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## Original Article

# Fast-Food Consumption Intention Among High School Students in Bangladesh: A Cross-Sectional Study

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## Abstract

**Background:** Fast-food consumption among adolescents is an increasing public health concern. However, evidence on the psychosocial factors associated with fast-food consumption intention among Bangladeshi adolescents remains limited.

**Objectives:** To assess fast-food consumption intention among secondary school students in Jamalpur, Bangladesh, and examine its associations with attitude, subjective norm, and perceived behavioral control (PBC).

**Methods:** A cross-sectional correlational study was conducted among 144 students aged 15–16 years recruited through convenience sampling. Data were collected using self-administered questionnaires and analyzed using descriptive and inferential statistics in SPSS version 25, including t-tests, ANOVA, Pearson's correlation, and multiple linear regression.

**Results:** Of the 144 students, 81.3% reported regular fast-food consumption. Fast-food consumption intention was positively correlated with attitude ($r = 0.487$, $p < 0.001$), subjective norm ($r = 0.177$, $p = 0.033$), and PBC ($r = 0.594$, $p < 0.001$). In the multiple linear regression model, attitude ($\beta = 0.296$, $p < 0.001$) and PBC ($\beta = 0.478$, $p < 0.001$) were significant positive predictors of intention, whereas subjective norm was not statistically significant ($\beta = -0.033$, $p = 0.625$). The model explained 42.2% of the variance in fast-food consumption intention ($R^2 = 0.422$).

**Conclusion:** More favorable attitudes and lower perceived behavioral control were independently associated with stronger fast-food consumption intention. These findings may inform school-based nutrition education and preventive nursing interventions. Further studies using representative samples are needed to assess generalizability.

**Implications for Nursing and Midwifery Preventive Care**

- Nurses can use TPB-informed school-based nutrition education to promote healthier dietary attitudes and intentions.
- Preventive nursing interventions can strengthen adolescents' perceived control over healthy food choices.

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## Introduction

Fast food refers to commercially prepared food that is prepared and served quickly, often in packaged form for takeaway [1]. It is important to distinguish fast food from processed foods and foods of low nutritional value, as these categories overlap but are not synonymous. Although many fast foods are highly processed and have low nutritional value, not all processed foods are fast foods [2]. Fast-food consumption has been associated with poorer dietary quality, unhealthy eating patterns, and an increased risk of overweight and obesity among young people [3–5]. Globalization, urbanization, the growing availability of fast food, and changing lifestyles have contributed to changes in adolescents' food choices, potentially increasing their exposure to less healthy dietary options [4, 6–8]. Fast-food consumption has been reported to be significantly associated with overweight status among adolescents aged 13–17 years in the United States [9].

In Bangladesh, fast-food consumption appears to be common among urban college-going adolescents. In a cross-sectional study conducted in Dhaka, 68.1% of participants reported consuming fast food at least once in the preceding week, with taste, pleasure, and convenience identified as the main reasons for consumption [4]. Fast-food consumption may be influenced by several factors, including taste, convenience, affordability, availability, personal preferences, and social influences from family and peers [2, 4, 10]. Understanding these factors requires examining not only actual consumption but also adolescents' intentions to consume fast food.

According to the Theory of Planned Behavior (TPB), behavioral intention is influenced by three key constructs: attitude, subjective norm, and perceived behavioral control (PBC). Attitude refers to an individual's evaluation of a behavior, subjective norm reflects perceived social expectations or approval from significant others, and PBC refers to an individual's perceived ability to perform the behavior [11].

These constructs are relevant to adolescent fast-food consumption because food choices may reflect personal preferences, social influences from family and peers, and perceived control over the availability, affordability, and accessibility of fast food [9]. Previous studies have also reported associations between subjective norms, PBC, behavioral intention, and fast-food consumption behavior [12, 13].

In Bangladesh, undernutrition and overnutrition coexist, contributing to the double burden of malnutrition [14]. To our knowledge, few studies have examined fast-food consumption intention among secondary school students in Bangladesh using the TPB framework.

Although international studies have applied this framework to fast-food consumption, further context-specific research is needed to understand the psychosocial factors associated with consumption intention among Bangladeshi adolescents, particularly students in settings such as Jamalpur.

## Objectives

The objective of this study was to assess fast-food consumption intention among secondary school students in Jamalpur, Bangladesh, and to examine its associations with attitude, subjective norm, and perceived behavioral control (PBC).

## Methods

### Study Design

A cross-sectional correlational study was conducted to examine fast-food consumption intention and its associations with attitude, subjective norm, and perceived behavioral control (PBC) among high school students in Jamalpur, Bangladesh.

The study period was January to December 2023. Participants were recruited from two schools: Hazrat Shahjamal (R:) School and College and Bangabandhu Ideal School and College.

### Participants and Sampling

The accessible population comprised 270 students, including 150 students from Hazrat Shahjamal (R:) School and College and 120 students from Bangabandhu Ideal School and College.

Students aged 15–16 years enrolled in Grades 9 or 10 were eligible to participate.

The target sample of 144 students was proportionally allocated according to the accessible population at each school, resulting in 80 students from Hazrat Shahjamal (R:) School and College and 64 from Bangabandhu Ideal School and College. Eligible students were recruited using convenience sampling. The inclusion criteria were: (1) being 15–16 years old; (2) being enrolled in Grade 9 or Grade 10 at one of the selected schools; (3) being present during data collection and able to complete the questionnaire; and (4) having parental or legal guardian consent and providing student assent. Students who were absent during data collection or unable to complete the questionnaire were not included.

The required sample size was calculated a priori using G*Power version 3.1.9.4 for a two-tailed correlation analysis, assuming an expected correlation coefficient of 0.25, a significance level of 0.05, and statistical power of 0.80.

The calculation yielded a minimum sample size of 120 participants.

The target sample was increased by 20% to account for potential nonresponse and incomplete questionnaires, resulting in a target sample of 144 students. Multiple linear regression was subsequently performed to examine the independent associations of attitude, subjective norm, and perceived behavioral control with fast-food consumption intention.

### Measurement Instruments (Validity and Reliability)

Data were collected using five questionnaire sections, including a researcher-developed sociodemographic questionnaire and four questionnaires assessing the Theory of Planned Behavior (TPB) constructs.

The sociodemographic questionnaire consisted of 11 items covering students' age, height, weight, gender, parents' educational levels and employment status, family financial status, regular fast-food consumption, reasons for consuming fast food, and usual place of consumption.

Attitude toward fast-food consumption was assessed using a modified 12-item questionnaire. Each item was rated on a five-point Likert scale, yielding a total score ranging from 12 to 60. Higher scores indicated a more favorable attitude toward fast-food consumption. The internal consistency of the scale in the study sample was acceptable (Cronbach's $\alpha = 0.75$).

Subjective norm was assessed using a six-item questionnaire, with each item rated on a five-point Likert scale. Total scores ranged from 6 to 30, with higher scores indicating stronger subjective norms in favor of fast-food consumption. The internal consistency of this scale was Cronbach's $\alpha = 0.79$.

Perceived behavioral control (PBC) was assessed using a modified 14-item questionnaire. Each item was rated on a five-point Likert scale, yielding a total score ranging from 14 to 70. Higher total scores indicate lower perceived behavioral control, whereas lower total scores indicate greater perceived behavioral control. Accordingly, higher PBC scores reflect lower perceived control over fast-food consumption. The results suggest that lower perceived behavioral control was associated with a stronger intention to consume fast food. The internal consistency of the scale was acceptable (Cronbach's $\alpha = 0.84$). Intention to consume fast food was assessed using a modified questionnaire based on Mirkarimi et al. [13] and Seo et al. [2].

The original questionnaire consisted of five items, one of which referred to "hamburger" and was modified to "cheeseburger" to improve its contextual relevance. Three additional items assessing intention to consume fast food were developed by the research team based on the study objectives and the specific aspects of fast-food consumption intention relevant to the study population. Before data collection, three experts from the National Institute of Advanced Nursing Education and Research (NIANER) with experience in nursing research reviewed the questionnaire, including the newly developed items, for relevance, clarity, and contextual appropriateness. This expert review provided a qualitative assessment of the content validity of the questionnaire before administration. The final questionnaire consisted of eight items rated on a five-point Likert scale, with total scores ranging from 8 to 40. Higher scores indicated a stronger intention to consume fast food.

The internal consistency of the scale was acceptable (Cronbach's α = 0.71).

The English-language questionnaire was translated into Bengali by a bilingual translator and subsequently back-translated into English to assess the consistency of the translated version with the original questionnaire, following the approach described by Brislin [15].

### Data Collection Procedure

Ethical approval was obtained from the Institutional Review Board of NIANER before data collection. Parental or legal guardian consent and student assent were obtained before questionnaire administration. Privacy and confidentiality were maintained throughout the study.

Data were collected using five sections of self-administered questionnaires. The researcher coordinated data collection with assistance from teachers at the participating schools. Teachers assisted with distributing and collecting the questionnaires, while students completed them independently. The questionnaire package contained 51 items and required approximately 20–25 minutes to complete.

### Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 25. Descriptive statistics, including frequencies, percentages, means, and standard deviations (SDs), were used to summarize participants' sociodemographic characteristics and scores on the TPB constructs.

Independent-samples *t* tests were used to compare mean intention scores by gender, regular fast-food consumption, and type of fast-food consumption (meal or snack).

One-way analysis of variance (ANOVA) was used to compare mean intention scores across categories of paternal education, maternal education, paternal occupation, maternal occupation, and place of fast-food consumption.

Pearson's correlation coefficient (*r*) was used to examine the bivariate relationships of age, body mass index (BMI), and monthly family income with intention, as well as the correlations among attitude, subjective norm, PBC, and intention.

Multiple linear regression was conducted with behavioral intention as the dependent variable and attitude, subjective norm, and PBC as independent variables. Statistical significance was set at $p < 0.05$.

## Result

### Sociodemographic Characteristics of the Students

A total of 144 students participated in the study. The mean age was 15.32 years (SD = 0.47), with ages ranging from 15 to 16 years. More than half of the participants were male (54.20%).

The mean BMI was 21.31 (SD = 3.05), ranging from 15 to 32. Regarding parental characteristics, the largest proportions of fathers had primary education (38.90%) and were engaged in business (45.10%), whereas most mothers had primary education (42.4%) and were housewives (75.70%).

Most students (81.30%) reported regular fast-food consumption.

Among these 117 students, 51.3% reported consuming fast food as a meal and 48.70% as a snack.

Regarding the place of consumption, 53.80% reported hotels or restaurants, 24.80% reported homes, and 21.40% reported the school canteen [Table 1].

### Descriptive Statistics of the Study variables

The descriptive statistics for the four study constructs are presented in Table 2.

The mean score for attitude toward fast-food consumption was 41.89 (SD = 13.80).

The mean scores for subjective norm, perceived behavioral control, and intention to consume fast food were 21.54 (SD = 6.62), 44.14 (SD = 16.91), and 24.83 (SD = 9.69), respectively.

At the item level, the highest mean score for attitude was observed for the belief that consuming fast food would make students fat (M = 4.11, SD = 1.17), whereas the lowest was observed for the belief that fast food could provide all the necessary nutrients of a meal (M = 2.56).

For subjective norm, the highest mean score was observed for following family members' beliefs (M = 4.03, SD = 1.06), whereas the lowest was observed

for the belief that teachers would like to consume fast food (M = 3.12, SD = 1.19).

For perceived behavioral control, the highest item mean was observed for the perceived ability to consume fast food despite receiving nutrition education through multimedia (M = 3.36, SD = 1.13), whereas the lowest was observed for the perceived ability to consume fast food despite learning to prepare a simple meal quickly (M = 2.90, SD = 1.21).

Regarding intention, the highest mean score was reported for the intention to consume a doughnut in the following week (M = 3.42, SD = 1.17), whereas the lowest was reported for the intention to consume fried chicken (M = 2.57, SD = 1.34).

### Sociodemographic Characteristics and Intention to Consume Fast Food

As shown in Table 3, age was negatively correlated with intention to consume fast food (r = −0.281, $p$ < 0.001).

Intention scores differed significantly by gender, with female students reporting higher scores than male students (t = −5.386, $p$ < 0.001). Significant differences in intention scores were observed across categories of mothers' education (F = 2.907, $p$ = 0.037) and fathers' occupation (F = 2.785, $p$ = 0.043).

However, the difference across categories of fathers' education was not statistically significant (F = 2.537, $p$ = 0.059).

Monthly family income was positively correlated with intention (r = 0.173, $p$ = 0.038). BMI, mothers' occupation, regular fast-food consumption, type of fast-food consumption, and place of fast-food consumption were not significantly associated with intention ($p$ > 0.05).

According to the reported post hoc comparisons, students whose mothers had secondary education had higher intention scores than those whose mothers had primary education and those whose mothers had above-secondary education. Students whose fathers were engaged in business had higher intention scores than those whose fathers were farmers, service holders, or engaged in other occupations.

### Relationships Among the Study Variables and Intention to Consume Fast Food

Pearson correlation analysis showed that attitude was positively correlated with subjective norm (r = 0.292, $p$ < 0.001), PBC scores (r = 0.419, $p$ < 0.001), and intention (r = 0.487, $p$ < 0.001). Subjective norm was positively correlated with PBC scores (r = 0.259, $p$ < 0.001) and intention (r = 0.177, $p$ = 0.033). PBC scores were also positively correlated with intention (r = 0.594, $p$ < 0.001).

Given that higher PBC scores reflected lower perceived behavioral control, this positive correlation indicates that students who perceived less control over fast-food consumption reported stronger intention to consume fast food.

Before the analysis, the assumptions of residual normality, absence of multicollinearity, independence of errors, and homogeneity of variance were assessed.

Residual normality was evaluated using histograms and normal probability (Q–Q) plots, multicollinearity was assessed using variance inflation factors (VIFs) and tolerance values, independence of errors was examined using the Durbin–Watson statistic, and homogeneity of variance was assessed using residual plots. Some deviation from the homogeneity of variance assumption was observed. The overall regression model was statistically significant and explained 42.2% of the variance in intention ($R^2$ = 0.422). Attitude was a significant positive predictor of intention ($B$ = 0.239, $SE$ = 0.058, β = 0.296, t = 4.094, $p$ < 0.001), indicating that more favorable attitudes were associated with stronger intention. PBC scores were also a significant positive predictor ($B$ = 0.274, $SE$ = 0.041, β = 0.478, t = 6.670, $p$ < 0.001); because higher PBC scores indicated lower perceived behavioral control, this finding indicates that lower perceived behavioral control was independently associated with stronger intention to consume fast food. In contrast, subjective norm was not a statistically significant predictor of intention ($B$ = −0.042, $SE$ = 0.085, β = −0.033, t = −0.490, $p$ = 0.625) [Table 4].

**Table 1.** Sociodemographic Characteristics of the Students (N = 144)

| Variable | n (%) | M (SD) | Range |
|---|---|---|---|
| Age (years) | — | 15.32 (0.47) | 15–16 |
| Gender | | | |
| Male | 78 (54.20) | — | — |
| Female | 66 (45.80) | — | — |
| Body mass index (BMI) | — | 21.31 (3.05) | 15–32 |
| Father's education | | | |
| Primary | 56 (38.90) | — | — |
| Secondary | 42 (29.20) | — | — |
| Higher secondary | 31 (21.50) | — | — |
| Honors | 15 (10.40) | — | — |
| Mother's education | | | |
| Primary | 61 (42.40) | — | — |
| Secondary | 48 (33.30) | — | — |
| Higher secondary | 30 (20.80) | — | — |
| Honors | 5 (3.50) | — | — |
| Father's occupation | | | |
| Farmer | 33 (22.90) | — | — |
| Business | 65 (45.10) | — | — |
| Service holder | 23 (16.00) | — | — |
| Other | 23 (16.00) | — | — |
| Mother's occupation | | | |
| Housewife | 109 (75.70) | — | — |
| Business | 13 (9.00) | — | — |
| Service holder | 18 (12.50) | — | — |
| Other | 4 (2.80) | — | — |
| Monthly family income (taka) | — | 18,888.89 (8,143.05) | 5,000–50,000 |
| Regular fast-food consumption | | | |
| Yes | 117 (81.30) | — | — |
| No | 27 (18.70) | — | — |
| Type of fast-food consumption (n = 117) | | | |
| Meal | 60 (51.30) | — | — |
| Snack | 57 (48.70) | — | — |
| Place of fast-food consumption (n = 117) | | | |
| Home | 29 (24.80) | — | — |
| School Canteen | 25 (21.40) | — | — |
| Hotel & Restaurants | 63 (53.80) | — | — |

***Note.*** Values are presented as *n* (%) unless otherwise indicated. M = mean; SD = standard deviation; BMI = body mass index. Percentages for type and place of fast-food consumption are based on the 117 students who reported regular fast-food consumption.

**Table 2.** Descriptive Statistics of Attitude, Subjective Norm, Perceived Behavioral Control, and Intention to Consume Fast Food (N = 144)

| Variable | Number of items | Possible score range | M (SD) |
|---|---|---|---|
| Attitude | 12 | 12–60 | 41.89 (13.80) |
| Subjective norm | 6 | 6–30 | 21.54 (6.62) |
| Perceived behavioral control | 14 | 14–70 | 44.14 (16.91) |
| Intention | 8 | 8–40 | 24.83 (9.69) |

***Note.*** M = mean; SD = standard deviation. All constructs were measured using a 5-point Likert scale. Possible score ranges represent the minimum and maximum total scores based on the number of items and the response scale.

**Table 3.** Associations Between Sociodemographic Characteristics and Intention to Consume Fast Food (N = 144)

| Variable | Intention, M (SD) | Test statistic | *p* |
|---|---|---|---|
| Age (years) | — | r = −0.281 | < 0.001 |
| Gender | | | |
| Male | 23.32 (3.81) | t = −5.386 | < 0.001 |
| Female | 26.64 (3.52) | | |
| BMI | — | r = 0.148 | 0.076 |
| Father's education | | | |
| Primary | 23.77 (3.64) | | |
| Secondary | 25.21 (4.72) | F = 2.537 | 0.059 |
| Above secondary | 25.67 (3.48) | | |
| Mother's education | | | |
| Primary | 23.89 (3.97) | | |
| Secondary | 25.83 (4.55) | F = 2.907 | 0.037 |
| Above secondary | 25.14 (2.92) | | |
| Father's occupation | | | |
| Farmer | 23.76 (4.78) | | |
| Business | 25.88 (3.66) | F = 2.785 | 0.043 |
| Service holder | 24.22 (3.54) | | |
| Other | 24.09 (3.84) | | |
| Mother's occupation | | | |
| Housewife | 24.53 (4.22) | | |
| Business | 27.15 (3.56) | F = 2.220 | 0.088 |
| Other | 24.14 (1.68) | | |
| Monthly family income (taka) | — | r = 0.173 | 0.038 |
| Regular fast-food consumption | | | |
| Yes | 24.97 (3.93) | t = 0.778 | 0.438 |
| No | 24.30 (4.47) | | |
| Type of fast-food consumption[b] | | | |
| Meal | 24.58 (3.77) | t = −1.082 | 0.282 |
| Snack | 25.39 (4.07) | | |
| Place of fast-food consumption[b] | | | |
| Home | 24.10 (4.17) | | |
| School canteen | 25.61 (5.05) | F = 0.731 | 0.536 |
| Hotel or restaurant | 25.10 (3.45) | | |

*Note.* M = mean; SD = standard deviation; BMI = body mass index. Pearson's correlation (r) was used for continuous variables, independent-samples t tests for two-group comparisons, and one-way analysis of variance (F) for variables with three or more categories. Different superscript letters indicate the reported post hoc group comparisons.

**Table 4.** Correlations and Multiple Linear Regression Predicting Intention to Consume Fast Food (N = 144)

| Variable / Predictor | r | B | SE | β | t | *p* |
|---|---|---|---|---|---|---|
| Correlations | | | | | | |
| Attitude × Subjective norm | 0.292 | — | — | — | — | < 0.001 |
| Attitude × Perceived behavioral control | 0.419 | — | — | — | — | < 0.001 |
| Attitude × Intention | 0.487 | — | — | — | — | < 0.001 |
| Subjective norm × Perceived behavioral control | 0.259 | — | — | — | — | < 0.001 |
| Subjective norm × Intention | 0.177 | — | — | — | — | 0.033 |
| Perceived behavioral control × Intention | 0.594 | — | — | — | — | < 0.001 |
| Multiple linear regression | | | | | | |
| Constant | — | 3.651 | 2.540 | — | 1.437 | 0.153 |
| Attitude | — | 0.239 | 0.058 | 0.296 | 4.094 | < 0.001 |
| Subjective norm | — | −0.042 | 0.085 | −0.033 | −0.490 | 0.625 |
| Perceived behavioral control | — | 0.274 | 0.041 | 0.478 | 6.670 | < 0.001 |

*Note.* *r* = Pearson correlation coefficient; *B* = unstandardized regression coefficient; *SE* = standard error; *β* = standardized regression coefficient. The regression model explained 42.2% of the variance in intention ($(R^2 = 0.422)$).

## Discussion

The present study assessed fast-food consumption intention among secondary school students in Jamalpur, Bangladesh, and examined its associations with sociodemographic characteristics and the constructs of the Theory of Planned Behavior (TPB). Most students reported regular fast-food consumption, commonly as a meal or snack and mainly at hotels or restaurants. The TPB measures showed varying levels of attitude, subjective norm, perceived behavioral control, and intention toward fast-food consumption.

Several sociodemographic characteristics, including age, gender, maternal education, paternal occupation, and family income, were significantly associated with fast-food consumption intention. Similar relationships between sociodemographic characteristics and food-related behaviors have been reported among adolescents and students [4, 9,13 , 16]. The frequent consumption of fast food observed in the present study is also consistent with previous research among adolescents [4, 5]. However, because this study was cross-sectional, these characteristics should be interpreted as correlates rather than causal determinants.

Female students reported significantly higher intention to consume fast food than male students, a finding that differed from those reported in some previous studies [2, 4, 13]. Dehdari et al. also examined junk-food consumption intention among female students using the TPB, demonstrating the relevance of this theoretical framework in a female student population. However, the present study did not measure the specific social or behavioral mechanisms that might explain the observed gender difference. Previous research indicates that dietary and lifestyle patterns can vary across adolescent populations and settings [17–19]. These contextual differences may contribute to variation between studies, although the underlying explanation for the gender difference observed in the present study cannot be established from the available data.

Maternal education, paternal occupation, and family income were also significantly associated with fast-food consumption intention, whereas paternal education and maternal occupation were not significantly associated with intention. Previous research has identified parental and socioeconomic characteristics as relevant to food-related behaviors among young people [2, 9]. The association between family income and intention was consistent with findings from previous research [20, 21]. Differences in socioeconomic characteristics and study settings may contribute to variation across studies; however, the present study did not examine the mechanisms through which socioeconomic characteristics may be related to fast-food consumption intention.

Attitude was positively correlated with intention and remained a significant positive predictor in the multivariable regression analysis. This finding indicates that students with more favorable evaluations of fast-food consumption tended to report stronger intentions to consume it, even after adjustment for subjective norm and PBC scores. This result is consistent with previous TPB-based research examining food and junk-food consumption [9, 13, 22, 23]. However, findings regarding the contributions of individual TPB constructs have been inconsistent across studies. For example, Dehdari et al. found that subjective norm and perceived behavioral control were important determinants of dietary intention. Such variation may reflect differences in populations, target behaviors, and contextual factors. Research on adolescent eating behavior has also examined interventions addressing problematic eating patterns [24]. Nevertheless, the present study did not evaluate an intervention or measure changes in actual consumption. Therefore, the findings support the relevance of attitude to fast-food consumption intention but do not establish whether changing attitudes would reduce fast-food consumption.

Subjective norm was positively correlated with intention at the bivariate level but was not a statistically significant predictor in the multivariable regression analysis. This suggests that subjective norm was associated with intention when examined separately but did not retain an independent association after attitude and PBC scores were considered simultaneously. Previous studies have identified social influences as relevant to fast-food

and nutritional behaviors [2, 13, 23]. Family and social contexts have also been recognized as relevant to young people's food-related behaviors [4, 8, 25, 26]. Nevertheless, these findings differ from those of Didarloo et al., who identified subjective norm as an independent predictor. Differences in participant characteristics, social context, measurement approaches, and relationships among TPB constructs may explain this discrepancy.

Perceived behavioral control scores were positively correlated with intention and remained a significant independent predictor in the regression model. Because higher scores on the PBC scale reflected lower perceived behavioral control, the positive regression coefficient indicates that students who perceived less control over fast-food consumption reported stronger intention to consume it. Its standardized regression coefficient was larger than that of attitude ($\beta = 0.478$ versus $\beta = 0.296$), indicating a stronger standardized association with intention within the fitted model. This finding aligns with previous studies highlighting the role of perceived behavioral control in fast-food consumption intention [2, 13, 23], but contrasts with the findings of Didarloo et al.

Because the present study did not establish a validated cutoff for the PBC scale, its mean score should be interpreted descriptively rather than categorized as high or low. The adjusted finding indicates that students' perceived control over fast-food consumption was independently associated with their intention, although this association does not establish a causal relationship with actual consumption behavior. The direction of this association should be interpreted with caution: lower perceived control, rather than higher perceived control, was associated with stronger intention in this sample.

Overall, the findings indicate that attitude, subjective norm, and PBC scores were each correlated with fast-food consumption intention [2, 13, 27]. However, only attitude and PBC scores remained significant independent predictors when the three TPB constructs were considered simultaneously. Given the coding direction of the PBC scale, the pattern of findings indicates that more favorable attitudes and lower perceived behavioral control were independently associated with stronger intention. The regression model explained 42.2% of the variance in intention ($R^2 = 0.422$). This pattern is consistent with evidence that TPB constructs may contribute differently across populations and health behaviors [9, 13, 23]. The findings therefore identify attitude and perceived behavioral control as the constructs independently associated with fast-food consumption intention among the participating students, whereas subjective norm did not retain an independent association after adjustment for the other constructs.

The use of convenience sampling may have introduced selection bias because participation was based on the accessibility and willingness of eligible students rather than probability-based selection. Therefore, the findings may not represent all adolescents in Bangladesh, including students from rural areas, madrasa settings, government schools, or other educational and socioeconomic backgrounds. The cross-sectional design also limits conclusions about temporal relationships and causality. Furthermore, the outcome assessed was intention to consume fast food rather than observed consumption behavior. Thus, the findings should not be interpreted as evidence that the identified factors directly determine actual fast-food consumption. Future studies using probability-based sampling and more diverse school populations, as well as longitudinal or intervention designs, may provide broader evidence on the factors associated with intention and their relationships with actual consumption.

The findings support the consideration of school-based health education that addresses students' evaluations of fast food and promotes awareness of healthier food choices. Educational activities may also provide practical strategies to help students make healthier food decisions in settings where fast food is readily available. Schools could consider improving access to nutritious meal options, providing age-appropriate nutrition education, and involving child health nurses in health promotion activities. Community and media-based initiatives may also complement school-based efforts to

promote healthy eating awareness among adolescents. However, these strategies should be regarded as recommendations for consideration rather than interventions whose effectiveness was established by the present study. Further intervention studies are needed to determine whether modifying attitudes and perceived behavioral control can produce measurable changes in actual fast-food consumption.

## Conclusion

Attitude, subjective norm, and PBC scores were associated with fast-food consumption intention among the participating secondary school students. However, only attitude and PBC scores were significant independent predictors when the TPB constructs were considered simultaneously, whereas subjective norm did not retain an independent association. Specifically, more favorable attitudes toward fast food and lower perceived behavioral control were independently associated with stronger intention to consume fast food. The regression model explained 42.2% of the variance in intention. These findings highlight the relevance of students' evaluations of fast food and their perceived control over its consumption in understanding fast-food consumption intention among the participating students in Jamalpur, Bangladesh. Given the cross-sectional design and convenience sampling, the findings should be interpreted cautiously and should not be generalized to all adolescents in Bangladesh without further evidence.

### Ethical Considerations

Ethical approval was obtained from the Institutional Review Board (IRB) of the National Institute of Advanced Nursing Education and Research (NIANER), Mugda, Dhaka (IRB No. Exp. NIA-S-226). Data collection was conducted after obtaining ethical approval. Before participation, the researcher explained the study purpose, procedures, voluntary nature of participation, and measures to maintain anonymity and confidentiality.

As the participants were aged 15–16 years, written or oral informed consent was obtained from their parents or legal guardians, and assent was obtained from the students before data collection. Permission was also obtained from the authorities of the selected schools. Participation was voluntary, and privacy and confidentiality were maintained throughout the study.

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### Conflict of Interest

The authors declare no conflicts of interest.

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### Authors' Contributions

Conceptualization: Md. Ariful Islam
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Supervision: Shanzida Khatun
Writing – Original Draft: Md. Ariful Islam
Writing – Review & Editing: Shanzida Khatun, Fahima Khatun
All authors contributed to the study conception and design. All authors read and approved the final manuscript and agreed to the order of authorship.

### Artificial Intelligence Utilization

The authors used Quillbot during the preparation of this work to enhance the language and readability of the manuscript, as the authors are not native English speakers. After using the tool, the authors reviewed, edited, and took full responsibility for the final text.

### Data Availability Statement

The original dataset analyzed in this study are not publicly available in accordance with participants' privacy. The dataset of the current study is available

from the corresponding author on reasonable request.

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