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Health emergency preparedness: an assessment of primary schools in Abakaliki, South-Eastern Nigeria

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ABSTRACT

Background: Children spend a significant proportion of their day in school, thus pediatric emergencies such as exacerbation of medical conditions, accidental and intentional injuries are likely to occur. An estimate of 10 -25% of injuries occur while the children are at school. It is the legal responsibility of the schools to ensure the safety and well-being of the pupils/students and staff during school hours working towards prevention of accidents and being prepared for immediate solutions when the accidents occur.

Methods: A cross sectional descriptive study of 31 registered primary schools in Abakaliki Metropolis. A prepared check list of facilities necessary for emergency care at schools derived from the school health programme evaluation scale was used for the assessment. Data was analyzed using the SPSS statistical package version 8, comparing findings in public schools with the private schools using Chi square. The level of significance was set at p<0.05. **Results:** A health room was available in 9.7% of schools exclusively private schools. Nurses, doctors and trained first aiders were found in 6.5%, 9.7% and 32.3% respectively of schools. First aid boxes were available in 80.6% of the schools but only 67.7% of the schools could offer first aid treatment at emergencies. None of the public schools had a school safety patrol or a fire extinguisher in contrast to the private schools.

Conclusions: Schools, especially the public schools in Abakaliki metropolis are ill prepared for emergencies.

Keywords: Schools, Health emergencies, Preparedness

INTRODUCTION

Any child can have a medical emergency in school. Schools are expected to anticipate and prepare to respond to a wide variety of emergencies. Emergencies are often threatening to life and or property. They can occur anywhere, at home, at work or at school. Children and adults may experience medical emergency situations because of injuries, complications of chronic health

conditions or unexpected major illnesses that occur in school.² Emergencies require urgent intervention, in order to save life or property or avoid worsening of damage. The sources of emergencies may be medical e.g. from injuries, complications of existing medical conditions such as hypoglycemia, acute severe asthma, convulsions or even epidemics such as cholera, meningitis or lassa fever or can be structural e.g., from collapsed buildings,

falling trees, pits or wells; natural e.g, from storms, lightening, fire outbreak, heavy rainfall.³

Emergencies may or may not be inevitable; however, it is necessary for a community to be pro-active and prepared for any form of them. Providing an environment that is responsive to emergency health needs of students is essential to creating a safe setting for children in schools.⁴ The school is a community made of pupils/students, teachers and other staff. It is an important community, where children obtain formal education. In some settings, children virtually live or board in the school, whereas in others, the children return home on daily basis after the school hours. Because children spend a significant proportion of their day in school, pediatric emergencies such as exacerbation of medical conditions, accidental and intentional injuries are likely to occur.⁵ Injuries are the leading cause of death and disability in the United State, especially among children with 70% of injury or deaths occurring in the school aged youth (5-19 year of age).⁶ An estimate of 10 -25% of injuries occur while the children are at school.⁷ Other medical emergencies seen in schools include insect bite anaphylaxis, snake bite, high grade fever, bleeding and seizures. Some reports from the developed countries have it that there has been increasing life threatening allergic reactions in schools.^{8,9}

There is no locally available literature on the pattern of emergencies seen in schools; however, it is a well-known fact that emergencies do occur at school. It is pertinent to note that due to technological advancement and health promotion activities, children who in the past, would have died in infancy, are surviving into childhood, adolescence and adulthood putting up with some of the complications of their childhood diseases. ¹⁰ This implies that some of these survivors that are in school may require special health care due to some persisting medical conditions. Therefore, there is need for schools to be prepared with trained personnel, medications and supplies, transport decisions and arrangement. ¹¹

Structural emergencies also occur in schools. There are news reports of school children's deaths and injuries from collapsed school building in different parts of the world. These would warrant emergency management.

It is the legal responsibility of the schools to ensure the safety and well-being of the pupils/students and staff during school hours as 'loco parentis.' School authority must identify threats to school safety. They must work towards prevention of accidents and be prepared for immediate solutions when the accidents occur. Schools ought to have a mini- clinic or health room well equipped with permanent or accessible health personnel. The health room needs facilities such as a well-stocked first aid box containing materials such as bandage, plaster, cotton wool, iodine, emergency medications like diazepam, analgesic, glucose, adrenalin etc. The school must have safety measures such as safety patrol team, school fence, fire extinguishers and ready water source in case of fire

outbreak. The school building must be maintained with strong walls, no cracks to guard against collapse.

The health of children while at school is ideally taken care of, through the school health programme. The school health programme (SHP) refers to all aspects of the school programme which contribute to the understanding, maintenance and improvement of the health of the school population. It involves the provision of health personnel, health facilities and healthy, safe environment in the health interest of the school child. This programme is expected to be in practice in every school.

In the study area, this programme has been in operation for the past 19 years, (since 1998). It started with weekly visitation to schools by a team of workers from the center for diarrhoeal disease (CDD) unit, the tuberculosis and leprosy (TBL) unit, nutrition unit, nursing unit and the environmental sanitation unit, all from the Ministry of Health. The programme has been solely run by the State Ministry of Health with no collaboration with the Ministry of Education. Their services border mainly on delivering health talks at schools, inspection of the pupils' hair, teeth, skin and administration of antihelminthics and vitamin supplements occasionally. However, there is no existing policy from the Ministry as at the time of this study, on the implementation of the programme in the various schools in the State. There is no standard school health examination/record card, from the Ministry of Health, for the evaluation/record of the health status of the primary school children. There is no existing protocol for handling emergencies at school in the state. The study objective therefore, is to assess the preparedness of schools for medical emergencies and proffer recommendations where necessary.

METHODS

This study was a cross sectional descriptive [pre-intervention] study of all the 31 registered primary schools was carried out in Abakaliki metropolis, the capital city of Ebonyi state, southeastern Nigeria from February 2008 – July 2008. This town has an estimated population of about 141,438 people. There are 31 registered primary schools in this town, with sixteen of them owned by the government (public), while the remaining fifteen are private owned. The activities of the public schools are coordinated by the Ebonyi state universal basic education board (UBEB) while those of the private schools are under the control of the national association of private school proprietors, Ebonyi State chapter. The regulation of the entire school system is however under the State Ministry of Education.

With the existing free primary education in the state, there is enormous enrolment of pupils into the public schools. Although education is not free with the private schools, the population of children in the private schools is quite comparable with those of the public schools. There were 18,501 school pupils and 812 teachers. There

were 8900 males and 9601 females with no statistically significant difference (p=0.8). The ratio of male pupils to female pupils was 1:1.07. The mean ratio of teachers to pupils was 1:25 in the public schools and 1:20 in the private schools.

At the time of this study, there were two tertiary health institutions located within this area, namely, the Ebonyi state university teaching hospital (EBSUTH) and the Federal Medical Center, Abakaliki. A secondary health facility and few primary health care centers with many private clinics run by midwives and/doctors, and a myriad of patent medicine shops which were quite popularly patronized by the people were also available.

Ethical clearance was obtained from the Ethics and Research Committee of the Ebonyi State University, Teaching Hospital. Consent was obtained from the Ebonyi state universal basic education board and from the national association of private school proprietors, Ebonyi state chapter.

Data collection

On arriving at the school, the school's head teacher or the assistant was contacted, the purpose of the visit was explained and permission was sought and obtained. Every school participated in this study. A prepared check list of facilities to be assessed or inspected for was taken to the schools and the availability of facilities ticked accordingly. The researchers were interested in the availability of health personnel, treatment facilities, first aid box and its contents, transportation facilities, water supply, strength of school building, presence of fire extinguisher or fire alarm, school fence, safety patrol. This check list was drawn from the school health programme evaluation scale, developed by Akani. 17 Data was analyzed using the SPSS statistical package version 8, comparing findings in Public schools with the Private schools using Chi square. The level of significance was set at p<0.05.

RESULTS

School health room/clinic was available in only three schools (9.7%) and those were exclusively private schools.

Availability of nurses, doctors and trained first aiders were 6.5%, 9.7% and 32.3% respectively, with most of them found in the private schools (Table 2). Two schools had Nurses on daily service to the schools, whereas the doctors visited the schools occasionally and had private clinics which served as referral centers for the school pupils and staff.

First aid boxes were available in 80.6% of the schools but only 67.7% of the schools offered first aid treatment at emergencies. Most of the first aid boxes were poorly equipped lacking necessary items (|Table 3). None had

emergency drugs such as adrenalin, diazepam or glucose or relief medications for asthma.

Table 1: Summary of available facilities for emergencies in both public and private schools of Abakaliki metropolis.

Parameter	No. of schools available		P
Parameter	Public (16)	Private(15)	value
Health room	0	3	0.06
Trained First aider	2	7	0.08
Nurse	0	2	0.13
Doctor	0	3	0.06
First aid box	11	14	0.08
Bus/ambulance	0	5	0.01
Essential drugs	4	15	0.00
Telephone (School)	1	9	0.00
Safety patrol	0	12	0.00
School fence	11	13	0.14
Fire extinguisher	0	4	0.02
Fire alarm	0	0	

Table 2: Grades of school health personnel seen in public and private schools in Abakaliki metropolis.

Grades of school health personnel	Public schools (n=16)	Private Schools (n=15)	Total (%) n=31
None	14	5	19 (61.3%)
H. Assistant/TFA	2	8	10 (32.3%)
Nurse/Midwife	0	2	2 (6.5%)
Doctor	0	3	3 (9.7%)

Key: H= Health; TFA=Trained first aide.

Table 3; Contents of the first aid box and the number of public and private schools in Abakaliki metropolis, in which they were seen.

Item	No of public schools (%) n = 16	No of private schools (%) n = 15	P value
Analgesics	4 (25%)	12 (80%)	0.002
Cotton wool	6 (6.3%)	15 (100%)	0.000
Bandage	4 (25%)	15 (100%)	0.000
Plaster	5 (31.3%)	15 (100%)	0.000
ORS	0	2 (13.3%)	0.131
Antiseptic solution	5 (31.3%)	13 (86.7%)	0.002
Anti-malarials	2 (12.5%)	4 (26.7%)	0.945
Antihelminthics	0	2 (13.3%)	0.131
Hematinics	1 (6.25%)	2 (13.3%)	0.505
Adrenalin	0	0	
Diazepam	0	0	

ORS = Oral Rehydration salts.

Table 4: Actions taken for emergency illness/injury at schools.

Activity	No. of public schools (n=16)	No. of private Schools (n=15)	Total n=31 (%)	p-value
First aid given	6	15	21(67.7%)	0.00
Treatment recorded	0	3	3 (9.7%)	0.06
Parents notified	3	7	10 (32.3%)	0.09
Transport to nearest health post	9	9	18 (58.8%)	0.83
Convey home after treatment	7	9	16 (51.6%)	0.36

None of the public schools had an official school vehicle for transportation to hospitals, particularly in case of emergencies, whereas five out of the fifteen private schools had. Total percentage school with vehicle for transport is 16.1%.

None of the public schools had a school safety patrol but 80% of the private schools had.

None of the public schools had any fire extinguisher while four (26.7%) out of the fifteen private schools had. No school had a fire alarm.

School buildings with strong walls, were found in fourteen (45.2%) schools, whereas the rest were dilapidated especially the public schools.

DISCUSSION

Despite its critical importance, school emergency preparedness is frequently inadequate because of barriers such as geographic and physical facility conditions, staffing, staff education and training, financial resources. Morris et al further summarized the reasons as limited availability of school nursing services, lack of policies or guidelines, inadequate funding of training and medications and / lack of education. 19

The findings from this study suggest that there is poor emergency preparedness in the primary schools in Abakaliki metropolis. The situation is worse with the public schools, which may suggest neglect of the welfare of these schools by the Government. This suggestion is buttressed by an earlier publication in the same study area. ²⁰ It can be seen from table 4 that the commonest action taken in emergencies was first aid treatment more with the private than the public schools.

Schools need a health room where simple or primary medicare can be offered, and the health room must be equipped with facilities and health personnel. Health personnel needed in the school may be any of the following, a nurse, a doctor, a trained first aider or a school teacher trained in first aid. Most of the schools lacked health personnel probably due to ignorance of the need or the lack of funds to pay them. Nwabuzor reported the shortage of school nurses and attributed it to lack of legislation on mandatory school nursing.²¹ Lack of legislation mandating school nursing is really an

important observation which if corrected by the government may significantly improve health services in every school community. As an alternative, teachers have been trained to offer some simple first aid services before referral to a higher health facility. Health programmes have been successfully implemented in schools by training teachers.⁷

Since injuries are the most common life threatening emergencies encountered by children and adolescents inside school, it becomes a basic requirement that school teachers, school nurses, physicians, sports coaches and students should know the general principles of first aid and cardiopulmonary resuscitation. It is ideally recommended that at least one school staff, in addition to the school nurse, or doctor, should have in-depth training on Cardiopulmonary resuscitation and first aid.

From our findings, majority of the schools had a first aid box, but the irony was that some of them were no longer functional. In fact they were used as cupboard, whereas most others were scantily equipped with first aid materials or essential medications. This is similar to findings by Bhatia et al who attributed it to lack of funds, lack of awareness or lack of knowledge regarding procurement of drugs. 10 A proper first aid box needs to contain essential medications. Essential medications are simply those that satisfy the primary health care needs of a community with regards to public health relevance, efficiency, safety and cost effectiveness.²² Such medications ought to be made available at all times in adequate amounts. The medications a given community would consider as essential may depend on the prevalent medical issues in that area. Since injuries, abdominal pain, high grade fever, body ache, tooth ache are generally common amongst school children. 10,18 It may be necessary to stock the first aid box with materials such as plaster, bandage, medicated solutions like antiseptics, gentian violet, methylated spirit, drugs such as pain relievers or anti-pyretics, diazepam, glucose. It is also required that the first aid box is secure, carefully organized, monitored and accessible.²³

With increasing school enrolment owing mainly to free primary education in public schools especially, schools must also be prepared to handle emergencies from children with special health needs, like the sickle cell anemic children, the diabetics, the asthmatic, the epileptic. This is why the appraisal of the health of school children is important, especially at pre-entry and periodically, since the findings would inform the school authority about those who may need such special care. Such children may at any time suddenly develop exacerbation (crisis) of their illness and require emergency intervention; therefore, the school needs to prepare for them by either having the trained personnel, the necessary medications or an emergency referral system. The prevalence of school health emergencies provide an opportunity for use of emergency physicians as they need to be involved in the development and organization of systems for prevention, initial stabilization, definitive management and responsible follow up of medical problems and injuries.²⁴ Where a school cannot offer first aid at school, there has to be immediate alternatives. There needs to be readily available vehicle to transport emergencies to the nearest health facility. There should be telephone services preferably owned by the school, to reach important persons or offices in case of emergencies.

Since school emergencies may not only be medical, but also structural, the school authority must guard its community against accidents or mishap. A safety patrol team patrols the school compound to be sure the school is safe from intruders, that there are no potentially dangerous structures like an old weak tree or weak walls of building that may fall at any time, no unprotected school wells or trenches. A school fence is essential for overall safety of the school population. School buildings need to be strong and safe, to avoid sudden collapse. Fire extinguishers and fire alarms may be quite necessary in schools especially in boarding schools or houses, in case of fire accidents.

A true and pertinent saying by Dr Murray of the American Academy of Pediatrics is 'Pediatricians have been used to staying in their offices, dictating health care from their chairs, without any of them recognizing what a school has in terms of health and safety processes'. This implies that Pediatricians should be aware of the capacity for each school to provide onsite first aid, and should assist the school in developing that capacity. The school health programme ought to be more seriously implemented and possibly enforced by the State government. There needs to be a protocol/policy with guidelines for every school to use. Emergency response protocols provide protection for children while in school. 27

There is need for every school to have a School Health committee made up of the school Head teacher, a school nurse/ doctor (Pediatrician), some members of staff with interest in health education and students, school social worker, parents and community representatives. The committee should be able to look at the peculiar need of the school and put up feasible emergency plan. The Pediatrician can help to develop simple guidelines to prepare the school staff to provide first aid and emergency care during accidental events.

Teachers are invaluable in the implementation of school health programmes and so they can be trained with success in handling emergencies as for preliminary intervention until definitive care is available.⁷

The Government through the Ministries of Health and Education must recognize and support the need for schools to be adequately prepared to handle health problems even emergencies at school.

The onus is on Pediatricians should take up the advocacy role for the schools and appeal to the government to look into school health services especially in the public schools.

The Red Cross society or school health clubs need to be activated in each school, and the members adequately trained to administer first aid.

Limitations

We would have liked to see the school health records of each school, to know the pattern of medical problems and emergencies often encountered, but there were no available health records.

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 $Institutional\ Ethics\ Committee$

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