

Assessment of Environmental Hygiene Conditions among Students and Teachers in Public Secondary Schools in Cross River State, Nigeria

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Abstract: *Background:* Lack of access to adequate water, sanitation and hygiene in schools in developing countries is a global problem. Such a lack has been proven to enhance serious health and psychological risks associated with poor toilet hygiene in schools, particularly for vulnerable groups such as students with disabilities, bladder conditions, and teachers. In Cross River State, WASH was introduced to mitigate illness, absenteeism, and long-term health issues stemming from inadequate sanitation, yet there appears to be a lack of empirical data assessing whether the initiative has effectively addressed these concerns.

Objective: The purpose of this study was to examine the hygiene conditions among students and teachers in public secondary schools in Cross River State.

Methods: This study adopted a cross-sectional descriptive survey design to assess environmental hygiene conditions, hygiene knowledge, and hygiene practices among students and teachers in public secondary schools. Using a questionnaire, data were collected and analysed accordingly.

Results: Results showed poor environmental hygiene conditions (students: M = 2.19; teachers: M = 2.42), high hygiene knowledge (students: M = 3.28; teachers: M = 3.62), and low-to-moderate hygiene practices (students: M = 2.45; teachers: M = 2.94).

Conclusions: Poor environmental hygiene conditions may increase students' vulnerability to infection, absenteeism, and reduced learning engagement. The action required is to ensure that the much-needed sanitation and hygiene facilities are provided in secondary schools and that the environment is conducive to teaching and learning. Lastly, this work has the potential to make important contributions to achieving the United Nations' Sustainable Development Goals.

Keywords: Water, sanitation, and hygiene, hygiene, environmental hygiene conditions, students, teachers, public secondary schools.

INTRODUCTION

Ensuring safe and healthy school environments is an essential component of promoting students' wellbeing, academic engagement, and long-term development. One critical dimension of a health-promoting school environment is access to adequate environmental hygiene, particularly through the provision of safe water, sanitation, and hygiene (WASH) facilities. In many low- and middle-income countries, including Nigeria, inadequate school sanitation and hygiene conditions remain major public health concerns, contributing to increased risks of infectious diseases, school absenteeism, and poor educational outcomes among children and adolescents [1].

In Nigeria, growing concerns over hygiene-related illnesses such as diarrhoea, cholera, typhoid fever, and malaria among school-aged children and teachers have underscored the need for improved environmental sanitation in schools. Additionally, earlier sanitation interventions were largely focused on household access, with limited attention given to public institutions such as schools [1]. In response, the Federal Government of Nigeria, in collaboration with development partners, introduced several Water, Sanitation, and Hygiene (WASH) initiatives aimed at improving access to safe water, sanitation facilities, and hygiene practices in schools. These include the Water Supply Sanitation Sector Reform Programmes (WSSSRP), the Sanitation, Hygiene and Water in Nigeria (SHAWN) projects, the Partnership for Expanded Water Supply, Sanitation and Hygiene (PEWASH) Strategy, and the National Roadmap for Eliminating Open Defecation [2, 3].

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Complementing these interventions, the National School Health Policy emphasises the importance of maintaining a healthful school environment by providing adequate gender-sensitive toilet facilities, a safe water supply, functional drainage systems, and proper waste disposal mechanisms [4]. Recommended standards also include the availability of handwashing stations with soap and the implementation of regular environmental sanitation practices to ensure safe and conducive learning conditions for students and teachers [5, 6].

Despite these policy efforts and intervention programmes, evidence suggests that many schools in Nigeria, particularly in Cross River State, continue to face significant environmental hygiene challenges. Reports indicate that only a small proportion of public secondary schools meet basic WASH standards, with deficiencies in sanitation facilities, handwashing infrastructure, water supply, and environmental cleanliness [7]. Studies conducted in Cross River State further revealed inadequate availability and accessibility of school health facilities, equipment, and personnel, while recent reports continue to describe poor environmental sanitation and limited access to functional hygiene facilities across many schools [8, 9].

Poor environmental hygiene conditions in schools have important implications for child health and nutrition. Inadequate access to safe water, sanitation, and hygiene services increases children's exposure to enteric pathogens, contributing to diarrhoeal diseases, parasitic infections, and other hygiene-related illnesses [10-12]. Repeated infections may impair nutrient absorption, increase metabolic demands, and heighten the risks of malnutrition, stunting, and poor physical development [13]. Poor school hygiene conditions have also been associated with increased absenteeism, particularly among children requiring adequate sanitation for personal and menstrual hygiene, thereby negatively affecting academic participation and performance [14, 15]. Furthermore, limited access to safe and supportive hygiene environments may impair concentration, cognitive functioning, and overall psychosocial well-being among school-aged children [11, 15].

Although considerable attention has been given to WASH interventions globally, reliable empirical data on current environmental hygiene conditions in public secondary schools across many Nigerian settings remain limited. Schools serve not only as centres for academic learning but also as important settings for

developing lifelong hygiene behaviours that can positively influence families and communities [16]. Therefore, obtaining accurate evidence on the status of environmental hygiene conditions in schools is essential for identifying existing gaps, informing policy decisions, and strengthening interventions aimed at safeguarding child health and educational outcomes [17]. Against this background, this study was undertaken to assess the environmental hygiene conditions among students and teachers in public secondary schools in Cross River State, Nigeria.

Statement of the Problem

Despite the recognised importance of Water, Sanitation, and Hygiene (WASH) in promoting safe and healthy school environments, inadequate environmental hygiene conditions remain a major concern in many public secondary schools in Nigeria. Poor access to safe water, functional sanitation facilities, and proper hygiene practices exposes students and teachers to increased risks of hygiene-related illnesses, including diarrhoeal infections, typhoid fever, and other communicable diseases. These conditions may also contribute to school absenteeism, reduced concentration, and diminished overall well-being, particularly among vulnerable school populations.

In Cross River State, several policy initiatives and school-based WASH interventions have been introduced to improve sanitation and hygiene conditions in public schools. However, available reports continue to indicate deficiencies in essential hygiene infrastructure, including inadequate toilet facilities, poor waste disposal systems, limited handwashing facilities, and unsatisfactory environmental cleanliness across many schools. Despite these concerns, empirical evidence on the current environmental hygiene conditions within public secondary schools in the State remains limited.

Furthermore, while existing studies have examined aspects of school health services and WASH provision in selected contexts, there is insufficient evidence regarding the actual environmental hygiene conditions, hygiene knowledge, and hygiene practices of both students and teachers in public secondary schools in Cross River State. Without such evidence, it becomes difficult for policymakers, school administrators, and health stakeholders to identify critical gaps and implement targeted interventions to improve school hygiene conditions and safeguard child health. Against

this background, this study was undertaken to assess environmental hygiene conditions, hygiene knowledge, and hygiene practices among students and teachers in public secondary schools in Cross River State, Nigeria.

Purpose of the Study

The purpose of this study was to assess the environmental hygiene conditions, hygiene knowledge, and hygiene practices among students and teachers in public secondary schools in Cross River State, Nigeria.

Research Questions

1. What are the environmental hygiene conditions for students and teachers in the public secondary schools?
2. What is the extent of students' and teachers' hygiene knowledge in the public secondary schools?
3. What is the extent of students' and teachers' hygiene practices in the public secondary schools?

LITERATURE REVIEW

Empirical studies on school environmental hygiene and WASH-related practices in Nigeria have highlighted persistent challenges in the availability of sanitation facilities, hygiene knowledge, and hygiene behaviours among school populations.

Environmental Hygiene Conditions in Schools

Evidence suggests that environmental hygiene conditions in many Nigerian schools remain inadequate. For instance, [17] investigated helminthiasis among school children in relation to hygiene conditions in primary schools and reported poor sanitary conditions across the schools studied. Most pupils indicated that school toilets were unclean, while many also reported the presence of bushes, litter, and improperly disposed waste within school compounds. These findings suggest that many school environments may not provide safe and health-supportive conditions for learners and staff.

Hygiene Knowledge among Students and Teachers

Studies examining hygiene-related knowledge among students and school personnel have reported mixed findings [18] assessed knowledge of sanitation and hygiene services among school administrators and

found that only a small proportion demonstrated good knowledge, while the majority exhibited average or poor understanding of available school health services. Similarly, [19] reported that although slightly more than half of primary school teachers demonstrated good knowledge of school health services, a substantial proportion still had poor knowledge.

Among students, [20] found that most secondary school students possessed good oral health knowledge, with over 90% demonstrating adequate understanding of oral hygiene practices. However, [19] reported contrasting findings, observing that female secondary school students had below-average knowledge of personal hygiene related to menstrual hygiene management. These inconsistencies suggest that while some aspects of hygiene knowledge are relatively well understood, important knowledge gaps remain among both students and educators. Further evidence from [21] showed that school principals demonstrated a high level of knowledge of school health services, suggesting that school leadership may have greater awareness of hygiene-related issues than students and some teaching personnel.

Hygiene Practices among Students and Teachers

Despite some evidence of adequate hygiene knowledge, actual hygiene practices among school populations often remain suboptimal [22]. An examination of handwashing practices among Nigerian secondary school students revealed very poor levels of engagement in proper hand hygiene behaviours. Similarly, [23] found that only a small proportion of primary school pupils demonstrated good hygiene practices, while nearly half exhibited poor hygiene behaviours related to personal cleanliness. Among teachers, [24] reported generally favourable attitudes and positive dispositions toward waste disposal practices, suggesting a stronger commitment to hygiene maintenance among school personnel than among students. However, positive perceptions may not always translate into adequate school-wide hygiene outcomes where environmental infrastructure remains insufficient.

Research Gap

Existing studies indicate persistent deficiencies in school environmental hygiene conditions, variable levels of hygiene knowledge, and generally poor hygiene practices among students in Nigerian schools. While previous research has examined isolated

aspects of sanitation facilities, hygiene knowledge, and hygiene behaviours, there remains limited empirical evidence specifically addressing the combined assessment of environmental hygiene conditions, hygiene knowledge, and hygiene practices among both students and teachers in public secondary schools in Cross River State, Nigeria. This study, therefore, sought to fill this gap by providing current evidence to inform decisions aimed at improving school hygiene conditions and promoting better child health and educational outcomes.

METHODOLOGY

This study adopted a cross-sectional descriptive survey design, which was considered appropriate for assessing the environmental hygiene conditions, hygiene knowledge, and hygiene practices among students and teachers in public secondary schools. The study was conducted in Cross River State, Nigeria, which comprises 18 Local Government Areas (LGAs). The study population comprised 21,092 respondents: 4,430 secondary school teachers and 16,662 Senior Secondary Two (SS2) students in public secondary schools across the State. SS2 students were selected for their relative maturity and presumed familiarity with school sanitation and hygiene, while teachers were included to provide institutional perspectives on environmental hygiene practices and school WASH conditions.

A simple random sampling technique was employed to ensure representativeness. First, two public secondary schools were randomly selected from each of the 18 LGAs, resulting in a total of 36 schools. Thereafter, teachers and SS2 students were randomly selected from each sampled school. The sample size was determined using the Krejcie and Morgan (1970) table [25]. Based on the study population of 21,092, a minimum sample size of 377 respondents was required. However, to minimise the effects of possible non-response, attrition, and incomplete questionnaire returns, the sample size was increased by approximately 77%, resulting in a final sample size of 668 respondents, comprising 528 students and 140 teachers. All 668 questionnaires were properly completed and returned, yielding a 100% response rate, as they were administered and retrieved immediately on-site.

Data were collected using a structured questionnaire titled Water, Sanitation and Hygiene Conditions Questionnaire for Public Secondary Schools

(WASHCQPSS). The instrument was designed to assess three major domains: environmental hygiene conditions, hygiene knowledge, and hygiene practices, with emphasis on factors relevant to child health outcomes such as infection prevention, school attendance, and general well-being. The instrument underwent face and content validation by experts in Educational Measurement and Evaluation and Environmental Health Education at the University of Calabar. The validation process focused on item clarity, relevance, construct alignment, and appropriateness for measuring the intended variables. Ambiguous or overlapping items were revised or removed to improve the instrument's overall quality. The reliability of the instrument was determined using Cronbach's Alpha coefficient. The overall reliability coefficient obtained was 0.90, indicating a high level of internal consistency. Subscale reliability coefficients were also satisfactory: Environmental Hygiene Conditions ($\alpha = 0.85$), Hygiene Knowledge ($\alpha = 0.89$), and Hygiene Practices ($\alpha = 0.87$).

Data were analysed using descriptive and inferential statistics. Mean scores and standard deviations were used to answer the research questions and determine general response patterns regarding environmental hygiene conditions, hygiene knowledge, and hygiene practices. A criterion mean of 2.50, based on the midpoint of the 4-point Likert response scale, was used as the benchmark for interpreting respondents' ratings. In addition, an independent-samples t-test was employed to test the hypotheses regarding gender differences among respondents at the 0.05 level of significance.

Ethical approval for the study was obtained from the Research Ethics Committee, University of Calabar (Approval No.: UNICAL/REC/2024/017). Because the study involved minors (SS2 students below 18 years of age), written parental consent and institutional approval were obtained through the participating schools prior to data collection. Informed consent was also obtained from all participants. Participation was voluntary, and respondents were assured of confidentiality and anonymity. All data collected was securely stored and used solely for research purposes.

RESULT

Section A: Demographic Data Analysis

Table 1 reveals that the total number of students that took part in the study was five hundred and twenty-

Table 1: Gender and Location of the Sampled Respondents

Gender/Students		Total	Location		Total
Male	Female		Urban	Rural	
245	283	528	255	273	528
56	84	140	65	75	140

eight (528), out of which two hundred and forty-five (245) were males, while two hundred and eighty-three (283) were females. The location of the student respondents also revealed that 255 lived in the urban area, while 273 lived in the rural area. The demographic results also reveal that of the 140 teachers who took part in the study, 56 were male and 84 were female. 65 of the teachers lived in the urban area, while 75 lived in the rural area.

Section B: Data Analysis

The results in Table 2 show that environmental hygiene conditions in public secondary schools are generally poor. This is evident in the mean ratings for both students and teachers on all items, which are below the criterion mean of 2.50, indicating disagreement with the items (items 1-10). This implies that the school compound is not free of litter and solid waste; there are open refuse heaps within the school premises, among other things. Moreover, the grand mean for both students ($Mean = 2.19$, $SD = 0.94$) and teachers ($Mean = 2.42$, $SD = 0.88$) demonstrates low levels of adequacy in waste management, sanitation

facilities, drainage systems, and vector control. This can be interpreted to mean that most schools lack the basic WASH infrastructure required for a safe learning environment.

The results in Table 3 indicate a high level of hygiene knowledge among both students and teachers, as indicated by their respective mean ratings, which are above the criterion mean of 2.50 across all items. The grand mean ratings for students ($Mean = 3.28$, $SD = 0.77$) and teachers ($Mean = 3.61$, $SD = 0.63$). This shows that the respondents demonstrated high knowledge of personal hygiene, disease prevention, and sanitation practices, suggesting that knowledge of WASH principles is high among both students and teachers.

The results in Table 4 indicate that, despite high knowledge levels, hygiene practices were only moderate among teachers ($Mean = 2.94$, $SD = 0.88$) and low among students ($Mean = 2.45$, $SD = 0.97$), as reflected in their grand mean ratings. This suggests inconsistent adoption of hygiene behaviours, particularly handwashing and personal sanitation practices, among students and teachers.

Table 2: Mean and Standard Deviation on the Environmental Hygiene Conditions in the Public Secondary Schools for Students and Teachers

S/No.	Item statements	Students n = 528		Teachers n = 140	
		Mean	Std. Dev.	Mean	Std. Dev.
1.	The school compound is free from litter and solid waste.	2.18	0.91	2.42	0.88
2.	There are no open refuse heaps within the school premises.	2.11	0.95	2.36	0.9
3.	The school environment is free from overgrown bushes.	2.34	0.89	2.41	0.87
4.	There is proper disposal of urine and faeces within designated facilities.	2.27	0.93	2.38	0.85
5.	There are no stagnant water pools within the school during rainy periods.	2.20	0.97	2.44	0.92
6.	Drainage systems in the school are functional and not blocked.	2.31	0.9	2.47	0.86
7.	The school has adequate and well-maintained drainage facilities.	2.25	0.92	2.43	0.88
8.	There is minimal presence of mosquitoes during school hours.	2.10	0.96	2.39	0.91
9.	The urinal facilities are clean and hygienic.	2.05	0.98	2.47	0.89
10	The toilet facilities are clean and usable.	2.08	0.94	2.45	0.87
	Grand Mean	2.19	0.94	2.42	0.88

Table 3: Mean and Standard Deviation on Extent of Students and Teachers' Hygiene Knowledge in the Public Secondary Schools

S/No.	Item statements	Students n = 528		Teachers n = 140	
		Mean	Std. Dev.	Mean	Std. Dev.
1.	Maintaining personal cleanliness is essential for good health.	3.42	0.68	3.71	0.59
2.	Keeping the environment clean helps prevent diseases.	3.35	0.72	3.68	0.61
3.	Regular brushing of teeth is important for oral health.	3.21	0.80	3.55	0.66
4.	Wearing clean clothes promotes hygiene.	3.48	0.70	3.74	0.58
5.	Wearing clean underwear is important for personal hygiene.	3.12	0.85	3.69	0.60
6.	Keeping nails short and clean helps prevent infections.	3.26	0.79	3.62	0.65
7.	Keeping hair clean and well-groomed promotes hygiene.	3.29	0.76	3.58	0.63
8.	Proper disposal of nasal mucus prevents disease spread.	3.18	0.83	3.46	0.71
9.	Hand washing with soap after using the toilet prevents infections.	3.51	0.65	3.73	0.55
10.	Drying hands with a clean towel after washing is important.	3.07	0.88	3.41	0.73
11.	Using disinfectants in toilets helps maintain hygiene.	3.15	0.82	3.60	0.64
	Grand Mean	3.28	0.77	3.62	0.63

Table 4: Mean and Standard Deviation on the Extent of Students and Teachers' Hygiene Practices in the Public Secondary Schools

S/No.	Item statements	Students n = 528		Teachers n = 140	
		Mean	Std. Dev.	Mean	Std. Dev.
1.	I wash my hands with soap after defecating.	2.41	0.99	3.02	0.84
2.	I wash my hands with soap after urinating.	2.28	1.01	2.85	0.9
3.	I use toilet tissue after defecating.	2.96	0.95	3.11	0.88
4.	I use toilet tissue after urinating.	2.36	0.98	2.79	0.91
5.	I wash my hands with soap after blowing my nose.	2.21	1.02	2.74	0.94
6.	I wash my hands with soap before eating.	2.33	0.97	2.89	0.88
7.	I wash my hands with soap after playing.	2.45	0.96	2.93	0.87
8.	I wash fruits before eating them at school.	2.61	0.94	3.08	0.85
9.	I rinse my mouth with safe water after eating.	2.19	1.0	2.70	0.92
10.	I drink safe and clean water at school.	2.74	0.91	3.29	0.78
	Grand Mean	2.45	0.97	2.94	0.88

Hypothesis One

There is no significant difference in the mean ratings of environmental hygiene conditions among male and female students and teachers in public secondary schools.

An independent samples t-test was conducted to examine gender differences in environmental hygiene conditions among students and teachers. The results in Table 5 indicate that there were no statistically significant mean differences between male and female

students and teachers about environmental hygiene conditions (students: $t(526) = -0.79$, $p = 0.430$; teachers: $t(138) = -0.82$, $p = .414$). This is evident from the associated probability (p) values of 0.430 and 0.414 for students and teachers, respectively, which were greater than the 0.05 level of significance at which the result was tested. Hence, it was concluded that there is no statistically significant gender difference in environmental hygiene conditions among students and teachers.

Table 5: T-Test Analysis of Difference in the Mean Ratings of Environmental Hygiene Conditions Among Male and Female Students and Teachers in Public Secondary Schools

Gender	Mean	SD	N	df	t-value	Sig.	Decision
Students:							
Male	2.16	0.92	245	526	-0.79	0.430	Not Significant
Female	2.22	0.94	283				
Teachers:							
Male	2.41	0.86	56	138	-0.82	0.414	Not Significant
Female	2.48	0.89	84				

Key: N = Number of Respondents, *df* = degree of freedom.

Table 6: T-Test Analysis of Difference in the Mean Ratings of Hygiene Knowledge Among Male and Female Students and Teachers in Public Secondary schools

Gender	Mean	SD	N	df	t-value	Sig.	Decision
Students:							
Male	3.22	0.79	245	526	-1.79	0.074	Not Significant
Female	3.34	0.75	283				
Teachers:							
Male	3.52	0.66	56	138	-1.47	0.144	Not Significant
Female	3.68	0.61	84				

Key: N = Number of Respondents, *df* = degree of freedom.

Hypothesis Two

There is no significant difference in the mean ratings of hygiene knowledge among male and female students and teachers in public secondary schools.

To test for gender differences in hygiene knowledge among male and female students and teachers in public secondary schools, an independent-samples t-test was conducted. The results, as shown in Table 6, reveal that there were no statistically significant gender differences in hygiene knowledge among students and teachers (students: $t(526) = -1.79$, $p = 0.074$; teachers:

$t(138) = -1.47$, $p = 0.144$). This is because the associated probability (p) values of 0.074 and 0.144 for students and teachers, respectively, were greater than the 0.05 level of significance at which the test was conducted. Thus, there is no statistically significant gender difference in hygiene knowledge among both students and teachers.

Hypothesis Three

There is no significant difference in the mean ratings of hygiene practices among male and female students and teachers in public secondary schools.

Table 7: t-Test Analysis of Difference in the Mean Ratings of Hygiene Practices Among Male and Female Students and Teachers in Public Secondary Schools

Gender	Mean	SD	N	df	t-value	Sig.	Decision
Students:							
Male	2.38	0.98	245	526	-1.67	0.096	Not Significant
Female	2.51	0.95	283				
Teachers:							
Male	2.88	0.90	56	138	-0.66	0.510	Not Significant
Female	2.98	0.86	84				

Key: N = Number of Respondents, *df* = degree of freedom.

Table 7 indicates that an independent-samples *t*-test was also conducted to examine gender differences in hygiene practices among students and teachers. The results show that there were no statistically significant differences in mean hygiene practices between male and female students and teachers (students: $t(526) = -1.67, p = .096$; teachers: $t(138) = -0.66, p = .510$). This is evident in the associated probability (*p*) values of 0.096 and 0.510 for students and teachers, respectively, which were greater than the 0.05 level of significance at which the results were tested. There is no significant gender difference in hygiene practices among students and teachers.

DISCUSSION

The findings of this study are discussed in relation to the research questions and hypotheses under the following themes: environmental hygiene conditions, hygiene knowledge, and hygiene practices among students and teachers in public secondary schools.

Environmental Hygiene Conditions in Public Secondary Schools

The findings of this study revealed that environmental hygiene conditions in public secondary schools in Cross River State were generally poor and rarely conducive to safe teaching and learning. This suggests that many schools continue to operate under environmental conditions that may compromise the health, comfort, and well-being of both students and teachers. This finding is consistent with previous studies. For instance, [11] reported that many Nigerian secondary schools were characterised by waste littering and widespread open dumping within school compounds. Similarly, [26] found that schoolchildren perceived their toilet facilities as unclean and reported the presence of bushes, litter, and poorly managed waste in their school environments. Likewise, [9] documented poor sanitation conditions in schools, including offensive odours, dirty toilet floors, visible faecal contamination, inadequate water supply, and the absence of functional handwashing facilities.

The persistence of these poor environmental hygiene conditions raises important concerns for child health, as inadequate sanitation environments may increase exposure to communicable diseases such as diarrhoea, typhoid fever, and other hygiene-related infections. Poor school environmental conditions may also negatively affect students' concentration, school attendance, and overall educational experience. These

findings underscore the urgent need for improved sanitation infrastructure and stronger environmental hygiene management in public secondary schools.

Hygiene Knowledge among Students and Teachers in Public Secondary Schools

The study revealed that both students and teachers demonstrated relatively high levels of hygiene knowledge, although teachers showed slightly higher levels of awareness than students. This suggests that respondents generally possess an adequate understanding of basic hygiene principles and the importance of maintaining healthy sanitation practices. The finding among students aligns with [19], who reported high levels of oral health knowledge among Nigerian secondary school students. However, it contrasts with [20], who found below-average personal hygiene knowledge among female secondary school students, and with [27], who reported limited knowledge of sanitation and hygiene services among school respondents. These differences may reflect variations in study context, measurement focus, and exposure to hygiene education programmes.

Similarly, the high level of hygiene knowledge observed among teachers supports earlier findings by [21], who reported that school principals possessed strong knowledge of school health services, and by [22], who found that many teachers demonstrated adequate understanding of sanitation-related health practices. Teachers' relatively higher knowledge levels may be attributed to their professional training, greater life experience, and increased exposure to health-related information. Despite encouraging levels of hygiene knowledge, the findings suggest that knowledge alone may not be sufficient to ensure appropriate hygiene behaviour, particularly among students. This highlights the need for school-based interventions that go beyond awareness-raising to emphasise practical behaviour change and sustained hygiene habits.

Hygiene Practices among Students and Teachers in Public Secondary Schools

The findings of this study indicate a clear disparity in hygiene practices between students and teachers. Although students demonstrated relatively good knowledge of hygiene, their actual hygiene practices were generally poor. Many students reportedly engaged inconsistently in appropriate hygiene behaviours, including proper waste disposal and the

use of designated sanitation facilities. This finding is consistent with [24], who reported that only a small proportion of Nigerian primary school pupils demonstrated good hygiene practices, while nearly half exhibited poor hygiene habits. Similarly, [22] found that hand washing practices among Nigerian secondary school students were unsatisfactory. These findings suggest that knowledge does not always translate into behaviour, particularly when environmental support systems such as clean facilities, water supply, and regular supervision are inadequate.

In contrast, teachers demonstrated comparatively better hygiene practices, including more responsible waste disposal and greater adherence to sanitary behaviours. This may reflect stronger personal discipline, professional responsibility, and better understanding of health-promoting behaviours. These findings are indirectly supported by [26], which found high levels of school health awareness among educational personnel. The disparity between students' hygiene knowledge and their actual practices highlights an important challenge in school health promotion. Without consistent reinforcement, supervision, and adequate sanitation infrastructure, students may struggle to adopt and sustain appropriate hygiene behaviours. Poor hygiene practices among students may increase their vulnerability to infectious diseases, contribute to absenteeism, and undermine their overall health and academic engagement.

CONCLUSION

Based on this study's findings, it was concluded that environmental hygiene conditions in public secondary schools in Cross River State are generally poor for both students and teachers. The study further revealed that although both students and teachers demonstrated relatively high levels of hygiene knowledge, students exhibited comparatively poor, inconsistent hygiene practices, whereas teachers demonstrated better hygiene practices. The findings suggest that many public secondary schools still lack adequate sanitation and hygiene facilities to support a safe, health-promoting learning environment. Poor environmental hygiene conditions may increase students' and teachers' exposure to hygiene-related illnesses and may negatively affect school attendance, concentration, wellbeing, and overall academic performance. Inadequate sanitation infrastructure may also undermine efforts to translate hygiene knowledge into consistent healthy behaviours, particularly among students. These findings have important implications

for the education and health sectors, as safe and hygienic school environments are essential for promoting students' health, protecting staff wellbeing, and supporting effective teaching and learning. There is therefore an urgent need for government, school administrators, and other relevant stakeholders to strengthen environmental hygiene conditions in public secondary schools through improved sanitation infrastructure, sustained hygiene education, and effective monitoring of school hygiene practices.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Government, through the Ministries of Education, Health, and Environment, should ensure the provision and maintenance of essential sanitation and hygiene facilities in public secondary schools, including functional toilets, clean water supply, handwashing stations, waste disposal systems, and proper drainage infrastructure.
2. School administrators should establish regular environmental hygiene monitoring and supervision mechanisms to ensure that sanitation facilities remain clean, functional, and accessible to both students and teachers.
3. Practical hygiene education programmes should be strengthened in schools to complement students' existing hygiene knowledge and promote consistent positive hygiene behaviours, particularly in handwashing, waste disposal, and proper use of sanitation facilities.
4. Teachers and school health personnel should be encouraged to serve as role models and actively reinforce hygiene practices through continuous guidance, demonstrations, and student engagement activities.
5. Periodic school-based sanitation audits and WASH assessments should be conducted by relevant authorities to identify gaps, monitor compliance with national school health standards, and guide evidence-based interventions.
6. Partnerships with community stakeholders and development agencies should be strengthened to support sustainable improvements in school

environmental hygiene and promote healthier learning environments for students and teachers.

APPROVAL FOR PUBLICATION

All research activities were reviewed and approved by the authors for publication.

AVAILABILITY OF DATA AND MATERIALS

The data used and/or analysed during the current study are available from the corresponding author on reasonable request.

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CONFLICT OF INTEREST

The authors acknowledge that there is no conflict of interest.

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