

A Study of the Primary School Environment in a Local Government Area, South West Nigeria

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Abstract

Background: School environment connotes the physical, biological and social milieu within which members of the school community operate. Its status has great impact on the health of the school children and other members of the community.

Objective: To assess the healthfulness of the primary school environment in Ilesa East Local Government Area, Osun State, Southwest Nigeria.

Methods: A cross sectional descriptive study of all primary schools in the area was done using a validated healthful school environment checklist. Data was analyzed using SPSS and compared between the two ownership groups of the schools.

Results: There were 64 schools in all, of which 34 were public schools and 30 were private schools. All (100%) practiced open dumping and burning of refuse. Sundry health hazards were found in 81% of studied schools. The recommended toilet-pupils ratio existed in only 5.8% of the schools. Water sources were located far away in 24% of the schools with water supply. Dilapidated Classrooms were found in 42.2% of the schools. There was no difference between the scores of the two groups of schools. $P=0.923$ (Mann-Whitney U Test).

Conclusion: The school environment was not healthy in most schools. There is a need to monitor and enforce the implementation of national guidelines on school environment in the study area.

Keywords: Healthy environment; School children; Child health; Nigeria

Introduction

Children spend ample time in schools where they are exposed to the various components of the schools' environment which may affect their health status either positively or negatively depending on the nature of such environment [1-3]. The introduction of extra-lesson periods in Nigerian primary schools has led to the school children spending extra time in schools [2]. A School environment connotes the physical, biological and the social/emotional milieu within which a child and other members of the school community operate and it involves all the consciously organized, planned, and executed efforts to ensure the safety and healthy living conditions for all members of the school community [1,3].

There are two groups of primary schools in Nigeria. These are the public schools which are owned by the government and the private schools which are owned by individuals or non-governmental organizations. Since the Federal Government launched the School Health Programme [SHP] guidelines in Nigeria [1,3], little efforts have been made to assess the level of compliance with its implementation. Healthful school environment is a key component of the SHP [1,3].

Although some studies exist on SHP in Nigeria [2,4-7], only a few focused mainly on the school environment [2,5,7] and none was from the current study location. This study attempts a more holistic approach to assessing the primary school environment in a focal Local Government Area (LGA) in Southwest Nigeria by examining the three recognized domains of a school environment, namely: The physical, biological, and social/emotional milieu [1,3]. The study is aimed to assess the status of the school environment and compare it between the public and private schools in study locality. It also draws attention to the link between the health of the school community members and their environment as a key ingredient to the attainment of the health and education related Millennium Development Goals [8,9].

Materials and Methods

Study setting and sampling

This was a school-based cross sectional descriptive study conducted among primary schools in Ilesa East Local Government Area (IELGA) of Osun State, Nigeria between January and June 2011. IELGA is mainly populated by The Yorubas of South western Nigeria and has a population of 105,416 [10]. It has a tertiary health facility: The Wesley Guild Hospital - a unit of The Obafemi Awolowo University Teaching

Hospitals Complex Ile Ife. This focal local government was selected by convenience sampling and all the Private and Public primary schools in the Local Government Area were studied.

An approval was obtained from the Local Government School Education Authority before the study commenced. The consent and cooperation of each school head was sought by explaining the purpose and benefits of the research work to them. Consent and assent of each participant was obtained as applicable. Consideration was given to the timing and the conduct of the study so that normal teaching periods were not unduly interrupted. There were no reported adverse effects on learning.

Study instrument

An adapted and validated healthful school environment evaluation checklist Appendix I was used to record information and score each school on the status of their environment. The checklist was adapted from "School Health Practice" by Anderson and Creswel [11] with the incorporation of key elements of The Nigerians' National Policy Guidelines on School Sanitation and SHP [1,3,12,13].

The checklist is weighted in order to enhance objectivity and quantify performances of the schools. It has sections on the school administration data, availability of the various components of school environment such as the school buildings quality and evidence of maintenance. Also, it contains sections on infrastructural facilities like: refuse and sewage disposal materials, water supply, materials for sitting comforts of pupils and teachers, sporting facilities and safety measures facilities. Parameters for assessing the presence of other materials for healthy living like the availability of wash hand basins, drinking fountains, soap for hand washing and the presence or otherwise of visible biological and physical health hazards are also included in the checklist. Scores were allocated to each item based on its importance. For example, regarding schools' water sources, a score of four, three, two, and one was allocated to sources from pipe borne, bore-hole, well and surface water respectively. For accessibility of the water sources, a score of three, two and one were allocated if a water source was located within the school premises, not more than 200metres from the school and if more than 200metre from the school premises respectively. According to the checklist, the maximum attainable and minimum acceptable scores were 66 and 57 respectively.

Data collection and analysis

A pilot study was carried out, using two primary schools in Ilesa West Local Government Area, a location outside but close to the study area. The information obtained from the pilot study was used to modify and make the data collection better. The checklist was administered by the researchers and a 'face to face' interview was conducted separately with three classroom teachers and two pupils selected randomly from each school to assess the emotional and social climate in the schools. The head teachers provided the school administrative data and helped in making further clarification(s) on any aspects of our observation where necessary. Scores were awarded based on direct observation of facilities and were filled in on the spot. The toilet-pupil ratio in each school was obtained by dividing the pupils' population by the total number of toilets. The dimensions of the floor of the classrooms, windows, and doors in each school were measured using non elastic measuring tapes and their areas were determined through multiplication of their lengths by their widths.

The space of a classroom floor was adjudged standard if the space containing 36 pupils arranged in six rows and columns was not less than 19.4 meters square [12] while ventilation was adjudged adequate if the windows and doors were positioned in a way that allowed cross ventilation and their combined areas accounted for at least a quarter of the floor space [12-14]. The ventilation was adjudged controllable if there were doors and windows with hinges that allowed their closing and opening as desired. The emotional climate was assessed by asking about job satisfaction and relationship cordiality with other members of the school community from the teachers. Accordingly too, the pupils were asked about their relationship with peers, teachers and other members of the school community. The emotional climate in any school was adjudged adequate if majority of respondents in that school were happy with their level of engagements and social interactions in the school. Other aspects of the checklist were scored as directly observed.

Data was analyzed using the Statistical Programme for Social Science (SPSS) software version 16. Descriptive statistics was done. The results obtained from the public schools were compared with those of the private schools using the Mann-Whitney U Test and the Pearson's chi-squared χ^2 tests as applicable. P values less than 0.05 were accepted as statistically significant.

Results

In all, there were 64 primary schools consisting of 34 public and 30 private in the study area. Fifty three (82.8%) schools had functional Parents' Teachers' Association. Forty two (65.6%) schools regularly organize extracurricular activities such as inter- house sporting-competition and cultural dances. Six (9.49%) schools, all private, had trained first aiders ($p=0.006$). The youngest primary school in the LGA was established two years prior to the study while the oldest had been in existence for 128 years. The median age of public primary schools was 45years (range 8-128 years) while that of private primary schools was 8years (range 2-39 years) (Table 1).

Age group of schools in years	Public school	Private school	Total
20-Jan	12	26	38
21-40	4	4	8
41-60	9	0	9
61-80	5	0	5
81-100	2	0	2
101-120	1	0	1
121-140	1	0	1
Total	34	30	64

Table 1: Age distribution of schools.

Water supply: Forty five (70.3%) schools (comprising 22 public and 23 private schools) had water supply. Forty (62.5%) schools got their water from well and five (7.8%) schools had functional bore hole. None of the schools had pipe borne water.

Location of water sources: Thirty four (75.6%) of the schools with water supply had their water sources located within the school premises. Eleven (24.4%) had theirs outside the school premises.

Sewage Disposal: Twelve (18.7%) schools had no toilet facilities. Majority of them were public schools 10 (29.4%) vs 2 (6.7%), (p=0.045). Majority of the schools 44 (68.8%) used pit latrines to dispose their sewage materials. Only private schools used water closet and it was found in eight (12.5%) of them. No school used bucket method of sewage disposal.

Toilet to pupil ratio: In the schools with toilet facilities, the toilet to pupil ratio was 1:30 in three (5.8%) schools, 1:31-60 in six (11.5%) schools, 1:61-90 in five (11.5%) schools and 1:>90 in 38 (73.1%) schools.

Refuse disposal: All the 64 (100%) schools practiced open dumping and burning method of refuse disposal.

Quality of school buildings: Most public schools were dilapidated (Table 2).

Fire Resistance: No school was entirely made up of pre-fabricated materials in Table 2

Classroom floor Space: Most public schools had standard classroom floor space while in most private schools; the floor space was too small and not standard (Table 2).

Floor finishing: There was no significant difference between the two groups of schools with regards to floor finishing (Table 2).

Ventilation: The public schools performed better with respect to classroom ventilation (Table 2).

Lighting: Most schools had good lighting (Table 2).

Insulation from heat: There was no difference between the two groups of schools with regards to their ceilings and insulation from heat (Table 2).

Facilities/ structures	Public	Private	Total	χ^2	P value
	N=34 n (%)	N=30 n (%)	N=64 n (%)		
Classroom buildings					
Dilapidated	20 (58.8)	7 (23.3)	27 (42.2)	8.231	0.004
Old walls and leaking roofs	7 (20.6)	4 (13.3)	11 (17.2)	0.19	0.663
Strong and minor cracks	2 (5.9)	13 (43.3)	15 (23.4)	10.458	0.001
Strong and good roofs	5 (14.7)	6 (20.0)	11 (17.2)	0.314	0.575
Fire Resistance					
All buildings with fire resistant materials	34 (100.0)	28 (93.3)	62 (96.8)	0.656	0.418
Some fabricated buildings	0 (0.0)	2 (6.7)	2 (3.2)	*0.656	0.418
All prefabricated buildings	0 (0.0)	0 (0.0)	0 (0.0)	-	-
Floor Spacing					

Standard	32 (94.1)	11 (36.7)	43 (67.2)	9.331	0
Not standard	2 (5.9)	19 (63.3)	21 (32.8)	9.331	0
Finishing					
Flat non glossy	6 (17.6)	5 (16.7)	11 (17.2)	0.011	0.917
Flat glossy	3 (8.8)	6 (20.0)	9 (14.0)	0.852	0.356
Worn off/broken/dusty	25 (73.5)	18 (60.0)	43 (67.2)	1.323	0.25
Sandy	0 (0.0)	1 (3.3)	1 (1.6)	*0.004	0.95
Ventilation					
Adequate	34 (100.0)	18 (60.0)	52 (81.2)	16.738	0
Not adequate	0 (0.0)	12 (40.0)	12 (18.8)	16.738	0
Controllable	33 (97.1)	16 (53.3)	49 (76.6)	16.981	0
Not controllable	1 (2.94)	14 (46.7)	15 (23.4)	16.981	0
Lighting					
Good	34 (100.0)	23 (76.7)	57 (89.1)	6.673	0.01
Poor	0 (0.0)	7 (23.3)	7 (10.9)	8.908	0.003
Artificial light	0 (0.0)	3 (10.0)	3 (4.7)	*1.680	0.195
Insulation from heat					
No ceilings	5 (14.7)	9 (30.6)	14 (21.9)	2.181	0.14
Partially ceiled	24 (70.6)	16 (53.3)	40 (62.5)	2.025	0.155
Properly ceiled	5 (14.7)	5 (16.7)	10 (15.6)	0.046	0.829
* - Chi-square (χ^2) with Yate's correction applied.					

Table 2: Quality of buildings/structures of the schools.

Sitting comforts: As shown in Table 3, The private schools had better sitting comforts for both pupils and teachers compared to the public through availability of more desks, tables and chairs.

Food service area: Food service area was significantly lacking in the private schools compared to the public (P=0.000) Table 3.

Safety measures: The Private schools significantly provided more safety measures. (P=0.000) Table 3.

Health hazards/nuisance: The private schools had less health hazards compared to the public schools where disease vectors like mosquito larvae, rats, cockroaches and animals droppings were commonly found (Table 3).

Evidence of maintenance: Evidence of maintenance was lacking in most schools in Table 3.

Facilities/ structures	Public	Private	Total	χ^2	P value
	N=34 n (%)	N=30 n (%)	N=64 n (%)		
(a) Sitting comforts Pupils					
100% seated	17 (50.0)	23 (76.7)	40 (62.5)	4.836	0.028
<100% seated	17 (50.0)	7 (23.3)	24 (37.5)	4.836	0.028

Teachers					
100% seated	18 (52.9)	27 (90.0)	45 (70.3)	8.785	0.003
<100% seated	16 (47.1)	3 (10.0)	19 (29.7)	8.785	0.003
(b) Food service area					
Available	34 (100.0)	17 (56.7)	51 (79.7)	18.489	0
Not available	0 (0.0)	13(43.3)	13 (20.3)	18.489	0
(c) Safety measures					
Safety patrol team	0 (0.0)	4 (13.3)	4 (6.3)	*4.836	0.028
School fence	5 (14.7)	14 (46.7)	19 (29.7)	7.799	0.005
Fire extinguisher	0 (0.0)	1(3.33)	1 (1.6)	*0.004	0.95
Fire alarm	0 (0.0)	0 (0.0)	0 (0.0)	-	-
No measure(s)	29 (85.3)	11 (36.7)	40 (62.5)	16.079	0
(d) Health hazards					
Industrial population including major road/ markets	18 (52.9)	19 (63.3)	37 (57.8)	0.706	0.401
Dangerous/ grazing animals	28 (82.4)	15 (50.0)	43 (67.2)	7.567	0.006
Animal droppings in classrooms	23 (67.6)	14 (46.7)	37 (57.8)	2.876	0.009
Floods/open drainages	18 (52.9)	16 (53.3)	34 (53.1)	0.001	0.975
Vectors/pests	16 (47.1)	13 (43.3)	29 (45.3)	0.089	0.765
No health hazard observed	3 (8.8)	9 (30.0)	12 (18.8)	4.691	0.03
(e)Evidence of maintenance	10 (29.4)	13 (43.3)	23 (35.9)	1.342	0.247
* - Chi-square (χ^2) with Yate's correction applied					

Table 3: Sitting comforts, Safety measures, Food service area and Evidence of maintenance.

Healthful living in the schools: The emotional climate was inadequate in most schools. The commonest reasons given by the teachers and pupils were complaints about poor remuneration and corporal punishments respectively. Compulsory wearing of shoes, regular cleaning of toilets and classrooms were more carried out by the private schools in Table 4.

Total scores and their comparison: The median score of the public schools was 31.5 (range 17-37) while that of the private schools was 28.5 (range 14-57) with one private school attaining the recommended score of 57. There was no significant difference between the scores of the two groups of schools. P=0.923 (Mann-Whitney U Test)

Discussion

A child friendly school constantly strives to promote and support the health of school children. Adequate and healthy school

environment components are critical criteria to be met before a school can be designated as being child friendly [1,15].

The observation that, majority of the schools carried out extracurricular activities like cultural dancing and inter-house sporting competition is commendable and in conformity with the recognition by some authors [16-18] of the role of such activities in achieving good health. This will allow school children in the area to achieve total state of physical, mental and emotional health as being advocated by the WHO [19].

Healthful living	Public	Private	Total	χ^2	P value
	N=34 n (%)	N=30 n (%)	N=64 n (%)		
†Adequate emotional climate	21(61.8)	5(16.7)	26(40.6)	13.438	0
Shoes worn compulsorily	5(14.7)	21(70.0)	26 (40.6)	13.438	0
Sports field available	25(73.5)	3(10.0)	28(43.7)	23.62	0
Sports facilities available	14(41.2)	4(13.3)	18(28.1)	4.812	0.028
Toilet rolls available	1(2.9)	4(13.3)	5(7.8)	1.165	0.28
Soaps for hand washing available	0(0)	1(3.3)	1(1.6)	0.004	0.95
Washing hands basin & stand available	4(11.8)	2(6.7)	6(9.3)	0.488	0.485
Dustbins and waste paper basket available	3(8.8)	6(20.0)	9(14.0)	0.852	0.356
Regular cleaning of toilets & classrooms	21(61.8)	28(93.3)	49(76.6)	8.851	0.003
Drinking fountains bucket & cups in class	2(5.9)	1(3.3)	3(4.7)	*0.000	1
* - Chi-square (χ^2) with Yate's correction applied.					
† - Poor remuneration and application of corporal punishment were the main reasons given by teachers and pupils respectively for inadequate emotional climate.					

Table 4: Healthful living in the schools.

Although the proportion of schools with at least one source of water supply is relatively higher than other studies across Nigeria [1,4,5,20,21], one out of every four schools with an identifiable water source in this study, had the source located outside the school premises. This could threaten water adequacy in the area and may lead to unavailability of water for various needs that are germane to the healthy living of the school community thus putting the schools at risk of disease outbreaks [1,22,23]. There is need for adherence to the prescribed national standards of amenity requirements [3,12] when considering proposals for establishing schools in the study area.

Gross inadequacies were noted in the toilet-pupil ratio with only 5.8% of the schools meeting the recommended ratio of one toilet to not more than 30 pupils [1,12]. This is only a shade better than the 1% recorded in previous national surveys [1,5]. The proportion of schools with toilet facilities is similar to 73% observed by Ofovwé and Ofili [4] but higher than the 25% recorded by Alex-Hart and Akani [21] both from Nigeria. Possible explanation for these differences may be due to the studies methods. While the current study and that of Ofovwé and Ofili involved both public and private schools, that by Alex-Hart and Akani, was conducted among public schools only, suggesting a wide dichotomy between the private and public schools regarding the availability of toilet facilities in Nigeria. The preference for pit latrine as the means of sewage disposal in this study is in tandem with findings by other authors [1,4,5,24,25] and may be attributable to its ease of use by school pupils and minimal water requirements given the relative scarcity of water in the schools. When toilet facilities are inadequate in schools, pupils can engage in indiscriminate disposal of sewage materials which may result in outbreak of poor sanitary related diseases in the school community as was reported across the country recently [26]. Appropriately fostered school-community relationships may be a way to resolving lack of amenities in the study locality.

The practice of open dumping and burning of refuse is not restricted to the current study [20,21,27]. This practice may be as a result of lack of refuse collection materials as found in this study. It may also be a reflection of the attitude of the larger society because the practice is common among adult Nigerians [28,29]. The current practice is at variance with the sanitary measures in the Nigerian National School Sanitation Guideline [12] and findings in the developed countries where waste management in schools has advanced to the realm of turning waste to wealth and monitoring their pollution effects [30]. Enforcing the school sanitation guideline [12] through provision of relevant waste disposal facilities and waste management education are possible solutions to the improper waste disposal in the area.

The observation that more private schools had substandard classrooms' floor spaces might be due to the fact that some of them were using rented apartments not primarily designed for school activities. This may result to a tendency towards overcrowding with attendant risks of infectious diseases transmission [22,23,31,32]. That more teachers were relatively provided with sitting comforts compared to pupils, may suggest that less emphasis was placed on the welfare of pupils in the study area. This calls for concern in the sense that, a child needs every comfort to enjoy maximum learning. The parlous state of classrooms as found in this study has laid credence to the findings of the 2007 national school survey [6], where only 4% of the classrooms across the country were conducive for learning because of their lack of adequate seats, floor space, instructional materials and infrastructural neglect. This indicates lack of progress and contrast with the situation in developed countries where there are well entrenched policies of constant maintenance, inspection and construction of school buildings [33].

In conformity with previous studies [2,6,21], most schools did not implement safety measures. This is quite disturbing, bearing in mind that, schools are prone to accidents [2,3,5,6,30,34-36]. There is need for regular appraisal of school safety measures in the locality as being done in the developed world [35,36]. Furthermore, upgrading the scope of school safety trainings in teachers' training institutions' curriculum [37] will make teachers appreciate the need for safety in their schools and implement its measures in deference to the words of

a Nigerian writer that "security is a basic human need, depriving schools of safety is depriving children their fundamental human right" [38]. These suggestions cannot be more apt bearing in mind the security challenges facing the country at the moment [39].

Various forms of health hazards were encountered in 81.3% of the schools. This pattern had been previously reported but to lesser degrees in different parts of Nigeria [4,21] and could point to the unhealthy states of primary school environment in the country. It may also be reflective of the poor knowledge of Nigerians on the health implications of polluting or contaminating school environment [40,41]. Enforcement of The National Policy Guidelines on school environment [3,12] matched with punitive measures against offenders may help deter inhabitants of the study area from encroaching, polluting or contaminating school premises.

Although inadequate emotional climate was less observed in this study compared to previous reports [15,21], and this is commendable. The observation that the teachers' main complaints were on inadequate emolument is not limited to the current study [42]. This indicates job dissatisfaction among them and could have deleterious impacts on their service delivery as well as their relationship with other members of the school community including the school children. Stakeholders in the education sector can buy into available international initiatives to improve the welfare of teachers in the locality [43]. Though a common practice in Nigeria [44,45], teachers in the study area need to exercise caution while applying corporal punishment as this was the leading cause of emotional inadequacy by the pupils. They should be encouraged by relevant authorities to use other non-physical methods to correct errant pupils.

Conclusion and Recommendations

Despite its being limited to only one Local Government Area because of resource constraints, this study has shown lots of inadequacies in the school environment of the study area, an indication that, the school environment in the area is not healthful. This observation has the potential to jeopardize the health of the school community members. There is a need for more advocacies on the enforcement of the various guidelines for achieving optimal school environment in the country. The Pediatric Association of Nigeria [PAN] and other relevant government and non-governmental agencies need to play active roles. Finally, there is need for more nationwide studies to ascertain the status of school environment in the country.

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