

Assessment of knowledge, attitude and practices regarding emergency management of dental trauma in children among school teachers: A cross-sectional questionnaire study

Bhuvanesh Nitin Bhusari¹, *Shivayogi M Hugar², Chandrashekhar Badakar³, Neha Kohli¹, Nivedita Saxena¹, Sanika Karmarkar¹

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Abstract

Background: Due to increased prevalence of dental trauma in school-going children, knowledge regarding its emergency management is vital to groups commonly supervising the children such as school teachers and parents.

Objectives: To assess the knowledge, attitude and practices regarding emergency management of dental trauma in children among school teachers.

Method: A cross-sectional survey was conducted comprising 160 participants. A 15-item validated questionnaire containing four domains of demographic data, knowledge, attitude and practices was distributed among the participants. Descriptive analysis was done using IBM SPSS software version 20.0 (Chicago IL, USA).

Results: It was found that 56.9%, 57.5% and 70% of school teachers respectively had low levels of knowledge, practice and attitude. When correlation between knowledge, attitude and practice was studied, positive correlation was seen between them which signified low knowledge correlated with less positive attitude owing to less referral practices.

Conclusions: There was inadequate knowledge about emergency management of dental trauma in children among school teachers.

(Key words: Attitude, Children, Dental trauma, Emergency, Knowledge, Practices, School teachers)

¹Post Graduate Student, ²Professor and Head, ³Reader, Department of Paediatrics and Preventive Dentistry, KAHER's KLE VK Institute of Dental Sciences, Belagavi, Karnataka, India

*Correspondence: dr.hugarsm@gmail.com



<https://orcid.org/0000-0003-3657-6709>

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Introduction

Dental trauma refers to injury to teeth and/or periodontium and nearby soft tissues. Global prevalence of dental trauma is 10–15%, whereas in India it is 13%^{1,2}. Dental trauma occurs more frequently in children than adults³. Studies on dental traumatology found that most dental accidents in children occur at home and at school^{1,2,4,5}. Dental trauma has a psychological impact on the child and is considered to have a negative impact on the quality of life, if not managed effectively^{6,7}.

Knowledge about the correct and timely emergency management of dental trauma in children is crucial for prognosis of the tooth. This knowledge is vital to groups supervising children like school teachers and parents. Traditional curriculum merely allows the teacher to evaluate and manage dental trauma. Due to this lack of knowledge and exposure, most school teachers are undertrained and unprepared to manage dental trauma. Thus, there is a need to train teachers regarding emergency management of dental trauma by conducting training courses, which in turn will benefit the children in case of emergency⁴.

Objectives

To assess the knowledge, attitude and practices regarding emergency management of dental trauma in children among school teachers.

Method

A cross-sectional questionnaire-based study was conducted in the Department of Paediatrics and Preventive Dentistry. Instructions regarding questionnaire were given and the questionnaire was distributed among 160 participants. Identity of the surveyor was kept anonymous. The responses were collected after which a training session was organised on emergency management of dental trauma for school teachers.

Sample size was calculated using the formula,
$$n = \frac{Z^2 pq}{d^2}$$
 ($Z_{\alpha}=1.96$ at 95% confidence, d = margin of error=6%, $p=81.7\%$, $q=18.3\%$)⁸. Sample size obtained was 160.

Questionnaire: The questionnaires references were obtained from articles published in the recent past,

and the questions were then condensed to 15 covered the important aspects required. Questionnaire was prepared in English, translated to regional languages and circulated among schools. It consisted of four components. First component asked participants to provide their demographic data. Second component was framed to find the knowledge of the participant. Third component dealt with the attitude of school teacher in accordance of knowledge, and last component dealt with practices that teachers had performed when they encountered dental trauma emergency. Responses to the questions were measured on a five-point Likert scale: 'Definitely agree', 'Agree', 'Neutral', 'Disagree', 'Definitely disagree'.

Validity of the content was approved by a group of professionals. Study participants included school teachers. Teachers in healthcare professional institutions and the ones who did not give their consent to participate were excluded from our study.

Participants were instructed regarding filling of the questionnaire and a pilot study was conducted among 20 participants to ensure ease and lucidity of answering the questionnaire. Reliability of the administered questionnaire was determined and a Cronbach alpha coefficient value of 0.82 was obtained. These participants were then excluded in

the final study, and the questionnaire did not require any modifications.

Ethical issues: Study approval was obtained from the Research and Ethics Committee of KLE VK Institute of Dental Sciences, Belagavi, Karnataka, India, on 28.11.2021. Written informed consent was obtained from all the participants,

Statistical analysis: The collected forms were analysed in MS Excel sheet (Microsoft Corp.). Data were entered using IBM SPSS software (version 20.0 Chicago IL, USA) and percentages were calculated. Data were then subjected to statistical analysis. Descriptive statistics was generated for all questions, and for each answer, frequency distributions and percentages were examined.

Results

The current study included a total of 160 participants. There were no dropouts as all participants returned a completely filled questionnaire. These included various age groups, gender and years of experience. There were 77.5% males and 22.5% females. The mean age of this population was 42.24 ± 8.30 years. Participants were posed with a wide array of questions that assessed their awareness level (Table 1).

Table 1: Question wise responses of respondents

Question	Definitely disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Definitely agree n (%)
Most commonly, dental trauma occurs on school playground	01 (0.6)	16 (10.0)	14 (08.8)	94 (58.8)	35 (21.8)
Dental trauma is one of the most commonly occurring injuries in early childhood	04 (02.5)	05 (03.1)	12 (07.5)	99 (61.9)	40 (25.0)
Dental trauma has a psychological impact on the child	05 (03.1)	17 (10.6)	16 (10.0)	81 (50.6)	41 (25.6)
Emergency management of dental trauma is professional and requires special education and training	05 (03.1)	02 (01.3)	04 (02.5)	102 (63.8)	47 (29.4)
Dental trauma to primary tooth causes serious damage to succedaneous tooth	04 (02.5)	16 (10.0)	19 (11.9)	90 (56.3)	31 (19.4)
Initiating immediate measures for emergency management of dental trauma can play a vital role in improving prognosis	04 (02.5)	04 (02.5)	09 (05.6)	99 (56.3)	44 (27.5)
Teachers must be trained for emergency management of dental trauma	08 (05.0)	05 (03.1)	14 (08.8)	99 (56.3)	34 (21.3)
Educating the teachers about emergency management of dental trauma will benefit the health of children	04 (02.5)	02 (01.3)	08 (05.0)	107 (66.9)	39 (24.4)
Tooth once knocked out can be reimplanted	05 (03.1)	07 (04.4)	21 (13.1)	99 (56.3)	28 (17.5)
I would like to know more about emergency management of dental trauma	04 (02.5)	01 (0.6)	05 (03.1)	110 (68.8)	40 (25.0)
I would like to spread awareness among parents of children regarding emergency management of dental trauma	05 (03.1)	01 (0.6)	08 (05.0)	103 (64.4)	43 (26.9)
I and my colleagues would follow referral practice to dental clinic in case of dental trauma emergency	06 (03.8)	04 (02.5)	13 (08.1)	104 (65.0)	33 (20.6)
I think attending training courses for emergency management of dental trauma will help in case of emergency	06 (03.8)	02 (01.3)	17 (10.6)	99 (56.3)	36 (22.5)
I would like to gather enough information about emergency service centres for emergency management of dental trauma in children	05 (03.1)	02 (01.3)	15 (09.4)	114 (71.3)	24 (15.0)
Emergency helpline number (108) should be called upon in case of any dental trauma	06 (03.8)	11 (06.9)	19 (11.9)	102 (63.8)	22 (13.8)

For the elucidation of the results 'agree + definitely agree' and 'disagree + definitely disagree' were combined. It was found that 56.9%, 57.5% and 70%

respectively had low levels of knowledge, practice and attitude (Figure 1).

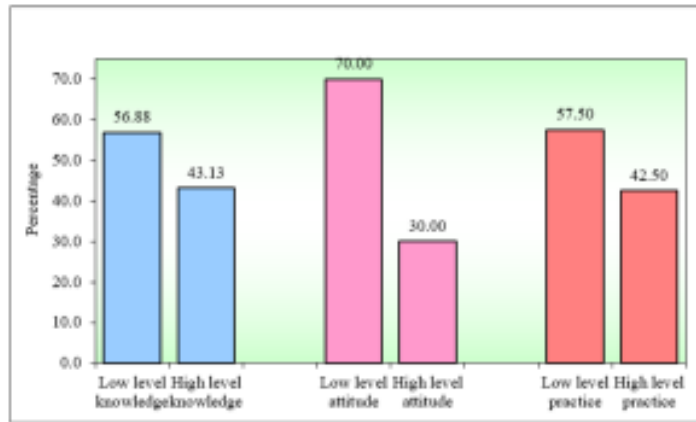


Figure 1: Distribution of teachers with levels of knowledge, attitude and practice

When the assessment of the levels of knowledge, attitude and practice was done among the school teachers on the basis of age group using one way ANOVA, the mean values were 20.1 ± 2.4 , 20.56 ± 1.91 and 20.25 ± 2.04 respectively for knowledge, attitude and practice ($p < 0.05$). [Table 2].

Table 2: Comparison of age groups with mean knowledge, attitude and practice scores by one way ANOVA

Age group	Knowledge		Attitude		Practice	
	Mean	SD	Mean	SD	Mean	SD
30yrs or less	21.42	1.84	21.00	1.00	21.26	1.33
31-40yrs	20.38	2.13	20.40	1.99	20.28	1.95
41-50yrs	19.42	2.54	20.65	2.06	20.04	2.21
51yrs or more	19.91	2.39	20.26	1.84	20.00	2.02
Total	20.01	2.40	20.56	1.91	20.25	2.04
F-value	4.2320		0.6773		1.9532	
p-value	0.0066*		0.5672		0.1233	

* $p < 0.05$

When the comparison of levels of knowledge with respect to age group was done, it was found out that the age group 30 years or less had better knowledge when compared to higher age groups. When the comparison was done with respect to gender, it was found that males had better knowledge than female, but no statistically significant difference was observed. After comparing knowledge based on years of experience, no statistically significant difference was observed (Figure 2).

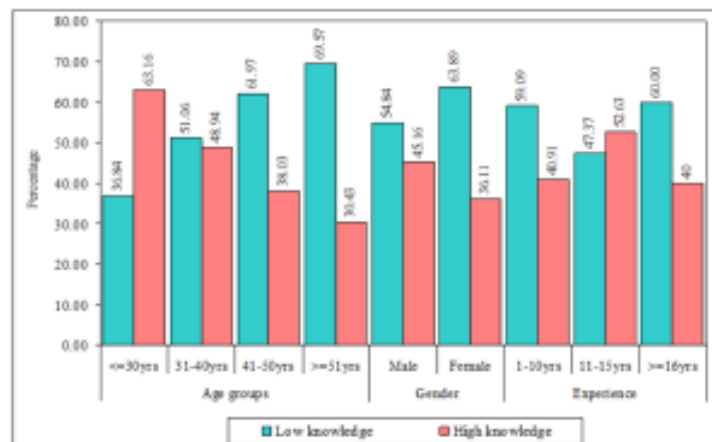


Figure 2: Association between demographic profile of teachers and levels of knowledge.

When the comparison of levels of attitude with respect to age group was done, it showed that younger age group had better attitudes whereas it declined as the age group advanced, though the values were not statistically significant. When comparison was based on gender, female had better

attitude towards emergency management of dental trauma as compared to male. The school teachers who had less than 10 years of experience showed better attitudes compared to the teachers who were more experienced (Figure 3).

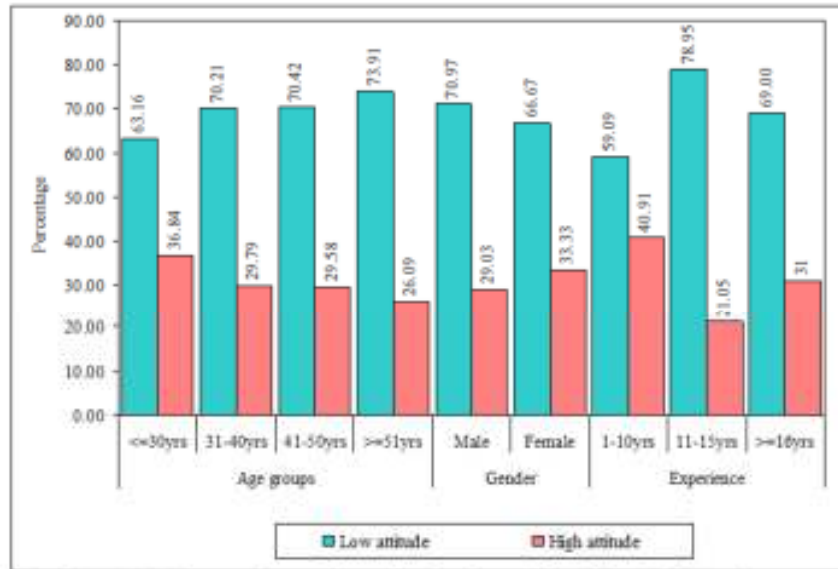


Figure 3: Association between demographic profile of teachers with levels of attitude about the emergency management of dental trauma

When the comparison of levels of practice with respect to age group was done, practices in younger age group was found to be better than the older age group population with statistically significant p-value of 0.016 ($p < 0.05$). The male group showed better levels of practice as compared to female, however statistically significant difference was not observed. Those teachers who had less than 10 years of experience showed better levels of practice as compared to more experienced teachers (Figure 4).

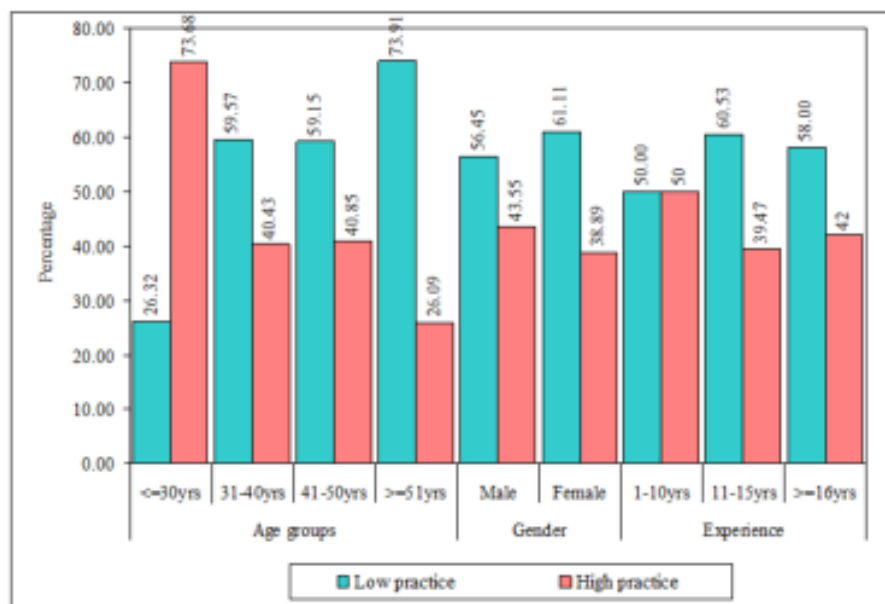


Figure 4: Association between demographic profile of teachers with levels of practice about the emergency management of dental trauma

However, when respondents were asked whether dental trauma to primary tooth causes serious damage to succedaneous tooth, it revealed their awareness of its detrimental effects leading to damage to the permanent tooth, as statistically significant p-value was found 0.0320 ($p < 0.05$). Also, the study helped us highlight the fact that most respondents had followed referral practice to dental clinic in case of dental trauma emergency owing to

p-value of 0.0070 ($p < 0.05$), which was highly statistically significant.

When correlation between knowledge, attitude and practice was carried out using Pearson's correlation coefficient, positive correlation was seen between knowledge, attitude and practice ($p = 0.0001$) [Table 3].

Table 3: Correlation between knowledge, attitude and practice scores by Karl Pearson's correlation coefficient

Variables	Correlation between		
	r-value	t-value	p-value
Knowledge vs attitude	0.3638	4.9097	0.0001*
Knowledge vs practice	0.4694	6.6828	0.0001*
Attitude vs practice	0.4982	7.2233	0.0001*

* $p < 0.05$

Discussion

As dental trauma is a common injury in school due to falls or from different sports activities, it becomes vital to assess the knowledge of school teachers in managing dental emergencies⁹. Dental trauma has a psychological impact on child^{6,7,9,10}. A teacher can initiate immediate action and perform the required first aid measures in case of emergency dental trauma. Hence, the study was conducted among school teachers as they serve as first responders to emergencies occurring in educational premises.

A cross-sectional questionnaire-based study was conducted to assess the school teachers' knowledge about emergency management of dental trauma. Study used a 5-point Likert scale due to its summative nature and high reliability^{10,11}. This study assessed teachers belonging to a wide range of teaching experience. There were zero dropouts which indicates that teachers were willing to take a step towards acquiring knowledge and spreading awareness. In this study, we assessed the basic knowledge of school teachers about the emergency measures undertaken during dental trauma. Impact of dental trauma on psychology of the child, damage to succedaneous tooth and reimplantation of avulsed tooth were assessed. Their willingness to seek knowledge and spread awareness was assessed by asking whether training school teachers for emergency management of dental trauma is necessary or if they are willing to know more about emergency management of dental trauma, which reflected their attitude towards the same.

Current study revealed school teachers' lack of knowledge in managing dental trauma, as the mean value of knowledge was below baseline numbers. This accords with most studies^{5,12-16}. Probable reasons for this could be inadequate lectures and training programmes on emergency management of dental trauma attended by them. However, teachers aged 30 years or less showed comparatively better

knowledge levels. This could be because school teachers who graduated recently had an updated curriculum about emergency first aid measures and had attended lectures on managing dental trauma for children. Study also highlighted that years of experience had negligible impact on knowledge, attitude and practices of school teachers as no significant differences in their results were observed. Lack of awareness and training of school teachers regarding emergency management of dental trauma is the root cause behind such results.

However, when respondents were asked whether dental trauma to primary tooth causes detrimental effects on the succedaneous tooth, statistically significant results were found which highlighted the fact that they were aware of its effects leading to damage to the permanent tooth. Likewise, a statistically significant result was found when the respondent's approach towards managing the dental trauma was assessed, as they were willing to follow and encourage their colleagues to follow referral practices to dental clinic in case of dental trauma emergency. Many participants correctly responded that initiating immediate measures for emergency management of dental trauma play a vital role in improving prognosis, corroborating the findings of Livia AAA, *et al*¹⁵ and Young C, *et al*¹⁶.

Regarding level of education and years of experience of participants, the study revealed a good level of education and professional experience (more than 16 years). However, these two factors did not contribute significantly in deciding the levels of knowledge, attitude and practices among school teachers, as was also observed by Livia AAA, *et al*¹⁵ and Sae-Lim V, *et al*¹⁷. This finding reveals that there is also a need to educate and train the higher age groups irrespective of the years of expertise they had in their field.

A comparison between knowledge, attitude and practice of age groups revealed a highly significant difference for knowledge, which explains the fact that though the teachers had knowledge, they lacked adequate attitude and practices when managing dental trauma emergencies. Merely having knowledge is not enough; the attitude towards implementing the acquired knowledge is crucial, and this could be achieved by spreading the awareness among school teachers about the importance of saving a tooth and minimizing its later complications.

Although the present study revealed a low level of knowledge of 43.1%, majority (96.3%) of participants showed their willingness to know more about the topic. This accords with the findings of Tewari N, *et al*¹⁴ and Livia AAA, *et al*¹⁵. Likewise, most participants were eager to gather more information about emergency service centres and spread awareness among parents on the same issue. This is a positive factor revealed from our study. In spite of respondents agreeing that they have knowledge regarding management of dental trauma, a thorough analysis found that they had lower levels of knowledge.

After collecting their responses, a training session was organized on the emergency management of dental trauma. Participants were found to be more knowledgeable when re-assessed using the same questionnaire. This accords with findings of McIntyre JD, *et al*⁴, Taranath M, *et al*⁵ and Cruz-da-Silva BR, *et al*¹⁸. Hence, it can be concluded that there is a need for such training sessions for school teachers in their training curriculum. Some studies have suggested that the presence of individuals who are trained in emergency dental first aid would help in reducing both the incidence and effects of dental trauma¹⁹. Thus, school teachers if educated and trained to manage the emergency dental trauma, could help in averting the detrimental effects caused by dental trauma and improve the future dental outcomes for the children.

The dentists have their role in educating teachers and spreading the awareness among them. They are the ones who have expertise in handling dental trauma. It is essential that school teachers receive adequate training through educational campaigns and training programmes with clinical guidelines for management of dental trauma in emergency situations for delivering apt treatment for children.

We have prepared a dental trauma emergency management educational poster and circulated copies to schools. The poster enlists the immediate measures to be taken following a serious dental trauma, followed by emergency helpline numbers and nearby emergency dental centres. We advised

the schools to circulate the posters among the teachers and parents and display the posters on the notice boards of teachers so that the correct information is disseminated.

The limitation of our study is that the sample size could have included a larger population. Thus, a cross-sectional survey with a larger sample size involving a larger geographical area is required to further support the study. There is a need for education and awareness regarding emergency management of dental trauma among school teachers. There is also a need to include information about dental trauma and measures to manage emergency dental trauma in teachers' curriculum. More training courses and lectures need to be conducted to broaden the horizon of knowledge for teachers towards this issue.

Conclusions

Majority of the school teachers in this study did not have adequate knowledge about emergency management of dental trauma.

References

1. Tewari N, Mathur VP, Siddiqui I, Morankar R, Verma AR, Pandey RM. Prevalence of traumatic dental injuries in India: A systematic review and meta-analysis. *Indian Journal of Dental Research* 2020; **31**(4): 601-14. https://doi.org/10.4103/ijdr.IJDR_953_19 PMid: 33107464
2. Tewari N, Bansal K, Mathur VP. Dental trauma in children: A quick overview on management. *Indian Journal of Pediatrics* 2019; **86**(11): 1043-7. <https://doi.org/10.1007/s12098-01902984-7> PMid: 31197645
3. Ai-Majed I, Murray JJ, Maguire A. Prevalence of dental trauma in 5-6- and 12-14-year-old boys in Riyadh, Saudi Arabia. *Dental Traumatology* 2001; **17**(4): 153-8. <https://doi.org/10.1034/j.16009657.2001.170403.x> PMid: 11585140
4. McIntyre JD, Lee JY, Trope M, Vann WF. Effectiveness of dental trauma education for elementary school staff. *Dental Traumatology* 2008; **24**(2): 146-50. <https://doi.org/10.1111/j.16009657.2008.00573.x> PMid: 18352915

5. Taranath M, Senaikarasi R, Manchanda K. Assessment of knowledge and attitude before and after a health education program in East Madurai primary school teachers with regard to emergency management of avulsed teeth. *Journal of Indian Society of Pedodontics and Preventive Dentistry* 2017; **35**(1): 63–7.
<https://doi.org/10.4103/0970-4388.199218>
PMid: 28139485
6. El-Kalla IH, Shalan HM, Bakr RA. Impact of dental trauma on quality of life among 11-14 years schoolchildren. *Contemporary Clinical Dentistry* 2017; **8**(4): 538–44.
https://doi.org/10.4103/ccd.ccd_428_17
PMid: 29326503 PMCID: PMC5754973
7. Bendo CB, Paiva SM, Torres CS, Oliveira AC, Goursand D, Pordeus IA, et al. Association between treated/untreated traumatic dental injuries and impact on quality of life of Brazilian schoolchildren. *Health and Quality of Life Outcomes* 2010; **8**: 1–8.
<https://doi.org/10.1186/1477-7525-8-114>
PMid: 20920332 PMCID: PMC2959098
8. Hugar SM, Suganya M, Kiran K, Vikneshan M, More VP. Knowledge and awareness of dental trauma among Indian nurses. *International Emergency Nursing* 2013; **21**(4): 252–6.
<https://doi.org/10.1016/j.ienj.2012.12.001>
PMid: 23317808
9. Glendor U. Aetiology and risk factors related to traumatic dental injuries - A review of the literature. *Dental Traumatology* 2009; **25**(1): 19–31.
<https://doi.org/10.1111/j.16009657.2008.00694.x>
PMid: 19208007
10. Traebert J, de Lacerda JT, Foster Page LA, Thomson WM, Bortoluzzi MC. Impact of traumatic dental injuries on the quality of life of schoolchildren. *Dental Traumatology* 2012; **28**(6): 423–8.
<https://doi.org/10.1111/j.16009657.2012.01114.x>
PMid: 22276554
11. Kumar S, Neha, Kaur G, Kashyap N, Palak, Radhe A. Social and psychological impact of traumatic dental injuries in children and adolescents: A review of literature. *Interventions in Pediatric Dentistry* 2020; **4**(3): 330–3.
<https://doi.org/10.32474/IPDOAJ.2020.04.000188>
12. Joshi A, Kale S, Chandel S, Pal D. Likert Scale: Explored and explained. *British Journal of Applied Science & Technology* 2015; **7**(4): 396–403.
<https://doi.org/10.9734/BJAST/2015/14975>
13. Croasmun JT, Ostrom L. Using Likert-type scales in the social sciences. *Journal of Adult Education* 2011; **40**(1): 19–22.
14. Tewari N, Goel S, Rahul M, Mathur VP, Ritwik P, Haldar P, et al. Global status of knowledge for prevention and emergency management of traumatic dental injuries among school teachers: A systematic review and meta-analysis. *Dental Traumatology* 2020; **36**(6): 568–83.
<https://doi.org/10.1111/edt.12579>
PMid: 32516464
15. Livia AAA, Raiza TP, Lais FL, Vitoria ES, Mariane HA, Leonardo SA. Traumatic dental injury in primary teeth: Knowledge and management in Brazilian preschool teachers. *Journal of Dentistry and Oral Hygiene* 2015; **7**(2): 9–15.
<https://doi.org/10.5897/JDOH2014.0135>
16. Young C, Wong KY, Cheung LK. Emergency management of dental trauma: Knowledge of Hong Kong primary and secondary school teachers. *Hong Kong Medical Journal* 2012; **18**(5): 362–70.
<https://doi.org/10.1371/journal.pone.0084406>
PMid: 24400088 PMCID: PMC3882231
17. Sae-Lim V, Lim LP. Dental trauma management awareness of Singapore pre-school teachers. *Dental Traumatology* 2001; **17**(2): 71–6.
<https://doi.org/10.1034/j.16009657.2001.017002071.x>
PMid: 11475949
18. Cruz-da-Silva BR, Perazzo M de F, Neves ETB, Firmino RT, Granville-Garcia AF. Effect of an educational programme on the knowledge level among an emergency service medical team regarding tooth avulsion. *Oral Health and Preventive Dentistry* 2016; **14**(3): 259–66.

19. Blakytty C, Surbutts C, Thomas A, Hunter ML. Avulsed permanent incisors: Knowledge and attitudes of primary school teachers with regard to emergency management. *International Journal of Paediatric Dentistry* 2001; **11**(5): 327–32. <https://doi.org/10.1046/j.09607439.2001.00288.x>
PMid:11572262