

Review Paper

The level of implementation of water, sanitation, and hygiene (WASH) practices among the public basic schools in Ghana

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ABSTRACT

Water, sanitation and hygiene practices (WASH) have been a major challenge facing many basic schools in Ghana for many decades. The school authority have made a number of complaints to the Ghana government through the Ministry of Education in relation to the inadequate potable water, sanitation facilities and hygiene practices in basic schools which the government has remained silent on. The aim of this study was to assess the level of implementation of Water, sanitation and hygiene practices in basic schools in the Sunyani East Education Directorate. Both qualitative and quantitative data were collected using questionnaires and interviews. The results indicate that hygiene and sanitation facilities available in schools under study included urinals, toilets, handwashing materials and solid waste disposal facilities. It was revealed that wooden slap pit latrine toilet was present in all schools except Methodist school which has cemented slaps. There were absence of toilet rolls, tap facilities and hand washing soap in all schools visited. The pupils fetched water from neighbouring houses and used it. The study recommends that the Parent-Teacher Association, School Management Committee, District Education Directorate and Ghana Education Service should team up to provide these essential facilities to basic schools in Sunyani East.

Key words: hygiene, level of implementation, public basic schools, sanitation, water

HIGHLIGHTS

- Government provides sanitation and hygiene facilities.
- PTA to collect minimum levies to support the provision of WASH.
- Coordinator should bring key stakeholders together in the hygiene and sanitation promotion in all public schools.
- Stakeholders should together to improve existing sanitary facilities in public schools.
- Schools do not have sanitary facilities such as toilets, urinals and handwashing materials.

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GRAPHICAL ABSTRACT



A pupil at school

A pupil practicing hygiene

1. INTRODUCTION

Globally, many countries such as Japan, Canada, Finland and Germany have implemented and been practicing water, sanitation, and hygiene (WASH) practices in their public schools. In this regard, [UNICEF \(2018\)](#) revealed that the promotion and participation of WASH practices among basic school pupils will promote positive hygiene behavior which can reach out to families and the larger community. The research conducted by [Kanyangarara *et al.* \(2021\)](#) revealed that there are multiple positive effects on pupils when WASH is well articulated in basic schools by providing safe drinking water, building good sanitary facilities and establishing appropriate hygiene habits. When these facilities are provided in basic schools, there will be improved primary school attendance, health and cognitive development. In order to promote hygiene and quality education the world over, there is a need for international support and the provision of requisite interventions to ensure sustainable and equitable access to basic sanitation services and safe water. Improved school WASH conditions may reduce pupils' absenteeism by providing services and a learning environment that appeals to children, specifically girls who are menstruating without facilities for personal hygiene, and by reducing illness transmission ([Shrestha *et al.* 2020](#)). Because of these health and educational benefits, national governments and multilateral agencies such as the United Nations Children's Emergency Fund (UNICEF) have emphasized frequent monitoring of WASH key indicators in schools to target resources and programmatic interventions to improve coverage ([Campbell *et al.* 2018](#); [Valcourt *et al.* 2020](#)).

In African countries like Kenya, Nigeria, Togo and others have partnered the international donors and the Ministry of Education, and the Ministry of Health to provide WASH facilities in basic schools by way of incorporating the Child-Friendly Healthy School Initiative (CFHSI). This initiative intended to provide a conducive environment to support quality education in Africa. According to [Kanyangarara *et al.* \(2021\)](#), the Implementation of the CFHSI has strengthened and sustained the existing efforts of WASH in schools by creating overall awareness of the importance of WASH in schools, stimulating a positive environment to advocate for improved WASH in schools and more importantly changing social norms, making unhealthy and unhygienic schools unacceptable.

The rights to education and health are significant and recognized in the Ghanaian constitution. This was emphasized by the current Sustainable Development Goals 4, 6 and 10 which are related to providing access to basic education, reducing child mortality, improving water and sanitation and promoting gender equality and inclusivity ([Chard & Freeman 2018](#); [United Nations Children's Emergency Fund \(UNICEF\). 2018](#); [Giné-Garriga *et al.* 2021](#)). The government of Ghana should provide a conducive environment and sustainable school water, sanitation and hygiene facilities to improve the health and wellbeing of school pupils in Ghana. The research conducted by [McMichael \(2019\)](#) suggests that providing basic schools with safe drinking water, enhanced sanitation facilities and hygiene education that encourage the development of good health is critical. It must be highlighted that there is a positive relationship between poor sanitation, polluted water and illnesses. [McMichael \(2019\)](#) reiterated that poor environmental conditions in school can quickly spread illnesses especially when

school children are close together in classrooms for many hours in a day. The infected schoolchildren can transmit the disease to their household members (Chard *et al.* 2019).

The motivation to build and use toilets in the homes of children depends on having successful, well-maintained toilets within the study schools (Dakhode & Gaidhane 2021; Haque & Freeman 2021). The basic schools of Sunyani East District lack proper knowledge, water and sanitation facilities, privacy, and sanitary pads (leading girls to use and reuse pieces of cloth) and all these hinder proper menstrual hygiene practices. The government of Ghana has failed to provide WASH facilities in many basic public schools attributing it to inadequate funds. This can compromise the health and the quality of education of adolescent girls in the study schools. According to Yu *et al.* (2019), if adolescent girls (and female teachers) attend schools during their menstruation, the availability of gender-appropriate toilets and water supplies is essential for girls to comfortably change and dispose sanitary pads and clean themselves in privacy. The development of implementation manuals for schools and other stakeholders is limited in the study of schools. Thus, the implementation and the evaluation of WASH facilities in basic schools of Sunyani East District remain largely unexamined. This study answers the following questions: (1) what type of WASH facilities are available in the public basic schools in Sunyani East? (2) To assess the state (functionality) of water, sanitation and hygiene facilities in the schools.

2. MATERIALS AND METHODS

2.1. Study area description

The study was conducted in Sunyani East Municipal, Bono Region, Ghana. Sunyani East Municipal, with its capital being Odumase, is one of the 27 Districts in the Brong Ahafo Region of Ghana. It was established by Legislative Instrument (LI) 1874 of 1988. Odumase serves as both the traditional and administrative capital of Sunyani East Municipal. The town is strategically located where roads from Sunyani, Kwatire, Adentia and Seikwa meet as revealed in Figure 1. It is located

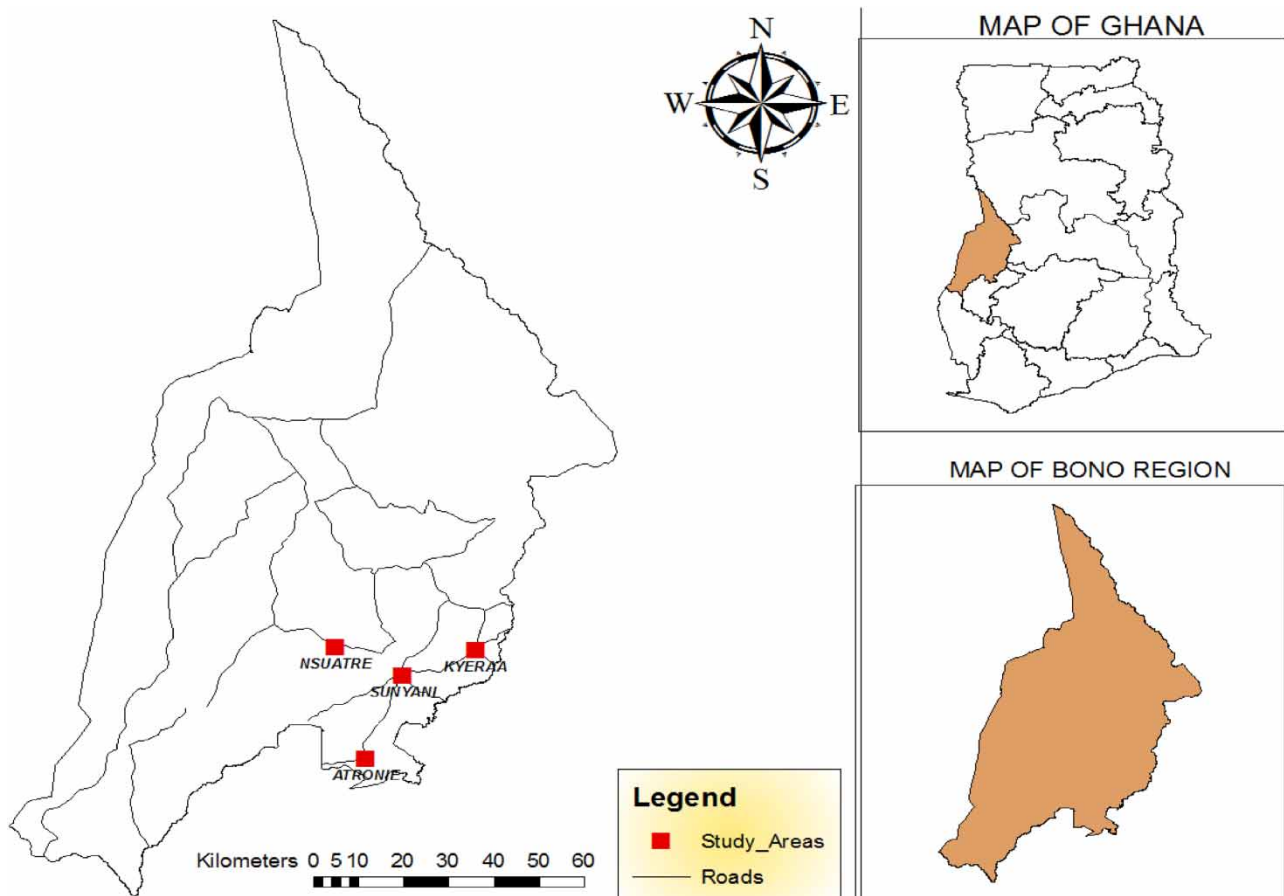


Figure 1 | Map of Sunyani East Municipality Showing the Study Areas. Sources: Sunyani Municipal Assembly, 2022.

between Latitude 7°15'S and 8°00'N and Longitude 2°25' E and 2°50'W. The Municipality shares boundaries with Sunyani West District to the South-West, North-West by Tain and Jaman District. The municipality has a total land area of 1,653 km². The 2021 population census puts the population at an estimated 75,366 people residing in the town of Sunyani East Municipal (Ghana Statistical Service 2021). The Municipality can boast of both public and private educational institutions at all levels such as basic schools, senior high schools and tertiary institutions. The Municipality has fourteen basic public schools, seven private schools, three senior schools and one university.

2.2. Study area selection

The choice of Sunyani East Municipal was motivated by my observation of the water and sanitation conditions of some public basic schools in the study area as the researcher has lived in the community for quite a considerable number of years. Access to WASH facilities in the selected schools is woefully inadequate and has caused a number of health problems such as skin rashes, diarrhea and malaria as well as abysmal academic performance.

2.3. Research design

A cross-sectional design was adopted for this study because the researcher wanted to know the current situation at hand at the time of conducting the research.

2.4. Target population

Population as contended by Vally *et al.* (2019) is a group of people or objects with common characteristics in which the researcher is interested. For the purpose of this study, the Population was drawn from government/public officials, schools, community, and private sector. Those that are in charge of basic schools in Sunyani East Municipal and are concerned with the provision and maintenance of water and sanitation in basic schools as stipulated in the GES-WASH Manual, (2020) were also considered.

2.5. Sampling techniques and procedure

The study population was stratified by broadly putting the target population into four categories, namely; first, the public officials who are responsible for the smooth provision and implementation of sanitation and hygiene practices must be up and doing in order to ensure that the wellbeing of school children is paramount. The day-to-day activities of WASH in the school environment included five public servants (three District School Health and Education Program Coordinators and two District Environmental Health Officers). The second group of participants involved people whose responsibilities are to see to the day-to-day running of the school and its effective management and supervision. This includes both the educators and the learners as well (heads, teachers and school prefects). The third category of stakeholders were members from the communities in which the schools are situated and who have an interest in what goes on in the school environment. The parent-teacher association and the school management committee chairmen were selected from each school in the Sunyani East Education Directorate. The fourth and last group of this study was the private sector. Religious bodies, NGOs, philanthropists and other private companies that support and ensure that there is effective implementation of WASH in basic schools were included in this group.

Thakadu *et al.* (2018) remind us that 'sampling in qualitative research is neither statistical nor purely personal.' Again, Ezbakhe *et al.* (2019) note that the sampling strategy must be selected to fit the purpose of the study, the resources available, the questions being asked, and the constraints being faced by the researcher. By considering these points, the researcher used non-probability sampling methods to select the schools and stakeholders involved in WASH activities. For the selection of schools, the researcher used a census to invite all the basic schools in the Sunyani East Municipal. The schools selected for the study included Urban Council, High Street, Kantro R/C, Methodist, Presbyterian and Roman Catholic as well as S. D. A and AME Zion. Nursery (pre-school), primary (1–6) and Junior High School (JHS) were the levels covered.

Going forward, the researcher used purposive sampling to select the respondents in the government, community and the private sector category. Purposive sampling focuses on selecting information-rich respondents, the study of whom will illuminate the area in question (Nery *et al.* 2019). Employing purposive sampling allowed me to select people like, the heads, teachers, school prefects, sanitation and health personnel, and the Municipal Environmental Health Officer (DEHO). Their selection was influenced by the aim of the study and also by the aspect of trying to get variations in experiences as far as possible. According to Safari *et al.* (2019), in qualitative research for instance, the participants are carefully selected

for inclusion in order to match the purpose of the research. So the researcher needs to consider the extent to which the sample can generate rich data for the study (Wagner and Pramling Samuelsson 2019).

2.6. Sample size

Table 1 depicts how the 68 respondents were selected from the various categories of stakeholders.

2.7. Sources of data

In order to assess the level of implementation and hygiene practices among public schools, both primary and secondary sources of data were used. The primary sources included all the data that the researcher originally collected from the sample or target population. The secondary data, on the other hand, are data including the Ghana Education Service (GES) WASH manual, journals, articles, paper publications, research works (published and unpublished), books and many others.

2.8. Data collection tools

A mixed method approach (both qualitative and quantitative data collection methods) was used in collecting data for the study. Quantitative data were collected using questionnaires. These tools captured the required data on the status of sanitation and hygiene for each selected school and the category of stakeholders who provided them. The qualitative data for respondents of key stakeholders such as the government, the community and the private sector were collected using key informants interviews. The respondents consist of the Municipal Environment Health Inspector, PTA/MSM executives, Teachers and Head Teachers as well as officials from Health Centers. The questionnaire was the main instrument used for gathering data from students. A closed-ended questionnaire was administered to the prefects of the school or any other available pupil at the school at the time of data collection in each of the eight schools. The in-depth interview was selected as the most appropriate method for gathering primary data from individual participants. On the other hand, interviews and observation were the main instruments used for collecting qualitative data.

2.9. Data analysis and management

2.9.1. Quantitative and qualitative data

After data collection, data was coded and analyzed. Editing involved examining data for errors and omissions after which, corrections were made accordingly where possible. Coding involved organizing data into classes/categories in relation to the themes of the study. After this, interpretations were made before making conclusions. After entering the data using the SPSS program, the computer was used to generate quantitative results including the percentages, frequencies, and averages. The qualitative data collected through interviews and observation were analyzed using quotations and themes.

Table 1 | List of respondents

Categories of respondents A		Total number of respondents
Government/Public Officials	GES.	1
	MA (Environmental Officer)	1
	GHS (Health Officer)	1
School	Head Teacher (One from each school)	8
	Teachers (Three From Each School)	24
	School prefects(Two from each school)	16
Community	SMC/PTA members (One from each school)	8
Private sector	NGOS	2
	Private Companies	2
	Religious Bodies	3
	Philanthropist	2
Total		68

Source: Author's Own Construct, 2022.

GES, Ghana Education Service; MA, Municipal Assembly; GHS, Ghana Health Service; SMC, School Management Committee; PTA, Parent-Teacher Association; NGOS, Non-Governmental Organizations.

3. RESULTS

3.1. Kinds of WASH facilities available in the public basic schools in Sunyani East Municipal

3.1.1. Presence of water in schools

Table 2 depicts that most schools in the District do not have water sources within the school compound or even a 1 km stretched distance except High Street School which has access to water within 70 m stretch. The assessment of water sources available in the eight schools shows that it was only a Roman Catholic school which has one functioning mechanized borehole as its water source. The schools without water sources have to send their pupils to fetch water from the neighborhood which disturbs the school timetable.

The data for the study portrayed that there was pipe water from Ghana Water Company and other mechanized boreholes drilled by the community and the private individuals or organizations which schools without water sources depend on as their sources of water. Fetching water from these sources is not free, it comes with a cost because they have been buying water from the providers. In line with this, a head teacher in a Methodist school lamented during the interview that: *it has always been difficult to wash our hands after eating due to the absence of water sources in the school compound. This situation compares pupils using part of their uniforms as a duster or rag.* In a related development, a teacher in AME Zion school frequently asks pupils to carry water from their homes to school in order to get water to wash their bowls after eating.

3.1.2. Sanitary facilities that exist in basic schools

The data from Table 3 shows that the SHEP policy that required basic schools to have a minimum of one squat, one hole per 50 students has not been implemented in the eight selected schools. It was revealed that there were shortages in sanitation and hygiene facilities in all the schools visited. It has been established by Humphrey *et al.* (2019) that providing adequate and good sanitation facilities enhances the health of pupils and teachers and that has a positive effect on teaching and learning. The number of sanitation facilities available in the sampled schools is shown in Table 3.

Table 2 | Types of water source

Type of water resources	Frequency	Percentage
Borehole	3/8	37.5
Mechanized borehole	2/8	25
Treated water	2/8	25
Well	1/8	12.5
Total	8/8	100

Source: Field Data, 2022.

Table 3 | Sanitation and hygiene facilities in junior high schools

Junior High School	Population			Toilet					
	Boys	Girls	Total	Pit latrine	Flush toilet	Urinal	Hand wash	Anal cleansing	Solid waste disposal
Roman Catholic	75	96	171	Nil	1/1	1/1	2 Basin	Nil	1 Bin
Presby.	110	135	245	1/1	Nil	1/1	1 Basin	Nil	1 Bin
Methodist	85	105	190	1/1	Nil	1/1	2 Basin	Nil	1 Bin
Urban Council	61	78	139	Nil	Nil	1/1	1 Basin	Nil	1 Bin
S.D.A	95	120	215	Nil	Nil	1/1	1 Basin	Nil	1 Bin
Kantro	45	60	105	Nil	Nil	1/1	1 Basin	Nil	1 Bin
AME Zion	70	83	153	1/1	Nil	1/1	1 Basin	Nil	1 Bin
High Street	72	118	190	1/1	Nil	1/1	Nil	Nil	Nil
Total	613	795	1,408	4/8	1/8	8/8	9 Basins	0/8	7/8

Source: Field Data, 2022.

It is evidenced from Table 3 that the eight junior high schools surveyed have a total population of 1,408 (613 boys and 795 girls) sharing only four pit latrines, one flush toilet and nine washing basins. The most worrisome situation is that there was not even a single school with anal-cleansing material on site. Out of the eight schools sampled, seven have solid waste disposal bins on their compound. The town council has not regularly emptied the bins when they become full. However, all eight schools have at least a urinal facility separate rooms for boys and girls and nine handwashing basins for 1,408 pupils which obviously were woefully inadequate.

However, inadequate toilet and urinal facilities in schools have impacted negatively on the JHS students in many ways such as health risks. Without proper toilet facilities, students may resort to open defecation or use inadequate sanitation facilities, leading to increased risks of waterborne diseases such as cholera, diarrhea, and typhoid. Poor sanitation can also contribute to the spread of parasitic infections. Again, the lack of toilets in schools in Ghana can have several significant impacts on school attendance. The absence of toilets in schools can lead to absenteeism, particularly among girls. Girls may miss school during menstruation if there are no private and hygienic facilities available. This can ultimately affect their academic performance and educational outcomes.

It was very crucial to find out from the eight schools selected whether sanitation and hygiene facilities in the primary schools are significantly different from the JHS Schools. To the researcher's amazement, similar conditions in the JHS schools persist in the Primary schools. Table 4 depicts sanitation and hygiene conditions in the selected schools.

It was revealed from Table 4 that with 515 boys and 574 girls, totaling 1,089 pupils in the primary schools in the Sunyani East Municipal, five out of eight schools have pit latrines, and no one has flush toilets and anal-cleansing facilities. At least each primary school has one urinal for separate boys and girls and one solid waste bin. These facilities are not enough for such a huge population of primary schools in the Sunyani East Municipal. With the exception of R/C, handwashing materials such as bowls or basins, were available in all the schools visited. However, few schools have soaps for handwashing. It was revealed that proper and cleansing materials like toilet rolls for pupils' use were unavailable in almost all the schools visited. Contrarily, the absence of these vital facilities in basic schools has resulted in lack of dignity and privacy. The lack of toilets can compromise students' dignity and privacy, particularly for girls. Without proper facilities, they may feel uncomfortable or unsafe attending school, leading to dropout rates. Also, it has an impact on learning. Poor sanitation conditions can create distractions and discomfort for students, affecting their ability to concentrate and learn effectively. A conducive learning environment is crucial for academic success, and inadequate sanitation facilities can hinder this (Table 5).

Another area of water, sanitation and hygiene considered in basic school was pre-school. Out of a total population of 502 nursery pupils, 231 were boys and 271 were girls. It was revealed that all the eight nursery schools visited have a urinal and hand wash facilities. Four out of eight schools had pit latrines, six out of eight schools had anal-cleansing materials and seven out of eight had solid waste disposal bins. However, only one school had a flush toilet thus the Roman Catholic school had all the facilities except flush toilets. Similarly, all WASH facilities were present in Presby. School except flush toilets likewise Methodist school and AME Zion nursery school.

Table 4 | Sanitation and hygiene facilities in primary schools

Junior High School	Population			Toilet		Urinal	Hand wash	Anal cleansing	Solid waste disposal
	Boys	Girls	Total	Pit latrine	Flush toilet				
Roman Catholic	62	76	138	1/1	Nil	1/1	2 Basin	Nil	1 Basin
Presby.	90	102	192	1/1	Nil	1/1	1 Basin	Nil	1 Basin
Methodist	73	95	168	1/1	Nil	1/1	2 Basin	Nil	2 Basin
Urban Council	49	58	107	1/1	Nil	1/1	1 Basin	Nil	1 Basin
S.D.A	84	73	157	1/1	Nil	1/1	2 Basin	Nil	1 Basin
Kantro	32	47	79	Nil	Nil	1/1	2 Basin	Nil	1 Basin
AME Zion	55	57	112	Nil	Nil	1/1	1 Basin	Nil	2 Basin
High Street	70	66	136	Nil	Nil	1/1	1 Basin	Nil	1 Basin
Total	515	574	1,089	5/8	0/8	8/8	8/8	0/8	8/8

Source: Field Data, 2022.

Table 5 | Sanitation and hygiene facilities in nursery schools

Junior high school	Population			Toilet					
	Boys	Girls	Total	Pit latrine	Flush toilet	Urinal	Hand wash	Anal cleansing	Solid waste disposal
Roman Catholic	24	28	52	Nil	1/1	1/1	2 Basin/Soap	Toilet Roll	1 Bin
Presby.	31	42	73	1/1	Nil	1/1	1 Basin/Soap	Toilet Roll	1 Bin
Methodist	35	45	80	1/1	Nil	1/1	2 Basin/Soap	Toilet Roll	1 Bin
Urban Council	43	37	80	Nil	Nil	1/1	1 Basin/Soap	Toilet Roll	1 Bin
S.D.A	19	22	41	Nil	Nil	1/1	1 Basin/Soap	Nil	1 Bin
Kantro	26	18	44	Nil	Nil	1/1	1 Basin/Soap	Toilet Roll	1 Bin
AME Zion	25	36	61	1/1	Nil	1/1	1 Basin/Soap	Toilet Roll	1 Bin
High Street	28	43	71	1/1	Nil	1/1	Basin/Soap	Nil	Nil
Total	231	271	502	4/8	1/8	8/8	8/8	6/8	7/8

Source: Field Data, 2022.

On the other hand, gender disparities are one of the consequences of inadequate WASH facilities in schools in Ghana. Girls are disproportionately affected by the lack of toilets in schools due to their specific hygiene needs. Gender disparities in access to education can widen if girls face additional barriers such as inadequate sanitation facilities. Schools play a crucial role in promoting good hygiene practices among students. However, without proper toilet facilities, it becomes challenging to teach and reinforce hygiene habits, such as handwashing, which are essential for preventing the spread of diseases.

3.1.3. Types of urinal facilities available

Apart from the advocacy of toilet facilities in basic schools, providing urinal facilities for pupils is as important as toilet facilities. There are a lot of inconveniences pupils go through during school hours as a result of inadequate urinal facilities in the schools. Pupils spent several minutes going to the bush to urinate during class' hours. This, in effect, affects pupils' academic achievement negatively. Even those with urinal facilities have only cemented type. It was evidenced from the total population of schools sampled that 50% of the schools use cemented floor urinals whilst 37.5% of the basic schools soaked pits as urinals in the District. It could be emphasized that the condition of both inside and outside soaked pits as urinal is unacceptable and has unhealthy surroundings that produce odor nuisance during the day. The urinal facilities available in the schools are shown in Table 6.

The results show that there were no proper ways of waste disposal in the sampled schools. It was revealed that few schools representing 62.5% have waste bins in their compound whereas 25% of the schools dumped their waste in the nearby bush. Table 7 below shows the actual situation on the ground.

3.1.4. The state (functionality) of WASH facilities in the schools

In this section, the study finds out the conditions of the available water, sanitation and hygiene facilities in the schools. Specific indicators the study looked out for were whether the facility was in good condition and functioning, in regular use, and the surroundings were hygienic for their use (Table 8).

Table 6 | Type of urinal facilities in the school

Kind of urinal facility	Frequency	Percentage
Soaked Pits	3/8	37.5
Cemented Urinal	4/8	50
No Urinal	1/8	12.5
Total	8/8	100

Source: Field Data, 2022.

Table 7 | Types of solid waste disposal facilities available

Solid waste disposal	Frequency	Percentage
Bins/Barrows	5/8	62.5
Pits/Dumping Site	3/8	37.5
No Facility	0/8	0.00
Total	8/8	100

Source: Field Data, 2022.

Table 8 | State of latrines

School	Latrines in good condition and functioning	Latrine in regular use	Feces on the floor of the latrine
Roman Catholic	1/8	1/8	Sometimes
Presby.	1/8	1/8	Sometimes
Methodist	1/8	1/8	Sometimes
Urban Council	Nil	Nil	Nil
S.D.A	Nil	Nil	Nil
Kantro	1/8	1/8	Sometimes
AME Zion	1/8	1/8	Sometimes
High Street	Nil	Nil	Nil

Source: Field Data, 2022.

The observation was made on the state (whether the Latrines were in good condition and functional) of latrines in schools visited during the assessment and the findings revealed that few were effectively functioning. With respect to whether the available Latrines are in regular use, only 3 schools were regularly used. It also emerged from the survey that in some instances feces are found on the slaps or floors of the latrines (Table 9).

On whether the urinals were in good condition and functional, all the schools' urinals were effectively functioning. With respect to whether the available urinals are in regular use, all the schools' urinals were regularly used. Regarding the urinals being cleaned and hygienic, the results indicate that they were to some extent cleaned and hygienic for human use.

4. DISCUSSIONS

4.1. WASH facilities in schools

The provision of safe water and sanitation facilities in schools is the primary component of sanitation and hygiene, according to Madon *et al.* (2018). It is his belief that this is the first step toward a healthy physical learning environment that benefits

Table 9 | State of urinals

School	Urinal in good condition and functioning	Urinal in regular use	Urinal clean and hygienic
Roman Catholic	Yes	Yes	Somehow
Presby.	Yes	Yes	Somehow
Methodist	Yes	Yes	Somehow
Urban council	Yes	Yes	Somehow
S.D.A.	Yes	Yes	Somehow
Kantro	Yes	Yes	Somehow
AME Zion	Yes	Yes	Somehow
High Street	Yes	Yes	Somehow

Source: Field Data, 2022.

both learning and health. In Burgers' opinion, these facilities are not necessarily sustainable or effective by themselves. By using toilet facilities and following appropriate hygiene behavior, people enjoy health benefits. By promoting these practices in schools, hygiene education prevents water and sanitation-related diseases and encourages healthy behavior in future generations. It is therefore not the number of toilet facilities and hand pumps that determine the success of a school hygiene program, but how learners apply sanitation and hygiene practices (Vaz Nery *et al.* 2019; Nalugya *et al.* 2020; WHO 2020).

4.2. Toilet facilities

A study was conducted to determine the availability of water, sanitation facilities and hygiene practices in basic schools in Sunyani East District. Among the schools that were sampled, three (JHS, three in primary and three in kindergarten) had toilet facilities, while the other schools defecate in public toilets or in bushes nearby. There were only three functional pit latrines in both JHS and primary schools. Students at the upper Primary and JHS had access to pit latrines with wooden slabs that were in good condition, hygienic and safe. The GES SHEP policy of 50 persons per squatting hole was not followed at Methodist JHS, which had inadequate toilet facilities. Among the primary and secondary schools, none have flush latrine facilities except Methodist KG.

There was an absence of places of convenience such as flush toilets for both teachers and students in either primary or JHS schools. Most schools used pit latrines, and those without toilet facilities used the nearby public toilets and bushes for convenience. Toilet facilities were generally clean in the schools we visited, and the compound and classrooms were also clean.

4.3. Solid waste disposal

Sunyani East Municipal has donated refuse bins to many of the schools to ensure the collection of refuse before final disposal due to inadequate dumpsites. For safe storage of refuse in basic schools, a teacher at the Methodist JHS suggested that refuse-holding bays with covers be constructed.

During an interview with some head teachers, the researcher found out that the last section of the school for the week usually sweeps the school compound, classrooms, and toilets. In addition, pupils can be required to sweep the compound or classrooms or clean the toilet facilities if they commit certain offenses.

It was highlighted during data gathering that many students littered their compounds with polythene bags and papers due to the unavailability of waste bins, thereby creating an unhygienic environment (Haque & Freeman 2021). According to the head teacher of Presbyterian Nursery and the sanitation teacher at Presbyterian JHS, the provision of waste bins in schools are very essential steps that lead to good sanitation and proper practices of hygiene. It was noted that schools using dust/waste bins have a clean environment, hence reducing the spread of diseases such as cholera caused by flies.

4.4. Handwashing facilities

Students cultivating the habit of practicing personal hygiene such as washing their hands with soap under running water is a very crucial step toward good health. In most Ghanaian schools it may surprise someone to know that there were inadequacies in washing containers, soap and water facilities in almost all the selected schools visited. Very little evidence of handwashing with soap was found. Contrary, 'Veronica container' was available for handwashing. School use is recommended by Clasen & Smith (2019). Handwashing with soap is strongly recommended by both UNICEF and GES, especially before eating and after visiting the bathroom.

There were no soap-based handwashing practices in any of the schools visited. The majority of schools had handwashing facilities, particularly water storage basins or containers. As a follow-up to the survey of pupils and interviews with school heads and teachers, to substantiate the veracity of the information gathered. Some head teachers mentioned that while water accessibility wasn't a problem (there is sufficient water in the vicinity of the school via pipes or boreholes), it was more difficult to fetch the water with containers. It was confirmed by the teachers who said they had no money to buy soap for pupils to wash their hands and that the PTA did not support them in that direction. As other pressing needs compete for the same funds, the government capitation grant is not sufficient as their only source of funding.

According to Musoke *et al.* (2018) and Desye (2021), improved handwashing significantly reduces the two leading causes of childhood mortality-diarrhea diseases and acute respiratory infections. Because handwashing with soap can prevent pathogens from spreading, it can reduce skin infections and trachoma as well. The use of soap for handwashing is considered a do-it-yourself vaccine if promoted broadly enough. Handwashing habits and access to safe water and sanitation at home and in schools must have improved in order to achieve sustainable development goals and targets for reducing child mortality.

4.5. Anal-cleansing materials

As part of the study, pupils were also assessed on the type of anal-cleansing materials they used. It also revealed the absence of proper anal-cleansing materials, such as toilet paper (sanitary). Primary and junior high schools visited did not use toilet rolls for anal-cleansing. Old/used exercise books were the common anal-cleansing material. The pupils lose materials that could serve as reference materials because of these problems. In addition, these anal-cleansing materials aren't burned or cleared daily, thus compounding the soiling of the toilet facilities.

Many primary students did not remember the last time they used toilet paper for anal-cleansing at school during an interview. Several people mentioned newspapers, exercise book sheets and tree leaves as alternative materials for cleaning their anuses. Others also mentioned sticks and stones.

5. MANAGEMENT, OPERATION AND MAINTENANCE FOR SCHOOL WASH

5.1. Government officials

This study refers to government officials who do not run school operations on a daily basis, but whose duties directly affect the school's wellbeing, particularly sanitation and hygiene. Sunyani East Municipal Assembly, Sunyani East Municipal Education Directorate, and Sunyani East Municipal Health Directorate were identified as government agencies.

5.2. Sunyani East Municipal assembly

The GES-WASH model guidelines and the Local Government Act 462 (Amended 2016) both place school infrastructure in the assembly's hands. Sanitation and hygiene are mainly handled by the Municipal Water and Sanitation Team at the assembly level. A DWST consists of individuals from the Environmental Health Unit, the Department of Social Welfare and Community Development, the Works Department, and the Development Planning Unit. DWST provided sanitation facilities for all schools, maintained these facilities, and inspected them.

As the Municipal Environmental Health Officer (DEHO) has never seen such a policy document from GES, he was unable to mention any aspect of the SHEP policy document or any other school sanitation and hygiene document. He demonstrated sufficient knowledge of the district's legal and institutional arrangements for sanitation services. As outlined in section 10(3) of the Local Government Act 462, 1993, district assemblies are responsible for sanitation services delivery

In the Municipal Assembly (MA), no bylaws have been enacted to enforce waste management practices. In order to enforce waste management practices, the MA uses some sections of the Criminal Code, specifically Act 29 1960.

According to him, what happens in the larger community is similar to what happens in schools in terms of sanitation.

'The assembly has also built and supplied a number of sanitation facilities to public basic schools for the past three years. For schools like Methodist Basic School, we constructed pit latrines made of cement slabs. We also distributed dustbins to almost all the schools to help with refuse collection. Some of my officers visit these schools to inspect the condition of these facilities and report to me for an official report'

5.3. Sunyani East Municipal education directorate

The school authorities in charge of the School Health Education Program (SHEP) were familiar with the hygiene and sanitation policies drawn by the Ministry of Education (MoE) and the Ghana Education Service (GES). Due to a lack of resources and logistics, GES finds it difficult to implement sanitation and hygiene policies and programs for schools, as well as monitor those already implemented.

Comparatively, sanitation and hygiene issues are ok in the municipality. As part of the assembly's sanitation facilities, some urban schools have received pit latrines with cemented floors and dustbins. In rural schools, some have wooden slabs and pit latrines whilst others do not have them at all. In times of nature's call, some students rush to their homes to ease themselves whereas others go to the nearby bush to defecate there during class hours. Lack of water in schools is one of the biggest challenges across schools. The little toilet facilities available in some of these schools are so deplorable that students/pupils can easily fall into the pit. Parents are responsible for providing their wards with anal-cleansing materials, so some of these schools have improvised handwashing facilities.

5.4. Sunyani East Municipal health directorate

Stakeholders participating in school sanitation programs were visited by the Ghana Health Service. An interview with the Municipal Public Health Officer revealed that the MoH is responsible for the health of schoolchildren despite the fact

that it is often given low priority compared to clinical services and infant and maternal health. However, teachers or other agents can only provide health education with the MoH's explicit permission. Health and hygiene messages from a project for sanitation, hygiene, and water in schools are coordinated with those from the Ministry of Health and GHS. Health education to these pupils is provided by the municipality with the various health posts in communities. Sanitation and hygiene issues are sensitized and educated to our pupils by our community health officers. Some schools have church service times on Fridays, so we arranged with the authorities to visit them. Health Workers at our communities' health centers and CHPS Compounds visit these schools to provide public health education. We take advantage of National Immunization Weeks to teach students about personal hygiene and sanitation at home, school, and wherever they go.

5.5. School level stakeholders in WASH activities

The head teacher, PTA/SMC executives and students/pupils form an important group of stakeholders that was considered in this study. Their predominant responsibility was to oversee the day-to-day running of the school through proper management practices and supervision.

5.6. Head teachers

During an interview with the Head Teachers, it was revealed that they are indeed responsible for providing sanitation and hygiene facilities since higher authorities are unable to do so. They must either improvise with their limited resources or appeal to assembly authorities and others for help. In my role as headteacher, I have been advocating for sanitation and hygiene facilities in the school. Through the Presiding Member of the assembly, I pushed for the toilet facility to be considered for us. Our church also provided a mechanized borehole for the pupils after we spoke to the Rev father whose jurisdiction the school is situated in. It was said by one head teacher that;

The parents sometimes contribute to purchase some water containers to store water for handwashing during school hours so that pupils will not go out during class hours in search of water to wash their hands. Equally, PTA purchased other handwashing materials like soap for pupils to use it as detergents to reduced bacterial infections

5.7. Pupils

Some of the schoolchildren mentioned that they clean school toilets and urinals in an effort to find out their stake in improving sanitation and hygiene in their schools. Every morning before classes begin, they sweep the classrooms and the school compound and empty dustbins. Additionally, they wash hands at critical times and thoroughly wash fruits before eating.

6. CONCLUSION

In order to change behavior among children and the wider community, schools are the best entry points for hygiene and sanitation activities. In addition, improved sanitation and hygiene are critical for schoolchildren and the community. In order for children to learn in a hygienic environment, schools play a key role. Melariri *et al.* (2019) note that health problems interfere with students' ability to attend school, stay healthy, or take advantage of their educational opportunities. Increasing enrollment, reducing absenteeism, and bringing more girls to school are all benefits of good health. Therefore, the overall health of students will be enhanced or promoted when sanitation and hygiene facilities are provided by the various stakeholders such as the government, teachers, parents, PTA/SMC executive members and NGOs.

It was found that while most schools have some sanitation facilities for ensuring WASH practices, none of the schools visited had flush toilets for teachers and students. Toilet rolls were not used as anal-cleansing material in all schools visited, nor was soap provided for handwashing. There is no money for teachers to buy soap to wash children's hands, according to some teachers. Parents also neglect to help their children practice good hygiene practices, as evidenced by the research finding funding for sanitary facilities was a major challenge.

Conclusion, again, can be drawn from the information and data gathered from the field and presented in this research that unless the identified lacuna of water, sanitation and hygiene is solved by school authorities and other stakeholders, the effective school sanitation and hygiene delivery and practice will remain a tantalizing mirage for many years to come in public basic schools, especially in Sunyani East Municipal. Addressing the issue of inadequate sanitation facilities in schools is crucial for ensuring the health, wellbeing, and educational attainment of students in Ghana. Investments in infrastructure, hygiene education, and policy enforcement are necessary to tackle this challenge effectively.

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DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

CONFLICT OF INTEREST

The authors declare there is no conflict.

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