avulsion before and after lecture, whereas there was good improvement in knowledge on possibility of replanting the tooth before and after lecture. About 78 (75%) teachers working in urban areas were more aware about the possibility of replanting compared to their counterparts in rural areas with only half of the teachers working in rural

areas were aware before the lecture is delivered. Almost all the teachers knew about the possibility of replanting tooth after the sensitization lecture.

Most of the primary school teachers knew hospital as the first place of referral for dental avulsion, with 68 (65.3%) and 64 (61.5%) in rural and urban areas respectively. Before the sensitization lecture only 13 (12.5%) and 19 (18.2%) of the respondents in rural and urban areas respectively felt the need to refer the children with dental avulsion to dentist for treatment. After attending the lecture all 208 respondents were of the knowledge to refer children with dental avulsion to dentist for expert management. Just more than half of the teachers in urban and rural areas were of the knowledge of urgency of replantation of tooth immediately soon after dental avulsion. Whereas very few of the teachers, 3 (2.8%) in rural areas and 9 (8.6%) in urban areas thought of replanting after few days of tooth avulsion. After the sensitization lecture all the respondents are of the view of replanting the tooth immediately after the avulsion. With perspective of teachers replanting avulsed tooth for children, there was good improvement of the attitude of teachers of both urban and rural areas, with 56 (53.8%) in

rural and 61 (58.8%) were willing to attempt replant the avulsed tooth before lecture. About 79 (75.9%) and 85 (81.9%) in rural and urban areas respectively were willing to replant if they come across any child with dental avulsion after they attended the lecture. (Table 3)

Primary school teachers were of the opinion to transport the avulsed tooth in paper or cotton, with 59 (56.7%) in rural areas and 62 (59.6%) in urban areas. After the lecture by dental experts with about the right medium to transport the avulsed teeth in milk, most of the respondents were of the opinion to transport the avulsed tooth in milk. Furthermore, there was good improvement on knowledge and practice after the lecture with regards to dental avulsion with fracture. Before the sensitization lecture, most of the participants were of the opinion that the children with dental avulsion needs to be referred to dentist, with 69 (66.3%) and 72 (69.2%) in rural and urban areas respectively. Approximately 20% of the respondents felt there is no need to do anything in case of dental avulsion associated with fracture. About 37 (35.5%) and 46 (42.3%) of primary school teachers were of the opinion of replacing the avulsed tooth even if associate with fracture (Table3).

Table 3: Practices of primary school teachers in rural and urban areas with regards to Dental Avulsion

| | | Before lecture | | After lecture | |
|-------------------------|---------------------|----------------|---------------|---------------|---------------|
| | | Rural (n=104) | Urban (n=104) | Rural (n=104) | Urban (n=104) |
| Place Of Contact First | Doctor | 23 (22.1%) | 21(20.1%) | | |
| | Dentist | 13 (12.5 %) | 19(18.2%) | 104 (100%) | 104 (100%) |
| | Hospital | 68 (65.3%) | 64(61.5%) | | |
| Urgency Of Replantation | Immediately | 67 (64.4%) | 61(58.6%) | 104 (100%) | 104(100%) |
| | Within 30 min | 18 (17.3%) | 18(17.3%) | | |
| | Within Hours | 16 (15.3%) | 16(15.3%) | | |
| | Few Days | 3(2.8%) | 9 (8.6%) | | |
| Attempting Themselves | Yes | 56 (53.8%) | 61(58.6%) | 79 (75.9%) | 85 (81.7%) |
| | No | 48 (46.1%) | 43(41.3%) | 25 (24%) | 19 (18.2%) |
| Cleaning Experience | Brush | 10 (9.6%) | 5 (4.8%) | | |
| | Salt Water | 27 (25.9%) | 30(28.8%) | 58 (55.7%) | 49 (47.1%) |
| | Milk | 8 (7.6%) | 11(10.5%) | 46 (44.2%) | 55 (52.8%) |
| | Water | 17 (16.3%) | 40(38.4%) | | |
| | Do Nothing | 42 (40.3%) | 18(17.3%) | | |
| Transport Media | Water | 8 (7.6%) | 15(14.4%) | 3 (2.8%) | 1 (0.9%) |
| | Milk | 0 (0%) | 18(17.3%) | 89 (85.5%) | 92 (88.4%) |
| | Antiseptic Solution | 24 (23%) | 9 (8.6%) | 0 (0%) | 0 (0%) |
| | Child's Mouth | 13 (12.5%) | 0 (0%) | 12 (11.5%) | 11 (10.5%) |
| | Paper/Cotton Roll | 59 (56.7%) | 62(59.6%) | 0 (0%) | 0 (0%) |
| Avulsed With Fracture | Replace | 14 (13.4%) | 9 (8.6%) | 37 (35.5%) | 44 (42.3%) |
| | Refer to Dentists | 69 (66.3%) | 72(69.2%) | 66 (63.4%) | 60 (57.6%) |
| | Do Nothing | 21 (20.1%) | 23(22.1%) | 1 (0.9%) | 0 (0%) |

DISCUSSION

The present study findings show insufficient knowledge and practices among primary school teachers on urban and rural areas of Lahore with regards to first aid, management and referral of children with dental avulsion which are comparable with other similar studies done elsewhere (10-13).

For prevention of complication, dental avulsion requires proper immediate steps. The safest approach in field especially schools is to replant the avulsed tooth immediately, which if not possible it needs to be preserved and transported in suitable liquid medium such as milk for viability and possible replantation by dental expert on

proper referral. As the child spends much of his day at school with involvement in sports, daily activities and is at risk of accidents or falls resulting in dental avulsion. Primary school teachers are the one who come in contact first with the injured children and their responsibility for coping with the situation is therefore of critical importance (14). Knowledge of teachers regarding types of dentition was 66(63.4%) in rural and 90 (86.5%) in urban areas, which is inadequate but still higher compared to study done in Hail, Saudi Arabia (15), where only 37.8% of primary school teachers knew about the types of dentition

There paucity of knowledge of possibility of replanting was noted to be in 53 (50.93%) and 78 (75%) in rural and

urban areas respectively. Replantation of avulsed tooth is a debatable as it may damage and hinder the permanent successor. These finding are corroborated by studies done in India and Singapore, in which teachers had poor level of knowledge with regards to replantation of tooth (16, 17). In case of dental avulsion, time is most important factor for preserving the avulsed tooth viability. In this study more than 50% of the respondents were aware to replant the tooth almost immediately or within 30 minutes which is analogous with the findings of the study done in Hong Kong (18), and in contrast to European study (7), where almost all respondents stating the correct time to replant the avulsed tooth.

Furthermore, only 18 (17.3%) in urban school and none from rural school knew about the correct way to store and transport the avulsed tooth. Milk is the regarded as ideal transport medium for transport of avulsed tooth, due to its ready availability and compatibility for periodontal ligament cells (19). Very few studies (20, 21) have reported good knowledge more than 50% of respondents regarding the transport medium, while most of the studies have shown 10-25% of the respondents knew about the transport medium (22-24). While more than 50% of teachers, both in urban and rural areas would like to replant the avulsed tooth by themselves, which was much higher compared to other studies (24-26), with just 5-25% of the respondents were willing to replant the tooth by themselves. This low percentage of people willing to replant tooth was because of their fear of infection, inflicting more to the child and lack of confidence.

The avulsed tooth will slip on the ground and get dirty in certain instances of tooth avulsion. It is also really important to know how to clean a filthy avulsed tooth. 40 (38.4%) of the teachers from urban areas thought of washing the avulsed tooth with water, whereas the majority of their counterparts in rural schools were of the opinion to do nothing. In a study conducted by Hamilton et al (27) where 2.2 percent of respondents decided to clean the tooth prior to tooth replantation, while only 8 percent washed it with milk, a comparable response was received.

As the method of information transmission to the teachers, a brief 30-min lecture accompanied by discussion was delivered to primary school teacher in urban and rural areas. Ideally, after the lecture as expected to see the change in knowledge and attitude in managing the avulsed tooth, more than 90% of primary school teachers selected the right answers except to few questions like attempting to replant the avulsed tooth by themselves, regarding cleaning the avulsed tooth before replanting and referral of children presenting with avulsion and fracture.

CONCLUSION

Knowledge and practices of field level management of dental avulsion in children by primary school teachers was moderate and marginally better in urban primary school teachers compared to their counterparts in rural areas. After the sensitization lecture by expert has remarkably improved the knowledge of teachers in both urban and rural areas, emphasizing more educational programmes on traumatic dental injuries for primary school teachers for enhancing their ability to give immediate care and proper referral.

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