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KNOWLEDGE OF SCHOOL PROFESSIONALS REGARDING EMERGENCY MANAGEMENT OF DENTAL AVULSION BEFORE AND AFTER THE CONDUCTION OF AN AWARENESS PROGRAM: A CROSS-SECTIONAL STUDY

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ABSTRACT **Background:** Avulsion is one of the most serious dental injuries due to its implications for tooth loss and sequelae following treatment. Most dental accidents in children occur at home, followed by the school therefore, first aid provided by school professionals and other school staff must be appropriate for the management of traumatic dental injury as it plays a major role in improving the prognosis. **Aim:** The study aims to assess the gain in knowledge of school professionals before and after the conduction of an awareness program regarding the emergency management of dental avulsion in Lucknow District. **Materials and methods:** A cross-sectional, questionnaire-based observational study was conducted in various schools in Lucknow. The questionnaire collected information on school professionals' education level, demographic characteristics, first-aid training, and attitudes towards emergency management of dental avulsion before and after the conduction of an awareness program. **Results:** 200 school professionals completed the questionnaire and knowledge about tooth avulsion was inadequate, and first aid training was not associated with correct responses to the management of avulsed teeth. A significantly higher percentage of school professionals expressed the need for future education in dental trauma avulsion management. However, after the conduction of an awareness program comparatively higher percentage of school professionals reported having gained knowledge regarding the emergency management of dental avulsion. **Conclusion:** Considering that there is a lack of knowledge among school professionals regarding emergency management of dental avulsion, educational programs can prove to improve knowledge and awareness among school professionals.

KEYWORDS : Avulsion, School Professionals, Awareness Program.

INTRODUCTION

Traumatic injuries are highly prevalent in children and are the major concern for morbidity and mortality of teeth especially anterior teeth. Tooth avulsion is defined as the total displacement of the tooth out of its dentoalveolar socket and accounts for 0.5-16% of traumatic injuries in permanent dentition. The International Association of Dental Traumatology(IADT) identifies avulsion as one of the most serious dental injuries due to its implications for tooth loss and sequelae following treatment.[1]

The school environment is the most common place for children, to experience trauma to the teeth. School professionals are the first point of contact to attend to a child with a dental traumatic avulsion. Epidemiological studies of dental trauma have shown that almost all dental accidents in school-going children occur at home, followed by schools and colleges. Inadequate actions taken by first-aiders or school professionals in schools following any traumatic or avulsion injury will have serious implications on the growth, function, and phonetics of the affected child. This influences the child's future psychosocial development and becomes a major financial burden on the caregivers. The prognosis of avulsion injuries is majorly dependent on the actions taken by the attending first-aiders or the school professionals and inevitably depends on their knowledge regarding urgency, manipulation, replantation, and transportation of avulsed teeth.

Therefore, imparting knowledge and information to school professionals for the management of a traumatic dental injury can help in improving the prognosis of avulsed permanent teeth of children in the schools. Also, the National Education Policy of India encourages association between education and health, thereby schools can act as health-changing agents in the community.[2]

Evidence from the majority of developing countries where the studies have been conducted has shown that school professionals, though deficient in their knowledge of oral health, have shown interest in providing oral health education to their pupils.[3]

Therefore, our study aimed to assess the gain in the knowledge and information of school professionals regarding emergency management of dental avulsion after the conduction of an awareness program in Lucknow District.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Pediatric and Preventive Dentistry, Sardar Patel Post Graduate Institute of Dental and Medical Sciences, Lucknow in collaboration with various schools of the Lucknow district. The study was reportable in line with the STROBE(Strengthening the Reporting of Observational studies in Epidemiology) guidelines for the presentation of cross-sectional studies. Ethical clearance was obtained from the Institutional Ethical Committee following the submission of the research protocol.

200 school professionals were assessed from various schools in the Lucknow District. The study was conducted over a period of two months and the nature and purpose of the study was explained to the school professionals. Strict confidentiality was assured.

Inclusion Criteria:

- School professionals from primary, middle, and high schools in Lucknow city were included.
- School professionals who agreed to participate in the study.
- School professionals who attended the awareness program.
- School professionals were included irrespective of age, sex, and religion.

Exclusion Criteria:

- School professionals who did not agree to participate in the study.
- School professionals who did not attend the awareness program.

Questionnaire Design

A questionnaire containing about 15 questions was prepared for data collection based on the study conducted by Khan A et al.[4] Questionnaires written in the English language were distributed to the school professionals in the Lucknow district via google forms. A descriptive four-part questionnaire was developed containing the first part of four questions regarding the participants' details, including gender, age, years of experience, and level of qualification. The next section had three questions referring to the training and experience – regarding first-aid training, avulsion experience, and advice. The third section assessed the urgency of referral, replantation, manipulation, and transportation. Finally, the last section had two questions about their willingness for further training and education regarding dental avulsion.

Collection of data

The questionnaire was distributed amongst the school professionals and they were asked to choose the most appropriate correct answer from the given list of answers, to assess their knowledge regarding the

emergency management of avulsed teeth before the conduction of an awareness program. Thereafter, an awareness program was conducted and information regarding avulsion and its emergency management, (in the form of a PowerPoint presentation containing a slide show) as a health talk was given to educate the school professionals. Awareness information was imparted by a qualified Pediatric dentist.

Filled questionnaires were collected on the same day before and after the conduction of an awareness program and the change in levels of knowledge was assessed.

An initial pilot survey was done with the questionnaire being administered to 30 school professionals, and subsequently, Cronbach's alpha was calculated, which yielded a value of 0.5 validating the designed questionnaire and demonstrating acceptable reliability of items.

RESULTS

200 surveys were distributed to the participating schools. The study population comprised majorly of female school professionals, i.e., 81.4%, and were in the 20-40 years age group. Most school professionals reported that they have been involved with primary education for less than 1 to 10 years (n=103,54.3%) and were educated to master's level (n=138, 73.4%). (Refer to Table 1) Of those surveyed, 67.6% did not have any certificate in first aid, and the majority (64.9%) did not have any previous avulsion experience.

A comparison of responses to each from before and after conduction of an awareness program was done using McNemar's chi-square test. It was found that the knowledge of school professionals regarding the handling of the soiled avulsed tooth, willingness to implant and technique of transportation, medium for transportation, first contact point & confidence in handling such situations were significantly increased after the conduction of the awareness program. (Refer to Table 2)

A comparison of knowledge scores from before and after the awareness program was done using Wilcoxon paired rank sum test, which showed that mean knowledge scores increased significantly after the awareness program assessment. Before the awareness program, the mean knowledge score of this study population was found to be 2.6±2.16, while the mean knowledge scores increased to 3.78±2.03. (Refer to Table 3)

Table 1: Demographic profile and baseline data regarding training & previous avulsion experience

		Frequency	Percent
Gender	Males	35	18.6%
	Females	153	81.4%
Age group	<20 years	3	1.65%
	20-40 years	117	62.2%
	41-60 yrs	66	35.1%
	>60 yrs	2	1.1%
Experience	<1 year	11	5.9%
	1-10 years	103	54.8%
	11-20 years	54	28.7%
	>20 years	20	10.6%
Qualification	High school	1	.5%
	Diploma	2	1.1%
	Bachelor's	42	22.3%
	Masters	138	73.4%
	PhD	5	2.7%
The first aid certificate holder	No	127	67.6%
	Yes	19	10.1%
	N/A	42	22.3%
Received avulsion experience	No	124	66.0%
	Yes	21	11.2%
	N/A	43	22.9%
Previous avulsion experience	No	122	64.9%
	Yes	18	9.6%
	N/A	48	25.5%

Table 2: Comparison of responses from before and after the awareness program.

Correct response					
	Before the awareness program		After the awareness program		P value
	Frequency	Percent	Frequency	Percent	
Urgency of referral	28	14.9%	32	18.9%	0.08, NS
Handling of soiled avulsed tooth	24	12.8%	61	36.1%	0.003, S
Willingness to replant	43	22.9%	85	50.3%	0.002, S
Technique of transportation	12	6.4%	25	14.8%	0.034, S
Medium for transportation	21	11.2%	70	41.4%	0.001, S
First contact point	70	37.2%	73	43.2%	0.045, S
Second contact point	70	37.2%	61	36.1%	0.854, NS
Third contact point	71	37.8%	67	39.6%	0.23, NS
Confidence	42	22.3%	106	62.7%	<0.001, S
Need for training	108	57.4%	93	55.0%	0.843, NS

Table 3: Comparison of knowledge scores before and after the awareness program

Comparison of knowledge scores before and after the awareness program					
	N	Minimum	Maximum	Mean	Std. Deviation
Before the awareness program score	188	.00	8.00	2.6011	2.16076
After the awareness program	188	.00	8.00	3.7872	2.03642
P value	<0.001, S				

DISCUSSION

The most common cause of traumatic dental injuries is accidental falls and playground accidents.[5] Tooth avulsion is one such emergency in dentistry wherein prompt actions if taken before consulting a dental professional can greatly enhance the prognosis of treatment. Therefore, the school professionals are ideally present to provide first-aid following any traumatic incidents in children. School premises are one of the best places to initiate the health awareness program.

Many studies in the existing literature are focused only on assessing the knowledge, attitudes, and skills of school professionals for emergency management of tooth avulsion [6,7,8,9,10] with very few studies evaluating the impact of health education programs and health awareness talks to improve their knowledge, and instill a positive attitude. [11,12,13]. Therefore, this study was carried out to assess the knowledge and awareness of school professionals regarding emergency management of dental trauma before and after the conduction of an awareness program.

During the awareness program, they were told to preserve the viability of the root surface cells and to rinse and clean the avulsed tooth with tap water, if the root surface is dirty. They were also advised not to scrape, brush, or remove any part of the root surface and to replant it if the root surface appears clean.

Results of the present study inferred that a limited number of school professionals (22.9%) were willing to replant the tooth before the awareness program. This is similar to the findings of Prasanna et al. in 2011 who stated that only 32% of school professionals had the knowledge of tooth replantation.[14] However, in the present study, the number of school professionals, willing to replant the tooth increased to 50.3% after the conduction of an awareness program.

In the present study, the mean knowledge scores of the school professionals increased after the conduction of an awareness program. The mean score was 3.7872, which was significant. This correlates with the findings of a study by Pujitha et al. in 2013, wherein they found a gain in the knowledge levels from 19.2% to 82.4% among rural school professionals and from 25.2% to 82.9% among urban school professionals following health education regarding emergency management of dental trauma.[15] Another study by Karande et al. in 2012, found an improvement in the knowledge regarding the replantation of permanent teeth among school teachers.[16] Another study by Andersson et al. in 2006, though conducted amongst school children, found an increase in the knowledge scores following health education regarding first-aid measures on avulsion and replantation of

teeth.[17]

Sedlacek P et al. in 2022 assessed that the educational effect of notebook covers illustrated with figures and informative texts about tooth avulsion and replantation in sixth-grade primary school pupils showed statistically significant improvements in the correct meaning of dental trauma (38% vs. 58.2%); procedures to follow in the case of dental avulsion (2.8% vs. 70.9%); storing the avulsed tooth in milk (18.5% vs. 76.9%); general knowledge about dental anatomy (61.1% vs. 95.5%); and the ideal time for the tooth to remain outside the mouth before replantation (20.4% vs. 59.7%).[18]

Al Zaher et al. in 2021 investigated the effectiveness of educational intervention using the Arabic version of the "save your tooth" poster and demonstrated significant improvement in the responses of the participants after interventional education. The mean score of knowledge showed a ranging expansion from 3.71 at the baseline to 4.03 after the intervention.[19]

Nashine N et al. in 2018 evaluated the knowledge and attitude of school teachers towards dental trauma and the effect of the educational intervention. The knowledge was consistently lacking before intervention with the level of correct answers ranging from 0.6 to 56.3%. It showed enhanced improvement after education to 96.6%. A positive attitude among the participants was appreciated before the intervention.[20]

Arikan V et al. in 2012 evaluated via a questionnaire the knowledge level of primary school teachers in Ankara, Turkey, regarding dental trauma. The rate of correct answers increased after the distribution of the information, and the total scores for the questionnaire showed marked improvement.[21]

In the present study, knowledge of school professionals regarding storage and transportation media used for avulsed tooth increased following the awareness program. The results are comparable with the results of a study by Al-Asfour et al., who found improvement in knowledge levels of Kuwaiti intermediate school teachers on the suitable storage medium for the avulsed tooth.[22]

Previous studies mentioned the importance of first-aid training for dental emergencies [23]. Furthermore, this study showed that only 10.1% of school professionals had courses in first-aid dental emergency and 9.6% had previous avulsion experience in school. This is consistent with the review done by Glendor in 2009 that stated that a lack of primary information amongst school professionals and caregivers regarding dental trauma leads to the mismanagement of tooth avulsion.[24]

These results are encouraging, as it highlights the effect of avulsion training on increasing the perception of preparedness and instilling greater confidence amongst school professionals. It is beneficial as involvement of school professionals in health education can help to create a supportive environment in the school setting and forms part of a holistic approach to oral health promotion. However, repetitive educational intervention is necessary, as according to Kahabuka et al. a single educational input to school professionals is not enough to improve childhood self-care. The educational information has to be frequently disseminated before any long-established effect can be assessed and such repetitions can be done in other ways such as posters and brochures.[25] Al-Musawi et al. in 2006 stated that information regarding the management of traumatic dental injuries can be provided through the use of smartphone applications and this was significantly more effective than providing lectures only.[26] Feldens et al. in 2010 had suggested the inclusion of management of dental traumatic injuries in the teachers' curricular training and pedagogical education continuously as a basis for future interventions.[27]

CONCLUSION

Imparting information and conducting awareness programs will increase the knowledge of school professionals regarding any dental trauma occurring on school premises. Dental and oral health promotion talks and campaigns should be included in teacher training sessions. These interventions will gradually enhance and help in better clinical outcomes for patients with avulsion injuries.

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