

# Determinants of Knowledge, Attitudes, and Practices Toward Plastic Pollution Among University Students in Bangladesh

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## ABSTRACT

The harmful impact of plastics on the ecosystem of Bangladesh is prolonged and magnified by the accelerated urbanization and the enormous applications of single-use plastics. The gap in research monograph is the untapped yet indispensable area of Knowledge, Attitudes and Practices (KAP) of university students regarding this crisis that places this group of highly educated youngsters in the perspective of this study as the drivers of sustainable change in the years to come. The cross-sectional survey of the students from three universities in Dhaka (n=201) on a pre-designed questionnaire to collect the data was considered the study and analyzed with the help of descriptive statistics and Ordinary Least Squares (OLS) regression. The findings suggest a colossal knowledge-behavior gap: high awareness score (the mean of 4.12 /5 of the students said that they were aware of the effect of pollution) and highly positive attitudes (91% of the students said that universities should have plastic policies), but their behavior was that they were a giant consumer of single-use plastics and in addition poor waste managers as only 12.4% of them used the recycling bins regularly This is a considerable attitude-practice gap, which suggests the fact that awareness is not sufficient. Most importantly, the regression outcome revealed that the predictive variables were knowledge ( $\beta=0.298$ ) and attitude ( $\beta=0.412$ ) but access to enabling university facilities ( $\beta=0.245$ ) was the true importance of sustainable behavior. In the paper, students are willing though limited by structural and convenience barriers. It. therefore recommends certain initiatives like better facilities in the campuses, good green campus actions, and integrated education that can be used to narrow this gap and make the youth realize the potential to help in reducing plastic pollution in Bangladesh.

**Keywords:** Plastic Pollution, Knowledge Attitude and Practices (KAP), Plastic Pollution, University Students, Knowledge-Practice Gap, Waste Management.

## INTRODUCTION

One of the most significant environmental issues in the modern world is dealing with is plastic waste. Microplastics are already present in our food systems, water sources, and even the air we breathe so, they are no longer only apparent trash in streets and rivers. This issue is worsened in Bangladesh a country formed by its rivers and agricultural past by increasing urbanization, increased consumerism bag, bottle, and cup packaging using common low-cost single-use plastics. over the last two decades, population growth, urbanization, and the increasing availability of plastic products have led to a rise in plastic usage in Bangladesh. Although plastic bags, cups, bottles, and food packaging are prevalent, improper disposal harms the environment and humans. Plastic bag bans and public awareness campaigns have reduced the country's plastic pollution. How individuals behave is crucial to the success of these initiatives. University students can solve environmental issues since they are educated, intelligent, and engaged. They may influence their own,

their families, and their future communities' lifestyles. Despite the potential impact of university students, the lack of research on Bangladeshi university students' knowledge, attitudes, and behaviors (KAP) regarding plastic pollution is a significant gap. This research aims to underscore the importance of filling this gap and the need for further study.

An Iranian study indicated that the public is well aware of microplastics but lacks technical awareness in terms of certain details such as particle size and toxicity. A vast majority of them (80.4%) identified appropriately that environmental pollution by microplastics might cause human health issues (Alizadeh et al., 2024a). Continued use of single-use plastics is most likely to be due to infrastructural and contextual problems. Plastic usage is very high in Indonesia, and the proper disposal is lacking because over 80% of the plastic waste is not dumped. Institutional issues like low infrastructure and policy implementation gaps have been attributed to be top contributors to the problem (Herdiansyah et al., 2022a).

Despite government and eco-friendlier campaigns against plastic bags and single-use plastics, despite the national attempts to pass policies banning them, Bangladesh is still yet to be free from having a very serious problem of plastic waste. Mountains of plastic bags, bottles, cups, and many other disposable items are consumed every day and discarded around the country. These are the wrong ways of disposing that cause clogging of drainage pipes, river and land pollution, as well as human health hazards through plastic burning or sludging.

The key objective of this research is - Evaluate the Knowledge, Attitudes, and Practices (KAP) of the Bangladeshi university students concerning plastic pollution. This includes assessing the level of understanding about plastic pollution, its causes, effects, and attitude. The study aims to identify current practices related to plastic consumption, waste segregation, and disposal plastics.

CK et al., (2017) Studies in Korea, Japan, Thailand, and the UK show that people there use a lot of plastic containers and bottles. Malaysia also uses a lot of polypropylene and PET, which is comparable to these countries. Heat, fatty meals, and extended storage may promote negative chemical migration from plastics. Plastics, which are everywhere in modern life, frequently include endocrine-disrupting chemicals (EDCs). People are worried about their health since these chemicals might go into food and beverages.

Coco Chin et al., (2023) Plastics are used extensively because they are inexpensive and long-lasting, but in Malaysia, their excessive manufacturing and poor handling have created a major environmental and health problem. According to studies, plastic waste, particularly that resulting from single-use plastics, contributes significantly to pollution, and inadequate recycling techniques make the problem worse. A critical study shows that physical impediments, including insufficient facilities, policy enforcement gaps, and convenience-driven lifestyles, inhibit pro-environmental action despite favorable beliefs.

Kumar Tharu & Shrestha, (2022) Even in Nepal, as in any developing country, plastic dependency has been increased even more with the acceleration of urbanization and consumption. A cross-sectional survey of pre-tested questionnaires was the methodology employed where 110 households were used as samples. Being published in the post-2020 world, the study provides an understanding of the pattern of consumer behaviour and policy issues in a Nepali urban location.

Naila et al., (2022) The geographical isolation of the Maldives, its reliance on imports, and its emphasis on tourism all contribute to the specific difficulty that the Maldives confronts regarding single-use plastics (SUPs). It was methodologically a cross-sectional survey of 817 respondents, applying a structured questionnaire to quantify KAP. It was conducted in the 2021-2022 year, and its findings are contextualized by the unique geographic and waste management challenges of Maldivian islands. It has been shown via research conducted all around the world, from Greece to Vietnam. Most of the plastic use studies are from North America, East Asia, or Europe, and there are none from the Gulf. Research predominantly uses either the Knowledge Attitude Practice (KAP) model or the Theory of Planned Behavior (TPB) exclusively. This research innovates by combining the two theories. This project informs us better about the physical, social, and mental factors that lead to the use of SUPBW.

## MATERIALS AND METHODS

Selection of the Study Areas The universities selected are:

1. University of Dhaka (DU): An excellent state university with an enormous, socio-economically representative student body from all over the country.
2. Dhaka International University (DIU): A large private university with enormous and diversified enrollment.
3. United International University (UIU): An excellent private university with students from a very diverse range of academic and geographical backgrounds.

Variables of the Study research employed a quantitative methodology where the variables were specified in clear terms and measured to account for their relationships under the KAP model. The variables are thus defined as follows:

### Dependent Variable:

Practice Score (Y): It is the actual practice of students towards plastic usage and disposal. It is an aggregation measure based on self-reported activity frequencies for plastic bag/bottle usage, segregation practice, recycling rates, and choice of disposal options. A higher score indicates more environmentally friendly behaviors.

### Independent variables:

Independent Variables: The study looks at some of the things that might affect the dependent variable:

1. **Knowledge Score (X<sub>1</sub>):** The total score for source, impact, decomposition rate, and microplastic and policy concern about plastic pollution.
2. **Attitude Score (X<sub>2</sub>):** Rated index score for perception, concern, and personal commitment to minimization of plastic use, from Likert-scale items.
3. **Age (X<sub>3</sub>):** Categorized by accurate age groups (18-20, 21-23, 24-26, etc.).
4. **Gender (X<sub>4</sub>):** Tally marked as male, female, or other.
5. **Academic Year (X<sub>5</sub>):** From first year through postgraduate levels.
6. **Department (X<sub>6</sub>):** Categorized by broad fields of study (Sciences, Business, Humanities).
7. **Perception Index (X<sub>7</sub>):** Perception index of understanding of responses' perspective on institutional roles and policy effectiveness.

Sample Size and Sampling Technique Identification the study population of the research consisted of undergraduate and postgraduate students from three universities in Dhaka. Stratified random sampling was employed in drawing a representative sample from the heterogeneous student population of the three universities. University and Academic Year were considered as strata for sampling to capture institutional environment differences and variations in the level of academic exposure. Sample size was determined using Cochran's formula for categorical data:

$$n_0 = z^2 \times pq \div e^2$$

Were,

Z = 1.96 (95% confidence level)

P = 0.5 (proportion of population with specific characteristic)

Q = 0.5 (1-p)

E = 0.07 (margin of error)

$$n_0 = (1.96)^2 \times (0.5) \times (0.5) \div (0.07)^2 = 196$$

As the student population in the three universities exceeded 10,000, no population adjustment was required. To account for correct non-response and incomplete questionnaires, the sample size of 201 was considered. This allocation of the 201 respondents across the universities also proportionate to their respective student numbers to ensure there was enhancement in representativeness. Dhaka International University (DIU), as it had the largest number of students among them, provided proportionately the highest number of respondents.

Data collection was done with considerations for accessibility, effectiveness, and respect for research ethics. The main instrument used for data collection was a standard online questionnaire developed and disseminated through Google Forms. The digital platform was used for providing universal and fast access to the student population of the three targeted universities with minimal contact and resource constraint.

Data Analysis was the 201 students. We prepared descriptive statistics so as to feel good about our respondents. We went to more advanced inferential statistics to discover the inter-connections among the variables and to evaluate our hypotheses. We used the statistical package programme STATA (version 13.0) for this stage of analysis. The core of our analysis was to use Ordinary Least Squares (OLS) regression. It allowed us to see how variables like knowledge scores, attitude scores, gender, and age influenced the practice scores of the students in reality, how all these different variables combined to predict their real behavior towards plastic usage. We conducted a diagnostic multicollinearity test via the Variance Inflation Factor (VIF). This was imperative to make sure our independent variables in the model were not correlated highly with each other, in order to ensure results are stable and reliable. Finally, for the one open-ended question that left room for comments and recommendations, we used a conceptual and narrative analysis approach. This entailed close reading of all qualitative feedback in order to identify common suggestions, problems, and issues expressed by the students, adding context and depth to our quantitative findings.

To be able to ensure the reliability of our regression, we actually tested formally for multicollinearity. We calculated two measures of importance for each of our independent variables: its Variance Inflation Factor (VIF) and its reciprocal Tolerance. During all the periods of this study, the primary purpose was to uphold the highest level of ethical principles. Prior to this, we have received a formal clearance of the department of economics at Dhaka International University. The clearance process involved providing a comprehensive research proposal stating our methodology and addressing all of the ethical concerns surrounding conducting research with human subjects.

## RESULTS

Results value the knowledge, attitudes and behaviors of Bangladeshi students at the university level about plastic pollution. The findings, with important policy and intervention implications, are reported in three parts descriptive Statistics of Sample characteristics.

- 1) An Evaluation of Knowledge. 2) A Measurement of Attitudes. 3) An Assessment of Behaviors.

Subsequent to this section, there will then be an economic view of the determinants that influence the way humans utilize plastic.

### Table 1: Socio-demographic of Respondents (N=201)

*Source: Authors' own calculations based on a 2025 field survey*

#### Gender Distribution

The gender distribution is nearly ideal as well, thus providing a decent representation of the general student body: 51.2% of the participants are boys (103), and 48.8% are girls (98). The possibility of gender bias is reduced by this equilibrium. It guarantees that both groups are equally represented in any subsequent research on how gender affects plastic use.

## Age Group Concentration

Most of the people who answered are in the age range of those who go to college, which shows that the survey was aimed at the most active student group:

The biggest group is the 21–23-year-olds, who make up 67.2% of the sample.

The younger generation (18-20 years) is likewise well-represented at 15.4%.

Individuals aged 24 and older (including the "27-29" and "30 and Above" groups) are a tiny segment, representing around 22.4% of the sample.

## Academic Year Overview

Senior undergraduate students make up the majority of the sample, offering a useful viewpoint from those who have had more experience in a university setting: Fourth-year undergraduate students make up the single biggest category at 34.3%. This high level of representation is significant because these students are frequently more integrated into university life and are closer to entering the workforce. A lot of students from the second and third years are also there (25.4% and 20.4%, respectively).

The study's emphasis on this particular demographic is supported by the fact that undergraduate students (First through Fourth Year) collectively comprise 97.5% of the total sample. Only 2.5% of students are postgraduates, which is a very small group.

**Table 2: An Assessment of Knowledge (N=201)**

| Knowledge Item                               | High Level (%) | Moderate (%) | Low Level (%) | Mean Score |
|----------------------------------------------|----------------|--------------|---------------|------------|
| Identification of common single-use plastics | 61.2           | 30.3         | 8.5           | 4.12       |
| Understanding of plastic decomposition       | 55.7           | 33.8         | 10.4          | 3.98       |
| Knowledge of microplastics                   | 50.7           | 36.8         | 12.4          | 3.85       |
| Awareness of government bans                 | 45.8           | 39.8         | 14.4          | 3.64       |
| Understanding pollution consequences         | 68.2           | 25.4         | 6.5           | 4.28       |

**Source:** Authors' own calculations based on a 2025 field survey

**Scoring:** 1 to 5 points, with 1 being extremely low and 5 being very high.

## Explanation of Knowledge Levels

On a 5-point scale, all of the Mean Scores are more than 3.5, indicating that university students have a typically high degree of understanding about plastic pollution. Knowledge that is the Most Comprehensive: identification and consequences

Expertise at its peak is most concentrated on solving the most obvious, pressing parts of the problem: Having an Understanding of the Consequences of Pollution (Mean = 4.28), With a mean score of 68.2%, this question demonstrated the greatest level of knowledge among the responders. It's clear that these affects make students

very aware of the harm caused by plastic waste. Names of common one-time-use plastics (Mean = 4.12): With 61.2% claiming to have a good level of understanding, this is the second-strongest category. The majority of students can name the most common household goods.

### Knowledge that is moderate but basic

Regarding plastic's impact on the environment, respondents demonstrate decent, although not very solid, knowledge: Understanding plastic degradation (mean = 3.98): More than half of the students (55.7%) know a lot about this subject, which shows that they understand how long plastic garbage lasts. Microplastics knowledge (Mean=3.85)- The excellent knowledge score is reduced to 50.7% in this location. This small drop in the percentage of people who know about the newer, less obvious pollutants (microplastics) is a sign that people know less about them than they know about the bigger problems.

### The Area of Least Expertise: Government and Policy

The most uninformed aspect is with regards to particular regulatory measures, which means that people are not well informed about the existing legal frameworks: Government prohibitions knowledge (Mean=3.64): With 45.8%, the question witnessed the lowest rate of responses with high levels of know-how, and the lowest mean score in general. This means that even though students are aware of the general effects of pollution, they are not aware of specific regulations and laws that the government has made regarding controlling it.

**Table 3: A Measurement of Attitudes (5-point Likert Scale)**

| Attitude Statement                             | Mean Score | SD   | Agree + Strongly Agree (%) |
|------------------------------------------------|------------|------|----------------------------|
| Plastic pollution is serious in Bangladesh     | 4.32       | 0.76 | 88.6%                      |
| I can help reduce plastic pollution            | 4.25       | 0.82 | 85.1%                      |
| Willing to reduce single-use plastics          | 4.18       | 0.85 | 82.6%                      |
| Government is doing enough                     | 2.84       | 1.12 | 34.3%                      |
| Universities should enforce plastic rules      | 4.45       | 0.71 | 91.0%                      |
| Willing to pay more for eco-friendly packaging | 3.87       | 0.94 | 68.2%                      |
| Recycling is effective solution                | 4.15       | 0.88 | 80.6%                      |
| Feel responsible for plastic waste             | 4.08       | 0.91 | 78.1%                      |
| Education can change plastic habits            | 4.38       | 0.74 | 89.1%                      |

**Source:** Authors' own calculations based on a 2025 field survey

This table provides a rough idea of the opinion of the people that participated in the survey regarding various aspects of plastic pollution. It is founded on 5 points Likert scale with 5 being most positive or Strongest Agreement and 1 being the most negative or Strongest Disagreement.

## Positive attitudes and a high level of Awareness

The fact that most Mean Scores were higher than 4.0 indicates that the respondents were generally optimistic and confident about the matter. Recognition of Seriousness: The statement Plastic pollution is a serious issue in Bangladesh received a mean score of 4.32, with an overwhelming 88.6 of respondents agreeing or strongly agreeing. This shows that a lot of people are aware of how bad the problem is. Self-Efficacy and Education: The majority of respondents are of the opinion that change is feasible. Over 85% of people who answered agree with the lines "Education can change plastic habits" (mean = 4.38) and "I can help reduce plastic pollution" (mean = 4.25) This shows that people feel empowered and believe in the power of knowledge.

## The strongest call for action by institutions (High Consensus)

Most people agreed that rules should come from the top down. The statement "Universities should enforce plastic rules" had the highest mean score (4.45), as well as the lowest standard deviation (0.71). This signifies that 91.0% of respondents firmly and regularly assert that their educational institutions ought to implement stringent measures to regulate plastic usage.

## Most unhappy with what the government is doing (High Polarization)

The government's involvement is where people are most unhappy and confused:

The phrase "Government is doing enough" gets the lowest Mean Score (2.84) and the largest Standard Deviation (1.12). The fact that only 34.3 respondents concur and the low mean score (which is close to the neutral point of 3.0) indicate that the majority of respondents are either dissatisfied or indifferent to the current government initiatives. The high SD shows that people have very different thoughts on this subject, with many likely Strongly Disagreeing (which brings down the mean) and some still agreeing.

## The gap in 'willingness to pay' is referred to as Behavioral hesitation.

People have good views about the issue, but their commitment drops when it comes to cost. For example, "Willing to pay more for eco-friendly packaging" has the lowest positive Mean Score (3.87) and a rather high SD (0.94). The agreement rate decreases to 68.2%. This shows that most students are eager to support green practices, but a large number of them are not willing to pay more for them.

**Table 4: Current Plastic Use (Practices)**

| Practice Aspect             | Frequency        | Percentage |
|-----------------------------|------------------|------------|
| Plastic Bag Usage Frequency | (Daily)          | 36.8%      |
|                             | 3 (Regular)      | 42.3%      |
|                             | 1-2 (Occasional) | 20.9%      |
| Plastic Bottle Usage        | 4-5 (Daily)      | 32.8%      |
|                             | 3 (Regular)      | 38.8%      |
|                             | 1-2 (Occasional) | 28.4%      |

|                               |                   |       |
|-------------------------------|-------------------|-------|
| <b>Disposal Methods</b>       | Regular waste bin | 61.2% |
|                               | Burning           | 19.9% |
|                               | Recycling bin     | 12.4% |
|                               | Open dumping      | 6.5%  |
| <b>Waste Separation</b>       | Always            | 14.4% |
|                               | Sometimes         | 42.8% |
|                               | Rarely            | 32.3% |
|                               | Never             | 10.4% |
| <b>Campaign Participation</b> | Regularly         | 10.9% |
|                               | Occasionally      | 38.8% |
|                               | Never             | 50.2% |

*Source: Authors' own calculations based on a 2025 field survey*

## Practical Aspects and Actions

According to the practice data, the students who were assessed exhibit unsustainable behaviors, such as a high dependence on single-use goods and a low level of active participation in waste management, even if they have high levels of knowledge and positive attitudes.

## Intensive Reliance on Personally-Use Plastics

Use of plastic bags is a widespread activity among respondents with 42.3% of them using the bag daily and 36.8% using the bag on a regular basis. This implies that the majority of the population has not been in a position to offer alternative use of the plastic bags in their day-to-day activities.

## Plastic Bottles

71.6% of people claim they use it on a regular basis (38.8%) or daily (32.8%). It is evident based on the frequency that students have become a heavy drinker of pre-packed bottled beverages.

## Ineffective Waste Disposal and little Recycling.

The disposal practices show that the concern of the environmentally sustainable practices is not valued, including recycling: The predominant form of plastic trash disposal is the standard trash can with 61.2% share.

Although this is quite natural, it implies that the garbage is not segregated and it does not always get sorted to be recycled.

### Harmful behavior

A major percentage of the respondents are still engaged in harmful behaviors with 19.9 percent of them confirming that they burn plastic, a source of air pollution, and 6.5 percent of them openly dump their waste.

### Low Recycling Participation

12.4% of people say they use a recycling container, which shows that people aren't consistently recycling, which is probably caused by a mix of bad habits and a lack of infrastructure.

### Pro-environmental Behavior is Lowly Involved

Separating trash: It is (Not Always Done): just 14.4% of people separate their trash always. The largest group (42.8 percent) answers that they occasionally separate which indicates that it is not a habit but rather a reaction to some situations.

Minimal Campaign Participation: Half of all the respondents (50.2) indicated that they had never attended a plastic related awareness campaign, which is the least practiced area. This is a huge difference between the purported inclination to help (as it has been mentioned in the Attitude section) and the real engagement in civic or activist activities.

**Table 5: Sources of Information and Awareness**

| Information Source          | Frequency | Percentage |
|-----------------------------|-----------|------------|
| Social Media                | 154       | 76.6%      |
| TV/Radio                    | 37        | 33.3%      |
| University Courses          | 49        | 24.4%      |
| Friends/Family              | 51        | 25.4%      |
| Environmental Organizations | 80        | 39.8%      |
| Government Campaigns        | 60        | 29.9%      |

**Source:** Authors' own calculations based on a 2025 field survey

### Sources of Information and Awareness

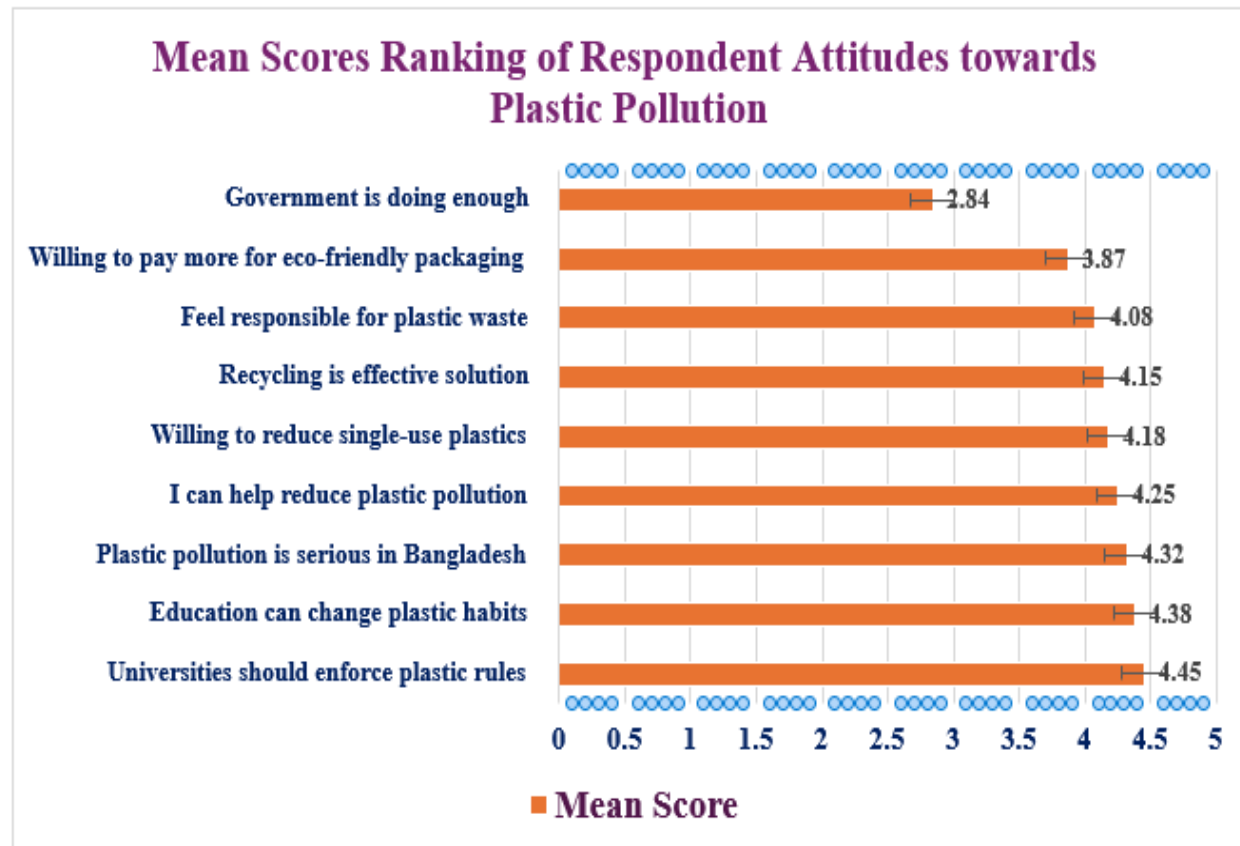
The statistics render it all too obvious that the most significant and predominant source of information is the social media platforms, which are significantly more than just the other channels with the following:

**Social media:** received a respondent mention of 76.6% of the respondents, and this is an excellent majority. This implies that awareness messages to this student population should be targeted using digital platforms and not traditional or formal institutions.

**Environmental Organizations:** These non-profits reach approximately 40% of the student body, making them the second most significant source. The results show that students are either exposed to or actively seeking out environmental news that isn't part of the mainstream.

**Friends and family:** 25.4% of students rely on their social network, which shows that peer-to-peer communication is an important way to get information to people.

**Figure 1: Mean Scores Ranking of Respondent Attitudes towards Plastic Pollution**



In Figure 1 (Mean Scores Ranking of Respondent Attitudes towards Plastic Pollution) gives a summary of how the people who answered thought and felt about plastic pollution, based on their average ratings on a 5-point Likert scale (where 5.0 is the greatest level of agreement or knowledge).

### The Universities Ought to Take Action (Mean = 4.45)

This item, which calls for universities to strictly follow plastic rules, has the best mean score. This significant support shows that most students think that necessary, top-down laws are needed to control plastic use. This shows that they prefer systemic change over just voluntary effort.

### Belief in Education and Seriousness

The next highest scores were obtained in education can change plastic habits (mean=4.38) and Plastic pollution is serious in Bangladesh (mean=4.32). This proves that students are aware of the seriousness of a situation and place much trust in educational programs to change their behavior.

### High Knowledge Base

The background knowledge of the students on the consequences and causes of the problem is high as attested in the high means of the question about Understanding pollution consequences (mean=4.28) and Identification of common single-use plastics (mean=4.12).

### High positive intentions

Mid-range scores indicate that individuals are rather responsible and willing to intervene: It is evident that students are willing to contribute to the solution of the problem because they responded to the question, "I can

help reduce plastic pollution" (Mean=4.25) and "Willing to reduce single-use plastics"(Mean=4.18). This is an important finding as it shows the internal force which is needed to facilitate the adoption of sustainable behaviours.

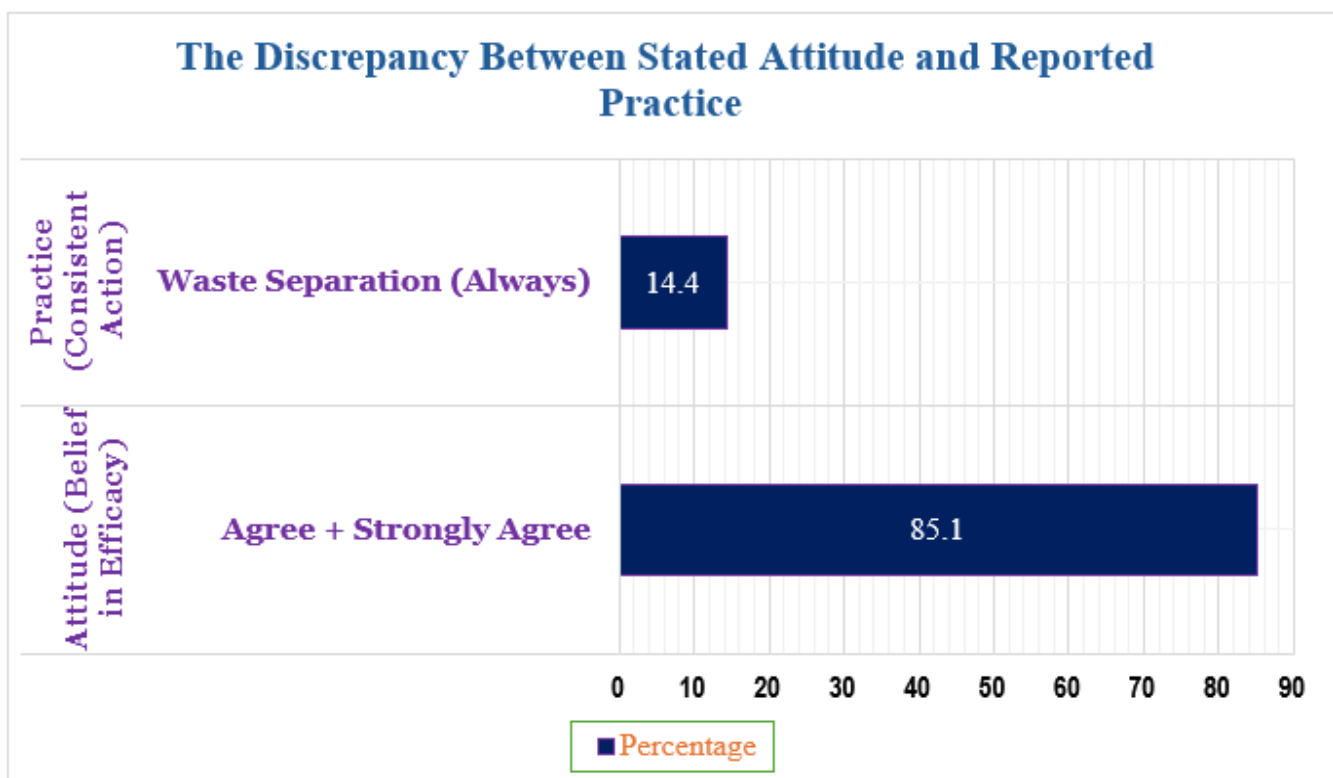
### Hesitation Points and critical Gaps

The least prominent aspects include the concerns of social skepticism and behavioral hesitation: The Barrier to Cost (Mean=3.87): "Instead, willing to pay more to have eco-friendly packaging is the least significant positive attitude statement. The depreciation in the average score in this case indicates that students are struggling with money. They desire to contribute to the environment, yet they are far less likely to do this at the expense of money.

### Dissatisfaction with the government (Mean=2.84)

The item has the lowest mean score on the entire chart, with the mean value less than the entire scale value of 3.0 which is supposed to be neutral. This figure evidently demonstrates that individuals are dissatisfied with or totally disagree with the statement. According to it, the existing measures of the government to prevent plastic waste are believed not to be sufficient or effective. This is a very crucial point in regard to policy recommendations.

**Figure 2: The Discrepancy Between Stated Attitude and Reported Practice**



**Figure: The Discrepancy Between Stated Attitude and Reported Practice**

Figure 2 is the most important visual evidence in this analysis; it is a comparison chart that indicates the gap between reported attitudes and the actual practices. The gap between what the students say they are prepared to do and what they do which is sustainable, is very big. This illustrates the relevance of bridging the gap between attitude and its practice immediately.

### Attitude (Belief in Efficiency)

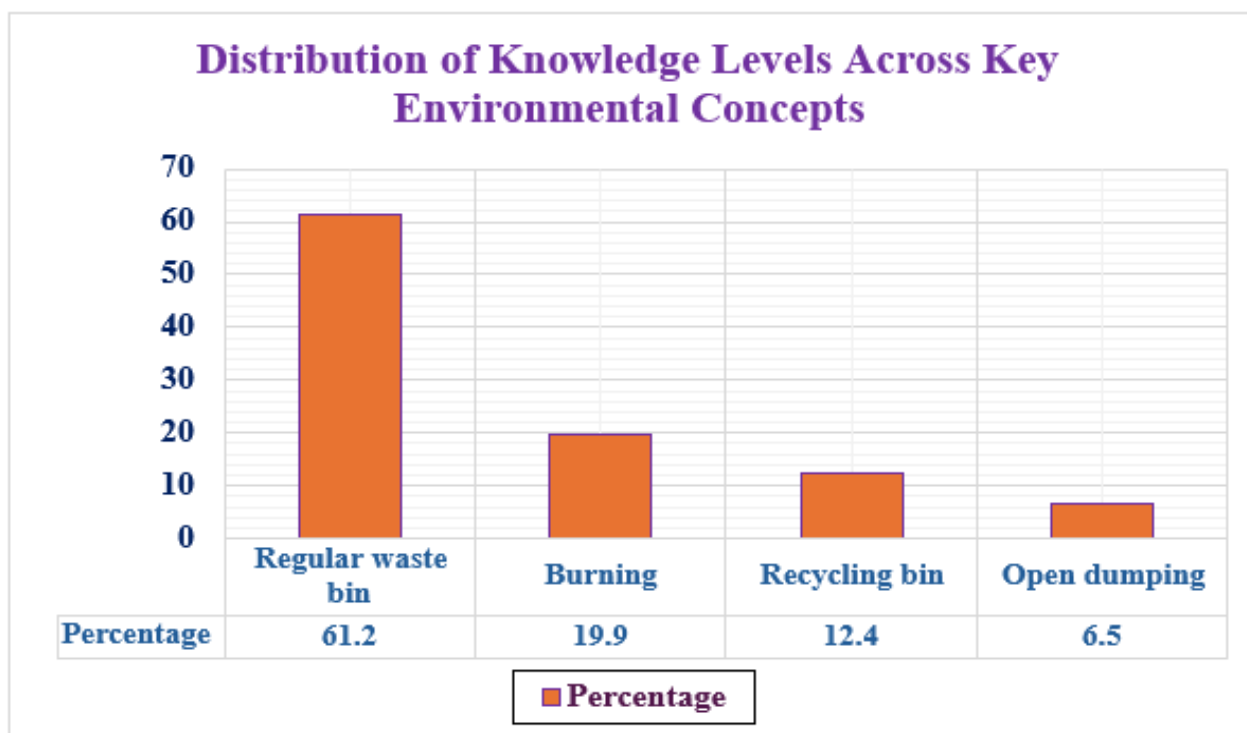
High bar on the chart indicates the stated attitude by the respondents which is computed by summing the number of individuals who agreed or strongly agreed on the statement I can help reduce plastic pollution. This

positive answer is well supported by a high percentage of 85.1 of the students which shows that there is a high chance of transformation. This figure demonstrates that the majority of the individuals in the group have high degree of self-efficacy and are self-motivated to perform acts that are environmentally friendly. This provides us with an understanding that all can be different.

### Practice Consistence (Action)

Conversely, the second bar that depicts Reported Practice is low. This demonstrates that this good attitude does not necessarily result in routine behavior. It represents only 14.4% of the respondents who replied that they always sort their plastic garbage to recycle, as shown in this bar. This shows that there is a gap of 70.7 percentage points between what people believe to do. It means that the wish to help of the greatest number of students is not sufficient to overcome the lack of such facilities as recycling, social norms, and form the habit of being environmentally friendly.

**Figure 3: Distribution of Knowledge Levels Across Key Environmental Concepts**



A detailed discussion of the basic ways of removing plastic trash

Figure- 3, a bar chart showing the main ways people throw away plastic trash, shows how common these habits are among students and how often they hurt the environment. The numbers show that people rely too much on regular trash systems and use dangerous ways of dumping too often, with formal recycling still being very low.

### The preponderance of general waste management systems

Most of the people who answered (61.2%) put their plastic trash in the regular trash. While this is better than direct dumping in the Bangladeshi context, waste deposited in general bins is typically mixed and ends up in landfills or open dumps meaning the material is still highly unlikely to be recycled and contributes to the overall pollution load.

### High Frequency of Harmful Practices

A big finding is that a lot of the people who answered the survey do things that directly cause bad air and land pollution, which is a major environmental problem that can hurt people's health and ecosystems. Approximately 19.9% of students say they burn their plastic garbage. Indirectly adding to air pollution, this

process releases dioxins and carbon gases that are dangerous. This confirms the earlier result that 63.7% of students know that burning plastic causes air pollution.

In addition to the high acknowledgment of soil deterioration (66.2% among students), 6.5% of students also confess to open dumping, which directly pollutes soil, water bodies, and public places. More than 26% of the group as a whole uses these two wasteful ways to get rid of trash.

### Recycling Engagement Is Minimal

The most concerning finding is that just 12.4% of respondents said they used the Recycling bin. This number shows for sure that people don't care much about the environment when it comes to garbage management. It either means that there isn't enough recycling infrastructure (particularly on college campuses or in residential areas) or that people have a strong propensity of mixing up their trash.

**Table 6: Determinants of Willingness to Reduce Plastic Use. (Dependent Variable: Willingness to Reduce Plastic Use)**

| Variable              | Coefficient | Robust SE | t-value  | p-value  |
|-----------------------|-------------|-----------|----------|----------|
| Constant              | 1.894       | 0.356     | 5.32     | 0.000*** |
| Gender                | 0.234       | 0.108     | 2.17     | 0.031**  |
| Age                   | 0.042       | 0.046     | 0.91     | 0.364    |
| Academic Year         | 0.156       | 0.062     | 2.52     | 0.013**  |
| Knowledge Score       | 0.298       | 0.084     | 3.55     | 0.001*** |
| Attitude Score        | 0.412       | 0.096     | 4.29     | 0.000*** |
| Information Sources   | 0.168       | 0.072     | 2.33     | 0.021**  |
| University Facilities | 0.245       | 0.112     | 2.19     | 0.030**  |
| R-squared             | 0.624       |           |          |          |
| Adj. R-squared        | 0.608       |           |          |          |
| F-statistic           | 38.47       |           | 0.000*** |          |

**Source:** Authors' own calculations based on a 2025 field survey

The OLS regression model was used to find the most important factors that affected students' participation in environmentally friendly plastic practices (the dependent variable). The findings show that the model has a great overall explanatory power, as it explains 62.4% (R-squared = 0.624) of the variance in the Practice Score. This confirms that it is a good predictor (F-statistic = 38.47,  $p < 0.001$ ). This stability gives us comfort that our results are accurate.

### Internal Drivers: Understanding and Attitude

The results of the study strongly support the idea that internal psychological factors are the main causes of long-lasting behavior. These findings are in line with the Knowledge, Attitude, and Practice (KAP) structure. Environmental psychologists generally agree with the KAP framework, which states that one's attitude and level of knowledge are the most important factors in influencing their behavior to change.

### Attitude Score ( $\beta = 0.412, p < 0.001$ )

The students' good attitude toward lowering plastic waste is the best indicator of what they will actually do. A student's practice score increases by 0.412 units for every one unit rise in their positive attitude score. This shows that having a good attitude and being committed to changing habits are the most important things you can do to make them last.

### The score for knowledge ( $\beta = 0.298, p < 0.001$ )

Knowledge level is the second predictor that is most effective. In the real life, knowing about the issues and impacts of plastic helps by 0.298 units. It is important to note that the coefficients of attitude and knowledge are highly significant and considerable, which highlights the fact that though its need is necessary, attitude (intent) has a deeper influence on practice than technical knowledge. This fact can assist individuals and groups in focusing on modifying their attitudes as a key measure to promote long-term behaviors.

### Demographic and Structural Facilitators

#### University Facilities ( $\beta = 0.245, p < 0.05$ )

This is a good indicator of the outcome as it indicates the quantity and quality of facilities in schools such as the trash cans and water refill stations. This is a significant discovery, as it confirms that some outside structural support is required to overcome the Attitude-Practice Gap. Students will feel more inclined to practice sustainably when it is easy to do so in the environment. The Practice Score between women and the male students was higher ( $\beta = 0.234, p < 0.05$ ). Better habits of students are linked to higher academic years ( $\beta = 0.156, p < 0.05$ ). The positive link shows that having more experience in a university setting, which means being exposed to official messages and social rules for a longer time, leads to better long-term behavior. This suggests that using a variety of media increases a student's drive and action resources.

#### Predictor of Inconsequentiality

After adjusting for every other factor, there was still no statistically significant relationship between the Age variable and the Practice Score ( $\beta = 0.042, p = 0.364$ ). This implies that age appears to have minimal influence on behavior at university, or it is already accounted for by the more practical measure of Academic Year.

**Table 7: Assessment of Multicollinearity**

| Variable              | VIF  | 1/VIF |
|-----------------------|------|-------|
| Attitude Score        | 2.76 | 0.362 |
| Knowledge Score       | 2.58 | 0.388 |
| Information Sources   | 1.79 | 0.559 |
| Academic Year         | 1.68 | 0.595 |
| Gender                | 1.42 | 0.704 |
| Age                   | 1.35 | 0.741 |
| University Facilities | 1.23 | 0.813 |
| Mean VIF              | 1.83 |       |

**Source:** Authors' own calculations based on a 2025 field survey

Ordinary Least Squares (OLS) models are a type of linear regression models that are often used in statistics. Its purpose is to forecast a dependent variable's value from a set of independent variables. This OLS model was tested for multicollinearity using the VIF technique.

### **Important Findings**

The VIF threshold says that in regression analysis, a VIF number less than 5.0 is usually fine, and a value less than 10.0 is also usually fine. All of the factors in this model have VIF values that are well below the 5.0 level. This gives us a lot of confidence in the model's accuracy.

### **The highest VIF**

Attitude Score (2.76), Knowledge Score (2.58), and other similar scores have the highest VIF values. This value is anticipated, as the KAP framework conceptually and statistically links knowledge and attitude (i.e., individuals who possess a greater amount of knowledge are more likely to possess more positive attitudes). To be sure, though, these numbers are low enough to show that the separate effects on practice are being measured correctly.

### **Mean VIF (1.83) which is very low**

The mean VIF for the whole model is 1.83 which is very low. This low mean VIF value suggests that the independent variables of the model are primarily independent of one another, which instills confidence in their independence.

## **DISCUSSION**

Based on the summary statistics, students are well informed on plastic trash (mean score above 3.5 on all information questions) but such knowledge has not been transformed to environment friendly activities. The observation corresponds with the global studies, which suggest that there is a gap between the knowledge and the actions (Devi et al., 2022; Chimisso, 2021). The presence of this gap is indicative of the fact that information on its own does not suffice to lead to behavioral change (this study is globally relevant as it validates the findings in Malaysia and Indonesia where the rise of knowledge does not correlate with improved recycling behavior (Coco Chin et al., 2023; Herdiansyah, 2022a). The OLS regression model explained 62.4% of the variation in how environmentally friendly students were ( $R^2 = 0.624$ ). It found that understanding ( $\beta = 0.298$ ,  $p < 0.001$ ) and attitude ( $\beta = 0.412$ ) were the best internal indicators of wanting to use less plastic. These findings support the KAP model, which states that knowledge influences attitudes and attitudes influence behaviour (Hossain et al., 2021a; Alteneiji, 2024b). The results also indicate that, despite the high level of cognitive awareness, emotional engagement and perceived self-efficacy are more significant in determining action, which intrigues the audience regarding the psychological aspects of pro-environmental behavior.

### **How Socio-Demographic and Structural Factors Work**

The factors of sustainability practices that were found to be important were gender ( $\beta = 0.234$ ,  $p < 0.05$ ) and academic year ( $\beta = 0.156$ ,  $p < 0.05$ ). It implies that female students and those on higher level in their studies tend to be more probable to utilize sustainable practices. This is similar to the results in Nepal and Malaysia, where the women were more environmental and acted more predictably (Kumar Tharu and Shrestha, 2022; Coco Chin et al., 2022). Conversely, the impact of the age was not a significant one on conduct ( $p = 0.364$ ), which implies that in a university setting, the differences of conduct are more directly correlated with academic involvement and environmental exposure than age affects them. Alizadeh et al. (2024a) discovered that age did not have any differences in the environmental behavior of students in the age of Iranian college students after considering the educational experience of the latter.

### **Policy and Practice Implications**

Regarding the policy, these findings demonstrate that the initiatives of increasing knowledge are insufficient in

themselves. However, the possible benefits of combined interventions are huge, which offers some ray of hope. Education coupled with regulation and infrastructural backup of these interventions can lead to a big decrease in the environmental impact. Universities ought to install sustainability models that would be applicable to the entire campus to ensure that individuals are naturally concerned about the environment. These could include plastic-free rules, water stations with refilling bottles, and recycling programs with rewards (Hossain et al., 2021b; Naila et al., 2022). There should be increased collaboration between the government and educational authorities in order to build curriculum modules that include environmental economics and sustainability education into undergraduate courses.

### Consistency with Existing Literature

This research confirms regional and global studies on Knowledge, Attitudes, and habits (KAP) showing strong knowledge and favorable attitudes do not always translate to sustainable habits. This research ranks factors by strength using regression analysis. It is clear from the findings that cognitive awareness on its own does not have nearly as big of an impact on behavior as attitude elements do instead. This research provides a better understanding of Bangladeshi students' behavior and supports the notion that psychological elements must be included in the formulation of environmental policy.

### Considered Limitations and Prospective Research Areas.

The authors of Alizadeh et al. (2024b) and CK et al. (2017) both said that the model may be very good at explaining things, but this could be because it uses self-reported data, which includes social desirability bias. Another limitation of the cross-sectional design is that it does not allow for the inference of causality; longitudinal studies are required in order to evaluate the development of behavior over time. Future study should use qualitative methods to investigate the motivational, cultural, and structural constraints that underpin the attitude-practice gap. Adding more areas and types of institutions would make the results more applicable across all of Bangladesh.

## RECOMMENDATIONS

The research findings give the propositions of the recommendation that can be made to the policy makers and the university administrators to make them close the Attitude-practice gap:

### Administrators and policy makers at the university:

- i. **Green Infrastructure:** It is recommended that the universities invest and install a straightforward and easily identifiable system of recycled and sorted waste and trash in recognizable containers within the campuses, residence halls, cafeterias and even on open space.
- ii. **Offer Green Alternatives:** Offer water refill in all the campuses so as to have the free or subsidized clean drinking water which will save the use of the single-use plastic bottle totally. Cafeterias in the university must be compelled to replace the disposable plates, cups and utensils with biodegradable or reusable ones.
- iii. **Enact Campus Plastic Policy:** Design and implement a earnest policy of Green Campus Policy which bans the use of single-use plastics in the campus. Begin with the removal of plastic bags at bookstores and bottles of plastic on official functions and meetings.
- iv. **Integrate Sustainability in the Curriculum and Campus life:** Legalize and subsidize student green activities and eco-societies. Introduce the subject of sustainable use and waste disposal to the orientation and other similar courses of the disciplines in the campus area.

### For Government and Environmental Agencies:

- i. **Enhanced Policy and Communication:** The existing bans on plastic bags are not adhered to. The government should lead by example and initiate a drive in which the ban is being enforced through advertisements and the masses informed about the laws and the punishment in a social environment.

- ii. **Create the Awareness of the People with the help of the Effective Communication:** In order to create the specific campaigns, one should resort to the power of social media that is the initial channel of information with children. Such should not be restricted to the issues of creating awareness but also give how-to instructions on the segregation of waste and stress on the options.
- iii. **Incentivize the Green Economy:** Provide tax relief or other incentives to local businesses to produce and sell low-cost reusable bags, containers, and other single-use alternatives.

## CONCLUSION

The availability of a lot of information does not imply that human beings will take action. Students are well aware of plastic pollution and its associated risks. Most of them are very favorable, understanding of the situation of how distressing things have become and willing to help in repairing them. However, there is no transfer of that environment awareness to everyday life habits.

The source of the problem is the action/beliefs gap: The greatest lesson of this study is the gigantic gap between what students think they believe and how they actually act or do. This division is not made by apathy, it is the division made by a system that is no longer able to keep pace with its own ideals.

The research results suggest that the environmentally responsible behavior is the product of the complicated interaction between the internal forces (knowledge, attitude, gender, maturity in terms of education) and external enablers (university facilities, availability of information, and economic considerations). Lack of structural support is a significant deterrent.

## REFERENCES

1. Alizadeh, I., Khiz, Z. S., & Faraji, M. (2024b). Knowledge, Attitude and Performance (KAP) of People regarding Microplastics as a New Health Problem in Kerman, Iran. *Journal of Environmental Health and Sustainable Development*, 9(3), 2318–2328. <https://doi.org/10.18502/jehsd.v9i3.16580>
2. Alteneiji, S. M., Mathew, B. T., Mohammed, H. A., Abu-Elsaoud, A. M., El-Tarabily, K. A., & Al Raish, S. M. (2024b). Knowledge, Attitudes, and Practices towards Single-Use Plastic Bags in the United Arab Emirates. *Sustainability (Switzerland)*, 16(17). <https://doi.org/10.3390/su16177396>
3. Chimisso, C. (2021). *Knowledge , Attitudes and Practices Towards Plastic Pollution in Umbria , Italy MSc Thesis – Environmental Economics and Natural Resources*.
4. CK, H., Kamarudin, K., & HM, Y. (2017). University Students' Knowledge, Attitude and Practice (KAP) of Endocrine Disrupting Chemicals (EDCs): The Use of Selected Plastic-Type Food Contact Materials in Kuala Terengganu. *IOSR Journal of Nursing and Health Science*, 06(01), 10–16. <https://doi.org/10.9790/1959-0601061016>
5. Coco Chin, K. K., Mahanta, J., & Nath, T. K. (2023). Knowledge, Attitude, and Practices toward Plastic Pollution among Malaysians: Implications for Minimizing Plastic Use and Pollution. *Sustainability (Switzerland)*, 15(2). <https://doi.org/10.3390/su15021164>
6. Devi, A. N., Gew, L. T., & Ooi, P. B. (2022). A Systematic Review on Knowledge, Attitude and Practices towards Single-Use Plastic. *Journal of Materials in Life Sciences (JOMALISC)*, 1(1), 45–56. <https://doi.org/10.11113/jomalisc.v1.17>
7. Herdiansyah, H., Sholihah, S. M. A., & Frimawaty, E. (2022b). Environmental Awareness Based on Community Knowledge, Attitude, and Behavior of the Environmental Impact of Plastic Packaging Use in Urban Areas. *IOP Conference Series: Earth and Environmental Science*, 1111(1), 6–13. <https://doi.org/10.1088/1755-1315/1111/1/012030>
8. Hossain, S., Rahman, M. A., Chowdhury, M. A., & Mohonta, S. K. (2021b). Plastic pollution in Bangladesh: A review on current status emphasizing the impacts on environment and public health. In *Environmental Engineering Research* (Vol. 26, Issue 6). Korean Society of Environmental Engineers. <https://doi.org/10.4491/eer.2020.535>
9. Kumar Tharu, N., & Shrestha, S. (2022). Assessment of Knowledge, Attitudes, and Practices on Usage of Plastic Goods among Undergraduates in Kathmandu Valley. <https://doi.org/10.37591/RRJoST>
10. Naila, A., Raheem, R. A., Hassan, R., Nazeer, A., & Samha, M. (2022). Single use plastic usage in the

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Maldives: Knowledge, practice and attitude. <https://doi.org/10.21203/rs.3.rs-2138273/v1>

11. Soubra, L., Aref, F., Pakyari, R., & Al Jabiry, H. (2025). Determinants of single-use plastic bottled water consumption among university students: a cross-sectional study. *Journal of Environmental Management*, 386. <https://doi.org/10.1016/j.jenvman.2025.125800>
12. Syed Ismail, S. N., Jia, L. Y., Ezani, N. E., Shamsuddin, A. S., Udin, N. M., & Ranga, J. U. (2023). Unveiling Youth's Perceptions and Behaviors Towards Plastic Usage and Management Amidst the COVID-19 Pandemic: A Knowledge, Attitudes, and Practices (KAP) Study. *Malaysian Journal of Medicine and Health Sciences*, 19(3), 116–126