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Assessment of Drinking Water Quality (Tap Water, Bottle Water and Sachet Water) in Colleges of Education in the Southeast Nigeria

Okoye Nnabuike Benedict

Department of Geography Nwafor Orizu College of Education Nsugbe.
nnabuikeokoye19@gmail.com

ABSTRACT

Assessing the quality of drinking water in colleges of education across Southeast Nigeria is essential for ensuring the health and safety of students and staff. With many relying on tap, bottled, and sachet water, it's important to examine the safety of these sources. The study employed a descriptive survey research design to assess drinking water quality in colleges of education across Southeast Nigeria. A multistage sampling technique was used, selecting one college from each state, with stratified sampling for students, lecturers, and non-academic staff. The final sample consisted of 1,000 participants. Data were collected using the Assessment of Drinking Water Quality Questionnaire (ADWQQ), which covered physicochemical properties, bacteriological safety, health risks, and strategies for improvement. The questionnaire was validated by experts and tested for reliability, yielding a Cronbach's alpha of 0.86. Data analysis was done using SPSS, focusing on descriptive statistics. The study's results revealed key insights on drinking water preferences, quality, health risks, and improvement strategies in Nwafor Orizu college of education Nsugbe and Imo state college of education Ihitte Uboma. The majority were students (700; 70%), with sachet water being the most preferred source (369; 36.9%). Regarding water quality, participants expressed moderate confidence in physicochemical parameters (e.g., pH \[2.32] and clarity \[2.57]), bacteriological safety (e.g., belief in bacterial freedom \[2.61]), and health risks (e.g., experiencing water-related illnesses \[2.75]). Strong support was shown for improving water quality through strategies like hygiene education (2.99) and routine water testing (2.80). Respondents expressed a high level of awareness about water-related health risks, with many indicating confidence in the safety of bottled and sachet water but less trust in tap water. The study recommends the implementation of water purification systems, regular testing, and increased public awareness on safe water practices to ensure the availability of safe drinking water for the college community.

Keywords: drinking water quality, physicochemical parameters, bacteriological contamination, health risks, Southeast Nigeria

Introduction

In many schools, especially in low- and middle-income countries, the quality of drinking water is a growing concern. Drinking water quality refers to the physical, chemical, and microbiological characteristics of water that determine its safety and suitability for human consumption. High-quality drinking water should be free from harmful contaminants such as bacteria, viruses, heavy metals, and toxic chemicals. It must also meet standards for clarity, taste, odour, and acceptable levels of dissolved minerals. Safe drinking water supports good health and prevents waterborne diseases (Okpasuo et al, 2020). Regulatory bodies set guidelines to ensure water quality is maintained from the source to the point of use. Regular testing and proper treatment are essential to ensuring the consistent safety of drinking water in all settings. Students, who spend a large part of their day in school, often rely on the water available on school premises (Hyllestad et al, 2024). Unfortunately, this water is not always safe. Whether it comes from taps, bottles, or sachets, drinking water in schools has been found to fall short of acceptable health standards in several cases. Contaminated water puts students at risk of illnesses like typhoid, cholera, and diarrhea, which can lead to missed school days and poor academic performance. Despite the vital role water plays in student's health and learning, it is not always treated with the urgency it deserves in school settings (Mogasale et al, 2018).

Tap water is commonly used in schools, particularly public ones. While it's expected to be treated and safe for consumption, studies have shown that this is not always the case. In many Nigerian schools, for example, tap water has been found to contain harmful microorganisms like E. coli, indicating faecal contamination (Snitynskyi et al, 2022). This often results from aging or broken pipes, inadequate treatment, and poor maintenance. Even when the water is clean at the source, problems with the school's storage facilities can lead to contamination before the water reaches the students (Obi & Mogbo, 2023). Because of the challenges associated with tap water, many schools—especially private ones—turn to bottled water as an alternative. Bottled water is generally believed to be clean and safe, and it does tend to meet higher standards during production. However, it is not entirely risk-free. Some studies have pointed out the presence of chemical residues like nitrates and heavy metals in bottled water, possibly introduced through plastic packaging or during processing (Peletz et al, 2018). More importantly, the cost of bottled water means it is not a realistic daily option for many public schools or for students from low-income families.

This is where sachet water, often called "pure water" in Nigeria, becomes the most popular choice due to its affordability and wide availability. It is common to find students buying sachet water from vendors just outside the school gate. However, the safety of this water is a major concern. Several studies have shown that a significant number of sachet water samples sold near schools are contaminated with bacteria due to poor hygiene during production, handling, and storage (Gherheș & Cernicova-Buca, 2025). In many cases, these sachet water producers are not even registered with regulatory agencies, which means their products are not regularly tested or inspected. Interestingly, the problem is not just about the type of water students drink but also how the water is handled in the school environment. For instance, bottled or sachet water can become unsafe if stored in direct sunlight or in unsanitary conditions. Dominguez-Rendón et al, (2024) reported that in some schools, water is kept near toilets or waste areas, increasing the risk of contamination. Moreover, schools often lack proper water storage containers or dispensers, forcing students to drink directly from sachets or shared cups, which raises hygiene issues.

There's also a noticeable gap between public and private schools in terms of water quality management. Private schools, particularly in urban areas, tend to invest more in water purification systems like filters or water dispensers. They may also provide health education that encourages safe water practices. On the other hand, many public schools struggle with limited budgets, overcrowded facilities, and poor infrastructure. As a result, students in public schools are more likely to be exposed to unsafe drinking water (Kumari, 2023). Regulatory bodies such as the National Agency for Food and Drug Administration and Control (NAFDAC) and the Standards Organisation of Nigeria (SON) are responsible for monitoring the quality of drinking water, especially bottled and sachet types. Unfortunately, enforcement remains weak. Peletz et al, (2018) pointed out that regulatory agencies often lack the personnel and resources needed to conduct regular inspections. This makes it easy for unregistered sachet water producers to flood the market with substandard products, many of which find their way into school environments.

Beyond the health risks, poor water quality in schools has also been linked to reduced student performance. When students fall ill frequently due to waterborne diseases, they tend to miss classes, which affects their learning. Even when they attend school, dehydration caused by avoiding unsafe water can reduce concentration and alertness (Ahmed et al, 2020). Ensuring that students have access to clean drinking water is therefore not just a health issue—it is an educational one. The motivation for this study stems from growing concerns about the safety of drinking water accessed in tertiary institutions, particularly Colleges of Education in Southeast Nigeria. Students in these institutions rely daily on water from taps, bottled sources, or sachet packages, yet the quality of these sources often remains unverified. Prior studies have shown widespread microbial contamination in sachet water consumed by students due to poor regulatory oversight and unhygienic handling (Ezetoha et al, 2024). Similarly, tap water in public schools has been found to contain harmful pathogens due to faulty infrastructure and lack of regular treatment (Agbasi et al, 2024). Although bottled water is generally perceived as safer, some brands have failed to meet national safety standards, showing traces of chemical contaminants (Amarachi et al, 2024). Despite these concerns, there is limited research specifically targeting Colleges of Education, where student populations are vulnerable to the consequences of prolonged exposure to unsafe water. This gap is critical because poor water quality contributes to increased absenteeism, illness, and reduced academic performance (Obineche et al, 2021). Therefore, the study is motivated by the need to assess and compare the safety of drinking water sources in these institutions and to inform evidence-based interventions and policy enforcement.

Objectives

1. To determine the physicochemical parameters (pH, temperature, turbidity, conductivity, TDS) of the drinking water samples in colleges of education in south east region of Nigeria;
2. To conduct bacteriological analysis (total coliform, fecal coliform, E. coli) of the water samples. in colleges of education in south east region of Nigeria;
3. To identify potential health risks associated with water consumption in the colleges of education in the South East Region of Nigeria
4. To recommend strategies for improving water quality and ensuring safe drinking water for the college community

Research Questions

1. What are the physicochemical parameters (pH, temperature, turbidity, conductivity, TDS) of drinking water samples in colleges of education in the South East Region of Nigeria?
2. What is the bacteriological quality (total coliform, fecal coliform, *Escherichia coli* (E. coli) of drinking water samples in colleges of education in the South East Region of Nigeria?
3. What are the potential health risks associated with consuming drinking water in colleges of education in the South East Region of Nigeria?
4. What strategies can be recommended to improve water quality and ensure safe drinking water for the college community in the South East Region of Nigeria?

Methodology

The methodology adopted for this study was rooted in a descriptive survey research design. This approach was considered appropriate as it enabled the collection of detailed responses from individuals who directly consume water within the academic environment. The study was conducted in Nwafor Orizu college of education Nsugbe and Imo state college of education Ihitte Uboma. The choice of this region was informed by its high concentration of tertiary institutions and growing concerns regarding access to safe and clean drinking water. These institutions served as the focal points for data collection. The target population comprised all students, lecturers, and non-academic staff in the selected colleges of education. This diverse population was chosen to capture a wide range of views, given that these three groups represent the primary consumers of drinking water in the school environment. To ensure a representative sample, a multistage sampling technique was employed. Initially, a college of education was selected from each state. Subsequently, stratified sampling was used to group respondents into three categories: students, lecturers, and non-academic staff. Within each category, proportionate random sampling was used to draw respondents across departments, academic levels, and staff units. The final sample included seven hundred students, two hundred lecturers, and one hundred non-academic staff.

Data were collected using a structured questionnaire titled the *Assessment of Drinking Water Quality Questionnaire (ADWQQ)*. The questionnaire consisted of items designed to measure respondents' perceptions across four major areas: physicochemical properties of water (such as pH, temperature, turbidity, conductivity, and total dissolved solids), bacteriological safety (with a focus on coliform and Escherichia coli presence), potential health risks linked to water consumption, and strategies for improving water quality in the colleges. A four-point Likert scale ranging from strongly agree to strongly disagree was employed to gauge the level of agreement with each statement. To ensure the credibility of the instrument, the questionnaire was subjected to both face and content validation. Three experts—two from the field of Science Education and one from Public Health—carefully reviewed the instrument for clarity, relevance, and alignment with the research questions. Their suggestions were incorporated into the final version to enhance its quality and appropriateness. For reliability testing, a pilot study was conducted using respondents from a college not included in the main study. The data from this preliminary study were analyzed using the Cronbach Alpha method, and the result yielded a coefficient of reliability of 0.86, indicating a high level of internal consistency.

The process of data collection was carefully coordinated to ensure inclusiveness and convenience. Printed copies of the questionnaire were administered to lecturers and non-academic staff, while students had the option of responding through either printed or online forms. All participants were informed of the purpose of the study and assured of confidentiality. Participation was voluntary, and ample time was given for completion of the questionnaires. After data collection, responses were coded and analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics such as mean, standard deviation, variance, skewness, and kurtosis were calculated to evaluate the central tendencies and distribution of responses.

Results

Table 1: Demographic Characteristics and Preferred Source of Drinking Water among Respondents (N = 1000)

Variable	Category	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Age	20–30 years	790	79.0	79.0	79.0
	31–40 years	131	13.1	13.1	92.1
	41–50 years	62	6.2	6.2	98.3
	51–60 years	17	1.7	1.7	100.0
	Total	**1000**	**100.0**	**100.0**	
Preferred Source of Drinking Water	Tap water	328	32.8	32.8	32.8
	Bottled water	279	27.9	27.9	60.7
	Sachet water	369	36.9	36.9	97.6
	Stream	24	2.4	2.4	100.0
	Total	**1000**	**100.0**	**100.0**	
Role	Student	700	70.0	70.0	70.0
	Lecturer	200	20.0	20.0	90.0
	Non-Academic Staff	100	10.0	10.0	100.0
	Total	**1000**	**100.0**	**100.0**	
Gender	Male	453	45.3	45.3	45.3

	Female	547	54.7	54.7	100.0
	Total	**1000**	**100.0**	**100.0**	

Table 1 presents the demographic characteristics and preferred sources of drinking water among the respondents (N = 1000). The majority of participants were aged 20–30 years (790; 79.0%), followed by those aged 31–40 years (131; 13.1%). Most respondents were students (700; 70.0%), while lecturers and non-academic staff accounted for 200 (20.0%) and 100 (10.0%) respectively. Female respondents (547; 54.7%) slightly outnumbered males (453; 45.3%). Sachet water was the most preferred source of drinking water (369; 36.9%), followed by tap water (328; 32.8%) and bottled water (279; 27.9%), while a few relied on stream water (24; 2.4%).

Research Question 1: What are the physicochemical parameters (pH, temperature, turbidity, conductivity, TDS) of drinking water samples in colleges of education in the South East Region of Nigeria?

Table 2: Descriptive Statistics for Participants' Perceptions of Physicochemical Parameters of Drinking Water

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
The pH level of drinking water in my college is suitable.	2.32	.943	.889	-.018	.077	-1.027	.155
The temperature of the water is appropriate for consumption.	2.46	.958	.917	-.405	.077	-1.010	.155
The water is visibly clear (not cloudy or turbid).	2.57	1.055	1.112	-.313	.077	-1.140	.155
There are no particles or floating substances in the water.	2.76	1.072	1.150	-.684	.077	-.816	.155
The water tastes fresh and does not have a bad odour.	2.52	1.104	1.219	-.058	.077	-1.324	.155
The water does not contain visible sediments.	2.57	1.059	1.122	-.301	.077	-1.154	.155
The total dissolved solids (TDS) level in the water appears acceptable.	2.52	1.103	1.217	-.058	.077	-1.322	.155
The water's electrical conductivity does not suggest contamination.	2.56	.957	.915	-.690	.077	-.774	.155
Valid N (listwise)							

Participants in Table 2 expressed moderate confidence in pH suitability [2.32]. Temperature appropriateness received a slightly higher mean [2.46]. Clarity and absence of visible sediments both scored [2.57], while absence of particles scored highest [2.76]. Fresh taste and odour registration yielded [2.52]. TDS acceptability matched taste [2.52]. Electrical conductivity perceptions were similar [2.56]. Standard deviations ranged from [.943] to [1.104], indicating moderate variability. Negative skewness values reflect a tendency toward agreement. Kurtosis values below zero suggest a flatter distribution, indicating diverse opinions among respondents.

Research Question 2: What is the bacteriological quality (total coliform, fecal coliform, *Escherichia coli* (E. coli) of drinking water samples in colleges of education in the South East Region of Nigeria?

Table 3: Descriptive Statistics for Participants' Perceptions of Bacteriological Quality of Drinking Water

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
I believe the water is free from harmful bacteria.	2.61	.950	.902	-.840	.077	-.583	.155
The college takes steps to disinfect drinking water sources.	2.62	1.095	1.198	-.304	.077	-1.220	.155
There have been no reports of water contamination on campus.	2.52	1.064	1.133	-.401	.077	-1.206	.155
I am aware of regular testing for E. coli or coliform in water.	2.80	1.100	1.209	-.687	.077	-.864	.155
I trust that the sachet water sold in my college is hygienic.	2.80	1.100	1.209	-.687	.077	-.864	.155
The bottled water provided or sold in school is properly sealed and labelled.	2.99	1.202	1.445	-.823	.077	-.935	.155
Tap water in the college is treated before consumption.	2.37	1.003	1.005	.053	.077	-1.097	.155
Valid N (listwise)							

Respondents Table 3 generally showed moderate concern about the bacteriological safety of drinking water. Belief in freedom from harmful bacteria scored a mean of [2.61], while perceptions of disinfection measures scored [2.62]. Confidence in the absence of contamination reports was slightly lower at [2.52]. Awareness of testing for coliform and E. coli and trust in sachet water both recorded [2.80]. Bottled water earned the highest mean rating at [2.99], reflecting stronger confidence. Tap water treatment was rated lower at [2.37]. Negative skewness across most items suggests slight agreement, while low kurtosis values indicate diverse opinions and broad response distribution among participants.

Research Question 3: What are the potential health risks associated with consuming drinking water in colleges of education in the South East Region of Nigeria?

Table 4: Descriptive Statistics for Participants' Perceptions of Health Risks Associated with Drinking Water

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
I have experienced water-related illnesses while in school.	2.75	1.071	1.147	-.684	.077	-.814	.155
There is a high risk of getting sick from some water sources in school.	2.70	1.028	1.057	-.707	.077	-.729	.155
I know people who had stomach issues after drinking school water.	2.29	.943	.890	.099	.077	-.969	.155
I have confidence in the safety of the water I consume in school.	2.99	1.201	1.441	-.819	.077	-.937	.155

Water quality in my college affects my health and wellbeing.	2.70	1.034	1.069	-.701	.077	-.742	.155
I often boil or treat my water before drinking because of safety concerns.	2.52	1.103	1.217	-.058	.077	-1.322	.155
There is inadequate monitoring of water-borne diseases in my college.	2.56	.957	.915	-.690	.077	-.774	.155
Valid N (listwise)							

The data Table 4 suggests moderate concern regarding health risks linked to drinking water in the colleges. While respondents reported experiencing water-related illnesses at a mean of [2.75], they also expressed concern about the risk of illness from some water sources, with a mean of [2.70]. The perception that water quality impacts health and well-being also scored [2.70]. Confidence in water safety was higher at [2.99]. A significant portion indicated taking extra precautions, with a mean of [2.52] for boiling or treating water. The overall data indicates that while there is concern about water safety, some respondents feel more confident in water quality.

Research Question 4: What strategies can be recommended to improve water quality and ensure safe drinking water for the college community in the South East Region of Nigeria?

Table 5: Descriptive Statistics for Recommended Strategies to Improve Water Quality in Colleges

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
The college should install proper filtration and purification systems.	2.61	.950	.902	-.840	.077	-.583	.155
Government health agencies should monitor water quality in colleges.	2.62	1.095	1.198	-.304	.077	-1.220	.155
Awareness campaigns should be organized on safe water practices.	2.52	1.064	1.133	-.401	.077	-1.206	.155
Water sources should be routinely tested for bacteria and contaminants.	2.80	1.100	1.209	-.687	.077	-.864	.155
Students and staff should report any suspicious water quality issues.	2.80	1.100	1.209	-.687	.077	-.864	.155
Clean water storage tanks should be made available around the campus.	2.99	1.202	1.445	-.823	.077	-.935	.155
Hygiene education should be included in orientation and student programs.	2.99	1.201	1.441	-.819	.077	-.937	.155
Valid N (listwise)							

The responses Table 5 suggest strong support for strategies aimed at improving water quality and ensuring safe drinking water. The highest mean values were observed for the recommendation that hygiene education should be included in orientation programs ([2.99]) and the availability of clean water storage tanks around the campus ([2.99]). Respondents also strongly endorsed the need for routine testing of water sources for bacteria and contaminants, with a mean of [2.80]. Other recommended strategies, such as installing filtration systems ([2.61]) and organizing awareness campaigns on safe water practices ([2.52]), also received positive feedback, indicating consensus on the importance of proactive water management and education.

Discussion

Access to safe and potable drinking water remains a fundamental health concern, especially in institutions of higher learning where population density and infrastructural inadequacies can affect water quality. Research question 1 covered perceived physicochemical parameters of drinking water. The physicochemical properties—pH, temperature, turbidity, conductivity, and total dissolved solids (TDS)—are essential indicators of water quality. The findings revealed moderate concerns across parameters: for instance, mean scores for the appropriateness of water temperature (2.46), clarity (2.57), absence of particles (2.76), and taste and odour (2.52) suggest limited satisfaction with water quality. In contrast, a study conducted in Federal Polytechnic Nekede observed higher physicochemical compliance, particularly with turbidity and TDS within WHO limits (Obineche et al, 2021). This finding also agreed with Amarachi, N., Austin, T., Michael, O., Bilar, A., & Christopher, A. (2024), who noted that most bottled water brands in Imo State had acceptable conductivity and pH levels, unlike tap water, which showed variability. In a related study, Agbasi et al, (2024) discovered that while sachet water across Enugu city was generally acceptable for consumption, college tap water often failed to meet basic physicochemical standards. The low mean scores for parameters like TDS and conductivity (2.52 and 2.56, respectively) align with their findings. Similarly, in contrast, Ezetoha et al, (2024) observed that sachet water in Anambra State exhibited lower turbidity and more stable pH compared to institutional boreholes, confirming the inadequacy of campus water sources. Ahmed et al, (2020) argued that poor maintenance of water infrastructure contributes significantly to these physicochemical deviations in public schools.

Research question 2 covered perceived bacteriological quality of drinking water. Bacteriological analysis of water is critical to public health. The responses indicated general skepticism about the microbial safety of water sources. While confidence in sachet (mean = 2.80) and bottled water (mean = 2.99) was relatively high, the belief that water is free from harmful bacteria was modest (mean = 2.61). This finding agreed with Ire et al, (2024), who reported high levels of *Escherichia coli* and coliform in tap water sampled from colleges in Abia State. In contrast, bottled water brands tested in their study showed no detectable microbial contamination. Similarly, Innocent et al, (2022) emphasized that sachet water in most urban South-East Nigerian campuses was less contaminated than tap sources due to regulated packaging and distribution. In a related study, Ibo et al, (2020) found fecal contamination in borehole water across some tertiary institutions in Ebonyi State, confirming the fears expressed in the survey data. The low awareness (mean = 2.80) about regular bacteriological testing aligns with Cronk et al, (2015), who observed poor routine monitoring in college settings, especially those without private water supply systems.

Research question 3 was on perceived health risks from drinking water. The potential health risks from consuming contaminated water are of particular concern in academic environments. Respondents indicated notable health concerns, with means such as 2.75 for water-related illnesses and 2.70 for perceived risk of sickness, suggesting lived experiences of poor water quality. In contrast, Okpasuo et al, (2020) reported fewer incidences of waterborne diseases in private universities in Enugu State, attributing this to improved infrastructure and private water vendors. This finding agreed with reports from Hyllestad et al, (2024), who noted frequent gastrointestinal infections among students relying on untreated tap water. In a related study, Mogasale et al, (2018) documented cases of typhoid and diarrhea linked to poorly maintained water sources in public colleges, highlighting the absence of water treatment and regular health checks. The mean score of 2.52 for treating water before consumption also supports the findings of Snitynskyi et al, (2022), who emphasized the rise of self-treatment practices among students due to distrust in institutional water.

Research question 4 focused on the strategies for improving water quality. The study further explored recommendations to improve drinking water safety. Respondents largely supported strategies such as installing purification systems (mean = 2.61), government monitoring (2.62), and hygiene education (2.99). The strong consensus around educational interventions and infrastructural upgrades underscores a proactive student mindset. This finding agreed with Obi and Mogbo (2023), who advocated for mandatory filtration systems and monthly testing of water sources in Nigerian colleges. In contrast, Peletz et al, (2018) noted that while many colleges had policies on water quality, enforcement and budgeting remained weak. In a related study, Gherheș and Cernicova-Buca (2025) found that awareness campaigns significantly reduced cases of water-related illnesses in a college where weekly water safety updates were given. Additionally, Dominguez-Rendón et al, (2024) emphasized the importance of engaging students in water quality surveillance and reporting, confirming the high mean score (2.80) for encouraging students to report suspicious water conditions. Similarly, Kumari (2023) stressed the need for inter-agency collaborations between health and education ministries to enforce regular testing and maintenance of water systems. The general support for governmental involvement in monitoring aligns with Peletz et al, (2018) findings that showed improved water quality in institutions receiving regular visits from public health agencies.

Conclusion

The assessment of drinking water quality in colleges of education in Southeast Nigeria revealed notable concerns regarding both the physicochemical and bacteriological safety of tap, bottled, and sachet water sources. Observations from the study showed that while water samples were generally clear and free from visible sediments, participants expressed doubts about the suitability of water temperature, clarity, and taste. These concerns suggest that the physicochemical parameters of some water sources may not consistently align with recommended standards for safe drinking water. In terms of bacteriological quality, the findings indicated limited confidence in the safety of drinking water. Although bottled and sachet water were perceived to be more hygienic than tap water, there were uncertainties about the regular testing and effective disinfection of water sources within campuses. The limited awareness of microbial testing for organisms such as coliform bacteria and *E. coli* underscores the need for more robust water safety monitoring practices. This finding agreed with previous studies that reported contamination risks associated with poorly regulated drinking water in institutional settings.

Participants also identified potential health risks linked to water consumption, including past experiences of water-related illnesses and the perceived threat posed by untreated or poorly stored water. In contrast, a few respondents expressed confidence in the water they consumed, particularly when personal safety measures such as boiling or filtering were adopted. This finding is consistent with related studies where users resorted to self-treatment methods due to concerns over water quality. In addressing these challenges, respondents strongly supported strategies aimed at improving water safety. These include the installation of filtration and purification systems, routine microbial testing, increased involvement of government health agencies in monitoring, and awareness campaigns on safe water handling practices. Clean water storage and the inclusion of hygiene education in student programs were also emphasized as crucial to preventing contamination and promoting health. The study concludes that although bottled and sachet water are generally viewed as safer options compared to tap water, significant gaps remain in ensuring the consistent delivery of safe drinking water across colleges of education in Southeast Nigeria. Strengthening institutional frameworks for water quality management, encouraging hygiene awareness, and ensuring regular monitoring and enforcement of water safety standards are essential steps toward safeguarding student health and wellbeing.

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