



Educational Dental Program and Its Impact on Emergency Management of Traumatic Dental Injuries in Children

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ABSTRACT

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Purpose: this study was conducted to design an educational dental program (campaign) for improvement of the awareness of parents, teachers and general dental practitioners regarding emergency management of traumatic dental injuries (TDI) in children and evaluate the impact of educational dental program (campaign) on level of knowledge about emergency procedure in TDI in children after 3 and 9 months. **Subjects and Methods:** A total number of 800 parents, 200 schoolteachers, and 200 general dental Practitioners' were randomly chosen. Evaluation of knowledge level for all groups was surveyed using a self-administered structured questionnaire, followed by awareness stage campaign to improve the level of knowledge of these groups of adults who would be the first line of defense in emergency TDI that can happen at home, school, and primary medical centers; then, the effect of the different awareness methods was evaluated among the groups. **Result:** A significant difference have been noticed in the level of knowledge in the groups after the educational dental program (campaign). **Conclusion:** educational dental program (campaign) play a main role in increasing level of awareness with emergency management of traumatic injuries in children, and cases prognosis.

KEYWORDS

Emergency,
Traumatic Dental Injuries,
General Dental Practitioner,
Avulsion, Teachers.

INTRODUCTION

One of the main oral health complications which can cause a lot of suffering and stress is dental trauma, from a small enamel chip to

* Paper extracted from Doctor thesis titled "Educational Dental Program and its Impact on Emergency Management of (TDI) in Children".

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huge orofacial damage assuming the displacement or avulsion of teeth ⁽¹⁾.

Avulsion is a serious dental injury and the success of the replantation depends on the time, using of an acceptable media to store the tooth until the time of replantation and handling the tooth with no touching to the root surface, thus increasing the possibility of tooth survival ⁽²⁾.

The clinical management using many of diagnostic tools and techniques and suitable treatment can have an important role to increase the prognosis of a traumatic dental injuries (TDI) ⁽³⁾. The prognosis highly hangs on proper emergency management, which hangs on the level of knowledge of care givers existing in the accident place before the beginning of dental treatment, like the children's parents and teachers ⁽⁴⁾.

Reducing the following pain can be done by prevention of these injuries; therefore, the level of knowledge and awareness of the individuals who can be in contact with children at home and in school should be increased ⁽⁵⁾.

Occasionally, TDI suddenly happen when general dental practitioners GDPs do not expect or even prepared for its management, that's why the staff of emergency trauma centers and pedodontic clinics should have the awareness of the first aid procedure and proper emergency management to rescue the life of a child or even can diagnose the life threatening condition; as well increasing the survival level of traumatized teeth because the time of treatment is responsible for the risk of tooth devitalization to occur ⁽⁶⁻⁸⁾.

Most of the investigation clarify that dentists' have a shortage in the awareness and ability to manage TDI, therefore this investigation had been done to explore and increase the GDPs level of awareness about emergency procedures in TDI science, there is a few national published studies in the aspect in this point ^(9, 10).

SUBJECTS AND METHODS

This cross sectional study was targeting:

1. Total of 958 random sample of Egyptian parents.
2. Total of 147 random samples of Egyptian teachers who works in pre and primary (Grades 1–6) schools in different sectors who could read Arabic or English.
3. Total of 206 random sample of Egyptian general dental Practitioners 'who participated in 3-day dental education program and was working or trains in primary health care. That was surveyed using a self-administered structured questionnaire.

Three types of questionnaires were developed and approved by specializes pedodontist and specializes Endodontists (members in Al-Azhar trauma center); the reliability and stability for the evaluation questionnaires were assessed using Cronbach Alpha and Common factor analysis. Questionnaires were developed in English as well as in Arabic language and before its distribution; a quick explanation about the objective of the investigation was given to the participants.

Following approval by the Research Ethics committee, Faculty of Dental Medicine for Girls, Al-Azhar University (REC code 18-086); different types of questionnaires for each group was distributed to all those participants who agreed to take apart in the investigation, investigator was available to make any required explanation of the subjects, the questionnaires were collected immediately after answering under the supervision of the investigator and compared with model answers.

Stage one: (Evaluation of knowledge level)

A-Questionnaire 1: (For parents) it was divided into three parts ^(11, 12). B- Questionnaire 2: (For teachers) it was divided into 4 parts ⁽¹³⁾. The same questionnaire for the parents except the second section which have 6 questions about the teacher's

role and responsibilities in the school. All of the 147 questionnaires (before) for the teachers and the 958 questionnaires (before) for the parents were distributed during 9 months from April 2019 until March 2020. C- Questionnaire 3: (For general dental Practitioners) the questionnaire was divided into two parts personal and professional information where imaginary TDI cases were designed to evaluate their knowledge⁽¹⁴⁾. All of the 206 questionnaires were distributed during 9 months period: April 2019, July 2019, and October 2019, and made sure that all of it were properly filled out.

Stage two: (Awareness stage)

Educational dental programs (Campaign) to improve the knowledge level. These programs were properly designed to accommodate with level of education, simplified, translated in Arabic (mother language) for the parents and teachers, and in scientific base for general practitioners to be sure that it had proper information according to the latest

guidelines of American Association of Pediatric Dentistry (AAPD).

All the participants in all groups were educated by means of: lectures, power point presentations, mouth word, pins, the fliers, poster, banners, and specific first aid programs for each group.

Stage three: (evaluation of effect of the different awareness methods on the groups), was performed using the same questionnaires that were applied in aforementioned stages.

RESULTS

Frequencies and percentages used to describe statistics for all variables. Correlation coefficients was used to test the factor analysis of questionnaires. Pearson correlation coefficient was used to analyse the relationship between knowledge score and age; while Spearman correlation coefficient used to evaluate the relationship between knowledge score and experience with TDI.

SAVE THAT TOOTH!
A front tooth can be knocked out in accidents, during play, sports, road traffic accidents, falls or fights.

Immediate Action Could Save that Tooth:
Call your doctor

- 1 Keep Calm!** Make sure that it is an adult tooth; baby teeth should not be put back in.
Telephone the dentist to tell them you're on your way
- 2 Find the tooth and pick it up by the crown (the white part). Avoid touching the root as this can damage the membrane which is essential to saving that tooth.**
- 3 If the tooth is dirty, wash it briefly (10 seconds) using milk, saline solution or cold running water.**
Skimmed MILK
- 4 Replant the tooth, using the shape of the teeth at either side of the gap as a guide to positioning. The injured person should bite on a handkerchief for 15-20 minutes to hold the tooth in position.**
Seek emergency dental treatment immediately
- 5 If the tooth cannot be replanted immediately, it can be carried:**
Inside the injured person's mouth, between the teeth and the inside of the cheek.
OR
In milk or a special storage medium for knocked out teeth, if available. Avoid storage in water.

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Figure(1) Poster and Fliers.

For parents and teachers:

The questionnaire was completed by 958 participants, mean age 21.4248 (SD $\pm$ 4.42) years. Most of the participants were females (70.8%) and only 28 (29.2%) males. The parents had their own children (14.9%); 3.9 % one child, 7.8% two children, and 2.3% three children, 0.9% 3-4 children, (85.1%) have no children.

The questionnaires were completed by 147 teachers, their age range was 20-53 years, and mean age was 28.48 years with S.D $\pm$ 4.98 . Most of the participants were female teachers, 81.0% respectively; with the mean teaching years being 5.35years. Most of them had their own children (68.0%); 9.5% one child, 43.5% two children, and 15.0% three children. Most of the teachers (66.0%) approved responsible for children during activities, while 29.3% of them were responsible for one class.

Table (1) Knowledge and experience with TDI.

Question	Answer	Teachers N (%)	Parents N (%)
1-Experience with TDI ?	Yes	45(30.6)	256(26.7)
	No	102(69.4)	702(73.3)
2-Witnessing TDI ?	Once	106(72.1)	699(73)
	Several times	37(25.2)	227(23.7)
	No	4(2.7)	32(3.3)
3-How did TDI occur ?	Playing sports	39(26.5)	278(29.0)
	Walking	18(12.2)	133(13.9)
	Playing in the school	15(10.0)	106(11.1)
	Fighting	72(49)	436(45.5)
	I don't know	3(2)	5(0.5)

(N=147) teachers and (N=958) parents.

Table (2) Management of dental injuries.

Question	Answer	T before	T after	P before	P after
1- What would you do in case of TDI ?	Call the parents	63(42.9)	12(8.2)	342(35.7)	102(10.6)
	Call the dentist	77(52.4)	127(86.4)	562(58.7)	818(85.4)
	Call the doctor	5(3.4)	8(5.4)	39(4.1)	38(4.0)
	Leave the child at home / School	2(1.4)	0000	15(1.6)	0(0)
2- Do you know what is the meaning of avulsion ?	Yes	40(27.2)	120(81.6)	251(26.2)	858(89.6)
	No	107(72.8)	27(18.4)	707(73.8)	100(10.4)
3-What would you do in case of a completely extruded tooth from its socket?	Throw the tooth away	21 (14.3)	5(3.4)	126(13.2)	18(1.9)
	Scrub the tooth	3 (2)	6 (4.1)	7(0.7)	18(1.9)
	Wash the tooth with tap water	29(19.7)	112(76.2)	127(13.3)	738(77.0)
	Wrap the tooth in a dry clean gauze	94(63.9)	24 (16.3)	698(72.9)	184(19.2)
4-Did the primary teeth need implantation ?	Yes	23 (15.6)	23 (15.6)	141(14.7)	90(9.4)
	No	124(84.4)	124(84.4)	817(85.3)	868(90.6)
5- The best media to place the tooth in until you go to the dentist.	Ice	1(0.7)	3(2.0)	15(1.6)	44(4.6)
	Tap water	6(4.1)	1(0.7)	22(2.3)	5(0.5)
	Tissue	17(11.6)	3(2.0)	154(16.1)	25(2.6)
	Physiological solution	45(30.6)	36(24.5)	280(29.2)	139(14.5)
	Cotton pad	13(8.8)	0	80(8.4)	3(0.3)
	Baby's mouth	8(5.4)	66(44.9)	91(9.5)	386(40.3)
	Disinfection solution	48(32.7)	9(6.1)	215(22.4)	60(6.3)
	Milk	9(6.1)	29(19.7)	101(10.5)	296(30.9)

Question	Answer	T before	T after	P before	P after
6-How would you hold a completely extruded tooth ?	By the crown	64(43.5)	127(86.4)	374(39.0)	878(91.6)
	By the root	25(17.0)	10(6.8)	174(18.2)	38(4.0)
	By the whole tooth	13(8.8)	7(4.8)	131(13.7)	33(3.4)
	Would not touch it	45(30.6)	3(2.0)	279(29.1)	9(0.9)
7-Would you look after a missing tooth fragment in the site of the accident ?	Yes	73(49.7)	140(95.2)	606(63.3)	923(96.3)
	No	74(50.3)	7(4.8)	352(36.7)	35(3.7)
8-Can the dentist reattached a fractured fragment to the traumatized tooth ?	Yes	57(38.8)	128(87.1)	330(34.4)	837(87.4)
	No	90(61.2)	19(12.9)	628(65.6)	121(12.6)

(N=147) (T) Teachers and (N=958) (P) parents.

Table (3) Education about TDI

Question	Answer	Teacher N (%)	Parents N (%)
1-Have you taken any education about TDI?	Yes	47(32.0)	271(28.3)
	No	100(68.0)	687(71.7)
2-How did you got information about TDI ?	Consulting an expert	41(27.9)	265(27.6)
	Consulting colleagues	48(32.7)	288(30.1)
	Dental lectures	69(46.9)	440(45.9)
	TV/ Radio shows	51(34.7)	294(30.7)
	Internet	72(49.0)	475(49.6)
	News Papers	34(23.1)	192(20.0)
3-Are you interested in taking more information about TDI ?	Yes	113(76.9)	754(78.7)
	No	34(23.1)	204(21.3)
4-How do you like to be educated about TDI ?	Basic life support courses	34(23.1)	208(21.7)
	Seminars and lectures by dentists at school	58(39.5)	441(46.0)
	Online lectures	41(27.9)	220(23.0)
	Don't Care	14(9.5)	89(9.3)

(N=147) (T) Teachers and (N=958) (P) parents.

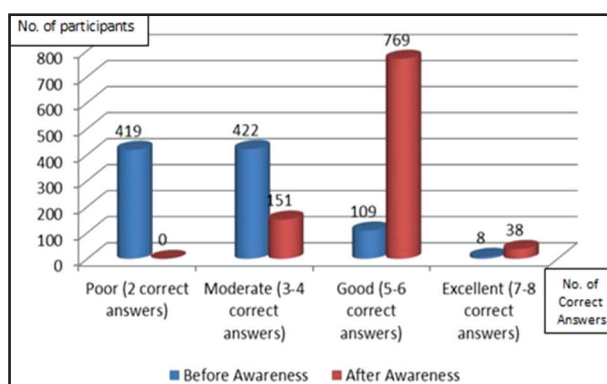


Figure (2) Bar chart representing mean and standard deviation values for parents knowledge score before and after awareness.

From (Fig.2) The result of paired t-test showed that, there was a significant difference in the mean knowledge score for parents after the educational programme (5.4708 with S.D 0.89; good), compared to their mean knowledge score before awareness (2.9071 with S.D 1.3; moderate), where $P = 0.000$.

From (Fig.3) The result of paired t-test showed that, there was a significant difference in the mean knowledge score for teacher after the educational programme (5.3537 with S.D 1.01227; good), compared to their mean knowledge score before awareness (2.9388 with S.D 1.55; moderate), where $P = 0.000$.

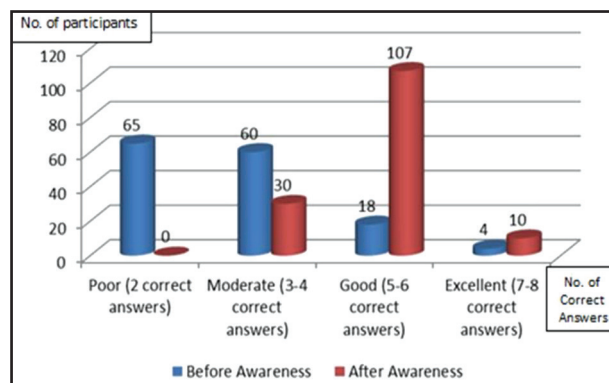


Figure (3) Bar chart representing mean and standard deviation values for teachers' knowledge score before and after awareness

For general dental Practitioners

The participants were 206 females, no males. Their age ranged from (19 -38) years and the mean average of age was 25.11 with S.D 3.69.

There was significant difference in the correct answers in relationship with the attendance to educational courses about trauma injuries ($P=0.024a$)

There was a significant effect on the knowledge score for those who attended continuing educational courses of dental trauma ($P=0.024a$). Also, there was a significant difference in the relation between GDPs' knowledge about TDI and their age ($P=0.01$, $r=0.2$), as well as the relationship between level of knowledge and number of traumatic injuries cases managed in their practicing experience time was significant ($P=0.01$, $r=-0.2$).

Table (4) Evaluation of the knowledge of GDPs about TDI; (N) is the number of GDPs, (%) is the percentage of participants who chose this answer, According to modified Ellis classification for TDI.

Questions	Answers	Before N (%)	After N (%)
		Total N=206	
1- Class 3 crown fracture of immature teeth after 2 days medicament.	Pulpectomy.	76(36.9)	46(22.3)
	apexogenises (correct).	105(51)	143(69.4)
	Root canal treatment.	25(12.1)	17(8.3)
2- Class 2 crown fracture of immature teeth medicament.	Ca(OH)2 or (MTA) (correct).	201(97.6)	199(96.6)
	Formalin.	0 (0)	4(1.9)
	Ferric sulfate.	3(1.5)	1(0.5)
	Nothing.	2(1.0)	2(1.0)
3- Class 2 crown fracture Immediate treatment.	Apexogenesis.	28(13.6)	11(5.3)
	Glass-ionomer (GI) or composite dressing (correct).	71(34.5)	133(64.6)
	2-week then follow-up and final restoration.	107(51.9)	62(30.1)
4- Root fracture class 5 treatment.	Right away repositioning, splinting, and follow-up (correct).	116(56.3)	132(64.1)
	Right away repositioning, splinting RCT,	50(24.3)	33(16.0)
	Right away repositioning and follow-up after 2-week then splinting.	40(19.4)	41(19.9)
5- In root fracture splinting should take.	1-2 weeks.	85(41.3)	36(17.5)
	More than 4 months 6.	43(20.9)	14(6.8)
	3-4 week (correct).	78(37.9)	156(75.7)
6-Time for endodontic treatment in root fracture.	Follow-up for 1y then RCT of coronal segment if necrosis happens	57(27.7)	57(27.7)
	After 1w extirpation of pulp and RCT just for coronal segment.	57(27.7)	32(15.5)
	After first visit Extirpation of pulp and place medication (caoh) for 1w and finally RCT for all tooth segments. (correct).	92(44.7)	117(56.8)

Questions	Answers	Before N (%)	After N (%)
		Total N=206	
7- Treatment in intrusion.	Right away orthodontic repositioning	85(40.3)	35(17.0)
	Wait 3w for spontaneous eruption and if no movement happen, extrusion orthodontic ally(correct)	106(51.5)	159(77.2)
	Wait 3w for spontaneous eruption and if no movement happens do extrusion surgically.	17(8.3)	12(5.8)
8- Treatment of extrusion.	Right away repositioning and splinting(correct)	171(83)	185(89.8)
	Grinding teeth off from occlusion and splinting	32(15.5)	13(6.3)
	Allow for spontaneous repositioning	3(1.5)	8(3.9)
9- management procedures for avulsed mature teeth with more than 1 h dry-time.	Excavate necrotic tissue and dissolve the blood clot from socket by saline wash, soak in 25% sodium fluoride, RCT, replantation and flexible splinting, give the patient antibiotic therapy .(correct)	93(45.1)	139(67.5)
	Excavating necrotic tissue , replantation then flexible splinting, give the patient antibiotic therapy.	47(22.8)	29(14.1)
	Soak in 25% sodium fluoride, RCT, replantation and flexible splinting, describe antibiotic treatment for patient.	66(32.0)	38(18.4)
10- Emergency management procedures for avulsed tooth at the place of accident.	Replantation right away, and if it is impossible, the best media to store tooth is in the patient's saliva and go to the dentist immediately. (correct)	123(59.7)	190(92.2)
	the best media to store tooth in is saline and go to the dentist within 1 h	24(11.7)	3(1.5)
	the best media to store tooth in is milk and go to the dentist within 1 h.	59(28.6)	13(6.3)
11- What will you do when the patient come to your clinic?	Replantation if not performed before, splinting, antibiotic therapy (correct).	141(68.4)	194(94.2)
	Vitality test, RCT, x-ray, flexible splinting, describe antibiotic for 7 days.	65(31.6)	12(5.8)
12- Avulsed teeth which were immediately replanted should be splinted for.	7-10 days. (correct)	105(51.0)	133(64.6)
	2 months.	97(47.1)	62(30.1)
	4 months.	4(1.9)	11(5.3)
13- When will you do endodontic treatment?	At emergency first visit.	45(21.8)	9(4.4)
	replantation then after 7-10 days before removing of splinting. (correct)	83(40.3)	169(82.0)
	If there was any necrosis after removing of splinting.	78(37.9)	28(13.6)
14- In a 4-yearold child will you replant the avulsed tooth?	No .(correct)	136(66.0)	182(88.3)
	Yes.	70(34.0)	24(11.7)

From (Fig.4) The result of paired t-test showed that, there was a significant difference in the mean knowledge score for parents after the educational programme (10.8301 with S.D 1.33810; good), compared to their mean knowledge score before awareness (7.6990 with S.D 1.83109; moderate), where $P = 0.000$.

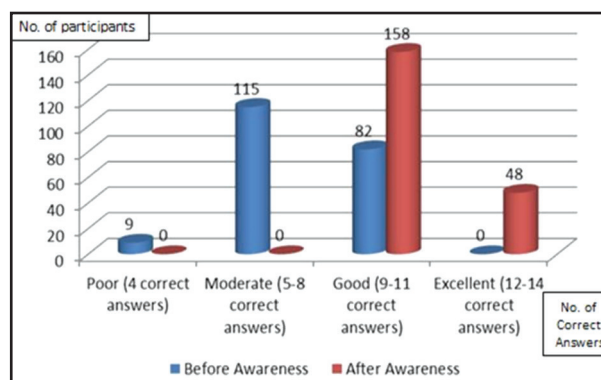


Figure (4) Bar chart representing comparison between before and after awareness.

DISCUSSION

For teachers and parents:

The places with the greatest prevalence of the traumatic dental injuries (TDI) happening in children are schools, home, club, or street; that's why good awareness of emergency management procedures for parents and teachers is a must ⁽¹⁴⁾.

Contact the dentist at the emergency time to take management procedures of the fractured tooth was chosen by (52.4%) of the teachers and (58.7%) of the parents. As wrong management may affect the treatment of TDI, this had been described in the dental educational course which in turn improved the results to 86.4% and 85.4%, regarding teachers and parents respons, respectively.

The time taken by the patients to go to the dentist from the site of the accident especially in case of avulsion, as well as proper storage media are mandatory for prognosis and survival of the avulsed tooth ⁽¹⁵⁾. Incorrect handling and long time out of the oral cavity may cause deformation of periodontal ligament, root resorption and may lead to ankylosis and tooth loss⁽⁹⁾. Therefore, replantation right away after complete extrusion from the socket is a must; however previous investigation showed that teachers' hate this point ⁽¹⁶⁾.

In the question about how to manage a completely extruded tooth from its socket, 63.9% and 72.9% of the teachers and parents respectively, would hold the tooth wrong and wrap it in a dry gauze, which could lead to permanent distortion for the periodontal ligament. The results are like those found in an investigation conducted in another country ⁽¹⁷⁾. Only a few numbers of teachers and parents (6.1% and 10.5% respectively) would place the tooth in milk, the International Association of Dental Traumatology considers it as a good storage medium for avulsed tooth ⁽¹⁸⁾; that have been improved after the educational program (campaign) (19.7% and 30.9% respectively) such finding is in accordance with an Indian prospective intervention study, that

evaluated the effect of the informative promotion programs to improve the knowledge and awareness of school teachers. ⁽¹⁹⁾.

Fractured tooth fragment can be reattached to traumatized tooth by dentist in order to preserve tooth vitality, arch integrity, esthetic, and functioning reasons. In our study, (50.3%) of teachers and (36.7%) of parents would not look in the site of the accident for the missing part, also (61.2%) of teachers and (65.6%) of parents thought that attachment of this fragment to the tooth was not a treatment option. However, their knowledge had been improved after the educational program (campaign) into (95.2% and 96.3% respectively) and (87.1% and 87.4% respectively). A similar results had been found in an investigation measuring teachers' awareness about right management procedures of TDI ⁽²⁰⁾.

For general dental Practitioners

Close to half of participants said that they occasionally (47.6%) or rarely (20.4%) meet TDI in their daily work. That accommodate with the results of other investigations that said that traumatic injuries happen infrequently and at occasions when general practitioners are not ready for emergency management procedure ⁽¹⁹⁻²³⁾.

Before the beginning of the educational program, the practitioners' level of knowledge was moderate, just as reported in previous investigations; and had been improved to good by having the educational program which stressed on the week points found in the before questionnaires, using the latest guide lines of AAPD ^(24,25).

According to the recent AAPD guidelines on the management procedures of complicated crown fracture (mod. Eliss class 3) in immature teeth With open apex more than 2mm, partial pulpotomy is the proper treatment or when there was untreated exposure for more than 24 h ⁽²⁶⁾. However, the results of this investigation showed that only 51.0% of GDPs chose this answer in their questionnaire. Apparently, dentists feel less confident in providing

emergency treatment of such complex case in immature teeth, which was also reported by an earlier study that analyzed correlation between dental trauma education and knowledge perception in the emergency treatment of complicated crown fracture among Flemish dental practitioners⁽²⁷⁾; but, the awareness after educational program was improved, that 69.4% of GDPs chose the right answer. While the best treatment for a crown fracture with pulp involvement of teeth with close apex is root canal treatment (RCT) in accordance with the recent guidelines of the International Association of Dental Trauma (IADT)⁽²⁸⁾.

Dentists believed that root fractures must be immediately repositioned and splinted (56.3%) but just (37.9%) knew that its period is 3 to 4 weeks; most of them (41.3%) thought that the normal 1-2 week period is enough. This is accommodating with the study which said that the rapid treatment and splinting of the root segments in one line improved the prognosis⁽²⁹⁾.

A percentage of (44.7%) of the participants had chosen that inter appointment calcium hydroxide dressing followed by RCT confined to the coronal segment is the best treatment procedure that's was corrected in the educational program and dentists' knowledge was improved, that 56.8% had chosen that the correct answer is follow-up for 1y then (RCT) of coronal segment if necrosis happens .

Those who chose to wait spontaneous re-eruption of intruded teeth with open apex was 51.5% of the participants., active repositioning of the teeth with open apex either with orthodontic or surgical way affect the healing prognosis of the tooth. On the other hand, outcome of the surgical and orthodontic repositioning in a case of sever intrusive luxation more than 7mm give good results⁽³⁰⁾, that have been mentioned in the educational program which improved the dentists' knowledge and (77.2%) of the participants chose the correct answer.

As for extrusion of permanent tooth with open apex case, (83%) of the participants had chosen the

correct answer that was reposition it right away and splinting. Tooth maturation at the time of TDI, the extra-alveolar time and suitable storage medium are the most important factors for success of a replantation^(28, 31), and the correct answer had been chosen more by the participants after the educational program (89.8%). Similar results had been found in another investigation.^(32,34)

As regards the treatment of avulsed teeth with close apex in an adult patient with more than 1h of extra-oral dry time, (45.1%) had chosen the right answer. In TDI management guidelines of IADT, the treatment of choice for avulsed teeth with close apex in more than 1 h of extra-oral time is removing the necrotic tissue, RCT, removing the blood clot from the socket by saline wash, soak it in 25% sodium fluoride, replantation, splinting , Antibiotic prescription⁽³³⁾, and soft diet intake for 1 week⁽²⁸⁾. The correct answer had been chosen more by the participants after the educational program (67.5%) and that result is similar to those found in other investigation⁽³⁴⁾.

Time is the most important factor in the treatment of TDI that can directly affect the prognosis⁽³⁵⁾, and most of GDPs had chosen to replant the avulsed tooth at the accident place 123 (59.7%) , than waiting until arrive to the dental office and that knowledge was improved more by the educational program 139(67.5%).

Getting a professional emergency management at the site of accident is mandatory, that would decrease the time between avulsion and replantation, and Consequently decrease the risk of having internal and external root resorption^(35,36). 51% of GDPs chose the answer to splint avulsed teeth for 7 to 10 days , which was higher in comparison with other studies were only 10-30% had chosen this answer^(15,22).

136 (66.0%) of GDPs chose the answer that they would never do replantation for primary tooth, result was improved by the educational program to 182 (88.3%) which is consistent with

the current guidelines and recommendations of the IADT ⁽²²⁾. Moderate level of awareness was seen by investigating GDPs. That's why a strong plan is important to keep all the dentists updated and increase their knowledge level specially toward TDI ⁽²³⁾. Approved guidelines were sent in the form of mails, posters and educational program about emergency management of TDI to increase GDPs level of knowledge ⁽³⁶⁾.

CONCLUSION

1. The teachers and parents awareness about the first aid emergency management procedures in TDI in Egypt was not enough, and had been improved by receiving a dental educational program.
2. Practical experiences with trauma injuries in the daily work have a direct relation with dentists' knowledge, which had been improved by the special dental educational programs (campaign) to increase the level of professional information and publishing the culture of using the Association of Pediatric Program Directors (APPD) guideline among all GDPs.

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RECOMMENDATIONS

At the end, specialized centers for TDI can be established in different cities with trained staff to offer 24-h services, especially for complicated cases. These centers must be connected to GDPs of the city and they should be able to referee their cases and the patients could also be referred to dentists to finish their treatment procedures. Early intervention with proper right management of TDI changes the outcomes and prognosis, all the GDPs

should be trained to efficiently manage the traumatic events. That's why further studies on the effect of educational program trauma management courses on clinicians' knowledge that could be totally or partially fund from the Egyptian ministry of health (MOH) are suggested so that such courses can be extended for all the GDPs. Training and educational TDI management programs are recommended to become obligatory studies in graduation year for all specialities and mandatory for promoting in any work for all community categories.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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