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RESEARCH ARTICLE

ASSESSMENT OF FIRST AID KNOWLEDGE ABOUT PRIMARY TOOTH AVULSION IN PEDIATRICIANS OF KARNAL CITY, HARYANA, INDIA, A SURVEY STUDY

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Abstract

The first aid knowledge of seventy pediatricians practicing in various Government and private hospitals in Karnal city Haryana, India, were assessed through four conceptual questions a hypothetical clinical condition about anterior tooth avulsion and its re-plantation in 10 years old boy. The collected data was analyzed as a whole as well as in four different groups of pediatricians having experience as G1, < 10 years, G2, >10 to 20 years, G3, >20 to 30 years and G4, > 30 years. The percentage of pediatricians having different options for four different questions were calculated and in addition to that knowledge-score of each pediatrician was calculated by assigning one and zero to each right and wrong options of each question. Satisfactory knowledge was observed on three basic questions viz. Q1 'Is the avulsed tooth likely to be primary or permanent?', answered rightly as permanent by 71.43% pediatricians with knowledge score, 0.70 ± 0.19 , Q2, 'How urgent do you feel that a dentist's opinion is needed', accurately answered as immediately, by 67.14 % pediatricians with knowledge score, 0.65 ± 0.15 and Q3 'Do you think that a primary tooth that has been avulsed should be replanted', answered appropriately as no, by 60% pediatricians with knowledge score, 0.60 ± 0.16 , whereas, average knowledge about another basic question viz., Q4, 'What would be the ideal time for replanting the avulsed tooth for the best possible prognosis?', accurately responded as within 15 to 20 minutes by 34.29% of pediatricians with knowledge score 0.33 ± 0.06 . Mild positive correlation between first aid knowledge of pediatricians with experience was observed in this study.

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Introduction:-

Traumatic injuries to teeth during adolescence have become a serious public health problem due to rise in the incidences of violence, traffic accidents and sports injuries in recent years. Dental trauma accounts to about 17% of the total body injuries in those aged between 0-6 years as compared to an average of 5% across all ages [1] Epidemiological data shows that about 50% of children have experienced dental trauma in their primary or permanent dentition throughout their school period. [2]

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Dental injury never comes alone but damages surrounding soft tissue, periodontal tissues, extensive maxillofacial damage, which may results into minor enamel chip luxation, tooth fracture, and tooth avulsion. Anterior teeth fracture can vary from simple enamel fracture, dentin fracture without pulp exposure, crown fracture with pulp exposure, root fracture, luxation and intrusion. The tooth luxation, avulsion and fracture of crown along with root and alveolar bone require immediate repositioning and stabilization with various degree of prognosis. [3, 4] The root fractures have poor prognosis because they involve a combination of damage to the periodontal ligament, cementum, dentin, and pulp [5] whereas, crown fractures involving enamel and dentin have a favorable prognosis because the possibility of irreversible pulp necrosis and obliteration of root canal is minimum. Prompt and appropriate management is necessary to improve the prognosis of an avulsed tooth re-plantation. Unfortunately, most of the dental avulsion patients, could not get prompt and appropriate first aid treatment and loose avulsed teeth due to lack of knowledge among attending people and physicians. [6, 7] Many patients after traumatic tooth avulsion have to approach medical doctors/ pediatricians for treatment due to lack of awareness or unavailability of a dentist in rural India. [8] Pediatricians may be able to play an important role in improving the dental health of their patients by increasing their involvement in oral health management during well-child care visits, especially for population with limited access to dental professionals. However, it is doubtful to what degree pediatricians are knowledgeable about preventive oral health. [9] Pediatricians are the first hand clinicians to attend the avulsed tooth children and their knowledge and attitude, prepare the base for the success of re-plantation procedure. [6] The study was aimed to assess the knowledge of pediatricians of Karnal city, Haryana, India about the management of tooth avulsion and need for inclusion of dental management courses for medical professionals.

Methods:-

The survey study was conducted by collecting data was through questionnaire from seventy actively practicing pediatricians in various Government and private hospitals in Karnal city zone, for their first aid knowledge about anterior primary tooth avulsion management by assigning them code no 1 to 70 in ascending order of experience to maintain the anonymity. The demographic information and their responses to four conceptual questions on a hypothetical clinical condition as “a 10 year old boy got injured resulting in avulsion of his upper anterior tooth and otherwise he is well oriented with time, place and space”, were collected through a questionnaire having multiple answer options with one correct answer. Responses from all 70 pediatricians were collected and arranged with assigned code numbers of the subjects. The data was analyzed by calculating χ^2 , df and ‘P’ values using two ways ANOVA in SPSS, Version 20.0 (SPSS, Inc, USA). Results were analyzed and expressed in tabular and graphical form as follows.

Observations and Results:-

Demographic observations:

n=70

The demographic data having age, gender, number of years of experience, qualification and type of job, as in Government and private sector, of all 70 pediatricians were studied and observed as follows. A total of seventy pediatricians (58 male and 12 female) were assessed in this study. Majority of them (53 male and 10 female) were found working in private hospitals, where as seven (5 male and 2 female) in Govt. hospitals. Age-wise distribution of pediatricians was found as one pediatrician <30 years, 19 between >30 to 40 years of age, 21 between >40-50 years of age, 14 between >50 to 60 years of age and 15 with > 60 years of age. Experience wise distribution of 70 pediatricians was found as 20 (16 male and 4 female) pediatrician <10 years of experience, 25 (20 male and 5 female) between 10 to 20 years of experience, 11 (9 male and 2 female) between >20-30 years of experience, 14 (13 male and 1 female) with more than 30 years of experience.

Knowledge assessment observations:

Question-wise and experience-wise knowledge assessment taking total number and percentage of right optioned pediatricians into consideration (n=70).

The question-wise knowledge was assessed by calculating the total number and percentage of paediatricians having right and different wrong options for each question once as a whole and also in four different groups viz. <10 years, >10 to 20 years, >20 to 30 years and > 30 years of experiences. The data was analysed statistically and χ^2 , df and ‘p’ values of different questions were derived and shown in table 1 and 2. The graphic representations are shown in figures 1 to 8.

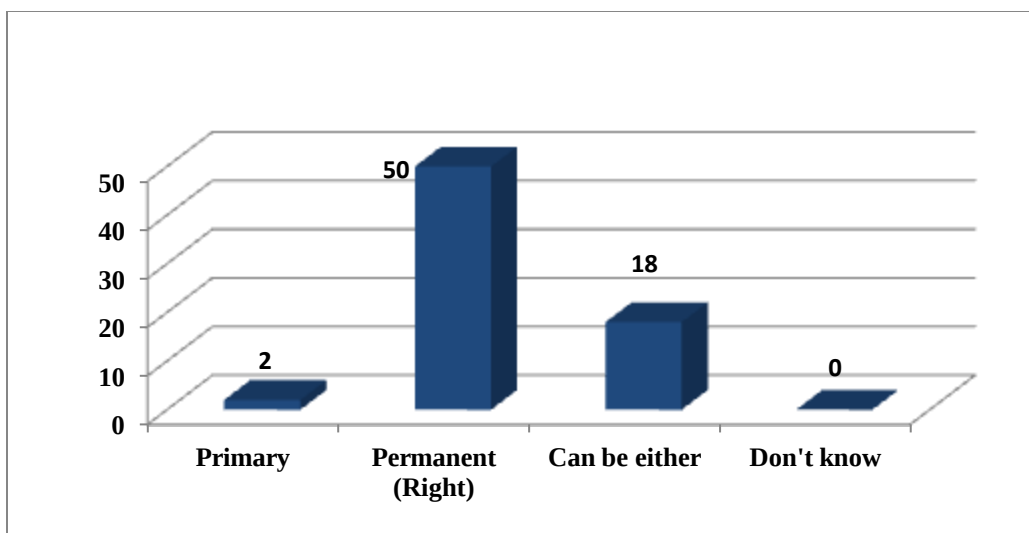


Figure1 Q1:- Is the avulsed tooth is likely to be primary or permanent in a 10 years old boy?

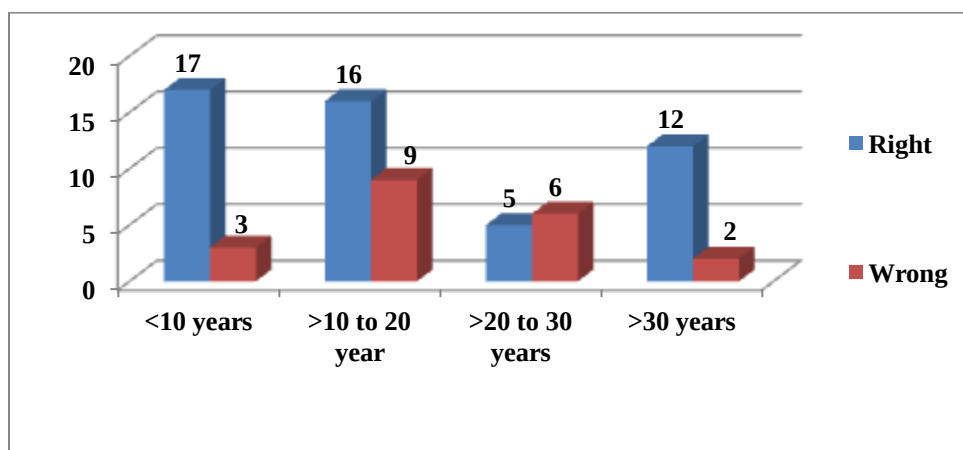


Figure 2:- Experience-wise responses of pediatricians for question no 1.

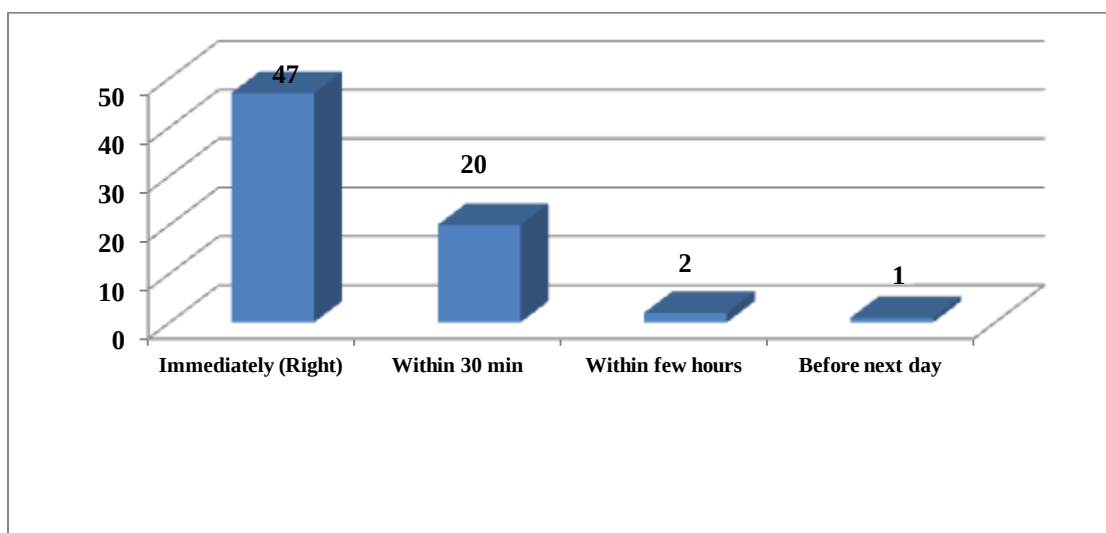


Figure3 Q2:- How urgent do you feel that a dentist's opinion is needed?

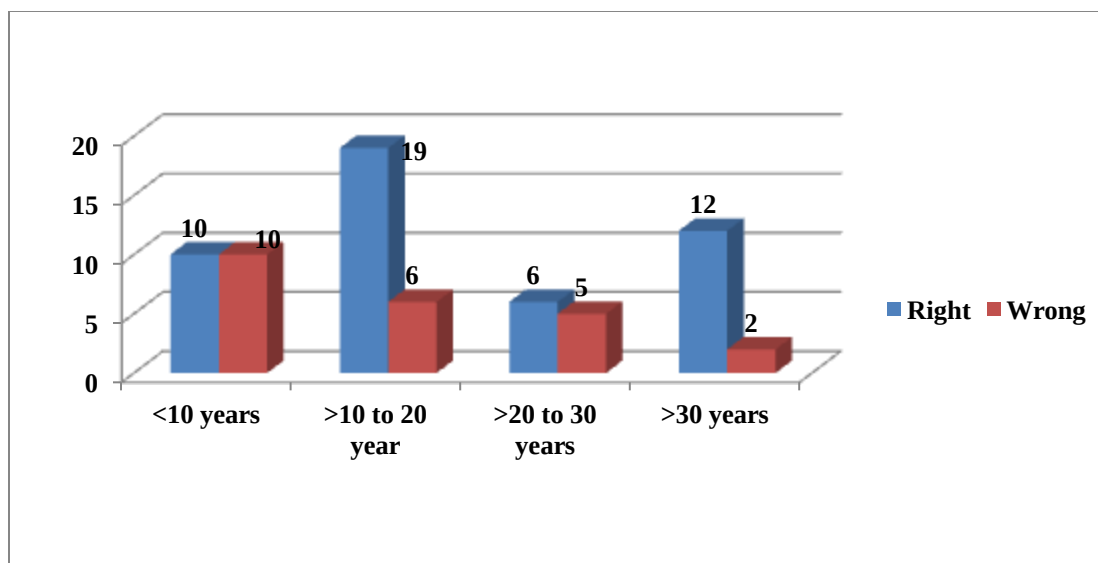


Figure4 Q2:- Experience-wise responses of pediatricians for question no 2.

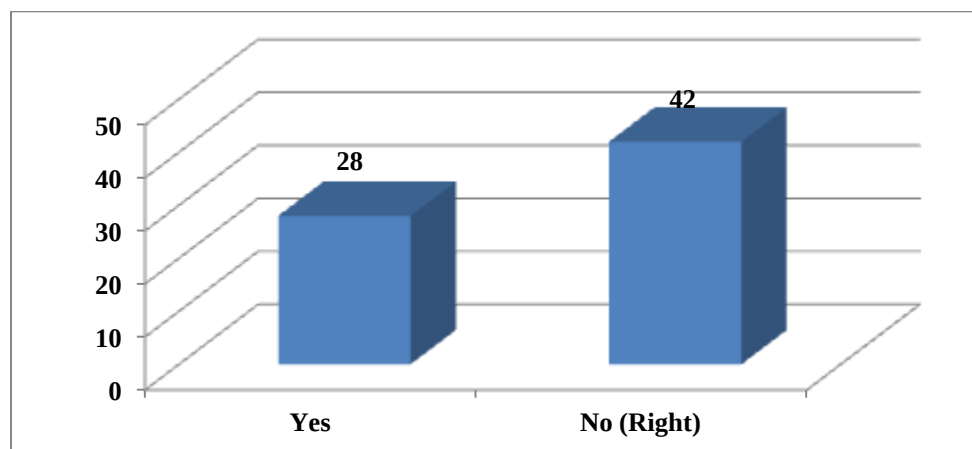


Figure5 Q3:- Do you think that a primary tooth that has been avulsed should be replanted?

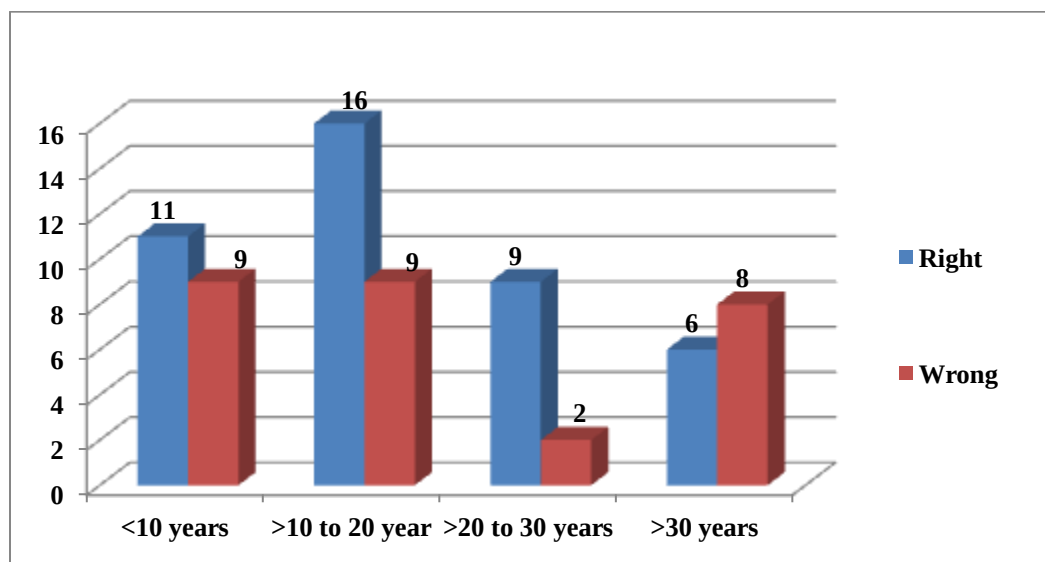


Figure 6:- Experience-wise responses of pediatricians for question no 3.

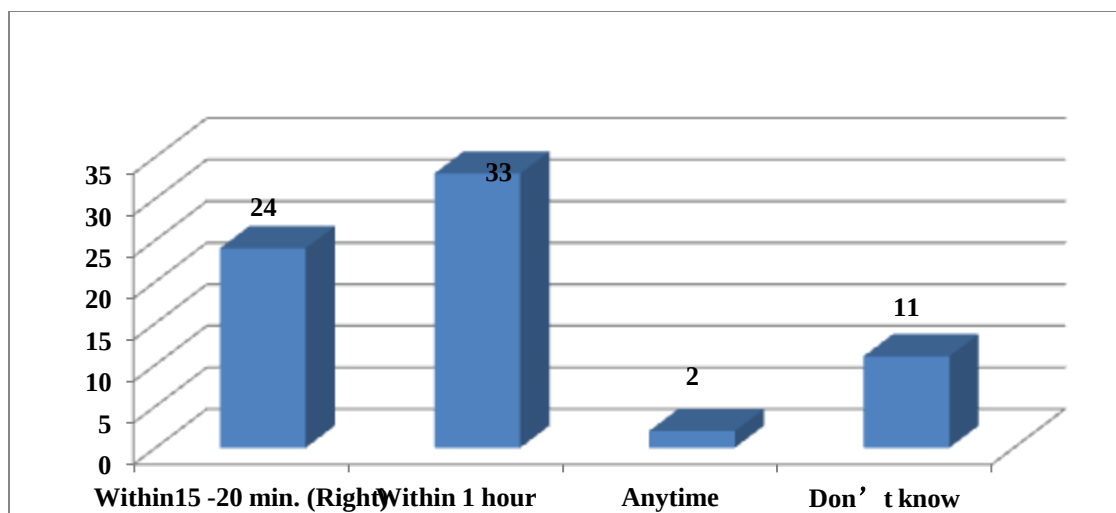


Figure 7 Q4:- What would be the ideal time for replanting the avulsed tooth for the best possible prognosis?

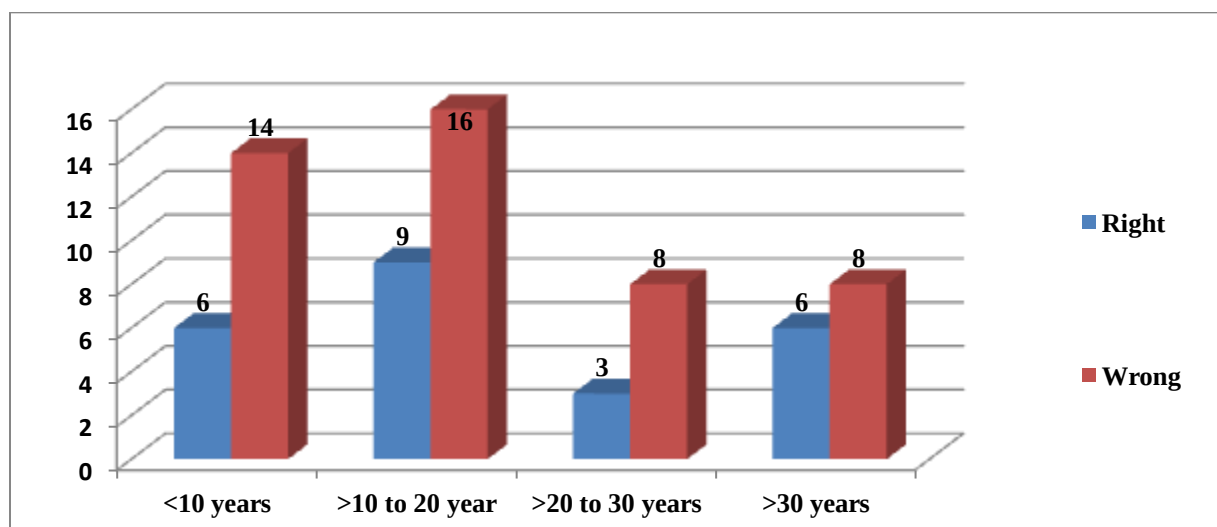


Figure 8:- Experience-wise responses of pediatricians for question no. 4.

Table 1:- Pediatricians numbers and percentage (Option-wise) for Q1 to Q4.

Questions	Option A	Option B	Option C	Option D
Q1, n (%)	2 (2.8)	50(71.43) Right	18(25.71)	0 (0%)
χ^2 , df, 'p'	3.706,3,0.295	7.517,3,0.057	7.014,3, 0.071	0.0,0,0.00
Q2, n (%)	47(67.14) Right	20(28.57)	2(2.86)	1(1.43)
χ^2 , df, 'p'	6.533,3 0.088	6.222,3 0.101	2.536,3 0.469	2.316,3 0.509
Q3, n (%)	28(40)	42(60) Right	0(0)	0 (0)
χ^2 , df, 'p'	4.271,3, 0.234	4.271,3, 0.234	0.0,0, 0.00	0.0,0, 0.00
Q4, n (%)	24(34.29) Right	33(47.14)	2(2.86)	11(15.71)
χ^2 , df, 'p'	0.892,3 0.821	0.581,3 0.901	0.801,3 0.849	4.074,3 0.254

Table 2:- Total Number and percentage of pediatricians (Experience-wise) having right knowledge for Q1 to Q4 along with χ^2 , df and 'p' values.

Group (n)	Q1 (n, %)	Q2 (n, %)	Q3 (n, %)	Q4 (n, %)
G1< 10 years (n=20)	17/20(85%)	10/20(50%)	11/20 (55%)	6 /20(30%)
G2>10-20 years (n=25)	16/25(64%)	19/25(76%)	16/25(64%)	9/25(36%)
G3>20-30 years (n=11)	5/11(45.45%)	6/11(54.54%)	9(81.81%)	3/11(27.27%)

G4>30 years (n=14)	12/14(85.71%)	12/14 (85.71%)	6/14(42.85%)	6/14(42.85%)
Total Right No (%)	50(71.43%)	47(67.14%)	42(60%)	24(34.29%)
χ^2 , df, p value	7.517, 3, 0.057	6.533, 3, 0.088	4.271, 3, 0.234	0.892, 3, 0.827

Q1. Fifty pediatricians (71.43%) have answered rightly as ‘permanent tooth’, where as 2 (2.86%) have answered as ‘primary tooth’ and 18 (25.71%) responded as can be either ‘primary or permanent tooth’ as shown in figure 1. A total of 50 (71.43%) out of 70 pediatricians have right knowledge of Q1 which include 17 out of 20 (85%) from G1, 16 out of 25 (64%) from G2, 5 out of 11(45.45 %) from G3 and 12 out of 14 (85.71 %) from G4. as shown in table 2 and figure2. Acceptable significant variations between of right and wrong optioned pediatricians were observed. However, non significant variations were observed in the number of pediatricians having right option between different groups with χ^2 , df, p values as 7.517, 3, 0.057 (Table 2.) and similar non significant variations were also observed between pediatricians having other wrong options (Table 1) at 5% level of significance.

Q2. Forty seven (67.14%) pediatricians have responded rightly as “immediately” for Q2, whereas 20 (28.57%) as within 30 minutes’ and 2 (2.86%) as “within few hours” and 1(1.43%) as “before next day”, dentist’s opinion is needed as depicted in figure 3. A total of 45 (67.14%) out of 70 pediatricians have right knowledge of Q2 which include 10 out of 20 (50%) from G1, 19 out of 25 (76%) from G2, 6 out of 11(54.54%) from G3 and 12 out of 14 (85.71 %) from G4 as shown in table 2 and figure 4. Acceptable significant variations between of right and wrong optioned pediatricians were observed. However, non significant variations were observed in the number of pediatricians having right option between different groups with χ^2 , df, p values as 6.533, 3, 0.088 (Table 2.) and similar non significant variations were also observed between pediatricians having other wrong options (Table 1) at 5% level of significance.

Q3. Forty two (60%) pediatricians have answered rightly for Q3 as “no”, where as 28 (40%) as yes” shown in figure 5. A total of 42 (60%) out of 70 pediatricians have right knowledge of Q3 which include 11 out of 20 (55%) from G1, 16 out of 25 (64%) from G2, 9 out of 11(81.81%) from G3 and 6 out of 14 (42.85 %) from G4 as shown in table 2 and figure 6. Acceptable significant variations between of right and wrong optioned pediatricians were observed. However, non significant variations were observed in the number of pediatricians having right option between different groups with χ^2 , df, p values as 4.271, 3, 0.234 (Table 2.) and similar non significant variations were also observed between pediatricians having other wrong options (Table 1) at 5% level of significance.

Q4. The response of all 70 pediatricians for question number 4 was found as 24 pediatricians (34.29%) have answered rightly as “within 15-20 min”, whereas 33 (47.14%) as “within 1 hour” and 2 (2.86%) as “anytime” and 11(15.71%) as “don’t know” as shown in figure 7. A total of 24 (34.29%) out of 70 pediatricians have right knowledge of Q4 which include 6 out of 20 (30%) from G1, 9 out of 25 (36%) from G2, 3 out of 11(27.27%) from G3 and 6 out of 14 (42.85 %) from G4. as shown in table 2 and figure 8. However, unacceptable percentage of rightly answered pediatricians (34.29%) was observed. However, non significant variations were observed in the number of pediatricians having right option between different groups with χ^2 , df, p values as 0.892, 3, 0.827 (Table 2.) and similar non significant variations were also observed between pediatricians having other wrong options (Table 1) at 5% level of significance.

Question-wise and experience-wise knowledge assessment taking knowledge score into consideration (n=70).

The knowledge score of each paediatrician was assessed by calculating the total right options for all questions. The score vary from 0 to 4, depending upon the number of questions rightly answered by the subject. For each rightly answered question, mark one is added and for wrongly answered question mark 0 is added in the knowledge-score of the subject. The ‘individual knowledge scores’, ‘average mean knowledge score’ for all four questions once as a whole and also in different groups having <10 years, 10 to 20 years, >20 to 30 years and > 30 years of experiences were calculated. The question-wise means and standard deviations along with χ^2 , df and ‘P’ values were derived as in table 3.

Table 3:- Question-wise and Experiences-wise Analysis taking knowledge score into consideration (Means $\pm$ SD of knowledge score with χ^2 , df and P value using two ways ANOVA).

Group	Q1 Mean	Q2 Mean	Q3 Mean	Q4 Mean	Experience-wise Mean $\pm$ SD
G1, n=20	0.85	0.50	0.55	0.30	0.55 $\pm$.19

G2, n=25	0.64	0.76	0.64	0.36	0.60±.14
G3, n=11	0.45	0.54	0.81	0.27	0.52±.19
G4, n=14	0.85	0.80	0.42	0.42	0.62±.02
Quest-wise Mean ± SD	0.70^a±0.19	0.65^a± 0.15	0.60^a±0.16	0.34^b±0.06	Mean ± SD 0.582±0.04
χ^2 , df, p value	7.517, 3 p=0.057	6.533,3 p=0.088	4.271,3 p=0.234	0.892,3 p=0.827	Total Mean for 4 questions 2.33

The Mean ± SD knowledge score of one questions was found as 0.582 ± 0.04 and for four questions 2.33. The question-wise Mean and SD of knowledge score was found as, for Q1 (0.70 ± 0.19), Q2 (0.65 ± 0.15), Q3 (0.60 ± 0.16), Q4 (0.34 ± 0.06) and Experience-wise total Mean ± SD of knowledge score was found as, 0.55 ± 0.27 in < 10 years, 0.60 ± 0.31 in 10-20 years, 0.52 ± 0.19 in >20-30 years and 0.62 ± 0.02 in >30 years of experienced paediatricians.

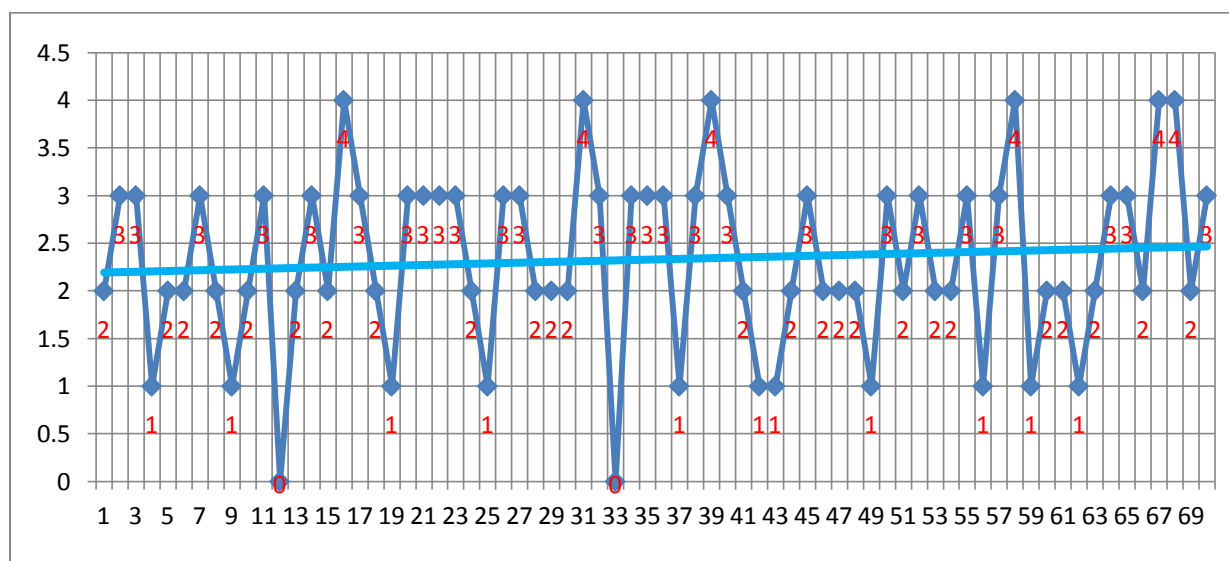


Figure 9:- Graphic representation of total knowledge score of each pediatrician with Mean and SD 2.33 ± 0.97 .

The knowledge score of all 70 pediatricians significant vary from 0 to 4 with mean and standard deviation as 2.33 ± 0.97 . Score zero from two, score one from 11, score two from 25, score three from 26 and score four from 6 pediatricians were observed respectively.

Discussion:-

The prognosis of an avulsed tooth dependent on its proper handling, extra-alveolar time, transfer media and the procedures performed at the time of re-implantation. In cases where these factors are unfavorable, pulp necrosis and degeneration of PDL cells may ensue, resulting in inflammatory root desorption or ankylosis. [10, 11] Re-plantation success depends on the maintenance of PDL cell vitality. [12] Immediate re-plantation of avulsed permanent tooth is generally accepted as treatment of choice, which may restore the aesthetics and functional value of the tooth [13]¹ with 85 to 97% healing of periodontal ligament. The length of extra-alveolar time and type of storage are significant factors that can affect long term survival of avulsed tooth. If there is more extra oral time of avulsed tooth then desiccation of root surface begin with high risk of loss of vitality of the periodontal ligament cells. [14, 15]

In this study the right knowledge about the incisor tooth as permanent at the age of 10 years was found correct only in 71 % pediatricians. It is very undesirable that 29% pediatricians have incorrect knowledge regarding a very basic concept about the type of incisor teeth present in ten a years old boy. The correct knowledge about the type of tooth is very essential for its proper treatment because re-plantation can only be tried in permanent tooth adopting proper procedure. Limbu et al. [16] have reported that the primary and permanent incisor can easily be distinguished based on morphological and physical characteristics but the level of knowledge and attitude regarding management of tooth avulsion was found very inadequate among the dental interns in Nepal and suggested the need of the adequate educative program. Sezer et al. [17] have assessed the depth of oral health and dental knowledge among

pediatricians in Turkey and reported lack of dental knowledge due to limited training in residency which limits the pediatricians' role in promoting children's oral health in daily practice. Several studies have assessed dental trauma knowledge among dentists and reported that the surveyed dentists had insufficient knowledge to treat dental trauma, [18, 19, 20] some had very little experience in treating dental trauma to permanent incisors, [21] and few had a lack of confidence regarding the management of complex trauma cases. [22] The pediatricians and surgeons at trauma centers are the first people to manage the emergency traumatic condition of head, neck and oral region. Usually pediatric surgeons while stabilizing the head injury in children pay little attention to the dental injury except, bleeding control from avulsed tooth site. It is equally important to save avulsed tooth along with head injury for total recovery from the trauma. A patient cannot be categorized as totally recovered, if he/she has lost one or other tooth in a traumatic accident. Cortes et al. [23] reported that dental trauma in children affected the child's ability to smile and laugh. Children with missing anterior teeth feel embarrassment and cannot maintain a normal healthy emotional state without being irritable. Such kids were reported to be less satisfied from their food, maintained a negative attitude towards tooth brushing, and felt less comfortable about smiling, laughing or showing their teeth, when socializing with people. Wong et al. [24] have assessed the changes in the oral health related quality of life in preschool children, who lost tooth due to untreated dental caries and extraction afterward. He reported that such kids suffered from severe mental and psychological stress and were uncomfortable in taking initiative and socializing with people. Giannetti et al. [25] assessed the changes in oral health related quality of life in school children who had a complete dislocation of the tooth out of socket and concluded that if patients got into tooth avulsion their quality of life is adversely affected.

The right knowledge about 'how urgent do you feel that a dentist's opinion is needed' was found correct as 'immediate dentist's opinion is needed to save the avulsed tooth', in 67% pediatricians. This result could be attributed to lack of knowledge and information regarding management of tooth avulsion among 33% of pediatricians practicing in Karnal city as evaluated in this study. Lot of research work on assessment and refinement of various techniques for revival of avulsed tooth has already been done and published for reference for professional dentists, medical professionals, trauma centre surgeons and pediatricians. It is very unfortunate and alarming that a sizable number of medical professionals, trauma surgeons, pediatricians and even dentists and dental interns are unaware of latest techniques or even basic concepts pertaining to the management of avulsed tooth. Holan et al. [26] have reported that only 4 percent of emergency physicians would render the appropriate treatment for dental avulsion cases and allow the dentist to follow up later on. One of the most important factors in successful treatment of avulsed tooth is minimizing time that the tooth is out of socket. [27, 28] Avulsion re-plantation requires urgent treatment in order to increase the likelihood of a successful outcome. [29, 30] Luxation injuries, particularly avulsion, dictate emergency treatment as positive outcomes diminish with time delay. [31] However, Al-Jundi et al., [32] have reported that 20 to 30 minutes is the maximum extra alveolar time limit for successful prognosis of a re-implanted avulsed tooth. The International Association of Dental Traumatology recommends using a flexible splint for up to 14 days for an avulsed tooth. Andersson et al., [10] concluded from their survey study that more number of respondents suggested the use of a flexible splint for stabilizing re-implanted avulsed tooth for the duration of 7 to 14 days. Hu et al. [19] have reported that only 59.1 % of their participants knew that a flexible splint is indicated for 2 weeks in cases of avulsed teeth. Westphalen et al. [33] have reported that most of their respondents (73 %) suggested a flexible splint and that 64 % of the dentists reported a splinting duration of more than 15 days. However, Zhao et al. [34] have reported that more of their respondents suggested a rigid splint (49 %) than a flexible splint (45.1 %). Furthermore, a higher percentage of the respondents in this previous study suggested splinting for 30 days (40.6 %), whereas only 10.2 % suggested splinting for 2 weeks. The International Association of Dental Traumatology (IADT) recommends root canal treatment when the extra alveolar dry time exceeds 60 min or for other reasons such as the presence of non-viable cells and teeth with a closed apex. [10] A large percentage of respondents (61.7%) reported that the endodontic treatment is dependent on the extra-alveolar period and stage of root formation. [34] Krastl et al. [35] have reported that most of the participants in their study suggested root canal treatment within 7 to 14 days for an avulsed tooth that has been replanted within 30 minutes.

The accurate knowledge about, 'is the avulsed primary tooth need not to be re-planted?' was found correct in 42 (60%) pediatricians. The American Academy of Pediatric Dentistry and the International Association of Dental Traumatology guidelines have suggested not to re-implant primary tooth because doing so may damage the developing permanent tooth. [36, 27, 37, 28] Zemon and Kenny [38] have suggested that re-implantation of primary avulsed tooth can cause deflection, hypoplastic and morphological changes to the crown of permanent tooth. Sometimes replanted primary tooth may form a dental abscess or undergo ankylosis. Nabil and Zubair [39] observed that the level of knowledge of general dentists in Yemen, on the management of dental avulsion was inadequate and

there was a need of educative programmes. They further reported that among the studied group 44% said that an avulsed tooth cannot be replanted, 66% informed that they used rigid splint for avulsed tooth and 29 % said that semi rigid splint should be used. Al Jazairy et al. [40] reported that 76 % of the studied dentists do not support the concept of re-implantation of avulsed permanent tooth, which is consistent with the results of previous studies. [34, 41] In cases of severe caries, periodontal disease, and medical conditions, such as immune-suppression or severe cardiac diseases, or in cases in which the patients are not cooperative, re-plantation of the avulsed permanent tooth is not indicated according to the International Association of Dental Traumatology (IADT) guidelines. [10]

The ideal time for replanting the avulsed permanent tooth for the best possible prognosis is within 10 to 15 minutes was found correct in 34% pediatricians in this study. Andreasen and Hjorting [42] had much earlier suggested that if a avulsed permanent tooth is re-planted within 30 minutes, 90% of the re-implanted teeth show no radiographic root resorption at a 2 year follow up. However, if re-implanted more than 2 hours after avulsion, root resorption will happen in 95% of the cases as observed and confirmed radiographically. Hashim [6] has reported that around 68% of the physicians referred the avulsed tooth immediately to the dentist, none of them liked to put the tooth back into the socket before referring to the dentist. One of the main requisites of dental avulsion treatment is the tooth re-implantation as soon as possible, keeping periodontal cells viable for healing and a possible pulp revascularization. [43] A delay in providing emergency dental treatment may jeopardize the prognosis of an avulsed tooth. If the tooth is kept in a suitable medium, the extra-oral time may be extended to up to 6-hours. [44, 45] Ahuja et al. [46] have reported that 34.7% pediatricians had come across a case of tooth avulsion during their practice. Out of them, 62.7% preferred to immediately seek dentist's advice and 15% believed that no dentist's consultation was required, 17.4% of the respondents opted to place the tooth back into the socket and then refer to the dentist. They concluded that the knowledge of pediatricians regarding management of avulsed tooth was inadequate and educational programs were required in this regard. [47] Talluri et al. [48] observed that 100% of medical professionals expressed that they could account for avulsed teeth and 22.4% doctors stated that the appropriate treatment during the initial 30 minutes provides the best prognosis for traumatically avulsed teeth and further revealed that 59.5% of the studied doctors had no recollection of any training in the management of dental injuries. This was similar to the study done by Nasr et al. [47] and agrees with Harrison, [49] with only 6% of senior house officers had training in dental management as part of their undergraduate education. Lewis et al. [9] studied that approximately 40% of the pediatricians were not sure of undertaking the tooth saving procedures and storing medium of avulsed tooth in a solution compatible with cell viability.

Statistical Analysis:

All pediatricians were found well aware of tooth avulsion and 50% had already come across with the condition in their routine practice. The knowledge about various concepts involved in re-implantation of avulsed tooth was found varying significantly between individual to individual and question to question. The analysis of variance of knowledge score data among the pediatricians having different years of experiences and variation in total knowledge score of different questions (Q1 to Q4) was analyzed statistically using chi square test and two ways ANOVA in SPSS (Version 20) student ware computer program at 5% level of significance. Question-wise evaluation revealed that the knowledge score data for Q1 'about nature of incisor tooth in a 10 years old boys as permanent' was found varying insignificantly between different age groups but following a trend ($\chi^2=7.517$, $df=3$, $p=0.057$) as pediatricians having more than 30 years of (0.857) and less than 10 years of experience (0.85) were having better mean knowledge score as compared pediatricians having 10 to 20 and 20 to 30 years of experience (0.64, 0.45). The variation in knowledge score data of Q2 'how urgent do you feel that a dentist's opinion is needed' was found statistically non significant, neither it is following a trend ($\chi^2=6.533$, $df=3$, $p=0.234$). However, better awareness with mean knowledge score (0.80) was observed among the pediatricians having more than 30 years of experience as compared to those having 10 to 20 years (0.76) followed by 20 to 30 years (0.54) and less than 10 years of experience (0.50). The variation in knowledge score data of Q3 'the avulsed primary tooth need not to be re-implanted' was found statistically non significant, neither it is following a trend ($\chi^2=4.271$, $df=3$, $p=0.234$). Whereas, better awareness with mean knowledge score (0.81) was observed among pediatricians having 20 to 30 years of experience as compare to those pediatricians having 10 to 20 years (0.64) followed by less than 10 years (0.55) and more than 30 years of experience. The variation in knowledge score data of Q4 'what would be the ideal time for replanting the avulsed tooth for the best possible prognosis?' was found statistically non significant, neither it is following a trend ($\chi^2=0.892$, $df=3$, $p=0.827$). Furthermore, better awareness with mean knowledge score (0.42) was observed among respondents having more than 30 years of experience compared to those having 10 to 20 years (0.36), followed by < 10 years (0.30) and >20 to 30 years of experience (0.27). There is no significant variation in knowledge score between Q1, Q2 and Q3, where as significant variation in knowledge score of Q4 with others

questions. The Higher overall knowledge score mean (0.62 ± 0.02) for all four questions was observed from pediatricians having >30 years of experience and lowest (0.52 ± 0.19) in >20 to 30 years of experiences. However a non significant positive correlation was observed between knowledge score and experience of the subjects. Lewis et al. [9] observed a negative correlation indicating recently passed out pediatricians had better knowledge than the more experienced. Similar findings were noted in a study conducted by Khandelwal et al. [50] Lewis et al. [9] have assessed pediatricians' knowledge, attitudes, and professional experience regarding oral health. Little is known about the incidence of dental problems in pediatric practice, and whether pediatricians attitude act as barrier to their patients' receiving professional dental care. Finally, it is important to know how pediatricians value the promotion of oral health and whether they would be willing to take on additional activities aimed at its improvement. Pani et al. [51] have reported that the level of knowledge regarding traumatic dental injuries was highest among surgeons and lowest among emergency room technicians who are likely to be the first people to encounter such injuries. They further reported that the attitude towards management of traumatic dental injuries was most positive among nurses. Samaei et al. [52] have reported that the knowledge and confidence of Australian Emergency Physicians and college trainees in managing dental emergencies was varied and Interactive training sessions in dental emergency management were highly indicated. Khandelwal et al [50] observed that 90% of physicians and Paediatric surgeons practicing in Indore area have accepted that they had no knowledge of dental trauma management and 93% of the practicing doctors were interested in attending an education programme in this regard.

The pediatricians' knowledge about tooth trauma management and familiarity with basic oral health-related researches are limited. [53, 54] Pediatricians can expand their involvement in oral health prevention, but they can never replace the care that dental professionals can provide. Time pressure, lack of accurate knowledge and inadequate staffing will make it difficult for pediatricians to devote the attention to oral health that all children deserve. Physicians' knowledge regarding tooth avulsion was found insufficient and only 18.8% refer pediatric patients to pediatric dentist. [55] There was no correlation between knowledge score and level of dental education received in medical school and / or residency. [54] In Kuwait, 16.7% physicians had received information about tooth avulsion. [56] Holan and Shmueli [26] have found that 55% of the physicians in their study had never received any information related to dental trauma. Hashim [6] highlighted that only 19.2% of the physicians had received training on managing avulsed teeth and the rest never had any educative program in this regard. The majorities 97.6% of the respondents was not satisfied with their level of knowledge and believe that they need further education. McCann et al. [57] observed that physicians and medical undergraduates in the United Kingdom were inadequately educated about dental trauma case and there is an urgent need to provide more courses on dental trauma management for physicians and pediatricians.

Conclusions:-

Not even a single pediatrician was found with perfect first aid knowledge about avulsed tooth management. Mild positive correlation between basic first aid knowledge of pediatricians about avulsed tooth management with experience was observed.

Recommendations:-

The existing medical education system in India, should provide more credit hours on dental trauma and their management for medical graduate and post graduate students. Collaboration between dentist, pediatricians and physicians is the need of hour for the implementation of oral health education programs in India. Super specialty facilities are needed for avulsed tooth re-implantation in Government and private sector hospitals in India.

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