

An Evaluation of the Health Status of the School Environment in Public Primary Schools in bonny Local Government Area, Rivers State

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ABSTRACT

Background: The provision of a Healthful School Environment is a prerequisite for the protection and promotion of the health of learners and attainment of Millennium Development Goal 2. This study sought to evaluate the availability of components of a healthful school environment in public primary schools in Bonny Local Government Area of Rivers State using an evaluation scale.

Method: This was a cross sectional school based study done in March 2006. Using an evaluation scale, 20 public primary schools were assessed for the availability of the various components of a Healthful School Environment such as water supply, toilet facilities, school structure, sitting comfort of pupils among others. Components had weighted scores. The minimum acceptable and maximum attainable scores were set at 52 and 64 points respectively. Data was analyzed using SPSS version 11.0

Results: Pupil population in the schools ranged from 100 to 1460 with a mean of $352 \pm 336SD$. Teachers population in the schools ranged from 2 to 13 with a mean of $5 \pm 2.77SD$.

Seventy percent of the schools had teacher- pupil ratio below 1: 40. Seven (35%) schools had water supply within their premises, 5(25%) schools had functional toilet facilities and all the schools practiced open dumping and burning as their only method of refuse disposal. By inspection, 10 (50%) schools had strong walls and were well roofed, 1(5%) school had no school structure, but had a shade made up of sticks with zinc roofing sheets. The remaining schools were at various stages of disrepair. Seventeen (85%) schools had adequate ventilation and good lighting. Seats were available for all pupils in 11(55%) out of 20 schools. None of the schools had a food service area, safety patrol team or fire extinguisher. The main hazards reported were presence of Snakes in 13 (65%) schools and flood in 12 (60%) schools. The total scores of the individual schools ranged from 8 to 37 points. No school had up to the minimum acceptable score of 52 points.

Conclusion: The environments of public primary schools in Bonny Local Government lacked the basic amenities of water and sanitation and are generally unsafe.

Keywords: Evaluation; Healthful School Environment; Bonny; Nigeria.

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INTRODUCTION

The School Health Programme denotes all aspects of the school programme which contributes to the understanding, maintenance and improvement of the health of the school population consisting of the school children and school personnel¹. It is essentially a preventive service whose aim is to ensure that school children achieve their maximum physical, mental and social health which will enable them benefit maximally from their education. The programme has four main components namely; school health services, school health instruction, school-home-community integration and healthful school environment¹.

Healthful school environment is concerned with the provision of an environment in the school conducive to healthy living and desirable health practices. It includes the emotional and the physical environment. The emotional environment in the school is exemplified by the type and quality of relationship existing between the students and staff. The physical environment is concerned with ensuring a clean and safe environment exemplified by the presence of water supply, refuse disposal, sewage disposal, quality of school buildings, and absence of harmful objects as well as vectors of disease agents¹. Effective learning can only take place in a school that provides a good standard environment. Day to day experiences in a good school environment should result in improved health knowledge, attitudes and practices.

Studies have shown that the school environment in Nigeria is unsafe due to lack of adequate and safe water supply, poor sanitation facilities, dilapidated school structures, overcrowded and un-conducive classrooms^{2,3}. Previous studies have shown that these prevailing conditions have a profound negative impact on the health of school children.^{4,5} For instance the World Health Organization (WHO) has estimated that between 25 to 33% of the global burden of diseases can be attributed to environmental risk factors⁶. The leading cause of death in children between the ages of 5 to 14 years in low income countries are lower respiratory tract infections, malaria, diarrhea diseases and injuries due to road traffic accidents and drowning⁶. It is also estimated that 88% of diarrhoeal diseases is caused by unsafe water supply and inadequate sanitation and hygiene⁷. Some of these diseases may have been acquired from the community or from the school since most of the risk factors are also prevalent both at home and at school. By providing these facilities, 1863 million days of school attendance would be gained due to less diarrhoea illness⁷. In Madagascar; 3.5 million school days are estimated to be lost each year due to ill health related to poor sanitation⁸. In Nigeria, the high level of helminthic infestations among school children has been blamed on indiscriminate

disposal of human faeces due to unavailability of adequate toilet facilities, poor personal hygiene and inadequate water supply⁵. These infestations are said to be capable of causing physical growth retardation and cognitive impairment⁶. Millennium Development Goal 2 calls for attainment of universal primary education, with the target that by 2015 every child should be able to complete a full primary education⁹. If Nigeria must attain this goal, the health of school children must be improved by reducing their exposure to environmental hazards. Unfortunately not much has been done in evaluating primary school environment in Nigeria as a whole and in Rivers State in Particular. This study seeks to evaluate the status of the school environment in public primary schools in Bonny Local Government Area of Rivers State.

MATERIALS AND METHODS

This is a cross sectional school based study carried out in Bonny Local Government Area (LGA) of Rivers State in March 2006. The LGA is one of the 23 Local Government Areas of Rivers State. Its boundaries are Okrika LGA in the North, Degema LGA in the East, Andoni LGA in the West and the Atlantic Ocean in the South. The Local Government Area which is named after it's headquarter-Bonny, is made up of Bonny City and 19 satellite villages surrounding it. There are also several fishing settlements attached to these villages. It has a population of 215, 358¹⁰. Bonny Local Government Area has a total of 20 public primary schools made up of 7 schools in Bonny city, 10 in the villages and 3 in the fishing settlements.

Purposive sampling method was used in this study. All the 20 public primary schools were inspected. A validated healthful school environment evaluation scale adapted from "School Health Practice" by Anderson and Crosswell¹¹ was used to assess the availability of the various components of a healthful school environment namely: Source of water supply, location of the water source, method of refuse disposal, availability of functional toilet facility, quality of school structure, ventilation, lighting, absence of health hazards, and healthful living. Items were scored according to their importance or relevance. For instance, the scores for availability of sewage disposal system in the school were graded from 0-3 points. Three points was awarded for the presence of water closet facility/septic tank in the school, while 0 point was awarded for the absence of sewage disposal system. A face to face interview method was used to obtain additional relevant information. The minimum acceptable and maximum attainable scores for healthful school environment using the evaluation scale were 52 and 64 respectively. Data was entered into a Microsoft excel spread sheet and analysed using SPSS version 11.0 software and results were presented using descriptive statistics.

Ethical consideration

The Ethics Committee of University of Port Harcourt Teaching Hospital, the Rivers State Universal Basic Education board and Bonny Local Government Authority gave approval for this study.

RESULTS

A total of 20 schools were inspected. The ages of the schools ranged from 15 years to 139 years. The population of the

pupils in the schools ranged from 100 to 1460 with a mean of 352 ± 336 SD. The schools in the villages and fishing settlements had pupil population less than 300 as shown in Table I.

The teacher population per school ranged from 2 to 13 with a mean of 5 ± 2.77 SD. The teacher- pupil ratio per school ranged from 1:30 to 1:128. Five (71%) out of the 7 schools in Bonny city and 8 (80%) out of the 10 schools in the villages had teacher-pupil ratio below 1:40 as shown in Table II.

Parents'-Teachers' Association (PTA)

Thirteen (65%) schools had functional PTA (i.e PTA which had been meeting regularly at least once in 3 months). These are the 7 (35%) schools in Bonny City and 6 (30%) schools in the villages.

Table III shows a summary of the findings on water and sanitation facilities.

Source of water supply

Four (20%) schools used tap water, 12 (60%) schools used well water and the remaining 4 (20%) schools used surface water.

Location of water source

Seven (35%) schools had their sources of water supply within the school premises, while in the remaining 13 (65%) schools; pupils fetch water from a distance of= 200 metres

Refuse Disposal

All the schools practiced open dumping and burning as their only method of refuse disposal.

Sewage Disposal

Functional water closet system (i.e water closet system that is in use) was found in 5(25%) schools while the remaining 15 (75%) schools had no toilet facilities. Pupils in the schools without toilet facilities generally used bushes and water fronts as toilets

Table IV shows a summary of the evaluation of school structure.

Structure

Ten (50%) schools were observed to have strong walls and were well roofed. One (5%) school had no school structure, but had a shade made up of sticks with zinc roofing sheets. Others were in various stages of disrepair with no evidence of maintenance.

Ventilation

Seventeen (85%) schools had adequate ventilation, but the ventilation was controllable in 7 (35%) schools.

Lighting

Seventeen (85%) schools had good lighting.

Insulation from Heat: Twelve (60%) schools out of the 20 schools had intact ceiling.

Sitting Comfort: Pupils were completely seated in 11 (55%) schools. While in 9 (45%) schools some pupils had no seat

Food Service Area: No school had food service area

Safety Measures: Two (10%) schools were fenced, no school had safety patrol team and none had fire extinguishers or buckets of sand.

Health Hazard: The commonest health hazard reported was the presence of snakes in 13 (65%) schools. Multiple hazards were reported in 15 (75%) schools. These hazards included snakes, floods, vectors and pests like tsetse flies, sand flies, rats and faeces in classrooms (Table V)

Healthful Living: Toilet rolls, waste paper basket, soap for washing of hands, drinking buckets and cups and wash hand basins were not found in classrooms in any school. No school reported having adequate emotional climate and the reasons are shown in Table VI.

Table I: Population of Schools in Bonny LGA

Pupil Population	Number of Schools			Total (%)
	Bonny C	Villages	Fishing S	
100-299	2	10	3	15 (75)
300-499	0	0	0	0 (0)
500 & above	5	0	0	5 (25)
Total	7 (35)	10 (50)	3 (15)	20 (100)

Bonny C= Bonny City, Fishing S= Fishing Settlements

Table II: TeacherPupil Ratios of Primary Schools in Bonny LGA

TeacherPupil ratio	Number of Schools			Total (%)
	BonnyC	Villages	Fishing S	
d 1:40	2	2	2	6 (30)
1:41- 1: 80	1	6	1	8 (40)
>1: 80	4	2	0	6 (30)
Total (%)	7 (35)	10 (50)	3 (15)	20 (100)

Bonny C= Bonny City, Fishing S= Fishing Settlements

Table III Assessment of the environment of schools in Bonny LGA

School Environment	No of Schools (%)
Source of Water	
Tap	4 (20)
Well	12 (60)
Surface Water	4 (20)
Location of Water Source	
Within the school	7 (35)
Within 200 metres distance	8 (40)
> 200 metres distance	5 (25)
Refuse Disposal	
Open dumping and burning	20 (100)
Sewage Disposal	
Functional water Closet	5 (25)
No toilets (Bush/ Water)	15 (75)

Table IV: Assessment of Sitting comfort, School Structures, Ventilation, Lighting and Insulation from heat of schools in Bonny LGA

Healthful School Environment Structure	No of Schools (%)
Dilapidated	5 (25)
Old wall, leaking roof	4 (20)
Strong wall with minor cracks	0 (0.0)
Strong wall, well roofed	10 (50)
Ventilation	
Adequate	17 (85)
Not adequate	2 (10)
Controllable	7 (35)
Uncontrollable	12 (60)
Lighting	
Good lighting	17 (85)
Poor lighting	2 (10)
Insulation from heat	
Intact ceiling	12 (60)
Broken ceiling	4 (20)
No ceiling	3 (15)
Sitting comfort	
100% seated	11 (55.0)
Less than 100% seated	8 (40.0)
None seated	1(5.0)

Note: One school had no structure
Bonny C= Bonny city Fishing S= Fishing settlements

Table V: Health Hazards found in the Schools Bonny LGA

Health Hazards	Number of Schools			Total (%)
	Bonny C	Villages	Fishing.s	
Snakes in schools	0	10	3	13 (65)
Floods	3	7	2	12 (60)
Vectors/ Pests	2	5	2	9 (45)
Faeces in classrooms	4	0	1	5 (25)
Encroachment	5	0	0	5 (25)
Vandalization	0	1	1	2 (10)
Dumping of refuse in the school premise by the community	1	0	0	1 (5)

Bonny=Bonny City, Fishing S= Fishing Settlements

Table V: Reasons for lack of adequate emotional climate in schools in Bonny LGA

Reasons for lack of adequate emotional climate	No of schools (%)
None payment of teachers salaries as at when due	20 (100)
None payment of teachers leave bonuses	20 (100)
Lack of adequate chairs for teachers to seat on	18 (90)
Quarrels between head teachers and other teachers	5 (25%)
Quarrels between teachers and members of the community	1(5%)
Lack of school structure	1 (5%)

Table VI: Healthful School Environment Scores by location of schools in Bonny LGA

Schools	Location	Healthful School Environment	
		Scores	% of 64
Bonny Govt School	Bonny City	25	39.1
Central School	Bonny City	27	42.2
Boyle Memorial	Bonny City	28	45.3
St Michaels School	Bonny City	31	48.4
Model Primary School	Bonny City	27	42.2
CPS Finima	Bonny City	37	57.8
CPS Abalamabic	Bonny City	28	43.8
CPS Banigo	Village	18	28.1
CPS Kuruma	Village	31	48.4
CPS Dema Abbey	Village	19	29.7
CPS Oloma	Village	24	37.5
St Barths	Village	20	29.7
CPS Agbalama	Village	29	46.9
CPS Peterside	Village	27	42.2
CPS Kalaibama	Village	29	43.8
CPS Greens Iwoama	Village	25	40.6
CPS Dan Jumbo	Village	26	42.2
CPS River Seven	Fishing .S	8	12.5
CPS Agaja	Fishing .S	30	45.3
CPS Iwokiri	Fishing .S	16	25
CPS Community primary school			

Healthful School Environment Scores of the Schools: The scores of the schools ranged from 8 to 37 points (mean 23.3 ± 6.3 SD) as shown in Table V

DISCUSSION

The National Policy on Education had recommended a teacher-pupil ratio of not less than 1:40 per class¹². In this study however this ratio was not reached in 70% of the schools. This is similar to the reports of studies done in South-Western and South Eastern Nigeria,^{2,3} Mozambique, Mali and Chad¹³. It however contrasts with the high teacher-pupil ratio of 1:10 found in Sweden and Cuba and 1:9.9 in Denmark¹³. These later countries are all well developed with more advanced educational systems. A low teacher-pupil ratio will negatively affect the emotional climate of the class. For instance, the teacher will be overwhelmed with work and may be unable to pay adequate attention to the pupils. This will in turn negatively affect the teacher-pupil relationship and the learners' academic performance. It will also encourage social vices like bullying which is rampant in schools. Such low teacher-pupil ratio will result in overcrowding with easy spread of communicable diseases. The low teacher-pupil ratio found in this study, cuts across schools in the city and in the villages. Whilst the low ratio in the schools in the city was as a result of large pupil population, that in the villages occurred as a result of inadequate teacher population in the schools.

The extent to which water is utilized in the school depends on the availability of the water source within the school premise and the ease with which the water can be fetched from the source. In this study, water supply was found in 35% of the schools. This is low compared to the 46% reported by Federal Ministries of Health and Education in their assessment of availability of water supply in schools¹⁴. However this former study involved primary schools, secondary schools and Universities in contrast to the index study and the figure represents a national average. It is however better than the 2.96% and 0% reported in Imo State² and Zaria in Kaduna State¹⁵ respectively. The differences between findings in this study and the two previous studies are that the Imo study involved assessment of water supply in all the Primary schools in Imo State and the Zaria study involved only one secondary school. In this study, sources of water were found within 200 meters distance from the school premises in 40% of the schools. This is still acceptable as was stipulated in the UBE Strategic Plan¹⁶. Within the school, water is needed for hand washing, drinking, flushing and cleaning of toilets. When children have to go a far distance to fetch water, there will be scarcity of water in the school and these needs will suffer. Moreover the children will be exposed to the risk of road traffic accident.

The practice of open dumping and burning as a method of refuse disposal by all the schools is consistent with what was found in previous studies done in Imo State², Ikenne in Ogun State,⁴ Zaria in Kaduna State¹⁵ and Benin City in Edo State¹⁷. Apart from providing breeding sites for flies, rodents and reptiles, uncontrolled open dumping results in the school premises being littered with papers. Also non-combustible materials like empty cans or broken bottles are left behind and constitute sources of cuts and accidents for children and breeding for mosquitoes. The state of facilities and the environment described in this study put the teachers at risk of liability based on the law of Tort; which include: malfeasance-

performing an illegal act, misfeasance-performing the correct act incorrectly and nonfeasance- not performing a legal responsibility¹⁸. As teachers who are thought to be negligent in their duty of supervising their pupils are placing themselves in a position from which they can be charged with nonfeasance.

The absence of functional toilet facilities in majority (75%) of the schools studied confirmed Asiabaka and Mbukwem², Ekpo et al⁴ and Akanis¹⁹ earlier reports of absence of these facilities in the public primary schools they studied in Imo State, Ikenne in Ogun State and Obio-Akpor in Rivers State. However, it contrasts with availability of adequate toilet facilities in private primary schools in Ikenne in Ogun State⁴ and Egor in Edo State²⁰. The difference in the reports of these studies is that private schools are better funded and have well maintained facilities than the public schools. The absence of toilet facilities in the schools studied, suggests that the pupils might resort to the unsanitary and primitive methods of waste and sanitary disposal with the attendant risks of contamination of the environment with helminthes and other faecal pathogens. Furthermore with 25% of the schools studied using surface water, in the face of no toilet facilities, there is a high possibility of faecal contamination of this water source with the risk of outbreak of diarrhea diseases within the school community.

Despite the Universal Basic Education Programme²¹ and the Child Friendly School Initiatives²² one School (Community Primary School, River Seven) had no school building. Thus children sat under a shade (made up of sticks with zinc roofing sheets) to learn. It must be emphasized that the environment in which learning takes place is an important factor in the effectiveness of the learning process⁶. Children studying under these circumstances cannot really claim to be part of the UBE/Child Friendly School scheme in Nigeria.

The observation that pupils were completely seated in 55% of the schools studied is an improvement over the 10.7% reported by Akani¹⁹. It is still not acceptable that in as high as 45% of the schools in Bonny, children still sat on the floor in spite of the UBE²¹ and Child Friendly Schools Initiatives²². Since sitting comfort has been identified as one of the factors which affect learning¹, it follows that these children may be unable to pay adequate attention to the teachers in order to learn effectively.

The presence of snakes within the premises of the schools in the villages and fishing settlements may be due to the fact that these schools were surrounded by thick bushes. It is however alarming because these areas lack functional health facilities, making it impossible for any child bitten by snake to get urgent medical attention. The Second most common health hazard was flood. This was reported by 60% of the schools distributed amongst the three study locations. Whilst the flood reported by the schools in Bonny City was caused by rain coupled with poor drainage, the one reported by the schools in the villages and fishing settlements were caused by periodic over flow of the Atlantic Ocean. The first structure of Community Primary School River Seven was washed off by the Atlantic Ocean; which is still threatening the present school site.

The absence of toilet rolls, soap for hand washing, wash hand basins and drinking cups and buckets in all the schools studied corroborates reports of previous studies done in Nigeria.^{2,4,15,19}

It however contrasts with the report of availability of these same facilities in 75- 78% of the schools in Bloomsbury Health district of London²³, though these schools are in a resource rich settings. The absence of water and soap for hand washing in the majority of the schools studied means that the pupils in these schools will be denied the practical demonstration of the act of hand washing, which is the single most effective way to prevent the spread of communicable diseases²⁴.

Provision of a positive emotional climate in the school is a necessity for effective learning. A positive emotional climate is dependent on adequate provision for the physical and psychological needs of the pupils and the school personnel. In this study no school reported having adequate emotional climate. Teachers are the most important people in the School Health Programme and most of the activities carried out in the programme revolve around them¹. In a situation where they are unhappy due to unpaid salaries and leave bonuses, the programme will suffer a setback. One of the responsibilities of the school administrator is to ensure that a cordial relationship exist between the head teachers and the classroom teachers, between the school community and their host community. This cordial relationship is necessary for a proper integration between the school, home and the community. When this relationship is threatened,(as was revealed in this study) then the Parent-Teacher-Association of the school is expected to intervene. Unfortunately the study revealed that functional PTA existed in only 65% of the schools.

In conclusion, the environments of public primary schools in Bonny Local Government lacked the basic amenities of water and sanitation and are generally unsafe.

RECOMMENDATIONS

The Local Government Authority should endeavour to site schools in safe surroundings. Environmental health inspectors within the Local Government Area should be encouraged to pay periodic visits to the primary schools. There is need for intersectoral collaboration between Ministries of Health, Education, Lands and housing, Environment, the Bonny Local Government Authority and the multinational companies for effective implementation of a healthful school environment. There is need to also assess the environment of private primary schools in Bonny Local Government Area to see if they will perform better

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