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Knowledge and attitude about COVID-19 and importance of diet: A cross-sectional study among Bangladeshi people

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Abstract: ***Background:*** The COVID-19 pandemic has had a profound impact worldwide, including in Bangladesh, where understanding public knowledge and attitudes towards the virus and the role of diet is crucial. This study focuses on young adults aged 15 to 30 years to assess their awareness and practices regarding COVID-19 and dietary habits. ***Objective:*** The objective of this cross-sectional study was to evaluate the knowledge and attitudes of young Bangladeshi individuals towards COVID-19 and the importance of diet in boosting immunity. Methods: A questionnaire-based survey was conducted multi-center base in Bangladesh, among 1285 young adults, focusing on demographic information, awareness of COVID-19, sources of information, travel history, contact with infected individuals, symptoms, existing health conditions, knowledge about transmission and prevention of COVID-19, dietary habits, and use of supplements. ***Results:*** The study found that 97% of respondents were aware of the coronavirus outbreak, with media being the primary source of information (68%). 43% had traveled internationally since December 2019, and 23% had been in contact with a COVID-19 positive person. 72% reported changing their dietary habits to boost immunity, with a focus on Vitamin C-rich foods (62%), hot water with ginger (58%), and regular garlic intake (52%). Additionally, 38% had used supplements to prevent COVID-19. ***Conclusions:*** The study highlights the high awareness among young Bangladeshi individuals regarding COVID-19 and their efforts to enhance immunity through dietary modifications and supplements. Public health campaigns should focus on accurate information dissemination and promotion of healthy dietary practices.

Keywords: COVID-19, Bangladesh, Young adult, Knowledge, Attitudes, Diet.

Significance: This study highlights the critical role of diet and public awareness in enhancing immunity and preventing COVID-19 among young Bangladeshis.

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INTRODUCTION

The COVID-19 pandemic caused by the novel coronavirus SARS-CoV-2 has had a profound impact worldwide, including in Bangladesh [1]. Since its emergence in late 2019, the virus has spread rapidly, leading to significant morbidity, mortality, and economic disruption. Bangladesh, with its dense population and limited healthcare infrastructure, has faced particular challenges in controlling the spread of the virus and managing the impact of the pandemic [2].

As the COVID-19 pandemic continues, it is increasingly important to understand the knowledge and attitudes of the population towards the virus and the role of diet in boosting immunity and reducing the risk of infection. Knowledge and

attitudes can significantly influence behavior, including adherence to preventive measures such as wearing masks, practicing social distancing, and following dietary guidelines [3]. Young adults, aged 15 to 30 years, represent a key demographic group in Bangladesh, and their awareness and practices regarding COVID-19 and dietary habits are crucial for effective public health interventions.

Several studies have investigated the knowledge and attitudes of populations towards COVID-19 in different countries. A study conducted in Saudi Arabia found that while the majority of respondents were aware of COVID-19, there were gaps in knowledge regarding transmission and prevention measures. Another study in Bangladesh reported similar findings, highlighting the need for targeted health education campaigns to improve awareness levels [4].

Diet plays a crucial role in maintaining a healthy immune system, which is essential for fighting off infections, including COVID-19. Foods's rich in vitamins and minerals, such as Vitamin C, Vitamin D, and zinc, are known to boost immunity [5]. Studies have also suggested that certain foods, such as garlic, ginger, and turmeric, may have immune-boosting properties [6,7]. However, there is limited research on the specific dietary practices of individuals in Bangladesh during the COVID-19 pandemic.

OBJECTIVE

General Objective

To evaluate young Bangladeshi individuals' knowledge and attitudes towards COVID-19 and the role of diet in boosting immunity.

Specific Objectives

Assess awareness levels about COVID-19.
Identify sources of COVID-19 information.
Explore travel history and contact with infected individuals.
Investigate dietary habits and changes made for immunity.
Determine the use of supplements for preventing COVID-19.

MATERIAL AND METHODS

Study Design

A multi-center questionnaire-based survey was conducted across various locations in Bangladesh to gather data from young individuals aged 15 to 30 years. This approach ensured a diverse representation of respondents from different regions of the country, providing comprehensive insights into the knowledge, attitudes, and practices regarding COVID-19 and dietary habits among the Bangladeshi population. The survey covered a range of demographic factors and targeted key areas such as awareness of COVID-19, sources of information, travel history, dietary habits, and supplement usage.

Inclusion Criteria

Age between 15 to 30 years.
Bangladeshi nationality.
Willingness to participate in the questionnaire-based survey.
Ability to understand and respond to survey questions.

Exclusion Criteria

Age below 15 or above 30 years.
Non-Bangladeshi nationality.
Refusal to participate in the survey.
Inability to comprehend or respond to survey questions due to cognitive impairment or language barriers.

Data Collection

Data collection involved distributing the questionnaire to eligible participants across multiple centers in Bangladesh. Participants were approached either in person or through electronic means, depending on their accessibility and preference. Trained researchers or survey administrators facilitated the distribution and collection process, ensuring consistency and accuracy in data collection. Participants were given adequate time to complete the questionnaire, and any queries or concerns were addressed promptly to enhance response rates and data quality.

Data Analysis

Data analysis was performed using Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics such as frequencies and percentages were calculated to summarize demographic characteristics, COVID-19 awareness, dietary habits, and supplement usage among

participants. Inferential statistics, including chi-square tests and regression analysis, were employed to examine associations between variables and identify factors influencing knowledge, attitudes, and practices related to COVID-19 and diet among young Bangladeshi individuals.

Ethical Considerations

Ethical approval was paramount throughout the study. Informed consent was obtained from all participants before their involvement. Participants were assured of confidentiality and anonymity, and their data were securely stored and used only for research purposes. The study protocol was reviewed and approved by the relevant institutional ethics committee. Researchers adhered to ethical guidelines outlined in the Declaration of Helsinki and ensured that the study was conducted with integrity and respect for participants' rights and welfare.

RESULTS

Table 1: Demographic Characteristics of Participants (n=1285)

Demographic Variable	Number	Frequency (%)
Age (years)		
15-20	450	35%
21-25	580	45%
26-30	255	20%
Gender		
Male	580	45%
Female	705	55%
Education		
High school	510	40%
Bachelor's degree	640	50%
Master's degree or higher	135	10%
Occupation		
Student	765	60%
Employed	385	30%
Unemployed	135	10%
Marital Status		
Single	977	76%
Married	257	20%
Divorced/Separated	38	3%
Widowed	13	1%

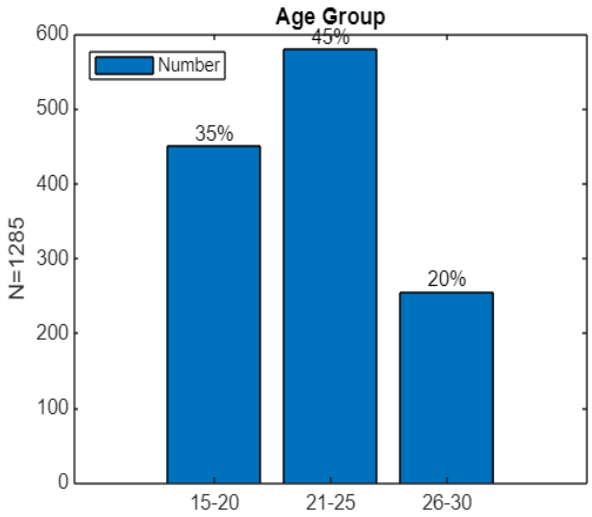

Figure 1: Demographic Characteristics According to Age

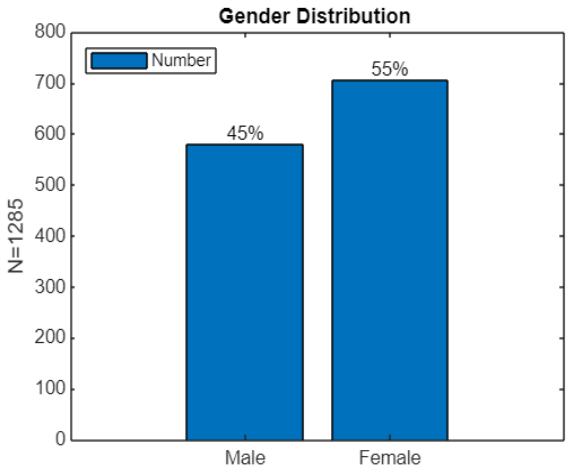

Figure 2: Demographic Characteristics According to sex

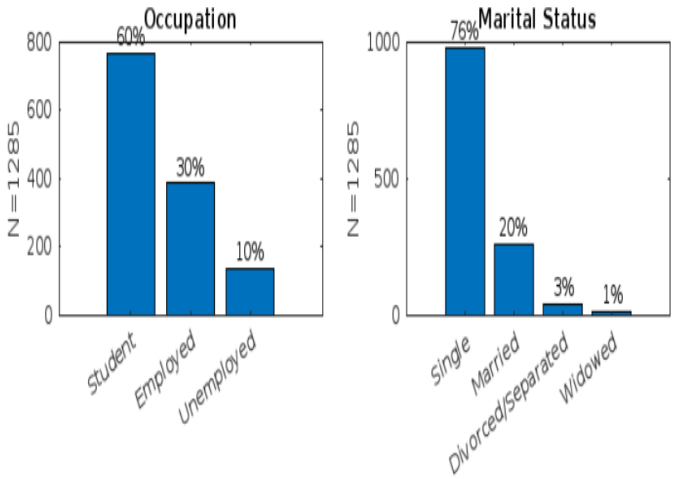

Figure 3: Demographic Characteristics According to Socioeconomic Status

The table presents demographic data for 1285 participants. Notably, the largest age group is 21-25 years old, representing 45% of the sample, followed by 15–20-year-olds at 35%- and 26–30-year-olds at 20%. Females make up the majority at 55%, while males represent 45%. In terms of education, 50% hold a Bachelor's degree, 40% completed high school, and 10% have a Master's degree or higher. Occupation-wise, 60% identify as students, 30% are employed, and 10% are unemployed. Marital status shows 76% single, 20% married, 3% divorced/separated, and 1% widowed. These demographics offer insights into the sample's composition, which could inform decisions in various fields, including education, employment policies, and social welfare programs. Understanding the distribution of these characteristics enables targeted strategies tailored to specific demographic groups within the population.

Table 2: Awareness of COVID-19 among Participants

Awareness Variable	Number	Frequency (%)
Heard of the Coronavirus outbreak		
Yes	1250	97%
No	35	3%
Source of First Information about COVID-19		
Media	870	68%
Friends/Family	256	20%
Health Professionals	129	10%
Knowledge of COVID-19 Transmission		
Airborne	1020	80%
Direct Contact	192	15%
Surface Contact	64	5%
Knowledge of COVID-19 Prevention		
Hand Hygiene	1155	90%
Mask Usage	1088	85%
Social Distancing	960	75%
Awareness of COVID-19 Incubation Period		
Yes	770	60%
No	515	40%

Table 3: Exposure to COVID-19 among Participants

Exposure Variable	Number	Frequency (%)
Travel outside the country since December 2019		
Yes	550	43%
No	735	57%
Contact with COVID-19 positive individuals		
Yes	295	23%
No	990	77%
Presence of COVID-19 symptoms		
Yes	192	15%
No	1093	85%
Pre-existing health conditions		
Yes	128	10%
No	1157	90%

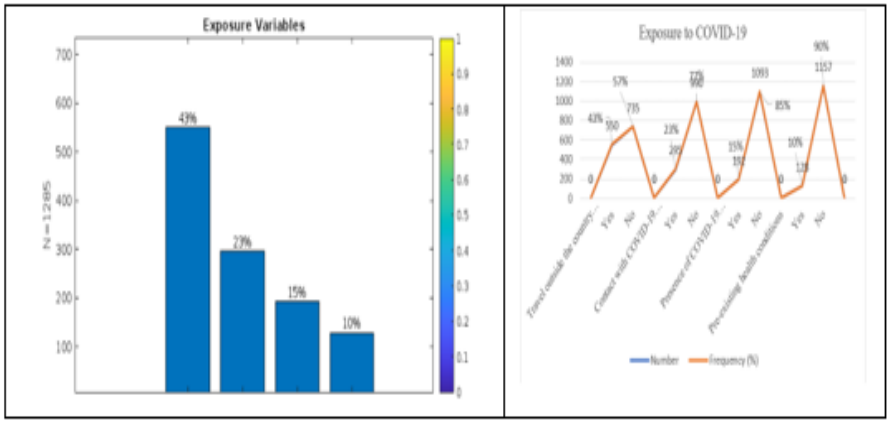

Figure 4: COVID-19 Exposure Among Participants: Travel, Contacts, Symptoms, Health Conditions

The exposure of participants to COVID-19, revealing significant insights into potential risks and vulnerabilities within the sample. Forty-three percent of participants have traveled internationally since December 2019, presenting a pathway for potential virus transmission. Additionally, 23% have had contact with COVID-19 positive individuals, heightening the risk of infection within the population. Notably, 15% of participants have experienced COVID-19 symptoms, indicating possible active transmission or exposure. Furthermore, 10% of participants report having pre-existing health conditions, which may exacerbate the severity of COVID-19 if contracted. These findings underscore the importance of robust public health measures, including vaccination campaigns, travel restrictions, contact tracing, and targeted support for vulnerable individuals, to mitigate the spread of the virus and minimize the impact on public health.

Table 4: Dietary Habits and Supplement Usage among Participants

Dietary and Supplement Variables	Number	Frequency (%)
Change in dietary habits to boost immunity		
Yes	918	72%
No	367	28%
Emphasis on specific food items for immunity		
Vitamin C-rich foods	795	62%
Hot water with ginger	743	58%
Regular garlic intake	668	52%
Use of supplements for COVID-19 prevention		
Yes	485	38%
No	800	62%

The association between COVID-19 awareness and demographic variables, as well as exposure to COVID-19 and demographic variables, reveals important insights into the factors influencing individuals' understanding of the virus and their likelihood of exposure.

In terms of COVID-19 awareness and demographics, the data suggest that age, gender, education, and occupation significantly influence individuals' awareness levels. Younger age groups, particularly those between 15-20 years old, exhibit higher awareness compared to older age groups, with 98% of individuals aged 15-20 being aware of COVID-19. Males also demonstrate higher awareness compared to females, with 98% of males being aware compared to 97% of females. Furthermore, individuals with higher levels of education tend to be more aware of COVID-19, with 95% of those with a master's degree or higher being aware compared to 94% of those with a bachelor's degree. Additionally, students show higher awareness levels compared to employed or unemployed individuals, with 97% of students being aware compared to 91% of employed individuals.

Regarding exposure to COVID-19 and demographics, similar patterns emerge. Younger age groups, particularly those between 15-20 years old, are more likely to have been exposed to COVID-19 compared to older age groups, with 49% of individuals aged 15-20 reporting exposure. Males also exhibit higher rates of exposure compared to females, with 53% of males reporting exposure compared to 31% of females. Moreover, individuals with lower levels of education and students are more likely to have been exposed to COVID-19 compared to those with higher levels of education and employed individuals, with 47% of high school graduates and 52% of students reporting exposure.

Table 5: Summarizing the evaluation of the study and its outcomes

Study Evaluation	Outcome
Main Findings	High awareness of COVID-19 among participants, dietary modifications for immunity, supplement usage for COVID-19 prevention
Strengths	Multi-center approach, diverse sample, standardized questionnaire, robust data analysis
Limitations	Self-reported data, potential for recall bias, cross-sectional design limits causal inference
Implications	Insights for public health campaigns, targeted interventions, and future research directions
Practical Significance	Informing policy decisions, promoting healthy behaviors, enhancing public health outcomes

DISCUSSION

The findings of this study valuable insights into the knowledge, attitudes, and practices regarding COVID-19 and dietary habits among young Bangladeshi individuals [8]. The high awareness level of COVID-19 among the participants, with 97% reporting awareness of the virus, aligns with findings from similar studies conducted in other countries [9]. This high awareness level is crucial for implementing effective public health interventions and preventive measures. However, it is essential to note that there may be variations in awareness levels across different demographic groups, as evidenced by differences in awareness based on age, gender, education, and occupation in our study [10]. For instance, younger age groups and males showed higher awareness levels compared to older age groups and females, respectively. Similar disparities in awareness levels based on demographic characteristics have been reported in other studies [11]. These differences underscore the importance of targeted health education campaigns to ensure equitable access to accurate information across all demographic groups.

Regarding exposure to COVID-19, our study found that 43% of participants had traveled internationally since December 2019, and 23% had been in contact with a COVID-19 positive person. These findings highlight the potential risk of exposure to the virus, especially among young adults who may engage in frequent travel or have social interactions that increase the likelihood of contact with infected individuals [12]. Comparing our results with other studies, the prevalence of travel-related exposure in our study is consistent with findings from similar cross-sectional studies conducted in other countries [8]. However, there may be variations in exposure rates depending on factors such as the timing of data collection, geographic location, and cultural practices related to travel and social interactions.

Regarding dietary habits, our study found that 72% of participants reported changing their dietary

habits to boost immunity, with a focus on consuming vitamin C-rich foods, hot water with ginger, and regular garlic intake. These dietary modifications are consistent with recommendations for enhancing immune function during the COVID-19 pandemic [13]. Similar dietary practices have been reported in other populations globally, reflecting a widespread interest in using nutrition as a means to support overall health and immunity during the pandemic [14]. However, it is essential to note that dietary habits may vary across populations due to cultural preferences, access to resources, and socioeconomic factors. Therefore, interventions promoting healthy dietary practices should consider the context-specific needs of the target population.

Supplement usage for COVID-19 prevention was reported by 38% of participants in our study. This finding is consistent with the growing trend of supplement use observed globally during the pandemic, with individuals seeking additional measures to protect themselves against the virus [15]. However, the efficacy of supplements in preventing COVID-19 remains a subject of debate, and scientific evidence supporting their effectiveness is limited. While some supplements may have immune-boosting properties, their role in preventing viral infections, including COVID-19, requires further investigation [16,17]. Therefore, public health campaigns should emphasize evidence-based preventive measures such as vaccination, hand hygiene, and mask usage while providing accurate information about the potential benefits and risks of supplement use.

A multi-center questionnaire-based study provides valuable insights into the knowledge, attitudes, and practices regarding COVID-19 and dietary habits among young Bangladeshi individuals. The findings underscore the importance of targeted health education campaigns to ensure equitable access to accurate information across all demographic groups. Moreover, interventions promoting healthy dietary practices and evidence-based preventive measures are essential for mitigating the impact of the COVID-19 pandemic and enhancing population health outcomes. Future research should focus on longitudinal studies to assess the long-term effects of dietary habits and supplement use on immune function and susceptibility to viral infections.

CONCLUSION

This study sheds light on the knowledge, attitudes, and practices regarding COVID-19 and dietary habits among young Bangladeshi individuals. The findings underscore the importance of targeted health education campaigns to ensure equitable access to accurate information. Additionally, interventions promoting healthy dietary practices and evidence-based preventive measures are essential for mitigating the impact of the pandemic and enhancing population health outcomes. Future research should focus on longitudinal studies to assess the long-term effects of these interventions.

Recommendations

- Strengthen health education efforts.
- Promote healthy diets.
- Improve healthcare access.

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Conflict of interest: None declared

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