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The care of traumatic dental injuries in primary schools in Southern Nigeria

ABSTRACT

Aim To assess the standards of care given to children who sustain traumatic dental injuries (TDI) in Nigerian primary schools.

Materials and methods Study design: cross-sectional study. Public and private schools were selected from the Southern geopolitical zones in Nigeria. An interviewer-administered questionnaire was used to obtain information on the presence or absence of a school clinic, trained nurse, records and first aid box from the head teachers. The record of past traumatic dental injury, cause of the injury and treatment measures were also obtained. Statistics: the information obtained were analysed using SPSS version 20.

Results There were 90 private and 90 public primary schools; 61 (34.1%) schools had school clinics. Forty-two (23.9%) of the schools had school nurses (7 public and 35 private schools), and 27 (64.3%) of them had been trained to treat dental emergencies. Only 14 (7.8%) of the schools had records of dental injuries, and luxation injuries (31.6%) was the commonest injury. Children who sustained injuries in the school premises were sent home in 59 (38.7%) schools, while 36 (22.5%) and 37 (23.1%) schools were referred to physicians and dentists, respectively.

Conclusion many schools do not have school clinics/sick bays or are poorly equipped to handle dental emergencies. Sending children home or to health centres without first aid could affect the prognosis of dental injuries, since timely intervention is of utmost importance for a successful outcome.

Keywords Deantal trauma; Management of dental emergencies; School nurses.

Introduction

Traumatic dental injuries are preventable, yet inevitable occurrences in children. They have been reported among 6-40% of school children [Faus-damiá et al., 2011; Bhayya and Shyagali 2013; Vuletic et al., 2014; WHO, 2014]. They occur as a result of unsafe play grounds/equipment, stairways, sports, road traffic accidents and violence. Falls have been reported to be the most common cause of TDI in children [Škrinjarić and Rajić 1982; Adekoya-Sofowora et al., 2004; Uskun, Kişioğlu and Altay, 2008; Glendor 2009; Vuletic et al., 2014]. However, collisions, fights, road traffic accident, contact with hard surfaces and biting on hard objects have also been implicated [Malikaew et al., 2003; Uskun et al., 2008]. Robson et al. [2009] showed that children attending state/public preschools had nearly two times greater chances of having dental trauma. Also several reports have shown that TDI occurred more frequently among children in deprived and crowded areas [Marcenes and Murray, 2002].

The prognosis of traumatic dental injuries is dependent on prompt treatment after the incident. Since injuries are known to occur within the school premises it is expected that first aid should be administered to such children before referring the injured for a more definite management in an appropriate health facility. One of the functions of the school health service is to provide first aid by trained staff in well equipped school clinics/sick bays. School clinics in addition to the first aid carried out, provide basic medical care, and refer children for appropriate care in health care facilities [Federal Ministry of Education, 2006a]. Since traumatic dental injuries are common in school children, school nurses and teachers should therefore be well versed in carrying out dental first aid given that the prognosis of the dental tissues is dependent on timely interventions [Meadow and Edelstein, 1981; Krause-Parello, 2005; Skapetis and Curtis, 2010].

Several studies have been carried out on aetiology, prevalence and pattern of traumatic dental injuries among Nigerian school children [Adekoya-Sofowora et al. 2004; Udoye, 2006]. However, the aim of this study was to assess the standards of care given to children who sustain traumatic dental injuries (TDI) in Nigerian primary schools.

Methods and materials

Study design and sampling technique

This was a cross-sectional descriptive study involving three states in the three Southern geopolitical zones of Nigeria. A multi-stage sampling technique was used to select the

	Type of school	South East-Enugu		South West-Lagos		South-South-Port Harcourt	
		Yes	No	Yes	No	Yes	No
Is there a school clinic	Public schools	6 (20.0)	24 (80.0)	0	30 (100)	18 (56.7)	12 (43.3)
	Private schools	7 (23.3)	23 (76.7)	17 (56.7)	13 (43.3)	14 (46.7)	16 (53.3)
	P=0.001	13 (21.7)	47 (87.3)	17 (28.3)	43 (81.7)	32 (52.5)	28 (47.5)
Is there a school nurse	Public schools	6 (20.0)	24(80.0)	0	30 (100)	1 (3.33)	29 (96.7)
	Private schools	9 (30.0)	21(70.0)	16 (53.3)	14 (46.7)	10 (33.3)	20 (67.4)
	p=0.54	15 (25.0)	45 (75.0)	16 (36.4)	44 (63.7)	11 (36.7)	49 (63.3)
School Nurse trained in dental emergencies	Public schools	0	6 (100)	NA	NA	1 (100)	0
	Private schools	2 (22.2)	7 (77.8)	15 (93.8)	1 (6.3)	9 (90.0)	1 (10.0)
		2 (13.3)	13(86.7)	15 (93.8)	1 (6.3)	10 (90.9)	1 (9.1)
Records in schools of TDI injuries	Public schools	0	30 (100)	8 (26.7)	22 (73.3)	3 (11.1)	27 (88.9)
	Private schools	0	30 (100)	2 (6.7)	28(93.3)	1 (3.3)	29 (96.7)
	p=0.00	0	60 (100)	10 (16.7)	50 (83.3)	4 (6.7)	56 (93.3)

*p<0.05 is statistically significant. NA-Not Applicable

TABLE 1 Comparing the clinics in private and public schools and the standard of care after injuries in the three geopolitical zones in Nigeria.

schools. Lagos, Enugu and Rivers states were selected from South West, South East and South-South geopolitical zones or regions, respectively. In each of these states, three local government areas (LGA) were selected; Oshodi/Isolo, Surulere and Mushin LGAs were selected from Lagos state. Obio Akpor, Ikwerre and Port Harcourt LGAs were selected from Rivers state while Enugu North, Enugu South and Nkanu West were selected from Enugu state. From the list of schools provided by the school boards, ten public and ten private schools were randomly selected from each of the LGAs. The study was non-invasive and the names of the schools were excluded from the study.

An interviewer-administered questionnaire was used to obtain information from the head teachers on the presence or absence of a school clinic/sick bay, trained nurse, records and first aid boxes. The record of past TDI, cause of the injury and treatment measures were also obtained. Also, head teachers of schools without school nurses were asked what they did with dental injuries that occurred in the schools or what they would do in case of dental injury.

Data analysis

The information collected was entered into a spreadsheet. Statistical comparison of public and private schools, as well as comparison of the three geopolitical regions was done using the IBM SPSS version 20. An observation was considered statistically significant when P value was less than 0.05.

Ethical clearance

Preceding data collection, ethical approval was sought and obtained from the Research and Ethics Committee of University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria. Also, permission and consent was also

sought and obtained from the head teachers of the private and public schools included in the study.

Results

There were 90 private and 90 public schools. Sixty two (34.1%) schools had school clinics/sick bays; 24 (38.7%) public and 38 (61.3%) private schools (p=0.02). when the school locations were considered 28.3%, 21.7% and 51.9% were in South West, South East and South-South zones, respectively. Forty two (23.9%) schools had qualified nurses; 7 (16.7%) public and 35 (83.3%) private schools (p=0.00) when the school locations were considered 38.1%, 35.7% and 26.2% were in Lagos, Enugu and Port Harcourt, respectively. Twenty seven (64.3%) of them had previous information on what to do what in case of dental emergencies (Table 1).

Referrals following injuries

In schools that had nurses, children with dental injuries were referred to physicians in health centres (20.8%), dentist (54.2%), sent home (16.7%) and in 4.2% of the case the parents were called. While head teachers in schools that had no nurses sent the children home in 59 (38.7%) schools, referred the children to physicians in the hospitals/health centers in 36 (22.5%) schools and to dentists in dental clinics in 37 (23.1%) schools. Three (1.9%) head teachers would call the parents while 22.5% head teachers returned the children back to class after first aid (Fig. 1, 2).

Records of injuries

Only 14 (7.8%) had written records of injuries in the

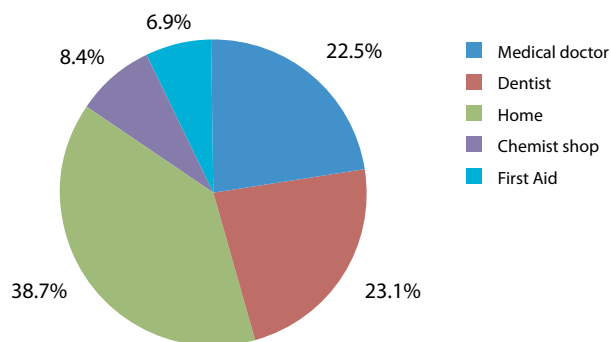


FIG. 1 Preferred referrals by school head teachers when children sustain dental injuries.

schools. When the public schools were compared to private schools it was observed that 11 (78.6%) were public schools, while 3 (21.4%) were private schools ($p=0.00$). Only 2 (4.8%) of the schools with nurses had records (Table 1).

Oro facial/ Dental injuries

Over half (52.6%) of the injuries reported were cut lips, 15.8% were avulsed teeth, 10.5% were fractured teeth and 31.6% were luxation injuries (some children had more than one type of injury). The causes of the injuries within the school premises were as a result of falls during play and sports (82%), fights (12%), collision (4%) and unspecified causes (2%).

Discussion

School health service, an essential component of the school health programme, is necessary for the entire health of the school community [Federal Ministry of Education, 2006a]. Providing basic medical care, school health records, first aid and appropriate referrals are some of its functions. Injuries do occur in schools and must be attended to appropriately. In the present study it was observed that a third of the schools studied had a school clinic, though this number is quite few, it was slightly higher than the 28.6% reported by Oyinlade et al. (2014) in schools at Sagamu, South West, Nigeria. However, the finding in the South West is comparable to the study reported in Sagamu by Oyinlade et al. There were more clinics in public than private schools in South-South unlike the absence of clinics reported in public schools in South West; however South East (Enugu) had the fewest number of schools with clinics/sick bays. It was observed that none of the public schools with sick bays had a nurse. This may be because the school health policy makes provision for referrals to nearby health centres.

In school clinics without nurses and schools without clinics/sick bays, over a third of the head teachers would send the children home if there was a dental injury. A third

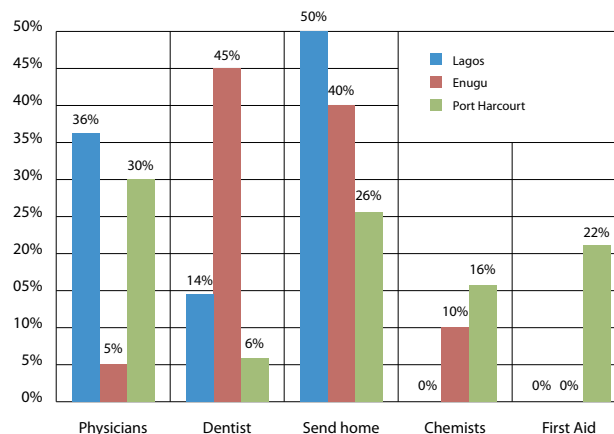


FIG. 2 Referral patterns by head teachers in the Southern geopolitical zones.

of the schools of those that would refer to a physician were affiliated with health centres. Pupils with dental injuries from these public schools were referred to the nearby health centres. This is probably in accordance with the school health policy in Nigeria, where school health services could be obtained from health centres within 15 minutes walk from the schools. The Federal Ministry of Health facilitates this referral services [Federal Ministry of Education, 2006a; Federal Ministry of Education, 2006b]. Though this is a laudable arrangement, it is pertinent to understand that time is a factor in the successful treatment and prognosis of injured dental tissues.

The place of first aid cannot be overlooked in schools, [Federal Ministry of Education, 2006a] though this is the ideal response to injuries in schools, knowing what to do and doing it properly is essential to a successful outcome and good prognosis of dental tissues. According to the school health policy, teachers and children should be trained in first aid in emergencies [Federal Ministry of Education, 2006b]. In this study the head teachers claimed they carried out first aid in dental emergencies. However, it was observed that their first aid boxes did not contain the basics advocated by the school health policy such as "iodine, crepe bandage, plaster, cotton wool, small scissors, paracetamol, gauze, gentian violet, glucose etc." [Federal Ministry of Education, 2006a]. Even when these are available, dental emergencies such as tooth avulsion cannot be managed without an oral health first aid kit that comprises among other things 'save a tooth' solution, normal saline, ice packs, examination gloves, a mouth mirror, a pair of tweezers, tongue depressors, a pen light and sterile gauze pads. Moreover, in unpublished studies carried out by Orenuga et al. (2009) and Oredugba (2011) among teachers in Lagos, Nigeria, it was observed that teachers had a poor knowledge on the practice of first aid in dental emergencies (conference proceedings of the International Association of Paediatric Dentistry 2009 and 2011, respectively).

Referring children to an appropriate health facility after first aid is one of the functions of a school health clinic. In this study it was observed that over half of the school nurses would refer a child with dental injuries to a dentist compared to about 23% of the head teachers in schools without school nurses. Though the nurses showed a better awareness than the head teachers, by their response they showed poor oral health awareness. This was particularly marked among the South-South head teachers and nurses, this further corroborates what has been reported on the general population in previous reports in South-South, Nigeria [Eigbobo et al., 2011; Eigbobo and Umanah, 2013].

The school clinic should have an area designated for medical records. School health records are non-statutory records generated from school health services that include "screening (pre entry and routine), sick bay, first aid, referral services and counselling" [Federal Ministry of Education, 2006b]. The role of records cannot be overlooked since records are essential for significant health information, the delivery of health care services, monitoring the health of the children and research; thereby it could be a tool accessed in improving services in the school [Federal Ministry of Education, 2006a]. In our study there was no record in over 90% of the schools, this was poorer than the 64.8% in Sagamu [Oyinlade et al., 2014] probably because we asked for a more specific record i.e. dental injuries. However, there may be an underestimation of the traumatic dental injuries because minor injuries may not have been documented or even reported to the school authorities [Vuletić et al., 2014]. Nonetheless, it was observed that public schools had a statistically significant higher record keeping system than private schools and this finding was also reported in Sagamu, Nigeria et al., 2014]. This may be because public schools are bound to adhere to and carry out government policies.

The commonest injury observed in this study was cut lip this was also similarly reported among preschoolers in Croatia [Vuletić et al., 2014]. The major cause of injuries in our study was falls during play and sports and this finding further substantiates what has already been reported in previous studies [Udoye, 2006; Glendor, 2009; Faus-damiá et al., 2011; Vuletić et al., 2014].

We observed that the school health service in record keeping and first aid administered to injured school children with TDI was poor and this further corroborates the inefficiency of school health services in Nigeria which have been reported in previous studies [Akani et al., 2001; Oyinlade et al., 2014]. This inefficiency may be due to insufficient training of staff [Oseji and Okolo, 2011].

Conclusion

Many schools did not either have school clinics/sick bay or were poorly equipped to handle dental emergencies. Sending children home or to health centres without first

aid could affect the prognosis of dental injuries, since timely interventions is of utmost importance for successful outcome.

Recommendations:

- the school environment should have safe playgrounds, well maintained furniture and equipment;
- the staff and students should be trained in dental first aid especially tooth avulsion;
- there should be well equipped sick bays/school clinics and appropriate first aid boxes.

References

- › Adekoya-Sofowora C, Bruimah R, Ogunbodede. E. Traumatic Dental Injuries Experience in Suburban Nigerian Adolescents. *Internet J Dent Sci.* 2004;3(1).
- › Akani N, Nkanginieme K, Oruamabo R. The School Health Programme. A situational revisit. *Niger J Paediatr.* 2001;28(1):1–6
- › Bhayya D, Shyagali T. Traumatic Injuries in the Primary Teeth of 4- to 6-Year-Old School Children in Gulbarga City, India. A Prevalence Study. 2013; *Oral Health Dent Manag.* 2013;12(1):17-23.
- › Eigbobo J, Onyeano C, Okolo N. Pattern of Presentation of Oral Health Conditions among Children at the University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt , Nigeria. *Pesq Bras Odontoped Clin Integr, João Pessoa* 2011;11(1):105–9.
- › Eigbobo JO, Umanah AU. Perception of graduating medical students on child and maternal oral health in a selected tertiary institution in the southern part of Nigeria. *Nig Q J Hosp Med [Internet].* [cited 2014 Jun 22];23(2):99–104. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24579504>
- › Faus-damiá M, Alegre-domingo T, Faus-matoses I, Faus-matoses V. Traumatic dental injuries among schoolchildren in Valencia , Spain. *Med Oral Patol Oral Cir Bucal.* 2011;16(2):14–7.
- › Federal Ministry of Education Nigeria. Federal Ministry of Education Implementation Guidelines on National School Health Programme. 2006.
- › Federal Ministry of Education Nigeria. National School Health Policy. 2006 p. 1–32.
- › Glendor U. Aetiology and risk factors related to traumatic dental injuries – a review of the literature. *Dent Traumatol.* 2009;25:19–31.
- › Krause-Parello C. Tooth avulsion in the school setting. *J Sch Nurs.* 2005;21(5):279–82.
- › Malikaew P, Watt RG, Sheiham A. Associations between school environments and childhood traumatic injuries. *Oral Heal Prev dent.* 2003;1:255–66.
- › Marcenes W, Murray S. Changes in prevalence and treatment need for traumatic dental injuries among 14-year-old children in Newham, London: a deprived area. *Community Dent Health.* 2002;19:104–8.
- › Orenuga OO, Olatosi OO, Nwanya BC. Knowledge, attitude and practices of school teachers in Lagos on the emergency management of dental trauma. *Int J Paediatr Dent.* 2009;19(1):159–62.
- › Oredugba FA. School teachers' knowledge and practices concerning emergency care of children with avulsed teeth. *Int J Paediatr Dent.* 2011;21:246.
- › Oseji M, Okolo A. School Health Services and Millennium Development Goals. *Int J Collab Res Intern Med Public Heal.* 2011;3(5):378–84.
- › Oyinlade O, Ogunkunle OO, Olanrewaju D. An evaluation of school health services in Sagamu, Nigeria. *Niger J Clin Pract.* 2014;17:336–42.
- › Robson F, Ramos-Jorge M, Bendo C, Vale M, Paiva S, Pordeus I. Prevalence and determining factors of traumatic injuries to primary teeth in preschool children. *Dent Traumatol.* 2009;25(1):118–22.
- › Skapetis T, Curtis K. Emergency management of dental trauma. *Australas Emerg Nurs J.* 2010;13:30–4.
- › Udoye CI. Traumatic injuries to the anterior teeth of Nigerian urban public school children. *J Coll Med.* 2006;11(2):88–91.
- › Uskun E, Kişioğlu AN, Altay T, Çıkinlar R, Kocakaya A. Assessment of the current status of playground safety in the midwestern region of Turkey: an effort to provide a safe environment for children. *Turk J Pediatr* 2008;50:559–65.
- › Vuletić M, Škaričić J, Batinjan G, Trampuš Z, Bagić I, Jurić H. A retrospective study on traumatic dental and softtissue injuries in preschool children in Zagreb, Croatia. *Bosn J Basic Med Sci* 2014;14(4):12–5.
- › WHO. Oral Health. World Health Organization; 2014 [cited 2014 Jun 10]; Available from: <http://www.who.int/mediacentre/factsheets/fs318/en/>