

## **Evaluation of Environmental Health and Safety Status in Public Secondary Schools in Minna, Niger State**

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### **Abstract**

*Poor maintenance of school environment can cause or worsen illnesses among school children. The aim of this study was to evaluate the environmental health and safety status in public secondary schools in Minna, Niger state. The objective of this study was to assess the healthfulness of school environments of public secondary schools within the rural and urban areas of Minna. Multistage sampling was used to select the sample population. The participating schools were inspected and both the students and principals interviewed using a questionnaire. Scores were awarded using the school Health Program Evaluation Scale. This study was conducted in 30 public secondary schools in Minna the Niger state capital. Parameters assessed included water source, hand washing, toilet and classroom facilities, waste management, food service areas, fire control (extinguishers and alarms), dangers from animals, floods and vectors/pests and buildings/infrastructure around the schools. The study concludes that school environment of public secondary schools situated in both rural and areas in Minna, Niger State is fairly friendly and fairly healthy. From the findings of this study, it recommends that school principals should initiate preventive measures and promote awareness in order to cope with environmental health and safety, stimulus perception and provide sufficient safeguard to the environmental health and safety in secondary schools.*

**Key words:** Evaluation, Environmental health and safety, Public secondary schools.

### **Introduction**

Adequate drinking water, sanitation and hygiene are crucial concerns for non-household settings, such as health care facilities, work places and schools. Protecting children's health and advancing environmental health and safety justice are critically important goals for the Environmental Protection Administration (EPA), as reflected in EPA's strategic plan (WHO 2018) when the school environment is of a poor condition. U.S Environmental protection agency (2018) Poor indoor environments can affect a child's health; dirt, allergens, chemicals and other contaminants can trigger or further aggravate allergies and illnesses Hauptman and Phipatankau (2015). Foodborne illnesses are the major food safety concern in primary schools. In Southeast Asia, non-typhoid *Salmonella*, pathogenic *Escherichia coli* and norovirus (WHO 2015) can occur in storage facilities for food items generated under poor food handling conditions and training, with the use of untreated water for non-drinking purposes and/or poor sanitation and hygiene; these factors are the primary risks for food poisoning Malm et al. (2015). Many schools in developing and developed countries lack adequate water and sanitation services, and this phenomenon has potential detrimental effects on health and school attendance Freeman (2011). Thus, there is a high prevalence of water-borne diseases that cause particularly children to fall ill or even die (UNICEF and WHO 2018). Improved sanitation conditions include access to enhanced latrines, latrine upkeep and fecal sludge management Kontingo et al. (2014). Additionally, waste

management is one of the most important environmental aspects with regards to educational institutions Sales *et al.* (2006)]. Waste management, related to resource and water consumption, can help reduce waste quantity Dascalak and Sermpetzoglou (2011), depending on students and educational staff numbers, site and infrastructure technical characteristics (including buildings) and institutional management Patel and Handu (2010).

A safe school is physically and psycho-socially secure. The most visible aspects of a school's physical environment are the quality of the security and maintenance of school buildings and grounds. Adequate facilities indicate a clean and safe environment that is conducive to education and has protected property, adequately maintained buildings, furniture and equipment, clean toilets, water, a green environment and the absence of harassment, Squelch (2001)].

In Minna, the Ministry of Education and the Niger state ministry of Health are making efforts to promote health education in schools. They are attempting to promote a state of perfect happiness in four dimensions: physical, mental, social and intellectual. In particular, the Niger state government has begun promoting healthy schools. This shift towards a greater emphasis on health education and environmental sanitation in schools follows World Health Organization (WHO) guidelines (SAMED 2016). This study aimed to evaluate the status of environmental health and safety in public primary schools in Minna province and to study how individual factors such as sex, education and length of work and training time affected perceived levels of environmental health and safety status in the teachers who are partially responsible for environmental health in public primary schools.

## **Methodology**

### **Participating schools**

This was a cross-sectional study of selected secondary schools in Minna the Niger state capital. It comprised of public schools. These schools were located in both the rural and urban parts of Minna.

### **Study instrument**

The school Health and Safety Program (SHP) evaluation scale was used to assess the schools. Assessment of SHP has been quantitative. The first SHP Evaluation scale was developed by Anderson and Cresswell (1980) in the UK. This has been modified to suit the Nigerian environment and level of economic development Akani and Nkanginieme (2007). The scale has also been validated for use in SHP evaluation in Nigeria.

### **Procedure**

multistage sampling method was used to select schools that participated in the study. Thirty (30) schools were selected for this study, twenty (20) within the urban areas of Minna and ten (10) from the rural areas of Minna. The researcher visited the selected schools and inspected the environment- water supply, refuse disposal system, sewage disposal, school plan (walls, roofs, ventilation, lightning, furniture sitting comfort, food service and nuisance), evidence of maintenance and healthful living. Scores were awarded using the SHP evaluation scale.

### **Data analysis**

This was done using the statistical package for sciences software (SPSS) (IBM, Chicago IL, USA) version 20.

## **RESULTS**

### **Design**

#### *Water supply*

The ten (10) public secondary schools selected in the rural areas of Minna had no access to any form of water supply, while five (5) out of the twenty (20) public secondary schools selected within the urban areas of Minna had boreholes inside the school premises which supply water to both students and teachers, ten (10) of the schools have wells, three (3) have pipe-borne water, the remaining two (2) schools had more than one source of water supply. From the schools sampled only the ten (10) public secondary schools located at the rural areas of Minna had their water source > 200m from the schools, the twenty (20) public secondary schools within Minna had their water source had water in their school compounds and only go out in search of water when there is scarcity and the distance is usually not <200m from the schools.

### **Refuse disposal**

All the ten (10) public secondary schools situated in the rural areas dump their refuse openly. The remaining twenty (20) public secondary schools within the urban areas of Minna bag their refuse, which is then collected by Niger state waste management authority for onward disposal by controlled tipping.

### **Sewage disposal**

All the public secondary schools have no sewage disposal structures. The twenty (20) public secondary schools within the urban areas all have sewage disposal structures, none of the public secondary school situated within the urban areas have water cistern they all use pit latrines. The urban public secondary schools have a toilet usage ratio of 1:>90 for both students and teachers.

### **School plan**

#### *Buildings*

All the ten (10) public secondary schools situated in the rural areas were dilapidated, five (5) among the twenty (20) schools situated within the urban areas have their school buildings made of strong walls and good roofs, ten (10) out of the twenty (20) schools have their school buildings made of strong walls but with minor cracks, the remaining five (5) have old walls and leaking roofs.

#### *Floor*

All the ten (10) public secondary schools situated in the rural areas have worn-off and dusty floors and they had no standard floor spaces per child. Ten (10) among the twenty (20) schools situated within the urban areas have no standard floor spaces per child and all the schools had flat and nonglossy floor finishing and all the floors had potholes in them. The remaining Ten (10) schools sampled had standard standard floor spaces per child and also had flat and nonglossy floors.

#### *Ventilation*

All the thirty (30) public secondary schools sampled in both rural and urban area were adequately ventilated. Ventilation was controllable.

### *Lighting*

All the thirty (30) public secondary schools sampled in both rural and urban area have good lighting system.

### *Insulation from heat*

None of the public secondary school situated in the rural areas was properly ceiled; five among the twenty public secondary school situated in the urban areas were partially ceiled, five other schools had no ceiling while the remaining ten schools were properly ceiled.

### *Sitting comfort*

In all the public schools visited and sampled both in rural and urban areas all the students were not comfortably seated because the sitting chairs and desk were inadequate so only few were comfortably seated as some were found sitting on the windows, some others were standing and majority were found sitting on the floor.

### *Food service area*

None of the public school secondary schools sampled had a food cafeteria. All of them had food vendors sell food within the school premises.

### *Safety patrol team*

None of the schools sampled had a safety patrol team.

### *Fencing*

All the ten (10) public secondary schools situated in the rural areas had no perimeter fencing, while the other twenty (20) schools situated in the urban areas had perimeter fencing.

### *Fire extinguisher*

All the ten (10) public secondary schools situated in the rural areas had no perimeter fencing, while the other twenty (20) schools situated in the urban areas had perimeter fencing.

### *Fire protection*

None of the schools are made of prefabs or some fire-resistant materials.

### *Nuisance/ health hazard*

There were neither open drainages nor incidences of flooding in any of the schools. Vectors/ pests (sandflies, snakes and rats) were occasionally a nuisance that affects the schools.

## **Maintenance**

### *Evidence of maintenance*

There were no evidences of maintenance in all the schools visited situated in the rural and urban areas.

## **Healthful living**

The emotional climate was adequate in all the schools visited in both the urban and rural areas. All schools have sport fields, all the schools were not having toilet rolls, the schools situated in the urban areas had soaps available for handwashing while the ones in the rural areas had none. None of the schools had wash hand basins in their classes, the schools in the urban areas had dustbins

and in some cases empty cartoon for disposing of refuse while the schools in the rural areas had none as we could visibly see trash littered everywhere the surrounding and classes.

### **Discussion**

The ten (10) public secondary schools selected in the rural areas of Minna had no access to any form of water supply, while five (5) out of the twenty (20) public secondary schools selected within the urban areas of Minna had boreholes inside the school premises which supply water to both students and teachers, ten (10) of the schools have wells, three (3) have pipe-borne water, the remaining two (2) schools had more than one source of water supply. From the schools sampled only the ten (10) public secondary schools located at the rural areas of Minna had their water source > 200m from the schools, the twenty (20) public secondary schools within Minna had their water source had water in their school compounds and only go out in search of water when there is scarcity and the distance is usually not <200m from the schools. All the ten (10) public secondary schools situated in the rural areas dump their refuse openly. The remaining twenty (20) public secondary schools within the urban areas of Minna bag their refuse, which is then collected by Niger state waste management authority for onward disposal by controlled tipping. All the public secondary schools have no sewage disposal structures. The twenty (20) public secondary schools within the urban areas all have sewage disposal structures, none of the public secondary school situated within the urban areas have water cistern they all use pit latrines. The urban public secondary schools have a toilet usage ratio of 1:>90 for both students and teachers. All the ten (10) public secondary schools situated in the rural areas were dilapidated, five (5) among the twenty (20) schools situated within the urban areas have their school buildings made of strong walls and good roofs, ten (10) out of the twenty (20) schools have their school buildings made of strong walls but with minor cracks, the remaining five (5) have old walls and leaking roofs. All the ten (10) public secondary schools situated in the rural areas have worn-off and dusty floors and they had no standard floor spaces per child. Ten (10) among the twenty (20) schools situated within the urban areas have no standard floor spaces per child and all the schools had flat and nonglossy floor finishing and all the floors had potholes in them. The remaining Ten (10) schools sampled had standard standard floor spaces per child and also had flat and nonglossy floors. All the thirty (30) public secondary schools sampled in both rural and urban area were adequately ventilated. Ventilation was controllable. All the thirty (30) public secondary schools sampled in both rural and urban area have good lighting system. None of the public secondary school situated in the rural areas was properly ceiled; five among the twenty public secondary school situated in the urban areas were partially ceiled, five other schools had no ceiling while the remaining ten schools were properly ceiled. In all the public schools visited and sampled both in rural and urban areas all the students were not comfortably seated because the sitting chairs and desk were inadequate so only few were comfortably seated as some were found sitting on the windows, some others were standing and majority were found sitting on the floor. None of the public school secondary schools sampled had a food cafeteria. All of them had food vendors sell food within the school premises and none of the schools sampled had a safety patrol team. All the ten (10) public secondary schools situated in the rural areas had no perimeter fencing, while the other twenty (20) schools situated in the urban areas had perimeter fencing. All the ten (10) public secondary schools situated in the rural areas had no perimeter fencing, while the other twenty (20) schools situated in the urban areas had perimeter fencing. None of the schools are made of prefabs or some fire-resistant materials. There were neither open drainages nor incidences of flooding in any of the schools. Vectors/ pests (sandflies, snakes and rats) were occasionally a nuisance that affects the schools.

There were no evidences of maintenance in all the schools visited situated in the rural and urban areas. The emotional climate was adequate in all the schools visited in both the urban and rural areas. All schools have sport fields, all the schools were not having toilet rolls, the schools situated in the urban areas had soaps available for handwashing while the ones in the rural areas had none. None of the schools had wash hand basins in their classes, the schools in the urban areas had dustbins and in some cases empty carton for disposing of refuse while the schools in the rural areas had none as we could visibly see trash littered everywhere the surrounding and classes.

### **Conclusion**

The school environment of public secondary schools situated in both rural and areas in Minna, Niger State is fairly friendly and fairly healthy. Based on the results in this study, secondary school headmasters should implement preventive measures and educate participants in order to cope with and provide sufficient environmental health and safety in secondary schools

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