

Knowledge of first aid measures of avulsion and replantation of teeth in Nigerian school children.

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Citation

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Abstract

The aim of this study was to assess the present knowledge level of tooth avulsion in Nigerian school children. A 12-stemmed questionnaire was distributed to 495 Nigerian school children (228 boys, 267 girls) aged 7 – 15 year-old in Ife Central Local Government, Ile-Ife, Nigeria in February 2008 to score several areas of knowledge about tooth avulsion and replantation. The results of this study showed that 39.2% of the children had experienced dental trauma in the past, 62.8% had never received information on first-aid on dental trauma. More than half of the participants 51.5% reported that an avulsed tooth would be left on the ground, 38.2% would throw it on top of the roof and 17.8% would replant. Overall assessment of the children showed a low level of knowledge regarding tooth avulsion and replantation principle. Cultural belief of throwing a knock out or exfoliated tooth on the roof had influence on the children. There is need for comprehensive dental educational programmes and oral health promotions amongst Nigerian school children to improve their knowledge on tooth avulsion and replantation.

INTRODUCTION

Avulsion of tooth occurs when a tooth directly sustains trauma which displaces the tooth from the socket. Tooth avulsion is one of the most serious dental emergencies in children, but the damage caused by this traumatic injury is not necessarily permanent if the injured child and the parents know the appropriate first-aid treatment to perform before seeking treatment from a dentist. The knowledge of appropriate measures to take immediately after tooth avulsion is crucial to successful implantation. The prognosis of replantation of an avulsed tooth is determined by which first-aid measures are taken during the first 15 minutes after avulsion ¹

Avulsion of teeth accounted for 0.5% - 16% (2) of traumatic dental injuries in children of which anterior teeth are commonest ³⁴ tooth avulsion has become a frequent occurrence due to sharp increase in road traffic accident cases ⁵. Other cause of avulsion of teeth include fall ⁶⁷ sports related injuries ⁸⁹ assault/fight ¹⁰¹¹ Tooth avulsion most frequently affects children and pre adolescents ¹²¹³. Consequently, other family members are involved and the subsequent effects of adolescent growth and dental rehabilitation affect the family for years ¹⁴. This is accompanied by significant economic consequences. For psychological reasons, replantation can significantly reduce

the anxiety and despair of the injured child and the parent ¹⁵.

Once avulsed, the tooth must be replanted into its own socket ². Immediate replantation within 15 minutes after avulsion ²¹⁶¹⁷¹⁸ and storage of the exarticulated teeth in solution compatible with cell viability until replantation ² are critical procedures. Avulsed tooth can be stored in saline balanced salt solution, milk and the person's saliva for shorter period ¹⁷¹⁸¹⁹²⁰²¹²². Dry storage of the tooth and storing the tooth in water are not recommended because this will result in an injury to the periodontal membrane with the result that the replanted tooth will be lost overtime ^{[[[2,16,23,24,25.]]]} Replantation of primary tooth is not recommended because the manipulation may cause injury to the underlying permanent tooth germ ².

Extra-oral time of an avulsed tooth plays a crucial role in the prognosis of a replanted tooth. Knowledge of first aid measures is therefore crucial to successful replantation. The storage and transport media of the avulsed tooth during extra-oral time is also of vital significance. Avulsion of teeth have been reported in African children ²⁶²⁷ but there was paucity of information on their knowledge level of emergency measures when avulsion trauma occurs. In a previously reported Nigerian study ¹⁰ on traumatic dental injuries, avulsion accounted for 20.8%. All the avulsed teeth in the children were not replaced with prosthetics. No reported

Nigerian study showed whether Nigeria children were knowledgeable about first aid measures to take when tooth avulsion occurs. The aim of this study was to assess the present knowledge level of avulsion and replantation of teeth in Nigerian school children.

MATERIALS AND METHODS

Nigerian primary and secondary school children aged 7 – 15 years were the target population. Ten schools (3 primary, 3 secondary) in Ife central local government agreed to participate in the study. A total of 495 children (228 boys, 267 girls) participated in the study in February 2008. The children were asked to complete a 12-stemmed questionnaire (Appendix A). General demographic data were collected and the child’s age and sex were registered. The following fields of knowledge were assessed: any experience of exposure to dental trauma, any previous advice on dental trauma, knowledge of the emergency treatment with particular focus on tooth avulsion and special knowledge on replantation principle.

Results were analysed using SPSS software for windows version 11.0 and chi-square test was applied to test for significant differences between age groups and gender. A significant difference was inferred at $p < 0.05$.

RESULTS

A total of 495 Nigerian school children [228 boys, 267 girls] participated in this study. The age and sex distributions are summarized in Table 1.

Figure 1

Table 1: Number of participants as a function of age and gender.

Age	Boys	%	Girls	%	Total	%
7	15	3.0	21	4.2	36	7.3
8	5	1.0	8	1.6	13	2.6
9	17	3.4	20	4.0	37	7.5
10	24	4.8	20	4.0	44	8.9
11	25	5.1	27	5.5	52	10.5
12	40	8.1	51	10.3	91	18.4
13	51	10.3	42	8.5	93	18.7
14	25	5.1	50	10.1	75	15.2
15	26	5.2	28	5.7	54	10.9
Total	228	46.1	267	53.9	495	100.0

One hundred and ninety four of the 495 participants [39.2%] reported they experienced traumatic dental injuries in the past. Boys were more frequently injured but the difference was not statistically significant. Majority of the children 74.7% reported that they would not re-implant an avulsed tooth, only 17.8% would replant and 7.5% are not sure of what to do. Many children knew that a tooth could be knocked out but few had knowledge that same tooth could be replanted. The children previous exposure to trauma and response to replant an avulsed tooth was statistically significant $P < 0.05$. Majority of the children 62.8% had no previous advice on how to manage traumatized teeth Table 2.

Figure 2

Table 2: Response to replantation of avulsed tooth regarding previous dental advice and dental trauma experience of the participants

	Dental trauma Experience		Previous dental advice		Tooth replantation	
	No	%	No	%	No	%
Yes	194	39.2	184	37.2	88	17.8
No	301	60.8	311	62.8	370	74.7
Not sure					37	7.5
Total	495	100	495	100	495	100

Response to immediate treatment after tooth avulsion in this study was low. Table 3 showed that between 7.3% to 9.3% of the participants will report for treatment within 15-30 minutes after injury.

Figure 3

Table 3: Response to treatment of avulsed tooth by the participants

Time After injury	No of children	%
Immediately (15mins)	36	7.3
Within 30 minutes	46	9.3
Within few hours	313	63.2
One day after injury	34	6.9
Anytime	66	13.3
Total	495	100.0

Their choice of where to receive treatment is also indicated in Table 4. Half of the participants 51.3% reported they would received treatment from a medical practitioner 13.5% and 27.7% chose to attend the dentist and the hospital respectively.

Figure 4

Table 4: Children’s choice of where to receive treatment

	No of children	%
Medical doctor	254	51.3
Dentist	67	13.5
Hospital	137	27.7
School clinic	11	2.2
Chemist shop	18	3.6
Others	8	1.6
Total	495	100.0

Regardless of age group, the knowledge of the children regarding avulsion and replantation was generally low as indicated in Tables 2,5,6,7.

Majority of the children 51.5% and 38.2% reported leaving an avulsed tooth on the ground at the site of injury and throwing an avulsed tooth on top of the roof respectively. The number of children that reported that they would take an avulsed tooth to the dentist after injury was low 5.2% Table

5.

Figure 5

Table 5. Distribution of mode of handling an avulsed tooth by the participants.

Handling of a broken tooth	No of children	%
Leave the tooth on the ground	255	51.5
Throw the tooth on top of the roof	189	38.2
Take the tooth to the dentist	26	5.2
Do not know	25	5.1
Total	495	100.0

Very few children had any knowledge why it is important to replant knock out tooth, how to clean a tooth before replantation and storage media Tables 6 and 7. The difference between age of the children and method of transportation of an avulsed tooth was statistically significant $P < 0.05$

Figure 6

Table 6: Transportation of an avulsed tooth by the participants

Mode of transportation	No of Children	%
Handkerchief or tissue paper	291	58.9
Liquid	62	12.5
Mouth	68	13.7
Hand	35	7.1
Plastic bag	26	5.3
Total	495	100.0

Figure 7

Table 7: Choice of storage medium for an avulsed tooth by the participants.

Type of storage medium	No of children	%
Tap water	209	42.2
Normal saline (salt water)	159	32.1
Fresh milk	14	2.8
Iced water	21	2.8
Antiseptic Solution	71	14.3
Alcohol	21	4.2
Total	495	100.0

DISCUSSION

The present study showed that the knowledge of Nigerian school children current knowledge level on tooth avulsion and replantation is low as well as the important measures to take when emergency situation arises. This finding is in good accordance with reported studies among Kuwaiti school children. It is very evident from this study that many Nigerian children will not replant an avulsed tooth, or if the avulsed tooth is replanted, it might result in poor prognosis. This calls for concern because with simple measures, replantation of an avulsed tooth has a very good prognosis.

The questionnaire administered to the children was carefully planned so that the children knowledge level of factors that influence the prognosis of replantation of permanent teeth would be demonstrated in their answers. Before completing the questionnaire, the content was explained to the children so that the children could understand it because young children like those in our study may have difficulties in understanding the content of a questionnaire. The cooperation of the teachers and the school children at the schools were commendable.

The study showed that 39.2% of the children had sustained dental injuries at this early stage is consistent with other studies (2). Our findings showed that there was no difference in prevalence of dental trauma between children of different ages indicated that most of the trauma occurred in primary dentition of the children. There was no significant difference in prevalence of dental trauma between the boys and the girls. This is in agreement with other reported study(1)

Avulsion and loss of a permanent tooth result in severe functional, esthetic and psychological negative consequences

for a child. In young, growing children permanent replacement of a lost tooth with implants and bridge therapy is not recommended because of risk of interfering with the development of the jaw while children are still growing (28). For this reason, these children have to wait for their final treatment until growth has been completed, resulting in temporary, often removable dentures in psychological sensible period of life(1).

The knowledge of Nigerian school children on mode of handling, transporting and storage of an avulsed tooth is low. Our findings showed that many Nigerian children would throw up an avulsed tooth on top of the roof rather than attending the dentist indicated that the cultural belief that a broken tooth or an exfoliated tooth should be thrown on top of the roof so that another tooth can replace it still exist in the country. This is not desirable and calls for concern. A matter of interest in this study was that majority of the participants (51.3%) reported that they would attend a medical doctor rather than the dentist indicated that the level of dental awareness in the country is still low. This is in agreement with reported Nigerian study (10).

Our findings showed that the most popular choice of storage medium by the participants was tap water. Majority of the children did not have the knowledge that milk was a better alternative. This is regrettable because a simple measure of storing an avulsed tooth in milk will enhance the prognosis of the tooth when implanted. Milk has a favourable osmolality and composition for the viability of periodontal ligament cells and has been recommended for temporary storage of avulsed teeth before replantation(25,29). Storing the tooth in water is not recommended in that the osmolality is too low which will result in destruction of the cells of the periodontal membrane (2,25). This is because of low osmolality of water.

A recent study among Nigerian children on traumatic dental injuries showed that tooth avulsion was common(10). There are possibilities that more Nigerian children will suffer from new avulsion injuries of permanent teeth. Many of these teeth could be replanted and saved if the children and adults would know the immediate action to take after an avulsion injury. By increasing knowledge of how avulsed teeth are to be dealt with at the site of the accident, the risk of incurring future negative consequences is minimized (30). Moreover, losing and replacing a permanent front tooth results in high costs for the individual, the individuals family and the society (31,32). The prognosis of an avulsed tooth is good if replanted under an ideal condition and the tooth could be

retained for life. The prognosis of healing depends on appropriate emergency management immediately after the avulsion trauma (2,6).

CONCLUSION

This study showed that the present knowledge level of Nigerian school children on avulsion and replantation of teeth was low. The Nigerian cultural belief that a broken tooth should be thrown on top of the roof of the house had influence on how children would handle avulsed teeth in this environment. A comprehensive dental educational programme would be desirable to improve the knowledge level of Nigerian children and individual on the emergency management of knocked – out teeth, on avulsion and replantation of teeth.

Figure 8

QUESTIONNAIRE ON AVULSION AND REPLANTATION OF PERMANENT TEETH IN CHILDREN (APPENDIX A)

- CHOOSE THE CORRECT ANSWER TO THESE QUESTIONS.**
1. Age ----- years
 2. Sex: Male Female
 3. School: Primary Secondary
 4. Type of School: Public Private
 5. Any previous experience of tooth injury?
(a) Yes (b) No
 6. Where will you go for treatment if you “Knock out” your tooth?
(a) Medical doctor (b) Dentist
(c) Hospital (d) School clinic
(e) Chemist shop (f) Others(specify) _____
 7. How urgent will you seek for treatment if you knock out your tooth?
(a) Immediately (15 minutes) (b) Within 30 minutes
(c) Within few hours (d) one day after injury
(b) Any time
 8. Will you replace a “Knock out” tooth back into the original position in the mouth by yourself ?
(a) Yes (b) No (c) Not sure
 9. What will you do to a broken tooth?
(a) Leave the tooth on the ground
(b) Throw the tooth on top of a roof
(c) Take the tooth to the dentist for treatment
(d) Don't know
 10. How will you carry the broken tooth to where you will be treated? Put the tooth inside which of these things:
(a) Handkerchief or paper tissue (d) Hand (e) Plastic bag
(b) Liquid (c) Mouth
 11. What type of liquid will you use to wash and transport broken tooth?
(a) Tap water (b) Normal saline solution (salt water)
(c) fresh milk (d) Iced water
(e) Anti septic solution (f) Alcohol
 12. Have you been given first-aid advice before on how to manage a broken tooth?
(a) Yes (b) No.

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