



Bangladesh University of Engineering and Technology (BUET)

Institute of Water and Flood Management (IWFM)

**Assessment of WASH Challenges and Improvement
Opportunities in University Hall Areas**

Term Paper

HE 6203: Public Health Engineering

Submitted to

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1.Introduction:

Sanitation is a broad term that encompasses the development and utilization of sanitary facilities to prevent diseases resulting from inadequate hygiene practices, such as improper waste disposal(1).According to WHO, Sanitation is defined as access to and use of facilities and services for the safe disposal of human urine and feces (2). A safe sanitation system is a system designed and used to separate human excreta from human contact at all steps of the sanitation service chain from toilet capture and containment through emptying, transport, treatment (in-situ or off-site) and final disposal or end use (2). Improved hygiene and sanitation in educational environments can prevent infections, control pathogen transmission, and promote overall health (3). Particularly in university residential halls, a good healthy living environment depends critically on access to sufficient water, sanitation, and hygiene (WASH) services. These facilities not only support the physical health of students but also contribute to their mental well-being and academic performance. A guideline emphasizes the importance of striking a balance between hygiene education and ensuring that environmental health conditions are enabling and acceptable (4). In the university hall, a diverse group of students resides and utilizes shared WASH facilities. In many cases, university authorities encounter challenges in maintaining adequate living conditions regarding WASH facilities, which can ultimately raise health concerns and disrupt the learning process for students residing in the university hall. The difficulties of safe water, sanitation, and hygiene are critical, because clean water, hygiene, and sustainable sanitation have a major positive impact on overall health, education, and development (5).

This term paper will investigate the WASH-related difficulties that university hall residents encounter, identify their fundamental reasons, and provide long-term development prospects. To achieve these goals, a standardized questionnaire was created as the primary tool for evaluating students' experiences and perceptions. The questionnaire was created to address key aspects of WASH, such as water availability and quality, sanitation infrastructure and management, and hygiene practices. Participants were asked quantitative and qualitative questions, allowing them to score their satisfaction, discuss obstacles, and make suggestions for improvements. By analyzing the collected data, the study makes actionable recommendations to improve WASH services and promote a healthy living environment in university halls.

2.Methodology:

2.1 Study Area: The study was conducted in the halls of Bangladesh University of Engineering and Technology (BUET), which included both male and female halls, as well as some other university halls included in a table below. These halls vary greatly in capacity, infrastructure quality, and gender distribution, with some located outside of Dhaka. This diverse range gives a thorough context for the research, representing the distinct challenges of different location.

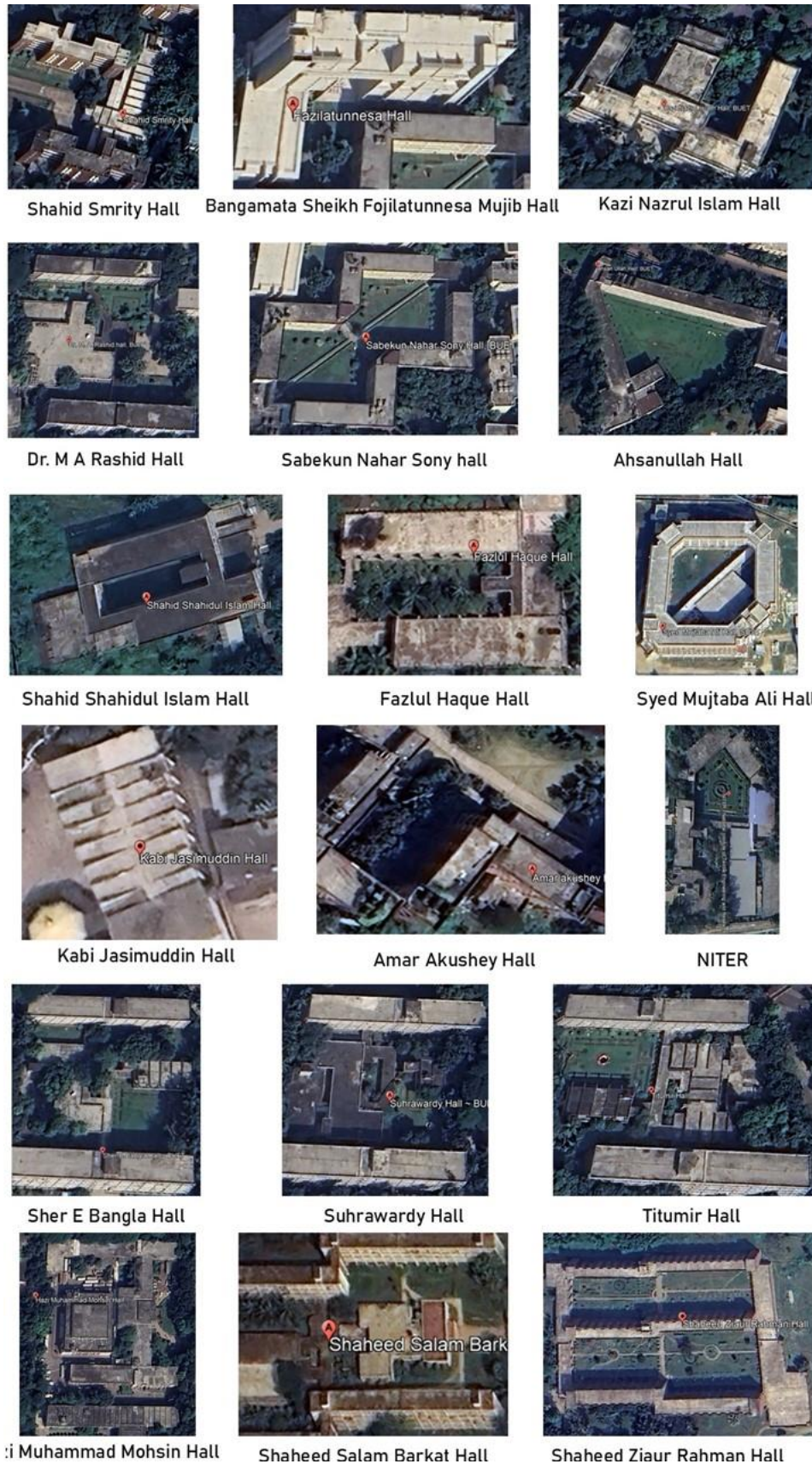


Figure 1: Study Area (Survey Conducted at Selected University)

Table 1: Study area list

University	Hall Name
Bangladesh University of Engineering and Technology	Kazi Nazrul Islam Hall
	Dr.M.A.Rashid Hall
	Shaheed Smrity Hall
	Suhrawardy Hall
	Titumir Hall
	Sher-e-Bangla Hall
	Ahsanullah Hall
	Bangamata Sheikh Fojilatunnesa Mujib Hall
	Sabekun Nahar Sony hall
University of Dhaka	Hazi Muhammad Mohsin Hall
Jahangirnagar University	Salam-Barkat Hall
Rajshahi University of Engineering and Technology	Shahid Ziaur Rahman Hall
	Shahid Shahidul Islam Hall
Khulna University of Engineering and Technology	Fazlul Haque Hall
Shahjalal University of Science and Technology	Syed Mujtaba Ali Hall
Faridpur Engineering College	Kabi Jashimuddin Hall
Mymensingh Engineering College	Omor Ekushey Hall
National Institute of Textile Engineering and Research	

Additionally, we have obtained data from two designated employees.

Table 2: Stakeholder interview list

Sohag Hawlader	Senior Pump Driver BUET
Cleaner	Shaheed Smrity Hall

2.2 Data Collection Method:

A systematic approach to data collection was implemented to evaluate the WASH-related challenges encountered by university hall residents and to identify opportunities for improvement. The study was conducted using a variety of methodologies to collect comprehensive and diverse data, ensuring that it captured the operational realities of WASH facilities and the experiences of the users. Data was collected in 4 different ways.



On Site Interview

Telephone
Interviews

Stakeholder
Interviews

On-Site
Observation

2.2.1 On Site Interview:

A comprehensive survey was created using World Health Organization (WHO) recommendations to assess water availability, sanitation infrastructure, and hygiene practices in university halls. The questionnaire aims to collect both quantitative and qualitative data in order to identify important concerns and potential areas for improvement. Questions were developed to assess the quality and reliability of WASH services, such as water supply frequency, the availability of working sanitation units, and access to hygiene resources. Open-ended questions allowed respondents to explain their experiences, identify difficulties, and make suggestions for improvement. The questionnaire was provided in person and via internet links to university hall residents, ensuring comprehensive coverage across different scenarios. This dual method enabled the inclusion of participants from numerous universities, capturing a diverse spectrum of opinions.

2.2.2 Telephone Interviews:

Telephone interviews were used when direct contact to hall residents was not possible. These interviews provide an alternative method of data collection while keeping a personal connection with respondents. The discussions focused on residents' experiences with water supply, sanitation facility maintenance, and challenges to good hygiene practice. We used this method to gather data from female halls.

2.2.3 Stakeholder Interviews:

Interviews were conducted with pump operators and cleaning personnel in BUET halls to acquire a better understanding of the operational and maintenance challenges faced by WASH facilities. These interviews provided information about water supply systems, such as pump operation schedules, maintenance challenges, and water storage issues. Discussions with cleaners showed frequent problems with sanitation maintenance. Their involvement

strengthened the analysis by providing practical perspectives on WASH infrastructure management and maintenance.



Figure 2: In person data collection and discussion



Figure 3: Discussion with the Senior Pump Operator

2.2.4 On-Site Observations:

The physical condition of WASH facilities within the BUET halls and around water outlets was evaluated through on-site visits. Observations focused on sanitation unit cleanliness, the availability and quality of hygiene supplies (e.g., soap, hand sanitizers, trash bins), and the state of water sources (e.g., taps, reservoirs, and filtering systems). Observations were documented through notes and photographs to provide visual evidence of the findings.





Figure 4: Onsite Observation of Sanitation Facilities in Different Hall



Figure 5: Handwash facilities in Basin



Figure 6: Drinking water facilities in different hall,Buet



Figure 7: Overhead Water Storage Tank in BUET

2.3 Data Organization and Analysis:

The data that was collected was systematically organized in an Excel spreadsheet for the purpose of analysis. In order to facilitate a full understanding of trends and patterns, each query from the questionnaire was categorized. Responses was grouped under Themes such as Drinking water facilities, Sanitation facilities, Personal hygiene etc. for further analysis.

2.3.1 Data Processing

Data for this research were collected using a structured survey. All questions were categorically divided into nine areas of evaluating WASH (Water, Sanitation, and Hygiene) conditions across the university halls: facilities providing drinking water, water treatment facilities, sanitation facilities, conditions of toilets, conditions of the septic tanks, conditions of taps, conditions of hygiene, conditions of stored water storage containers, and other WASH-related ailments. Each question within these categories was designed to capture a certain information in regard to prevailing conditions and practices in the halls.

The responses for each question were tabulated and represented in percentage form to clearly understand the trend and variation in WASH facilities across different halls. This systematic categorization enabled the analysis of data and risk assessment in a structured manner. For risk assessment, 12 questions on drinking water, sanitation, and hygiene conditions were selected, and the binary response of Yes/No was considered for simplification in evaluating the risks.

2.3.2 Data Analysis

Then, the sum of the response to all 12 yes/no questions was done for each hall's risk assessment. The risk scores were divided into four levels of categories, namely:

- Low Risk: 1–3, Color: Blue
- Medium Risk: 4–7, Color: Yellow
- High Risk: 8–10, Color: Orange
- Very High Risk: 11–12, Color: Red

Color coding was used to visually enhance the risk levels, allowing stakeholders to identify which halls had critical issues at a glance.

The study adopted the Joint Monitoring Programme 'Ladders' framework for monitoring and assessing drinking water, sanitation, and hygiene conditions in the university halls. The JMP 'Ladders' provided a systematic way of classifying the service levels of WASH facilities, ranging from basic to safely managed services. This allowed a nuanced analysis of the WASH conditions to be made, identifying gaps and giving priority to areas that needed improvement.

The methodology has incorporated percentage analysis, risk scoring, and the JMP framework, hence there was a well-rounded and very detailed analysis of WASH challenges in university hall areas, upon which actionable improvements could be done.

3. Discussion:

Survey questions has been categorized into nine categories to inspect WASH facilities in the different university hall. The categories are: Drinking Water Facilities, Water Treatment Facilities, Sanitation Facilities, Toilet Conditions, Septic Tank Conditions, Tap Conditions, Hygiene Conditions, Water Storage Container Conditions, and WASH-Related Illness. Brief discussion of each categorize has been given below:

3.1 Drinking Water Facilities:

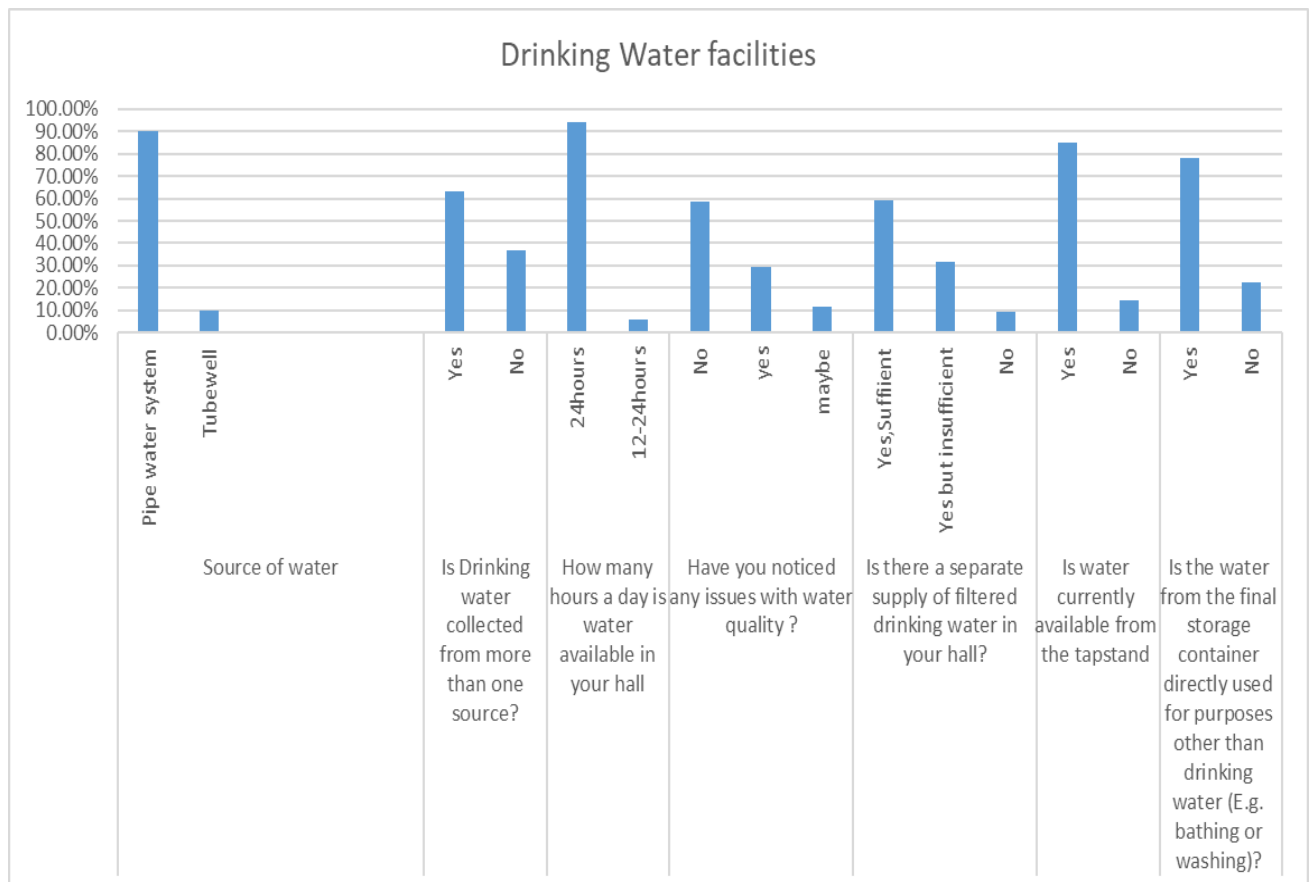


Table 3: Drinking water facilities

The table shows a survey among 26 participants in university halls concerning the state of drinking water facilities. Pipe water systems are the major source for 84.62% of respondents, while 15.38% depend on tubewells. These findings again portray a concern about resilience in emergencies, given the limitation of source diversity, as only 15.38% collect water from multiple sources. All respondents reported 24-hour water availability, indicating good access, although supply consistency and pressure were not assessed. Although 73.08% reported no problem with water quality, 19.23% noted the presence of problems, which means that water should be tested periodically and maintained. Only 53.85% have adequate access to filtered water, while 46.15% have poor or no access at all, which demonstrates inequality in facilities that should be addressed urgently. Tap water is accessible to 92.31% of the respondents, but the 7.69% without access need to have this basic amenity provided. More importantly, all participants were using stored water for other uses, which is why proper storage should be practiced and maintained to prevent contamination.

3.1.1 Onsite Inspection of Drinking water facilities:

Drinking water facilities in BUET halls was sufficient enough for them. They have all sorts of treatment facilities for purification of water like Reverse osmosis and filtration system But after recent incident in BUET Halls about some students facing Health related issues the authorities decided to supply bottle water for drinking purpose and also used a community drinking water stand for All the students.



Figure 8: Drinking Water Facilities in BUET Hall



Figure 9: Drinking Water Distribution in Bottles



Figure 10: Makeshift Drinking water facilities after recent Wash Related Illness

3.2. Water Treatment Facilities

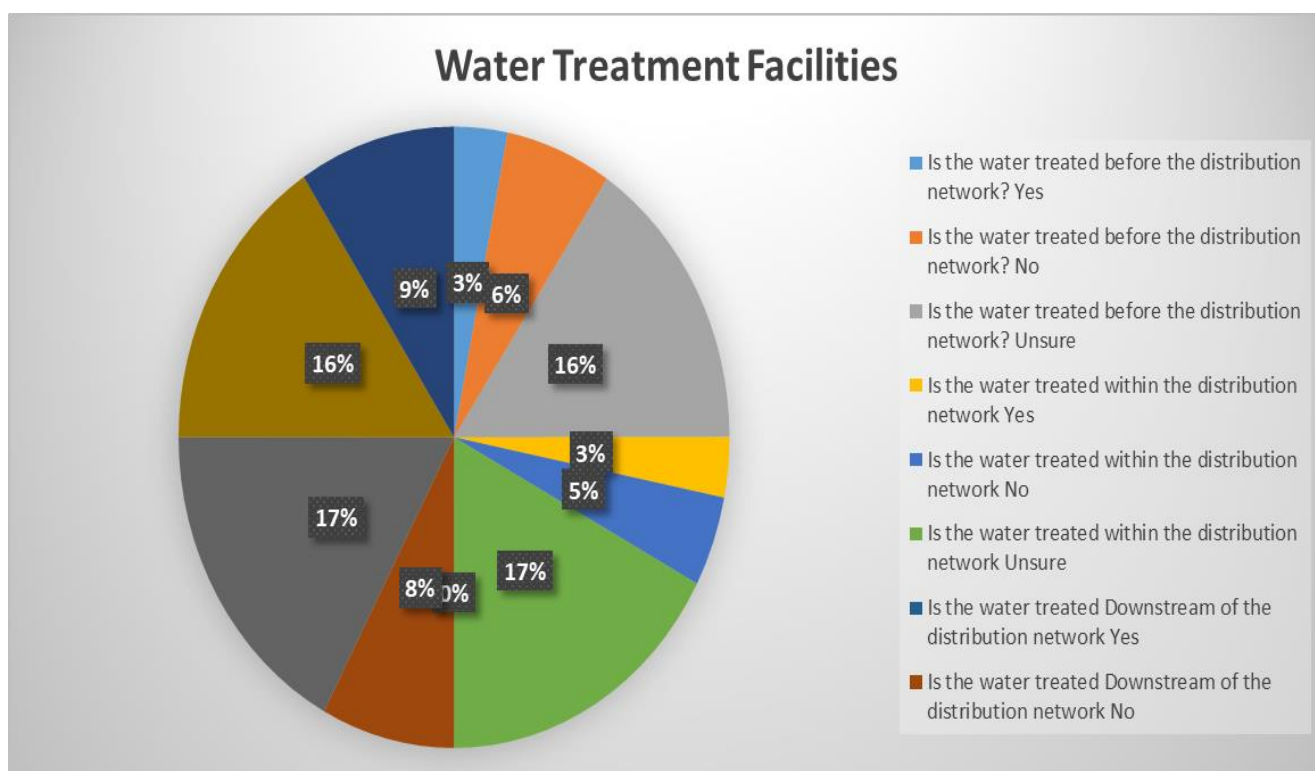


Figure 11: Water treatment facilities

The questionnaire revealed major loopholes in water treatment processes and knowledge within university halls, showing a worrisome absence of treatment at every stage: no participants reported water treatment before, within, or downstream of the distribution network. On the other hand, 84.62% said there was no treatment, while 88.46% were not sure about the treatment practices—meaning there is a great knowledge gap. This lack of knowledge can be an indication of how poorly the university authorities handle communication or are transparent with water management. Moreover, the unavailability of proper water treatment presents considerable health hazards: residents are then exposed to untreated water. The result calls for timely actions from the university authorities to establish proper measures for water treatment,

increase awareness among residents about water safety, and provide regular monitoring of the situation transparently.

3.3. Sanitation Facilities



Figure 12: Sanitation facilities

A total of 96.15% were of the flush type, an indicator that shows the University halls' high level of infrastructure in sanitation facilities, though 3.85% represent pit latrines, indicating unequal distribution that requires upgrading. Also, the proportion of students with low water scarcity is 84.62%, and those experiencing a medium level are 15.38%. The latter is very important because, in certain particular areas, access to water can be erratic for personal hygiene. The toilets have handwashing facilities for 61.54% of respondents, while the 38.46% without such facilities underline a serious hygiene gap that needs immediate action. Encouragingly, 100% confirmed the availability of water in handwashing facilities, showing prioritization of critical hygiene needs. Most respondents, 76.92%, report a favorable toilet-sharing ratio of 1–10 users, but 7.69% experiencing over 20 users per toilet underscores overcrowding challenges.

3.3.1 Field Investigation on sanitation (Handwash System):

Although there were sufficient water facilities and lavatories for students to handwash and sanitize, there were instances in which handwashing equipment, such as soap and handwashing liquid, was unavailable. In Suhrawardi Hall, the handwash dispenser was empty, indicating that university students are lacking in this fundamental item. In the majority of instances, students are required to carry their own personal handwashing product to maintain their hygiene. This can be a major concern.

3.4 Toilet Condition

Toilet Condition			
		N	Percentage
What is the condition of the toilet superstructure?	No Problem Observed	19	73.08%
	Slightly Damaged	7	26.92%
Does the toilet provide security to the intended users?	Yes	23	88.46%
	No	3	11.54%
Are there functional locks on the toilet doors?	Yes	14	53.85%
	No	2	7.69%
Is there sufficient lighting in the washroom areas?	Yes, Adequate Lighting	23	88.46%
	No, Poorly Lit	2	7.69%
	No, No lighting at all	1	3.85%
How frequently are cleaning staff assigned to maintain your halls facilities?	Daily	4	15.38%
	One times per week	11	42.31%
	Two times per week	8	30.77%
	More than two times per week	3	11.54%

Table 4: Toilet condition

The outcome of the survey will shed light on the situation in university halls concerning toilet facilities, showing both positive and negative aspects. 73.08% reported no problems with the superstructure of toilets, reflecting good maintenance; though 26.92% observed slight damage, showing the need for proactive repairs. While 88.46% showed that toilets provide security, 11.54% disagreed, pointing to issues like broken doors or inadequate locks. Besides, only 53.85% reported functional locks on toilet doors, leaving 46.15% without this basic necessity, which is critical for user privacy and security. The lighting condition was generally favorable, with 88.46% satisfied, but 7.69% faced poor lighting, and 3.85% reported no lighting at all, raising concerns about safety and accessibility, particularly at night. Hygiene practices were found to be very poor, as only 15.38% reported cleaning daily, while the rest indicated weekly or every other week, which is not enough for such highly utilized communal facilities.

3.4.1. Field Observation on sanitation facilities (Toilet):

The sanitation facilities in BUET hall were mostly modern, featuring a flush-type sanitation system. However, there were concerns regarding environmental conditions and cleanliness in the sanitation facilities. Visible dirt and feces were found on the commode and floor of several toilets. They also expressed valid concerns over the privacy of sanitation facilities because of the broken window and walls, which must not be ignored.



Figure13: Visible Dirt/excreta in the latrine facilities



Figure 14: Privacy concern in sanitation facilities for students



Figure 15: Broken Window of Washroom

3.5. Septic Tank Condition:

Septic Tank Condition			
		N	Percentage
Difficulty accessing the septic tank, how difficult is it for a service provider to access the toilet to remove sludge using a manual or motorized emptying method?			
	Low	18	69%
	Medium	7	27%
	High	1	4%
Reliance on groundwater used for drinking ,the potential for local groundwater sources to be contaminated by inadequate sanitation and fecal sludge management			
	Low	8	31%
	Medium	6	23%
	High	3	12%
Is there visible damage to the septic tank/pit/outlet pipes, such as cracks, corrosion, deformation or leakage?			
	Yes	2	8%
	No	24	92%
	Don't know	0	0%
Are drainage systems cleaned regularly in your hall?	Yes	21	81%
	No	5	19%

Table 5: Septic tank condition

The survey data provided important insights into the management of septic tank conditions in university halls, indicating strengths and areas for improvement. The accessibility for sludge removal was described as "low difficulty" by 69%, indicating relatively easy access in most cases, although 27% reported "medium difficulty" and 4% "high difficulty," indicating design or logistical shortcomings. About the safety of the groundwater, 31% perceived the risk of contamination as low, while 35% felt it was a medium or high risk, which indicates possible poor maintenance or improper placing of septic tanks near water sources. Moreover, 8% also reported noticeable structural damage to septic tanks, a critical situation that can result in leakage and environmental hazards, though 92% did not observe any such damage. Most of the maintenance practices were positive, with 81% reporting cleaning the drainages regularly, while 19% showed deficiencies in these activities that could result in blockages and poor hygiene.

3.6 Tap water Condition:

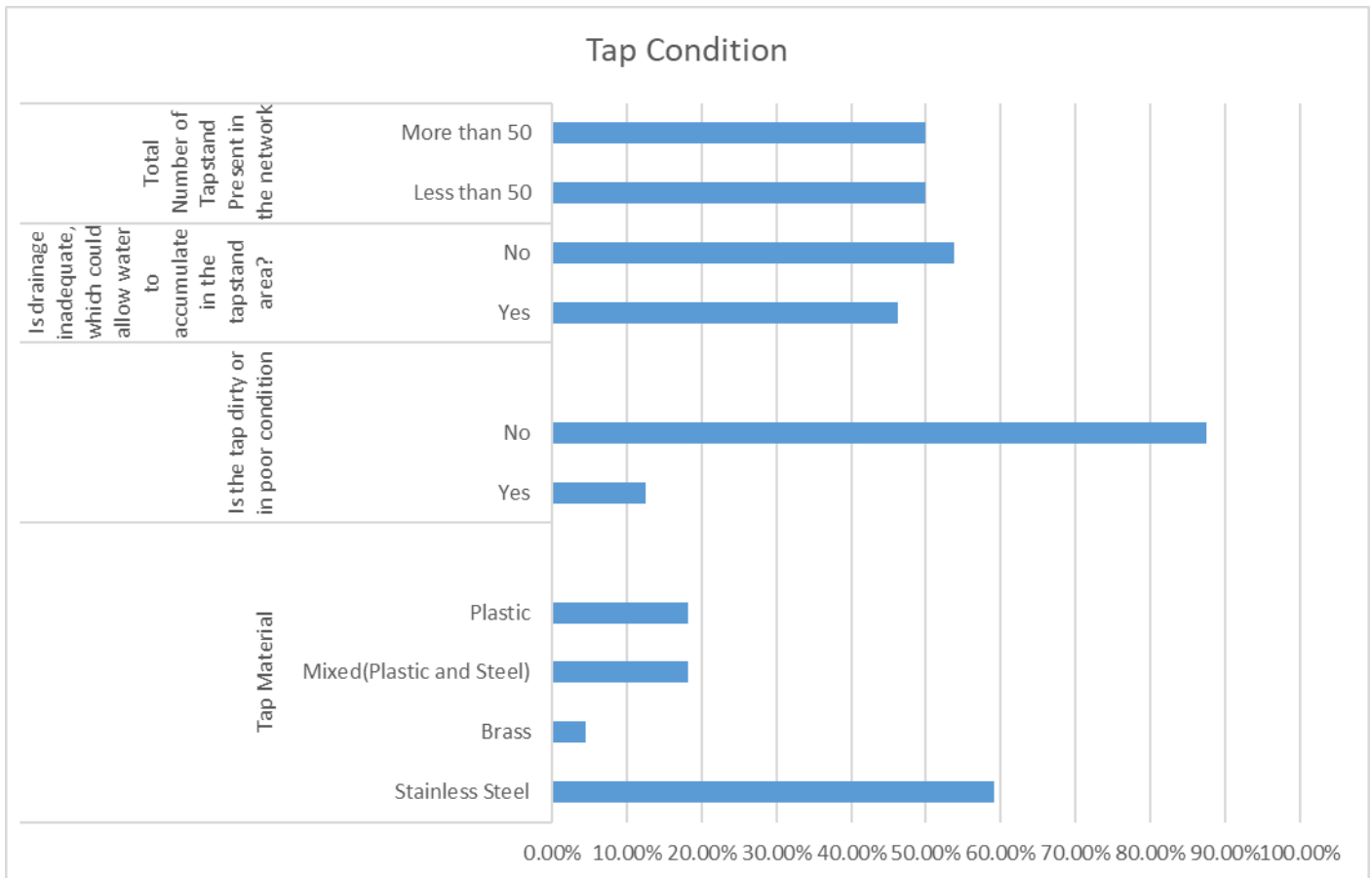


Table 6: Tap condition

The survey results suggest that the tap infrastructure within university residences is predominantly well-preserved, as evidenced by 61.54% of taps being constructed from resilient stainless steel, and 92.31% being classified as clean and in satisfactory condition. Moreover, 96.15% of respondents deemed the quantity of tap stands to be adequate, indicating effective planning and allocation of resources. Despite this, concerns remain as 23.08% of respondents reported inadequate drainage, which poses risks related to water accumulation and related health risks, in addition to the 7.69% who reported taps as dirty or poorly maintained, showing specific cases of poor hygiene. Moreover, the presence of taps made from less durable materials (34.62% being plastic or composite) increases the concern regarding the consistency of facility quality.

3.7 Hygiene Condition

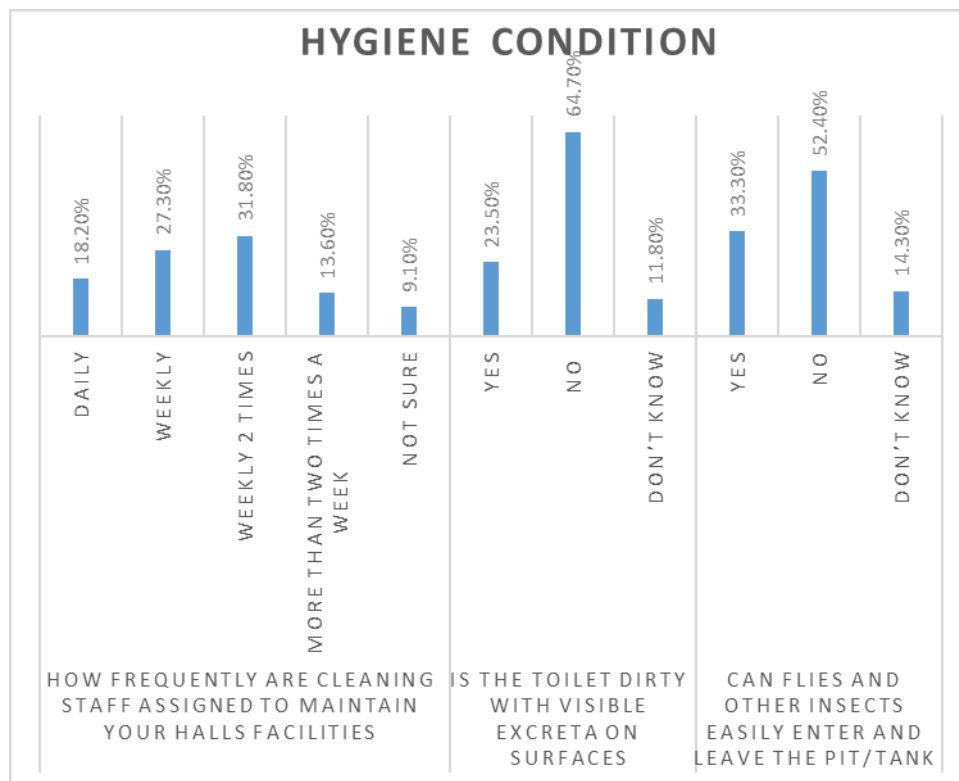


Table 7: Hygiene condition

The survey data reveals that hygiene conditions in university halls are generally satisfactory, as 88.46% of participants reported clean toilets and 76.92% did not observe flies or insects in sanitation areas, indicating that basic hygiene measures are in place. Nonetheless, significant deficiencies exist, exemplified by the fact that 42.31% of participants indicated that sanitation is conducted merely once weekly, a frequency that may be inadequate for communal spaces. Furthermore, 23.08% recognized problems with the presence of flies and insects, attributed to inadequate sealing or structural defects. In addition, 11.54% noted the existence of unclean restrooms featuring discernible waste, which suggests irregular cleaning practices in certain residential halls.

3.8 Water Storage Container Condition:

Water Storage Container Condition			
		N	Percentage
Is the final storage container cracked, leaking, or unclean?	Yes	5	19.23%
	No	21	80.77%
Is the final storage container kept in a place where it may become contaminated?	Yes	2	7.69%
	No	24	92.31%
Total Number of Storage Tanks Present in the network	Zero to Five	12	46.15%
	Five to Ten	3	11.54%
	More than 10	2	7.69%
	No idea	9	34.62%
Storage Tank Construction Material	Concrete	6	23.08%
	Ferrocement	9	34.62%
	PVC	6	23.08%
	PVC and Steel	1	3.85%
	Don't Know	4	15.38%
Is the storage tank underground, ground level or elevated	Underground	1	3.85%
	Ground Level	4	15.38%
	Elevated	21	80.77%
Are there any signs of contaminants inside or outside the storage tank?	Yes	2	7.69%
	No	17	65.38%
	Maybe	7	26.92%
Is the storage tank excluded from routine maintenance and quality control programs?	Yes	2	7.69%
	No	15	57.69%
	Maybe	9	34.62%

Table 8: Water storage container condition

The survey underscores significant elements pertaining to the conditions of water storage containers within university halls, indicating both commendable attributes and aspects necessitating enhancement. Although a substantial proportion of participants (80.77%) indicated that the containers were in satisfactory condition and appropriately positioned (92.31%), concerning problems, including cracks, leaks, or unsanitary conditions, impact 19.23% of the containers, presenting potential contamination hazards. Moreover, more than a third of respondents did not know the number (34.62%) or material (15.38%) of storage tanks, indicating a critical knowledge gap. Most of the tanks are elevated (80.77%), which provides advantages such as reduced contamination risks and improved water pressure; however, ground-level and underground tanks, although less common, require more intensive maintenance. Contamination indicators were either reported or suspected by 34.61% of respondents, and 7.69% stated their exclusion from maintenance programs, thus underlining the weaknesses in inspection processes and regular quality assurance.

3.9 WASH related illness

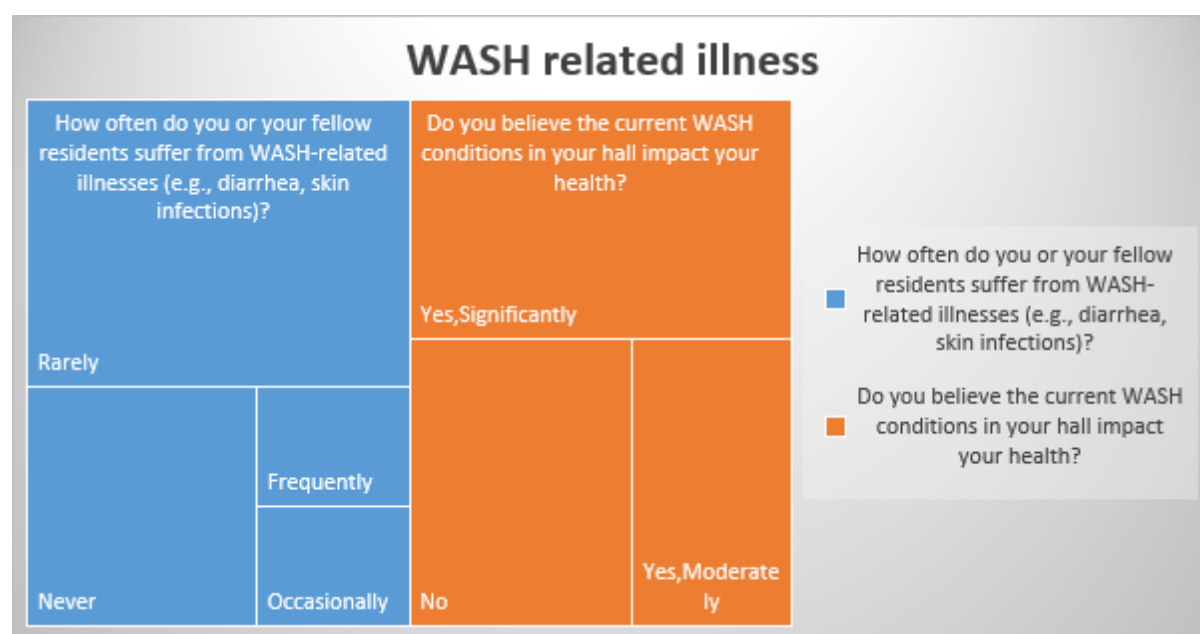


Figure 16: WASH related health impacts

The findings of this survey bring out the influence of WASH conditions on health and well-being among university hall residents. In as much as 65.38% of the respondents report WASH-related illnesses as 'rarely', and 19.23% as 'never,' the combined 15.38% who experience such illnesses 'frequently' or 'occasionally' brings out a subset that is at risk and in need of focused interventions. A striking 61.54% perceive a major health impact due to WASH conditions, while 23.08% feel moderately affected, which indicates a great concern about the existing facilities. This mismatch between the relatively low frequency of reported illnesses and the high perceived health impact may suggest psychological stress or fear of potential risks rather than direct physical illness.

3.10 WASH related Risk Assessment

Hall Name	Hall Water, Sanitation and Hygiene Risk Assessment																			
	Rashid	Shera Bangla	Nazrul	Ahsanullah	Titumir	Suhrawardy	Sony	Bangamata	Smrity	Ziaur	Mohsin	Salam-Barkat	Fazlul Haque	Mujtaba Ali	Jasim Uddin	Shahidul Islam	Kabi Ishimuddin	NITER	MEC	Bangabandhu
Information for Assessment	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)	Risk (Y/N)
Water unavailability > 24 hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Final storage container damaged	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	1	0	0	0	0
Septic tank/pit/pipes damaged	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Insufficient water supply for sanitation purposes	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1
Handwash facilities unavailability	0	0	0	1		1		1	1	0	0		0	1	1	1			1	1
Toilet dirty with visible excreta	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Can flies and other insects easily enter and leave the pit/tank	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0
Water quality issued (e.g. color, smell, taste)?	0	0	0	0	0	0	0	1		1	1	0	0	0	1	0	1	1	1	0
How often do you or your fellow residents suffer from WASH-related illnesses (e.g., diarrhea, skin infections)?	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Do you believe the current WASH conditions in your hall impact your health?	1	1	1	1		1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
Is the tap dirty or in poor condition?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Regularly cleaned drainage systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
Total Risk Score	1	1	1	2	0	2	1	4	2	2	5	6	4	1	4	4	3	4	7	4
Risk Level																				

Table 9: WASH risk assessment in hall areas

Summary: Hall Water, Sanitation and Hygiene Risk Assessment	Hall Name	Total Risk Score	Risk Level
	Rashid	1	
	Shera Bangla	1	
	Nazrul	1	
	Ahsanullah	2	
	Titumir	0	
	Suhwarwardy	2	
	Sony	1	
	Bangamata	4	
	Smrity	2	
	Ziaur	2	
	Mohsin	5	
	Salam-Barkat	6	
	Fazlul Haque	4	
	Mujtaba Ali	1	
	Jasim Uddin	4	
	Shahidul Islam	4	
	Kabi Jashimuddin	3	
	NITER	4	
	MEC	7	
	Bangabandhu	4	

Table 10: Summary of WASH risk assessment in hall areas

The picture shows the assessment table to identify risks in WASH facilities within the university halls according to 12 critical questions. Each of these questions taps important aspects related to WASH: water availability, such as a 24-hour supply, the quality of drinking water, enough and clean sanitation facilities, adequate hygiene facilities including hand-washing, and proper disposal of waste. Responses are coded as either “Yes” or “No,” with each “No” answer contributing to a cumulative risk score. These total scores are then used to categorize risk levels into four specific ranges: low risk (0–3), medium risk (4–7), high risk (8–10), and very high risk (11–12). Observations show a lot of variation in the WASH conditions between the halls, with some showing better facilities and lower risk scores while others have more “No” responses, indicating poorer facilities and a higher level of risk.

Through this risk assessment, Rashid, Shera Bangla, Nazrul, Ahsanullah, Titumir, Suhwarwardy, Sony, Smrity, Ziaur, Mujtaba Ali hall identified low risk hall. But some hall falls in the medium risk zone. Those halls are: Bangamata, Mohsin, Salam-Barkat, Fazlul Haque, Jasim Uddin, Shahidul Islam, Kabi Jashimuddin, NITER, MEC, Bangabandhu hall. There is no hall in the high or very high-risk zone.

The scoring methodology provides a clear and systematic way of identifying high-risk halls and focusing required interventions. However, the dichotomous “Yes” or “No” answers may oversimplify complex issues, as they do not account for partial availability or the qualitative nuances of the challenges identified. Additionally, the scoring system assumes equal importance for all questions, which may not accurately reflect the relative importance of various WASH components, such as water availability versus waste disposal.

3.11 WASH Monitoring Using JMP LADDERS

JMP ‘LADDERS’ for Monitoring Water, Sanitation and Hygiene in University Hall			
Hall Name	Drinking Water	Sanitation	Hygiene
Rashid Hall			
Shera Bangla Hall			
Nazrul Hall			
Ahsanullah Hall			
Titumir Hall			
Suhwarwardy Hall			
Sabekun Nahar Sony Hall			
Bangamata Sheikh Fazilatunnesa Mujib Hall			
Shahid Smrity Hall			
Shahid Ziaur Rahman Hall			
Haji Muhammad Mohsin Hall			
Salam-Barkat Hall			
Fazlul Haque Hall			
Syed Mujtaba Ali Hall			
Jasim Uddin Hall			
Shahid Shahidul Islam Hall			
Kabi Jashimuddin Hall			
NITER			
MEC			
Bangabandhu hall			

Table 11: WASH monitoring using JMP LADDERS

The image depicts a table of assessment of drinking water, sanitation, and hygiene facilities in university halls using the JMP ladders. In all halls, safely managed drinking water (blue) and safely managed sanitation systems (green) are available, showing a very strong commitment to clean water access and sanitation facilities. However, there are gaps in hygiene facilities. Hygiene facilities vary, with basic hygiene (purple) —meaning there is some level of hygiene provided, though not necessarily adequate—found in some halls (yellow) and very basic or no hand-washing facilities at all in others, such as Shahid Ziaur Rahman Hall and Jasim Uddin Hall. These disparities could undermine the health benefits of clean water and indicate

inequitable resource distribution. Urgent action is needed to provide sanitation services in under-resourced facilities, upgrade inadequate handwashing facilities to meet basic hygiene standards, and ensure equitable allocation of resources. Regular monitoring and maintenance must be addressed to sustain improvements and address gaps, thus creating a healthy and inclusive living environment for the student body.

4. Conclusion:

This report has brought to the fore some critical challenges and great opportunities for improvement in the WASH conditions within university halls. Indeed, some aspects of the WASH infrastructure are performing well, with access to drinking water through safely managed systems in most of the halls, while remaining aspects related to sanitation and hygiene are quite critical. Some of the halls are not having resource distribution with proper sanitation service and hygiene facilities. Furthermore, poor drainage, irregular cleaning schedules, structural defects in water storage containers, and the lack of treatment procedures for water all point to systemic inefficiencies. These issues not only pose health and well-being risks but also hamper efforts to provide an enabling living and learning environment. The 'Ladders' framework of the Joint Monitoring Programme and the metrics of risk assessment have brought clarity to service levels and have identified areas of high risks, which are to be targeted first. Their removal through strategic interventions may bring marked improvements in safety, equity, and overall quality in WASH facilities at universities.

5. Recommendations:

1. Infrastructure Upgrades: Sanitation and hygiene facilities should be installed and maintained in the most under-resourced halls to ensure that all students have access to minimum WASH facilities. Non-durable materials, such as plastic taps, should be replaced with standardized stainless steel for durability and hygiene.

2. Water Treatment Systems: There is a need to ensure comprehensive water treatment at all stages, that is, before, within, and downstream of the distribution network, to eliminate any potential contamination risks for safe drinking water.

3. Standardized Maintenance Schemes: Develop daily cleaning schedules for toilets, handwashing stations, and storage containers within communal areas. Periodically inspect and perform the required repairs to address structural and functional defects in a timely manner.

4. Equality in Resource Distribution: WASH resources should be equally distributed across all halls, focusing on filling gaps that are highly at risk as identified through the risk assessment.

5. Improved Drainage Systems: Improvement in drainage inefficiencies to avoid stagnation of water leading to health implications. Improved grading and additional outlets should be used in areas susceptible to water collections.

6. Sensitization: Increase awareness among citizens on personal and community hygiene. Provide space for feedback mechanisms and communication of concerns regarding the WASH facilities.

7. Monitoring and Evaluation: Continue monitoring and evaluating the progress of the WASH conditions, using tools such as the JMP 'Ladders' framework, to ensure that interventions are sustained and improved over time.

Addressing these recommendations will help university authorities bridge gaps in WASH infrastructure and services and create a healthier, more equitable, and inclusive living environment for all residents.

6. References:

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