

Environmental Health Assessment of Primary Schools in Southeastern Nigeria: Implication for a Healthy School Environment in Developing Countries

C.T. Ezeonu, MBBS, FMC, Department of Paediatrics, Ebonyi State University Teaching Hospital, Abakaliki, Nigeria

M.N. Anyansi, B.Sc, Nurse Public Health, Department of Nursing Sciences, Ebonyi State University, Abakaliki, Nigeria

Correspondence may be directed to: Dr. Chinonyelum Thecla Ezeonu, Consultant Paediatrician and Lecturer, Department of Paediatrics, Ebonyi State University Teaching Hospital Abakaliki, Nigeria, E-mail: ctezeonu@yahoo.co.uk.

Abstract

In this cross-sectional descriptive study, we used a validated school health program evaluation scale (SHPE) to assess the environmental health status of primary schools in Ebonyi State, southeastern Nigeria. Parameters assessed included water supply, sewage and refuse disposal, school building ventilation, lighting and seating, as well as the availability of toilet tissue, basins for washing hands, regular cleaning of toilets, and so forth. Of all the schools assessed, only two schools, both private, attained the minimum acceptable SHPE score of 57. The mean SHPE score of the private schools (50.40) was significantly higher than that of the public schools (28.69) (*t*-test, *p* = .00). Policy reforms are needed that would ensure a healthy primary school environment in Nigeria and in other developing countries with similar settings.

Introduction

A healthy school environment has been defined as “the physical, emotional and social climate of the school designed to provide a safe physical plant, as well as a healthy and supportive environment that fosters learning” (Marx and Wooley 1998). Some studies have shown a clear link between environmental quality and educational performance (Kamarrudin et al. 2009; Murray et al. 2007). In Nigeria, the universal basic education (UBE) program was passed into law in 2004 as one of the strategies aimed at implementing the educational components of the Millennium Development Goals (Ejich 2009). The UBE has thus enabled mass enrolment of children in schools, particularly public schools. However, schools ought to be adequately equipped with corresponding infrastructures to provide an enabling school environment for optimal learning for the child.

Earlier studies that assessed the state of the school environment in some parts of Nigeria noted that conditions were generally grossly suboptimal (Nwana 1988; Ofovwe and Ofili 2007). This situation is common in most rural and suburban schools in developing countries, particularly in Africa and Asia (Majra and Gur 2010). Findings such as these have policy implications and necessitate the institution of major reforms in the primary educational system. In most parts of Nigeria, as in other developing countries, such educational reforms are yet to be effected because of a dearth of baseline data on school environmental health assessments. In Ebonyi State, a relatively new state in southeastern Nigeria, no such study has yet been carried out. It is our aim to conduct environmental health assessments of primary schools within the Ebonyi State capital, with the view to highlighting the need for policy reform that would ensure a healthy school environment in Nigeria and in other developing countries with similar settings.

Materials and Method

This study was conducted in Abakaliki, the capital city of Ebonyi State, southeastern Nigeria, from January 2007 to June 2007 and involved 31 primary schools in the study area. Sixteen were run by the government (public schools), and 15 were privately owned. It was a cross-sectional descriptive study of all the primary schools within the study area, using a validated school health program evaluation scale (SHPE) (Akani 1997). The scale evaluates three aspects of the school health program: school health services, school health instruction and healthful school environment. The maximum score attainable from the scale was 66, and the minimum acceptable score was 57. Study approval was obtained from the Chairperson of the Ebonyi State Universal Basic Education Board for the public schools, and from the Chairperson of the National Association of Private School Proprietors, Ebonyi State chapter, for the private schools. Ethical clearance was obtained from the Ethics Committee of Ebonyi State University Teaching Hospital, Abakaliki, Nigeria. Data were analyzed using SPSS Version 13. Results from the public schools were compared with those of the private schools, using the independent sample t-test. Level of significance was set at a p -value of $< .05$ and the confidence level at 95%.

Results

Of the 31 primary schools assessed, the ratio of male 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. None of the public schools had pipe-borne water, 56.3% had wells and 25% had access to bore holes, while the rest had no water supply at all. Of the private schools, 60% had pipe-borne water, while 33.3% had bore holes. All the private schools' source of water was within the school. For refuse disposal, the majority of schools (61.3%) practised open dumping, although this was significantly more common in public than in private schools ($p = .1$). No toilet was available in 56.3% of public schools, and their sewage disposal was the bush method. Pit latrines or toilets were used in 25% and 18.8% of public schools, respectively (Table 1). For the majority of schools with toilets, the ratio was one toilet to ninety pupils (1:90). In private schools, 73.3% had toilets, while the rest had pit latrines. In those with toilets, the ratio of toilets to students was 1:90, just as in the public schools. One school had a lower ratio: one toilet to 30 pupils.

Table 1. Distribution of types of sewage disposal in the private and public primary schools in Abakaliki southeastern Nigeria

	Sewage disposal method			Total
	Bush	Pit	Toilet	
Public schools				
Number	9	4	3	16
% within type of school	56.3%	25.0%	18.8%	100.0%
Private schools				
Number	0	4	11	15
% within type of school	0%	26.7%	73.3%	100.0%
Total				
Number	9	8	14	31
% within type of school	29.0%	25.8%	45.2%	100.0%

Among the public schools, 31.3% had dilapidated buildings, while none of the private schools' building were dilapidated. There was 100% sitting comfort (which means every pupil or teacher has a seat to him- or herself) in the private schools, but less for the public schools. A sports field was available in 87.5% of the public schools, but only 25% of the public schools had sports facilities. All the private schools had a sports field, and 80% of the private schools had sports facilities. The difference was statistically significant.

Toilet rolls and soap were not available in 87.5% of the public schools, whereas a majority of the private schools provided these toiletries ($p < .05$). Toilets were cleaned regularly in 87.7% of the private schools and in 31.3% of the public schools ($p = .002$). None of the public schools had a safety patrol team or a fire extinguisher, whereas 80% of the private schools had a safety patrol team and 26.7% had a fire extinguisher ($p = .00$). Compulsory wearing of shoes was noted in all the private schools but only in 62.5% of the public schools ($p = .00$). Only two schools scored above 57 on the SHPE, and those were private. Comparison of the mean scores of the public (28.69) and the private schools (50.40) using the independent t-test showed a significant difference ($p = .00$) (Table 2).

Table 2. A comparison of the mean school health programme evaluation scale scores in public and private primary schools in Abakaliki southeastern Nigeria

	Number	Mean	SD	SEM
HSE total score				
Public schools	16	28.69	5.606	1.402
Private schools	15	50.40	7.079	1.828

HSE = healthful school environment; SD = standard deviation; SEM = standard error of the mean.

Discussion

The situation analysis in the present study shows a deplorable state of the school environment, and it was worse in the public schools. None of the public schools had a water source within the school,

and a majority had no adequate means of sewage disposal. In contrast, most of the private schools got their water from taps or bore holes, and their means of sewage disposal were predominantly toilets. Our analysis found that most of the schools with toilets had just one for up to ninety pupils. This constitutes an over-use of the sanitary facilities and a strain on maintenance. Although the guidelines for establishing schools in various states in Nigeria specify a ratio of one toilet to ten pupils, they seem to exist only on paper (Adia 2010). This is a common occurrence in most parts of Nigeria (Ekpo et al. 2008, Ogaji 2006) and is similar in many parts of the developing world (Majra and Gur 2010). Water, toilet tissue, soap and basins for washing hands are necessities for basic sanitation. It appeared that most of the private schools had obtained these items through contributions from pupils or through school fees. Thus, inadequate government funding of contributes to poor health in public schools and constitutes a major policy issue that should be considered an interventional priority.

Open dumping of refuse, found commonly in most of the schools studied, constitutes environmental pollution. These poor environmental sanitation indices do not seem peculiar to this study area. Other authors who surveyed environmental health knowledge and practice in different schools found similarly poor school environmental sanitation, despite sound knowledge of what constitutes ideal sanitation behaviour (Ebong 1994). Suffice it to note that environmental sanitation is a key element of the Millennium Development Goals under the theme “Ensuring Environmental Sustainability” by 2015. It has been reported that less than 50% of the Nigerian people have access to minimum national acceptable standard of sanitation, and in some states the number is as low as 10%, worse still in some rural settings (Oluyole 2010). Most childhood diseases can be traced back to lack of access to basic sanitation facilities.

As for the school buildings, none of the private schools were dilapidated, whereas 31.3% of the public schools were. This finding did not correlate with the age of the school. Dilapidated buildings put pupils at risk, as such buildings may collapse. In addition, it has been documented that with poor conditions of school buildings, students could be expected to reflect the negative environment in poor academic performance (Kamaruddin et al. 2009). Another area of contrast was seating. All the private schools had 100% comfortable seating for pupils and teachers, while the converse was the case for the public schools. Although the conditions at the middle and high school level in Nigeria are relatively better than those in primary schools, they are still far from optimal.

It is recommended that the governments of developing countries consider implementing policy reforms that would ensure a healthy primary school environment. In conclusion, school age children in the developing world deserve good health in all aspects. To achieve this, and to meet the MDGs of improving child health and environmental sustainability, the concerted efforts of both public and private sectors are imperative.

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