

## **ANALYZING THE PERCEPTION-PRACTICES GAP IN SANITATION BEHAVIOR: A STUDY OF KUET STUDENTS**

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### **ABSTRACT**

Prioritizing proper hygiene and sanitation in educational institutes can create a more productive and conducive environment for learning among students. As educational institutes are bacterial breeding sites because of the proximity of students, teachers, and other staff, poor hygiene can further accelerate the possibility of spreading infectious diseases and illness among students. This paper's objective is to illustrate the current hygiene malfunctions in Khulna university of Engineering and technology and represent a comparison between the sanitary practices of residential and non-residential students. In this study we tried to delineate every aspect of sanitary glitch that effects the student's health directly or indirectly. We conducted an extensive questionnaire survey where the participants answered about their personal hygiene practices and the difficulties they face regarding it. The inquiries were made about the student's outlook on water sanitation, food sanitation, availability of sanitary supplies, regular cleanliness of the washrooms, proper waste disposal, hand hygiene etc. From the survey it has been noticed that both residential and non-residential students are not satisfied with the current hygiene practices in the university and outside the vicinity of the campus. A lot of them have suffered from waterborne and foodborne diseases. The purpose of this study is to direct the attention of the authority to the sanitary degradation of the university residential halls and also take measured steps for the betterment of the students living outside the campus boundary.

**Keywords:** *hygiene, sanitation, survey, residential, non-residential*

### **INTRODUCTION**

Proper practices of sanitation and maintenance of hygiene are prior things to live a healthy life. Juveniles around the world are more detrimental to attain regular hygiene practices. Public health, environmental sustainability, and general quality of life are all significantly impacted by sanitary behavior [1]. Even while people are becoming more conscious of the importance of good sanitation, there is frequently a big discrepancy between what they believe to be the best sanitation practices and how they behave ( [2]). The purpose of this study is to examine the perception-practice gap among Khulna University of Engineering & Technology (KUET) students, who are a representative sample of Bangladesh's future engineers and policymakers. This study aims to provide light on behavioral patterns and possible obstacles to good sanitation practices by finding gaps between knowledge and application.

There is a growing rate of students who like to take higher studies after the completion of higher secondary or equivalent examinations in Bangladesh. So, it is now a concerning issue about the health and hygiene practices that are followed by the students as well as the authorities. The classrooms, the dormitories or the residential halls, the offices e.g., administrations, etc. are such places where sanitation and hygiene practices are required to be practiced regularly [3]. But in real scenarios, the lack of proper regulations is lagging due to many reasons and in many aspects. According to many studies, communal washrooms and bathrooms are not cleaned properly and regularly after they are used [4]. Also, proper and adequate water supply in restrooms, enough water to wash hands after using restrooms, and routine toilet cleaning are essential requirements to ensure that students are following proper sanitation practices in both residential halls and academic buildings [5].

In Bangladesh, where the current sanitation infrastructure is being challenged by fast urbanization

and rising population pressure, the perception-practice gap in sanitation is a critical concern. This study uses questionnaire surveys and observational methods to assess KUET students' perceptions and actual behaviors related to sanitation, with a focus on hand hygiene, waste disposal, and toilet cleanliness. The findings will highlight the underlying causes of the gap, such as lack of facilities, behavioral inertia, or social norms, and will propose strategies to bridge this disconnect. Even though government and non-governmental organizations (NGOs) have launched various awareness campaigns, behavioral adherence remains inconsistent [6]. University students, especially those in technical fields like engineering, are expected to have a higher awareness of sanitation-related issues, but it is unclear if this awareness translates into everyday practice. Addressing this perception-practices gap is crucial in Bangladesh, where waterborne illnesses and inadequate sanitation pose serious health hazards. Universities are perfect case studies for comprehending sanitation issues since they act as a microcosm of larger social activities. The research's conclusions can help lead awareness campaigns, guide policy proposals, and improve institutional hygiene infrastructure, all of which will support national efforts to meet Sustainable Development Goal (SDG) 6: clean water and sanitation for everyone [7].

This study going to explore the current situation of sanitation practices of the present KUET students; residential and non-residential, to collect the perceptions of some randomly selected students about their experiences of hygiene facilities, and to assess the basic health life differences between the residential or non-residential one of the KUET students.

## METHODOLOGY

The study was conducted at Khulna University of Engineering and Technology in Khulna by using google form. Questionnaire survey method was used to collect the data of the student's opinion, attitude and experience on current hygiene practices in Kuet. Nearly 120 students filled the Google forms sent via social media across all departments of this university.

### Sampling & data collection:

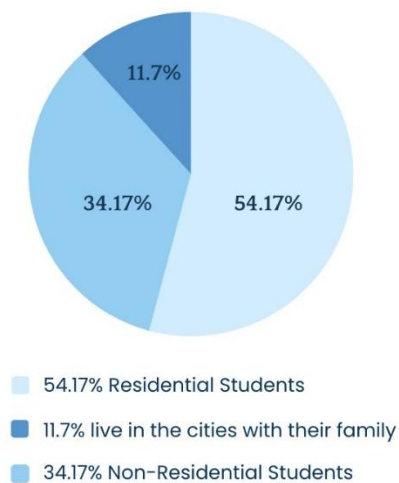


Figure 1

A semi-structured questioning procedure was used to gather the qualitative data. 25 questions were assembled, including short answers, checkboxes, and multiple choice questions. The data collected from the respondents of Kuet briefly indicated their concerns on the continued cleanliness procedures. The questionnaire was spread in all departments across the university. The link of the google form was sent to the main messenger group of all the departments and to all the batches that are currently studying in Kuet. It was also shared to multiple groups in WhatsApp and Facebook. Almost 120 students filled the form that included 65 residential students and 41 Non-residential students and other 10 students staying with their family in the city. The responders ranged in ages from 19 to 24 where 39.1% were female responders and other 60.9% were male responders.

### Type of inquiries on the Questionnaire:

25 questions were asked where the 1<sup>st</sup> set of 6 personal questions asked about the student's gender, age, year of enrollment, history of any disease, residential status, and hours spent at the institution [1]. The next set of questions were asked about the quality and availability of drinking water both in the residential halls and outside as unpurified water posed a threat to health of the students. Other inquiries were made upon the other aspect of sanitation and hygiene practices which included hand hygiene, waste disposal, food sanitation, restroom sanitation etc [2]. The purpose of this study is to compile the information on contemporary sanitation management that is practiced in Kuet and how that affects the student's health. This evaluation procedure doesn't reveal a person's socioeconomic status or religion.

## RESULT ANALYSIS

**Common attributes of the responders:** About 120 students participated in the study, where 47 students were female and 73 were male. As in Kuet girls have only one dormitory allotted for them and boys have 6 dormitories, more diverse responses were collected from them. No other gender participants were found to fill the form.

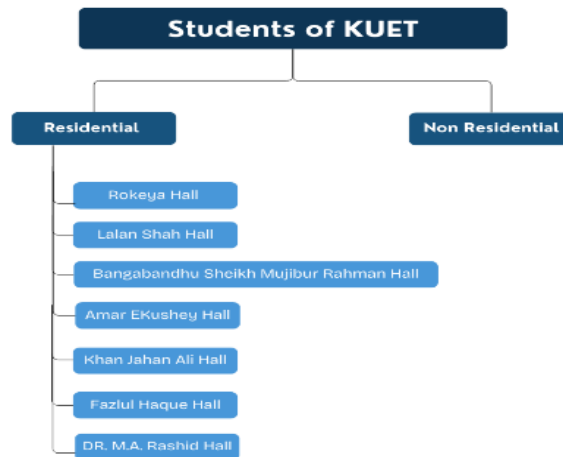


Figure 2

Table 1 Profile Analysis [1]

Information	Number	Percentage (%)
<b>Gender</b>		
Male	73	61%
Female	47	39%
<b>Age</b>		
19-21	60	50%
21-23	43	35.8%
23-25	17	14.17%
<b>Year passed</b>		
Year<=1	55	45.8%
1<year<=2	37	30.8%
2<year<=3	26	21.67%
3<year<=4	5	4.17%
<b>Hours spent in the university campus</b>		
3hrs to 5hrs	72	60%
5hrs to 7hrs	39	32.5%
7hrs to 10hrs	9	7.5%

Ages from 19 to 25 participated where majority of the responses came from students between the age of 19 to 21. About 54.17% students were residential students, living in the dormitories provided by the university and 34.17% lived outside and near the campus due to the residential hall's inadequate seating [1]. Responders were primarily of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year students of different departments. When asked about their history of disease many of them responded saying that they didn't face any major health risks but some of them had history of pneumonia, dengue, chikungunya etc. Some of them even suffered from Covid-19. The students who already have health risks are more vulnerable to diseases than the other students. This is the reason why the quality of water and food sanitation play a major role in a student's health. Maximum students spent about 3 to 5 hours in the university campus regularly. Therefore, maintaining a hygienic environment in the classes and labs were crucial for the student's health.

**Water Sanitation:** Water sanitation refers to the practices that are conducted aiming for better quality of drinking water and water for daily use to prevent waterborne diseases. Easy access to pure drinking water and clean water for daily use is a fundamental need of every student. Gathering the information from the study we got to know that residential students and non-residential students have different opinion on the quality of drinking water.

Table 2 Attitude of residential students toward drinking water quality provided at the dormitories

Dormitories	Satisfied	Average	Dissatisfied	No Idea
Begum Rokeya Hall	40.3%	39.92%	16.78%	3%
BSMR Hall	37.4%	44.2%	16.43%	1.97%
Lalon Shah Hall	35%	40.94%	21.66%	2.4%
Khan Jahan Ali Hall	40.9%	39.7%	17.85%	1.55%
Fazlul Haque Hall	41%	40.7%	16.3%	2%
DR. M.A. Rashid hall	39.7%	45%	12.9%	2.4%
Amar ekushey	38.67%	40.53%	17.7%	3.1%

The table below shows the percentage of satisfaction of drinking water quality in each of the residential halls in the university campus. Kuet has a total of 7 residential halls 1 for female and other 6 for male students.

Result shows that on average 39% students thinks the quality of the water is satisfactory and 41.5% thinks that the quality is average. Whereas, 17% (on average) of the students are dissatisfied with the water quality. All the residential halls showed almost similar statistics which lead to the assessment that maybe the drinking water quality in all the dormitories are nearly same.

Table 3 Attitude of non-residential students toward drinking water quality provided at the dormitories

Area	Satisfied	Average	Dissatisfied	Haven't tried yet
Fulbarigate	19.7%	35.6%	42.5%	2.2%
Khulna (main city)	48.3%	34.5%	15.6%	1.6%

The table above shows the percentage of satisfaction of drinking water quality of the non-residential students [1]. Students due to inadequate seating in the residential halls choose to congregate near the university vicinity. They either choose mess or housing complexes shared with other students. There are also some students who stay with their family in the same city and use transport for daily classes. As per the result shown in the table above we can conclude the fact that the quality of water varies from the area near the university campus and in the main city. Majority of the non-residential students (42.5%) who opt for mess near the university are dissatisfied with the water quality and about 35.6% of them thinks that the water is of average quality. Among the students living in the city 48.3% of them are satisfied with the water quality.

Comparing the opinions of both the residential and non-residential students, we came to the conclusion that the water quality of the dormitories is more hygienic than outside of the campus boundaries. Poor quality of drinking water is responsible for many diseases. As a result, student's health

is deteriorating gradually. Students living outside the campus usually have their water transported to them which is managed by some unauthorized local water supplier. These suppliers claim that the water they supply are pumped from deep well though no actual verification was done on them.

Table 4 Percentage of students effected by water-borne diseases after getting admitted in the university

Types of Students	Yes	No	I don't remember
Residential	21.5%	67.3%	11.2%
Non Residential	55.4%	36.3%	8.3%

The table above shows the statistics of the residential and non-residential student's health risks due to many waterborne diseases. The statistics show that about 21.5% the residential students and about 55.4% non-residential students have suffered from waterborne diseases after getting admitted to in the university. The percentage of non-resident students who contract waterborne illnesses is higher than that of residential students. After doing further investigation, some information about the student's illness were discovered. Many of the non-resident students have suffered from pneumonia, jaundice and typhoid which is caused by contaminated water. In recent days, one of the non-residential students had gone through major operation of kidney stone removal. According to that student consuming contaminated water for an extended period is responsible for developing kidney stones.

Therefore, the non-residential students should opt for alternate drinking water supply and the university authority should take more responsible steps in upgrading the quality of the drinking water as the student's health is on the line.

Table 5: Availability of Water Supply in Dormitories

Dormitories	Regularly	Available but sometime dearth of water supply occurs	Maximum time shortage of water supply	I have no idea
Begum Rokeya Hall	47.8%	39.2%	10.8%	2.2%
BSMR Hall	37.9%	49.5%	9.6%	3%
Lalon Shah Hall	39.3%	43.8%	15.1%	1.88%
Khan Jahan Ali Hall	42.6%	38.9%	15.8%	2.7%
Fazlul Haque Hall	44.7%	34.2%	17.8%	3.3%
DR. M.A. Rashid hall	34.5%	46.9%	15.7%	2.9%
Omor 21e	39.9%	44.5%	11.9%	3.7%

This table above shows that the percentage of availability of water supply in the dormitories. Among the students living in dormitories on average 41% of them thinks that the water supply is regular whereas 42.5% (on average) thinks that the water supply is sometimes disturbed. The students have complained in the past that sometimes the disturbance in the water supply have caused trouble in their regimented way of living. Although the shortage in the water supply is temporary, the authority and hall provost should take some measurements for the regular supply of water for the students.

As for non-residential students, they are said to have less issue regarding the availability of water supply. Almost all of the students living outside the campus boundary have continuous water supply, although some disruptions are unavoidable. And those disruptions are quickly solved as well.

Table 6 Availability of sanitary supplies in Washrooms [1]

	Regularly Available	Scarcity can occur sometimes	Rarely available	Personally afforded	I have no idea
Dormitories	5.7%	7.6%	16.9%	68.3%	1.5%
Academic buildings	39.7%	26.8%	18.9%	13.5%	1.25%
Student accommodation Outside campus	10.2%	12.3%	1.9%	70.8%	4.8%

Sanitary supplies refer to hand washes, soaps, tissues or napkins etc. Restrooms or toilets should have these supplies on stand for the students to use. However, this is not the case in the dormitories. The students have personally afforded supplies and use them. The non-residential students also have their own sanitary supplies in their respective home.

As the students stay almost a long time in the classes and labs, the academic buildings (where the classes are held) should have regular supply of these sanitary products. Although, according to 26.8% students the sanitary supplies are not always available, almost 39.7% of them disagreed and stated that they have regular sanitary supplies in their washrooms of the academic buildings. Almost 13.5% of them bring their own supplies to use them. The washroom near the dining of the residential halls do have soaps in them but majority of the students don't use them because of their germ-ridden appearance.

Table 7 The sanitation system of the restroom in dormitories and academic buildings

	Regularly cleaned	Cleaned every once in a while	Not properly cleaned
Begum Rokeya Hall	23.2%	47.9%	28.9%
BSMR Hall	20%	60.9%	19.1%
Lalon Shah Hall	21.8%	58.6%	19.6%
Khan Jahan Ali Hall	24.9%	50.8%	24.3%
Fazlul Haque Hall	19.8%	52.4%	27.8%
DR. M.A. Rashid all	9.7%	46.5%	43.8%
Amar Ekushey	21.3%	47.9%	30.8%
Academic Buildings	67.5%	27.9%	4.6%

The sanitation system of the restroom refers to the regular and proper cleansing of the toilet and the bathroom (both are separated in our residential halls). Many students always complain about the unhygienic environment of the bathroom in the halls. The stuffs appointed for the cleaning don't maintain regularity and they lack the knowledge of proper cleansing techniques. As a result, the washrooms in the dormitories remain unhygienic. Majority of the students have stated that the washrooms are cleaned once in a while and some of them (28% on average) thinks that the cleaning procedures are not properly done. On average only 20% students think that the washrooms are cleaned properly.

From the above statistics a noticeable deterioration of hygiene can be seen in Dr. M.A. Rashid hall. Students living in this hall have faced major issues in their washrooms due to extreme unhygienic environment. Some students think due to the location of the hall being near the gate many outsiders come and use the hall washroom to their accord. Apart from the fact that the stuffs show great incompetence in cleaning the washrooms, almost 10 to 15 people use only 1 or 2 washrooms in the residential halls [3]. Whereas, the non-residential students don't seem to suffer from these kind of unhygienic bathroom environment. In the mess or other student accommodation, students share a clean washroom among 2 to 3 persons. The non-residential students are responsible for the hygiene of their own washrooms.

Table 8 Appropriate waste disposal management

	Regular disposal of waste	Irregular waste management
Dormitories/ Residential Halls	32.9%	67.1%
University Campus	77.8%	22.2%
Academic Buildings	59.8%	40.2%
Student accommodation Outside campus	61.3%	38.7%

Regular disposal of waste is necessary to maintain a healthy environment. From the table above, we can see the average rate of regularity of waste disposal in all 7 dormitories of the campus is 32.9%. On the other hand, non-residential students have a much better disposal system that maintains regularity according to 61.3% of the non-residential students. Because of unpunctual disposal of waste, the residential students live in a detrimental environment which further intensify the health deterioration.

As the students spent a large amount of their day in the university campus and in the classes and labs, the environment of the university and academic buildings should also be maintained. According to the 77.8% students the university campus is clean and waste disposal system is praiseworthy. However, this percentage decrease a lot when it comes to academic buildings and comes down to 59.8%. Regularity in the waste disposal system is necessary to keep the environment fresh for the students.

**Food sanitation:** Food sanitation refers to the sanitary measurements taken to avoid foodborne illness of the consumer. The effect of unhealthy and insanitary food on one's body is unthinkable. Because of consuming unhealthy food for longer period of time the young students are inclined to get sick every now and then. This not only affects their studies but also have long termed detrimental effect on their health.

Table 9 Food sanitation practices in the Dormitories and Hotels near the University Campus

	The food is fresh & warm	The food is not fresh	The environment is unhealthy
Begum Rokeya Hall	47.8%	35.9%	16.3%
BSMR Hall	48.8%	38.8%	12.3%
Lalon Shah Hall	47.9%	36.9%	15.2%
Khan Jahan Ali Hall	45.7%	39.7%	14.4%
Fazlul Haque Hall	48.9%	34.8%	16.3%
DR. M.A. Rashid hall	41.6%	40.9%	17.2%
Amar Ekushey Hall	42.3%	45.8%	11.9%
Hotels	39.7%	46.6%	13.7%
Cafeteria	68.9%	21.9%	9.2%

From the table above, on average 46% of the residential students think they get fresh and warm food served to them while other 39% (on average) thinks that the food served in the halls are not fresh and not made maintaining proper sanitary measurements. Almost 15% of the students expressed that the environment of the dining is not healthy. After further investigation, more information about the lack of inefficiency shown in maintain a healthy environment in the kitchen and dining are gathered. Food making procedure should always start with clean hands and clean kitchen which is not maintained in the dormitories. For maintaining a sanitary environment in the kitchen the workers should use clean gloves, the utensils should be properly cleaned before serving the food, the food should not be kept in the open without any protection. None of the above mentioned steps are followed by the kitchen managements in the residential halls. Many students have complained about the unwashed (not properly washed) utensils that are served to them. Unvaccinated dogs and cats enter the vicinity of the residential halls and roam around near the kitchen creating noxious environment.

The food available near the university campus are in worse condition than the residential halls according to the students. 46.6% of the students think that food served in the hotels are not fresh. Some students stated that the hotel owners serve stale food to them after reheating and seasoning them a little bit. Some have found dead insects in their food while eating. The student consumers who have eaten

these foods for a longer period of time have possibility of getting major health risks such as ulcer, GERD, IBS etc.

Table 10 Percentage of students who suffered from food poisoning or other foodborne diseases due to the consumption of unhealthy food

	Yes	No	Not sure
Residential Students	39.5%	57.7%	2.8%
Non Residential students	65.3%	23.8%	10.9%

The table shows that the non-residential students are more prone to foodborne diseases than the residential students. Almost 65.3% of the non-residential students suffered from food poisoning and other foodborne diseases, while the percentage of residential students is a lot less in this regard.

This doesn't indicate the fact that food sanitation system in the dormitories are great although they are better than the hotels outside the university campus. For maintaining the sanitary standards of food authority should step forward as student's health is on the line.

## DISCUSSION

This study illustrated the deprivation of proper sanitation management of the students of Khulna University and Technology (KUET) [5]. It portrayed the different perspective of residential and non-residential students of this university and their experience with the ongoing sanitary practices inside and outside the university vicinity. Staring from water sanitation, sanitary supplies, regular cleanliness of the restrooms, proper waste disposal to food sanitation, every parameter of sanitation was discussed. Both residential and non-residential students suffer immensely due to the malpractices of hygiene. This study showed how the sanitation environment effected the health of the students potentially endangering them to multiple major health risks. Due to these sanitary issues students nowadays prefer to study in foreign countries [5]. As a result, the nation is losing their talented pupils. However, those who can't afford foreign studies are helpless in this regard [5].

The authorities of the university and the hall provost of every residential hall should address this alarming issue of unsanitary lifestyles of the students. Purified drinking water should be provided to every student both residential and non-residential. Proper waste disposal of dormitories should be done punctually to provide a healthy atmosphere to the students. Cleanliness of the washrooms should be done by more expert stuffs and should be done regularly. More washrooms should be built in every dormitory for the students. Proper food sanitation measurements should be taken to ensure the students health both in the residential hall dining and hotels outside the campus.

There are multiple limitations of this study because of the inability of bringing all the aspects of sanitation management [5]. The result of this survey can be effected by participant's choice and preferences [5]. However, the purpose of this study was fulfilled as the different struggles of residential and non-residential students were portrayed regarding sanitary practices [5].

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