

## A COMPARATIVE ANALYSIS OF SANITATION PRACTICES BETWEEN PUBLIC AND PRIVATE UNIVERSITIES OF BANGLADESH

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### ABSTRACT

This paper aims at the basic hygiene and sanitation practices of students of public and private universities in Bangladesh. In Bangladesh, there are 53 public universities and 109 private universities, and student enrollment in these universities after completion of 12th grade (e.g. HSC (Higher Secondary School Certificate) examination, A-level, Alim examination and technical equivalence) about 25.1 % in 2021, according to the World Bank collection of development indicators. Upgraded health issues and sanitation systems in educational institutions, especially at school and college levels are having mass concern. But while it is about university students, it seems less of a prime concern among the students as well as the authorities. Our study is mainly concerned with Water Sanitation and Hygiene (WASH)-related problems from both private and public universities' points of view. It also includes the extensive survey participated by the students providing their personal information about hygiene. It helps to provide information about waterborne diseases, water scarcity in university residential halls, hand washing facilities, cleaning and disinfection processes in residential hostel premises, etc. From the survey, it has been noticed that private university students possess better sanitation practices in comparison to public university students. The study reveals about 31.5% of the students of public universities opined that they were affected by waterborne diseases like dysentery, diarrhea, typhoid, and other gastrointestinal complexities while the rate of affected students from private universities is 5.6% after they got admission to their universities. Here the maintenance of hygiene facilities is defined by hand washing practices, offered by the university authority, 11.11% of students from public universities responded that they always experienced hand washing facilities but 68.52% of students from private universities opined to have the same facilities in university washrooms. The rate shows how students from public universities are deprived of proper hygiene practices provided by university administrators. This study also put forward some effective recommendations to improve the existing WASH practices in both scenarios.

**Keywords:** Sanitation, hygiene, disease, WASH, disinfection.

## 1. INTRODUCTION

The universities that are operated by the Government and financed by the country's people are called the public universities. On the other hand, the universities that are run by the private sector or by personal will and not by the Government are called Private universities. This study evaluates the comparative analysis of sanitation practices and facilities among the private and public universities (and affiliated institutions) of Bangladesh. Maintaining hygiene and sanitation practices along with getting pure drinking water for all university students is a basic need. The students in Bangladesh have a growing interest in taking higher studies after the completion of 12<sup>th</sup> grade. In a report published in the Daily Star, in 2022, at least 49,151 Bangladeshi students went abroad to study in 58 countries, according to the latest UNESCO data. The number was 24,112 in 2013 and 16,609 in 2008 (*Number of Students Going Abroad Triples in 15 Years despite University Boom | Students Going Abroad for Study Keep Rising*, n.d.) According to the World Bank collection of development indicators, more than 25% of students stay in our country to get admission to the universities of Bangladesh per year. As per Bangladesh Education Statistics 2021, the number of seats for first-year students in 49 public universities is 51,152, and in the National University, it is 11,30,032. The number of seats for first-year students in 107 private universities is 2,38,323 (Ashik -E -Elahi & Hossain, 2020).

During their class or study hours, it is essentially required to have proper sanitation availability. Sometimes university authorities face challenges in providing proper sanitation practices among the students. University-affiliated or owned residential halls are mainly deprived of proper sanitation practices.

Communal washrooms and bathroom systems in these places are only meant to be applied but they are not washed properly or regularly by the attendants ('Ahmed & 'Rahman, 2000). Also, scarcity and insufficiency of water in toilets produce unpleasant odors and also encourage students not to wash their hands after using the toilets. Again, unpleasant odor leads them to refrain from using toilets when it is required and health hazards can be seen e.g., inflammation of intestines, constipation, urinary tract infections, kidney failure, and so on. As all the students put their steps to universities to develop their dreams, it is a primary condition to ensure zero health hazards caused by the university's sanitation process. In both residential halls and academic buildings, proper and sufficient supply of water in toilets, sufficient water supply to wash hands after using toilets, and regular cleaning of toilets are fundamental conditions to guarantee the implementation of appropriate sanitation practices among the students.

In the residential hall, the dining environment is also a major concern. As the study includes WASH practices, it is essential to ensure clean, hygienic, and environment-friendly dining facilities in both university residential halls and canteens. Washing hands before preparing food and before taking the meal should be checked. But in the real picture, the hostel dining is always seeming unhygienic and hand wash bottles or soap are not always available. The hand wash soap or handwash bottles are useful to disinfect the cook's as well as consumers' hands. Due to a lack of proper handwashing practices among the students and staff inside the dining area, water-borne diseases occurred significantly during the student's university days. Some of the common diseases are cholera, diarrhea, typhoid, food poisoning, dysentery, and other gastrointestinal diseases etc.

A study was done on private university students in Bangladesh and it is observed that most of the students use water to wash hands in their need. However, only a small percentage (22.5%) effectively followed the correct handwashing steps and frequently used water, soap, or hand sanitizer. In the same study, it was found that 37.5% of students forget to wash their hands while attending university (Sultana et al., 2016). That study was done in the Private Universities of Bangladesh that revealed the level of knowledge and practice of hand hygiene among university students.

Another study reveals the hygiene and sanitation practices of university students in Bangladesh specifically done at the University of Dhaka. That study also focused based on male and female students e.g., Female students have 1.992 times better hygiene and sanitation practices than male students. Students at home have 3.745 times better hygiene and sanitation practices than students at the residential hall. Every person has the right to be shielded from illness and other health risks that can arise from improper excreta and human waste disposal. A study shows that proper investments in the quality of

drinking water can reduce the number of deaths from diarrhea by 17%, sanitation by 36%, and hygiene by 33%. The fact that most water sector organizations are run by highly qualified water engineers who are either ignorant of or uninterested in sanitation and hygiene issues is another reason why these numbers are commonly disregarded (Shakhawat Hossain et al., 2020a).

Consequently, it is essential to undertake a study on the sanitation practices of both Public and Private universities in Bangladesh. As the Public universities are owned by the Government, regular cleaning and check-up facilities cannot be provided due to some internal reasons like carelessness of the attendants, misuse of power and money, and lack of proper guidelines and training of the cleaning staff. On the other hand, Private universities are ruled by the private sector or personal will, and all the facilities are maintained by the student's money. But the fact is, proper hygiene and sanitation practice is a basic need for all the students. The study was done on 108 random students from different public and private universities in Bangladesh. Their opinions were taken by Google form. This study provides information on the basic hygiene and sanitation practices from Public and Private Universities' point of view. It also helps to concern the Government and as well as University authorities to ensure proper sanitation. This paper aims to evaluate personal hygiene practices among students from different universities in Bangladesh.

## **2. METHODOLOGY**

The study was conducted on 108 students from different universities around the country by using Google Forms. There are different kinds of educational institutes offering many degrees after the completion of 12<sup>th</sup> grade. This study took all the responses from private and public medical colleges as private university and public university's responses respectively. This is mentioned to simplify the further processes.

### **Data Collection:**

This is a quantitative and questionnaire survey method to collect their opinions. There were 20 questions asked and the answers were taken in different forms (e.g., multiple choice, checkbox, short answer and recommendations, etc). The questionnaire was prepared to include all the divisions around the country but got most of the responses from the Khulna and Dhaka divisions about 49.5% and 44.4% respectively. There were responses also came from Barisal (4%), Chattogram (1%), and Rajshahi (1%). Among the participants, there were 66.7% were female and 33.3% male. The students who provided their information to the Google form from the mentioned divisions were incorporated into the study and other divisions were excluded from the study. The study was done to show the comparative sanitation practices in both public and private universities along with residential and non-residential students. The survey included 52.5% non-residential and 45.5% residential students and some other types of students participated as they were staying in outside mess. The questionnaire was provided as a soft copy and the link was through social media like Facebook, Messenger, WhatsApp, and Instagram. The participants were chosen randomly from different universities in Bangladesh. The responses were collected from 22<sup>nd</sup> October 2023 to 14<sup>th</sup> November 2023.

### **Types of Questions Asked on Questionnaire:**

In the questionnaire, 6 questions were about personal information, and 6 questions were about the experience of drinking water and sanitation inside the academic building and in the residential halls because not only children are affected by waterborne diseases but also students of adult ages are also affected by these diseases. The study aims to focus on the present experience and situation of the university students' health, whether it's public university or private university. The study was done to gather all the information regarding the attitudes toward hygiene knowledge along with showing the sanitary practices from Public and Private university points of view.

### Calculation Process and Way of Evaluation:

The analysis of the entire data was done by using Questionnaire Survey; using a structured set of questions, questionnaire surveys are a technique for collecting statistical data about the characteristics, attitudes, or behaviors of a population (Preston, 2009). As Bangladesh is a developing country, the socio-economic aspect and various religions and traditions influence people to follow different types of sanitary practices by themselves. Putting all these factors under consideration the evaluation process does not reveal the person’s religion or socio-economic condition.

## 2. RESULT & DISCUSSION

### 3.1. Primary Details of the Study:

Before scrutinizing the responses, it is required to show the basic information of the participants. The study was done with over 108 students of which half of the students (54) came from public universities and the remaining half (54) were from Private universities.

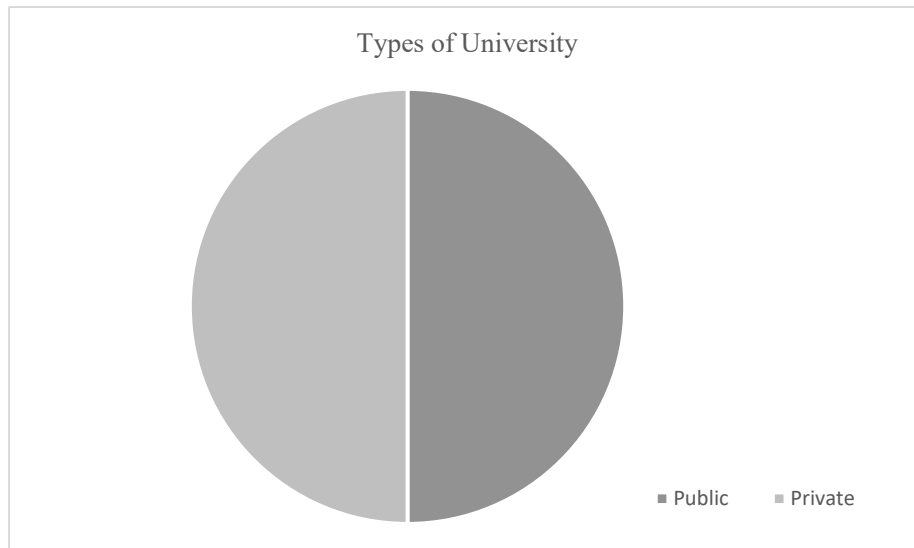


Fig 1: Participants’ Ratio According to Public & Private University

Here the left and right parts of the pie chart indicate participants from public and private universities respectively. The 50/50 proportion was made willingly to show the situation of Public Universities (including DU affiliate universities/ Government Medical Colleges/ National Universities/ Open Universities/ Diploma Degree offering Government Institutes) and Private (including Private Medical Colleges, Degree offering private educational institutes) University’s sanitation practices more precisely.

Table 1: Profile Analysis of the Participants

SL	Information	N	%
1	<b>Gender Profile</b>		
	Male	38	35.2%
	Female	70	64.8%
2	<b>Division</b>		
	Dhaka	53	49.1%
	Khulna	49	45.4%
	Barisal	4	3.7%

	Rajshahi	1	0.9%
	Chattogram	1	0.9%
<b>3</b>	<b>Residents</b>		
	Non-residential	60	55.6%
	Residential	46	42.6%
	Other	2	1.9%
<b>4</b>	<b>Year Passed</b>		
	year<=1	21	19.44%
	1<year<=2	8	7.41%
	2<year<=3	38	35.19%
	3<year<=4	37	34.26%
	year>4	4	3.70%
<b>5</b>	<b>Daily Time Spent (Approx.)</b>		
	3 hrs to 5 hrs	44	41.5%
	5 hrs to 7 hrs	37	34.9%
	7 hrs to 10 hrs	26	24.5%
	More than these periods	3	2.8%

Among the participants, the responses from females were more than the males. There were no other gender participants found in the study. As sanitation practices for women are important in many cases, so their large responses from female students were taken in future implementation. The questionnaire included students of different ages who had started to spend their days in university. Most of the students are between 2<sup>nd</sup> <year<=3<sup>rd</sup> and 3<sup>rd</sup> <year<= 4<sup>th</sup> ranges. The above data shows that most of the participants have spent their time in their respective universities between 2 to 3 years. The questionnaire was sent to the university students to cover random divisions of Bangladesh, but most of the responses came from Dhaka (49.1%) and 2<sup>nd</sup> highest responses came from the Khulna division (45.4%). Also, some small numbers of responses came from Barisal, Rajshahi, and Chattogram. Most of the participants spent (41.5%) 3hrs to 5hrs in their respective universities for study or research purposes. 34.9% students spent 5hrs to 7hrs, 24.5% student spent 7hrs to 10hrs for the mentioned reason. More than all these periods only 2.8% of students were opined to stay in university on daily basis.

### 3.2. Different Sanitary Issues According to Public & Private Universities of Bangladesh

After getting all this information, drinking water quality assessments in academic buildings and residential halls are also required. As a community requires pure drinking water to have better health. Without access to clean and pure water, different health problems will increase (Fahmida et al., 2013). In Bangladesh, the students studying in different universities have proper and profound knowledge about sanitation and personal hygiene but most of the implications can be adopted by developing suitable sanitation and healthy environments in every corner of any university in this country. The result below shows how sanitation and other things related to it are differently experienced in Public and Private universities. The study reveals only 7.41% of public university students put drinking as very satisfying whereas 37.03% of private university students put their opinion in the same category.

Table 2: Attitude Towards Drinking Water Quality in Your University (Academic Building)

University Type	Very Satisfied (%)	Satisfied (%)	Okay (%)	Dissatisfied (%)	Very Dissatisfied (%)	I have not tasted it yet (%)
Public	7.41%	37.03%	29.63%	18.52%	5.56%	1.85%
Private	37.04%	35.19%	20.37%	1.85%	1.85%	3.70%

The above table shows how the percentage of satisfaction varies towards drinking water quality in university academic buildings according to public and private university students' points of view. Additionally, the hostel drinking water quality varies from academic buildings sometimes and the variation is noticeable for public and private universities too.

Table 3: Attitude Towards Drinking Water Quality in Your University (Residential Halls)

University Type	Very Satisfied (%)	Satisfied (%)	Okay (%)	Dissatisfied (%)	Very Dissatisfied (%)	I have not tasted it yet (%)
Public	3.70%	27.78%	27.78%	31.48%	7.41%	1.85%
Private	22.22%	22.22%	11.11%	3.70%	1.85%	38.89%

The above table shows how the percentage of satisfaction varies towards drinking water quality in university academic buildings according to public and private university students' points of view. Additionally, the hostel drinking water quality varies from academic buildings sometimes and the variation is noticeable for public and private universities too.

Table 3 gives the data that only around 4% of students of public universities show the highest satisfaction, on the other hand, 22.22% of students from private universities say they have the highest satisfaction with drinking water supplied in residential halls. It is also notable in The above table shows how the percentage of satisfaction varies towards drinking water quality in university academic buildings according to public and private university students' points of view. Additionally, the hostel drinking water quality varies from academic buildings sometimes and the variation is noticeable for public and private universities too.

Table 3 that a large number of students from private universities (38.89%) did not taste this category of drinking water as many private universities have less or no hostel facilities and students of these universities used to stay at home or in mess, outside of the university area. Drinking water quality is a major component of developing proper sanitation and causing fewer public health hazards. Necessities and crucial elements of primary health care include clean, safe, and easily accessible water supplies as well as adequate sanitation. The field of public health is developing more quickly and widely the more water there is, and the higher its quality (Ahmed & Rahman, 2000). As the main aim of this study is to show the scenario of sanitation practices in public and private universities, it is shown how much the students of public universities are getting poorer water supply day by day than private university students.

Again, there seems some unavailability of sanitary water supply which is also responsible for putting the university students in health hazards. Proper supply of sanitary water involves students washing their hands after defecation and proper consumption of water after using toilets. As most of the toilets are communal type, clean and fresh toilets inspire students to use them further. Two tables show the different aspects of sanitary water supply in both Public and Private universities along with Academic and Residential Hostel building scenarios.

Table 4: Availability of Sanitary Water Supply in Academic Buildings

University Type	Regularly Available (%)	Available but sometimes Scarcity occurs (%)	Scarcity can be seen for most of the time (%)	I have no idea (%)
Public	51.85%	33.33%	7.41%	7.41%
Private	77.78%	9.26%	0%	12.96%

Table 5: Availability of Sanitary Water Supply in Residential Hostel Buildings

University Type	Regularly Available (%)	Available but sometimes Scarcity occurs (%)	Scarcity can be seen for most of the time (%)	I have no idea (%)
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Public	57.41%	35.19%	1.85%	5.56%
Private	33.33%	7.41%	1.85%	57.41%

Here, we are going to analyze the scenario of sanitary water supply in both places. In public university academic buildings, 7.41% of students experienced scarcity of water most of the time while none of the private university students experienced this kind of situation according to

**Table 4.** Moreover, sanitary water supply in residential hostels in both places also shows variations. Though scarcity seen most of the time shows the same result in both cases (1.85%), scarcity faced by the students for some while by public university students is more (35.19%) than private ones (7.41%)

**Table 5.** As a communal type of washroom is provided in such places, needs to be washed and flushed with a sufficient amount of water for further use. Fouled toilets are either ignored by subsequent users or fouled more due to a lack of sufficient water supply. Ignoring toilets when a student needs them in such cases is detrimental to health. It can cause many health hazards. The effects of poor sanitation, including proper well-being, typhoid, intestinal worm infections, polio, and diarrheal illnesses like dysentery and cholera can affect humans. It makes stunting worse and aids in the development of antibiotic resistance(*Sanitation*, n.d.).

There is also another requirement to remain healthy- washing hands with soap or liquid handwash or alcohol-based hand rub, hand wipes, and antiseptic cleansing agents after using toilets and before taking meals. It is expected to have proper hand washing facilities in the washrooms whether it is a Public or Private university. The table below shows shown availability of "Hand Wash" in the University Washroom.

Table 6: Availability of "Hand Wash" in Your University Washroom

University Type	Regularly Available (%)	Scarcity can be seen for most of the time (%)	Available Sometimes occurs (%)	but Scarcity	Personally Afforded (%)	I have no idea (%)
Public	11.11%	35.19%	12.96%		33.33%	7.41%
Private	68.52%	1.85%	22.22%		3.70%	3.70%

Another crucial factor is washing hands to minimize the public health hazard. Because sustainable sanitation, clean water, and good hygiene have a significant positive impact on development, education, and health (Fan & Azad, 2017). It is seen from

**Table 6** that getting hand washing facilities in academic buildings in public university students regularly is only around 11%, on the contrary, this number is about 68.5% in private universities perspective. It is a matter of fact that about 33% of public university students usually afford personal handwashing equipment indicating that they are more aware of maintaining personal hygiene. So, proper facilities of sanitation in public universities can help to improve present public health conditions.

Along with the university washroom, hand washing facility is expected to be provided in university residential hostels. Here the result is shown below:

Table 7: Availability of Hand Wash in Your University Residential Hostel

University Type	Regularly Available (%)	Scarcity can be seen for most of the time (%)	Available Sometimes occurs (%)	but Scarcity	Personally Afforded (%)	I have no idea (%)
Public	5.56%	11.11%	3.70%		70.37%	9.26%
Private	22.22%	5.56%	0%		7.41%	64.81%

The handwashing facilities in university residential halls are also shown in

**Table 7.** It is so frustrating fact that there are only 5.56% of students opined that they get regularly available handwashing facilities, whereas, 22.22% of students from private universities get handwashing facilities regularly. Again, around 70% of public university students afford handwashing facilities personally. Proper hand-washing practices may reduce many waterborne diseases. However proper practice will not be possible if handwashing facilities are not provided by the authority. As the residential students stay in the university hostels for a long period, they need proper sanitation supplies instead of personally affording them. Sometimes it becomes impossible for those students who need to maintain their family or educational expenses during the university period. They prefer to live hand to mouth instead of buying such health-maintaining products. But they also have rights to live like other students, getting proper hygiene facilities and also buying mineral water from shops. Here the table shows the different aspects of sanitation and hygiene experienced by different students covering various public and private university students of Bangladesh.

### 3.3. Examining the Rate of Illness of the Students Due to Improper Sanitation

Now, we are going to analyze how much students get affected by water-borne diseases frequently after getting admission to their respective universities by taking public and private university points of view.

Table 8: After getting admission to your university are you affected by waterborne diseases frequently?

University Type	Yes (%)	No (%)	I cannot remember (%)
Public	31.48%	59.26%	9.26%
Private	5.56%	75.93%	18.52%

The above table indicates that public university students are affected by several waterborne diseases. The rate of affected students from public universities is 31.48% after getting admission to their university but this rate is comparatively low in the private university scenario (5.56%) stated in

**Table 8.** If the universities have residential hostel capacities, it is detrimental to students' health if they get sick during their on-campus class time and if they do not get sufficient medication from the university authority due to a lack of proper sanitation practices. Sometimes, it is costly to take medicines for middle and lower-class income people.

Among the participants, most of them opined that they were affected by Food Poisoning mostly(32.4%). Some gastrointestinal diseases and diarrhea also affect the student's health which is a concerning issue. The participants said that they have experienced Cholera, Typhoid, Helminthiasis, Dysentery, etc frequently. There was an option including Hepatitis A, but none of the participants were found to be affected by this disease.

The overall fact shows clearly, how worse public university students experience sanitation provisions than private university students. In university residential hostels, the bathrooms and shower areas are far more than sufficient for the quantity of students utilizing them. A study conducted by(Shakhawat Hossain et al., 2020b)., found a result that only 4 lavatories and 4 bathing spaces exist for 32-50 students' residential halls at the University of Dhaka which is one of the most popular universities in Bangladesh. Students all over the country mostly choose public universities first, but there are also a good number of students who have wishes and preferences to get admitted to private universities first. But the former choice is in greater number than the latter one. This study reveals that the students of different private universities are getting much more healthy environments of sanitation than the public ones.

Bangladesh's economic development has advanced significantly in recent years. Over the previous two decades, the nation's GDP remained above six percent, positioning it as the world's fastest-growing



economy (Kabir et al., 2018). Though this study will not judge the socio-economic condition or level of intelligence or the student's choice, rather we look forward to finding the differences occurring in both scenarios. As the public university is ruled by the Government and financed by the People of Bangladesh, the cleaning and looking after of the entire procedure is done by the workers, showing negligence at their work. In public universities, there is a lack of monitoring processes that hamper public health and break the student's right to get all the health-related advantages from the authorities.

The study also includes some opinions from university students. Some of them are given as recommendations from the consumers.

*"Drinking pure water and tap water should be cleaned enough because it causes skin diseases. In the Department, drinking water should be provided on each floor"* said a female student from Khulna University of Engineering & Technology.

*"University washroom must be clean all the time. Availability of water in the washroom must be ensured. A hand wash bottle in the corner of every basin would be great."* – A male student from Khulna University of Engineering & Technology.

*"Should be focused on the availability of hand wash liquid all time."* – A male student from American International University-Bangladesh.

*"Washrooms should have adequate toilet papers, hand wash, sanitizer, proper flow of fresh water, clean bathroom facilities inside for male and female with proper materials, university canteen should serve hygiene food, Classrooms should be kept clean."* – A female student from Bangladesh University of Health Sciences.

A positive aspect of the study is most of the students had proper knowledge about WASH (Water Sanitation and Hygiene) during their pre-university days. There have been numerous school-based WASH-related interventions over the previous 20 years (2000–2020), including the provision of hardware facilities like latrine construction, tube-well installation, handwashing products, cleaning supplies, and hygiene promotion (Kabir et al., 2021). So there is less requirement to aware the students aware of hygiene and self-cleanliness. The primary required thing is to provide proper sanitation facilities in university academic buildings or residential hostels. The implications could be taken in both public and private universities of Bangladesh, as there is no 100% high satisfaction rate in the cases. According to WHO, several NTDs, including schistosomiasis, helminth-transmitted infections, and trachoma, can be avoided in large part by practicing (*Water Sanitation and Health*, n.d.). Also, the government of Bangladesh should look after the sanitary conditions of public universities and the condition of private universities can be more satisfying by looking after the in-person authority. Proper investments in quality-based drinking water and sanitary water supply should be maintained by highly qualified Engineers, appointed and trained by the Government, as we all know that these higher education taking students are the future of the nation, demanding the best services from their country so that they could learn how to return their best services to their nation too.

### 3. CONCLUSION:

This study shows how students from different universities of Bangladesh are deprived of proper sanitation facilities. Again this study helps to show the differences experienced by the students according to the public and private university basis. Various parameters are helped to identify the contrast between these two types of universities e.g., quality of drinking water, availability of sanitary water supply, and availability of hand washing facilities in both residential hostel buildings and academic buildings of the respective universities. The participants show their gratitude towards these parameters and thus the outcome shows variances between the mentioned two types of universities. The study also shows how the differences in their sanitation environment affected the students' health.

Due to improper sanitation and health practices, other issues provoke the students to get admission to foreign universities. Less concern about university-level hygiene arouses brain drain culture among

the higher economic condition based family as well as society. But this number is not larger than the lower one. However, this number is increasing day by day. But the lower or middle-class income people need to admit their children to get admission in Bangladeshi Universities, to establish their dream. Their dream of becoming a “Graduate” will be hampered if proper sanitation facilities are not provided by the Authorities.

The limitation of this study is, that all the divisions can not be shown here. It is expected to do furthermore studies on how to increase the quality of drinking water and sanitary conditions along with the proper hand washing facilities in public universities of Bangladesh. This study took a small step to show the differences initially and also put some recommendations on how to overcome the ongoing problems. Another limitation is, that the study is done over some randomly chosen universities and on some random students as the participants of the questionnaire survey. The result of the survey can be affected by the participants' level of choice and preferences. However, the aim of the study is fulfilled as we want to show some basic differences between those two types of educational institutions.

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