

# Preventive Practices among Young Adults toward COVID-19 during the Pandemic in a Selected Town of Bangladesh

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## ABSTRACT

This study assessed COVID-19 preventive practices among 200 young adults in Tangail town, Bangladesh, focusing on the influence of socio-demographic factors such as sex and education level. Data collected through a pre-tested, semi-structured questionnaire revealed that 79% visited crowded places, 89% wore masks, 94.5% disinfected hands with soap, and 92% obeyed government restrictions. Significant gender differences were observed, with females showing higher compliance in mask-wearing and hand hygiene practices. Education level was also linked to better adherence, with those having higher education showing greater adherence to preventive practices. These findings highlight the need for targeted public health strategies and improved communication to address gaps in preventive behaviors and enhance preparedness for future pandemics.

**Keywords:** Coronavirus pandemic, COVID-19 preventive practice, SARS-CoV-2, young adults.

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## 1. INTRODUCTION

The COVID-19 pandemic significantly impacted global health, with young adults being a crucial demographic in spreading and preventing the virus. Understanding young adults' knowledge, attitudes, and practices toward COVID-19 was essential for implementing effective public health interventions [1]. Studies showed that while many young adults engaged in preventive practices such as hand washing and mask-wearing, gaps remained in adherence to other crucial measures like social distancing and avoiding large gatherings [2]. Additionally, young adults underestimated the adherence of their peers to preventive guidelines, highlighting the need for strategies to improve compliance with COVID-19 preventive behaviors [3]. Identifying predictors of precautionary behavior adoption among young adults was crucial for tailoring communication messages and interventions to promote effective preventive measures [4], [5].

Future pandemics like COVID-19 are a significant concern due to various factors. Environmental degradation, including habitat loss and poaching, increases the likelihood of zoonotic diseases jumping from wildlife to humans [6]. The COVID-19 pandemic has shown that mitigation strategies like lockdowns can have long-lasting global

health consequences, emphasizing the need for policymakers to be prepared for future pandemics [7].

The lessons learned from the COVID-19 pandemic underscore the critical need for developing long-term exit strategies and goals to better prepare for future pandemics [8]. Societies are evaluating past responses to COVID-19 to better prepare for future crises as the world transitions to a post-pandemic phase [9]. The pandemic has revealed major global public health gaps, highlighting the need for capacity building and improved communicable disease control to enhance preparedness for future pandemics [10].

This study aimed to contribute to the existing body of knowledge by assessing the prevalence of young adults' adherence to preventive guidelines and investigating those factors that influenced preventive behaviors during the COVID-19 pandemic to inform future interventions and policies to control and prevent future pandemics.

## 2. MATERIALS AND METHODS

A cross-sectional study was conducted among 200 young adults aged 18 to 30 years residing in selected residential areas of Tangail town. The areas included Akur

Takur Para, Registry Para, Adalot Para, Thana Para, Muslim Para, College Para, Sabalia, Bishwash Betka, Kagmari, and Santosh—main residential zones of the Tangail town where most of the population lives.

Data were collected using a pre-tested, semi-structured questionnaire. Both men and women aged 18 to 30 years who were residents of Tangail town and willing to participate were randomly selected and included in the study. Exclusion criteria were residents outside the young adult age group (18–30 years), those who had lived in the town for less than six months, and those unwilling to participate.

The study details were explicitly explained to each eligible participant and informed written consent was obtained. Ethical clearance was secured from the Ethical Review Committee of Bangladesh University of Health Sciences, and strict ethical standards were maintained throughout the study. All possible measures were taken to ensure the data's quality. Data analysis was performed using SPSS v25.

### 3. RESULTS

Table I shows the socio-demographic profile of 200 young adults in Tangail town who participated in the study. Among the respondents, 44.5% were male, and 55.5% were female. The average age of the participants was 22.27 years, with a standard deviation of 2.23 years, indicating a relatively young cohort.

TABLE I: SOCIODEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

Variables	Frequency (F)	Percentage (%)
Sex		
Male	89	44.5
Female	111	55.5
Total	200	100
Age	Mean±SD: 22.27 ± 2.23	
Marital status		
Married	27	13.5
Unmarried	171	85.5
Divorce	02	01
Total	200	100
Education level		
Below SSC	01	0.5
SSC	08	04
HSC	13	6.5
Bachelor	171	85.5
Master's or higher	07	3.5
Total	200	100
Employment status		
Student	183	91.5
Employed	06	03
Unemployed	05	2.5
Business owner	02	01
Housewife	04	02
Total	200	100
Religion		
Muslim	187	93.5
Hindu	13	6.5
Total	200	100
Monthly family income	Mean±SD: 44690.00 ± 29755.86	

TABLE II: DISTRIBUTION OF RESPONDENTS BASED ON THE COVID-19 PREVENTIVE PRACTICES

Variable	Frequency	Percentage
Visited crowded place		
Yes	158	79.0
No	42	21.0
Total	200	100
Wore a mask when leaving home		
Yes	178	89.0
No	22	11.0
Total	200	100
Disinfected hands with soap upon returning from public places		
Yes	189	94.5
No	11	5.5
Total	200	100
Changed clothes after returning from public places		
Yes	180	90.0
No	20	10.0
Total	200	100
Disinfected hands after sneezing or coughing into them		
Yes	182	91.0
No	18	9.0
Total	200	100
Obeded government restrictions on COVID-19 prevention strategies		
Yes	184	92.0
No	16	8.0
Total	200	100
Carried a hand sanitizer when leaving home		
Yes	141	70.5
No	59	29.5
Total	200	100

Regarding marital status, a significant majority, 85.5%, were unmarried, while 13.5% were married, and 1% were divorced. The respondents were generally well-educated, with 85.5% holding a Bachelor's degree. Other education levels included 6.5% with an HSC (Higher Secondary Certificate), 4% with an SSC (Secondary School Certificate), 3.5% with a Master's degree or higher and 0.5% having education below SSC.

Regarding employment status, the majority of the respondents, 91.5%, were students. Other employment statuses included 3% employed, 2.5% unemployed, 2% housewives, and 1% business owners. The religious composition was predominantly Muslim at 93.5%, with the remaining 6.5% Hindu. The average monthly family income was 44,690 BDT, with a substantial standard deviation of 29,755.86 BDT, reflecting the respondents' economic status variability.

Table II shows the COVID-19 preventive practices among respondents. Most respondents, 79.0%, reported visiting crowded places, while 21.0% avoided them. 89.0% wore a mask when leaving home, whereas 11.0% did not. Upon returning from public places, 94.5% of respondents disinfected their hands with soap, and 90.0% changed their clothes.

Regarding hygiene after sneezing or coughing into their hands, 91.0% of respondents disinfected their hands, while 9.0% did not. Compliance with government restrictions on

TABLE III: ASSOCIATION BETWEEN SEX AND COVID-19 PREVENTIVE PRACTICES AMONG RESPONDENTS

Variables	Worn a mask when leaving home		X <sup>2</sup>	p
Sex	Yes	No	13.93	<0.001
Male	71 (79.78%)	18 (20.22%)		
Female	107 (96.4%)	4 (3.6%)		
	Disinfected hands with soap upon returning from public places		10.15	0.001
Male	79 (88.76%)	10 (11.24%)		
Female	110 (99.1%)	1 (0.90%)		
	Carried a hand sanitizer when leaving home		9.24	0.002
Male	53 (59.55%)	36 (40.45%)		
Female	88 (79.28%)	23 (20.72%)		

TABLE IV: ASSOCIATION BETWEEN EDUCATION LEVEL AND COVID-19 PREVENTIVE PRACTICES AMONG RESPONDENTS

Variables	Changed clothes after returning from public places		X <sup>2</sup>	p
Education level	Yes	No	13.07	<0.001
HSC and below	15 (68.18%)	7 (31.82%)		
Bachelor and higher	165 (92.7%)	13 (7.3%)		
	Disinfected hands after sneezing or coughing into them		10.07	0.002
HSC and below	16 (72.73%)	6 (27.27%)		
Bachelor and higher	166 (93.26%)	12 (6.74%)		

COVID-19 prevention was high, with 92.0% of respondents obeying the guidelines. However, only 70.5% carried a hand sanitizer when leaving home, while 29.5% did not.

Table III presents the relationship between sex and various COVID-19 preventive practices among respondents, as measured by the Chi-square (X<sup>2</sup>) test.

In the practice of wearing a mask when leaving home, there was a significant association with sex (X<sup>2</sup> = 13.93, p < 0.001). Among males, 79.78% wore a mask, while 20.22% did not. In contrast, a higher percentage of females, 96.4%, wore a mask, with only 3.6% not adhering to this practice.

For the practice of disinfecting hands with soap upon returning from public places, the association with sex was also significant (X<sup>2</sup> = 10.15, p = 0.001). 88.76% of males disinfected their hands, compared to 99.1% of females. The percentages of males and females who did not follow this practice were 11.24% and 0.90%, respectively.

Lastly, carrying a hand sanitizer when leaving home showed a significant association with sex (X<sup>2</sup> = 9.24, p = 0.002). Among the males, 59.55% carried a hand sanitizer, whereas 40.45% did not. Meanwhile, 79.28% of females carried a hand sanitizer, with 20.72% not doing so.

This table highlights significant gender differences in adherence to preventive practices during the COVID-19 pandemic, with females generally demonstrating higher compliance across all three practices.

Table IV presents the relationship between education level and various COVID-19 preventive practices among respondents, as determined by the Chi-square (X<sup>2</sup>) test.

Regarding the practice of changing clothes after returning from public places, a significant association with education level was observed (X<sup>2</sup> = 13.07, p < 0.001). Among those with an education level of HSC and below, 68.18% changed clothes, while 31.82% did not. In contrast, a higher percentage of those with a Bachelor's degree or higher (92.7%) adhered to this practice, with only 7.3% not doing so.

The practice of disinfecting hands after sneezing or coughing into them also showed a significant association with education level (X<sup>2</sup> = 10.07, p = 0.002). Among respondents with an education level of HSC and below, 72.73% disinfected their hands, compared to 93.26% of those with a Bachelor's degree or higher. The percentages of those who did not disinfect their hands were 27.27% and 6.74% for the lower and higher education groups, respectively.

This table highlights the impact of education level on adherence to preventive practices during the COVID-19 pandemic, with respondents holding a Bachelor's degree or higher demonstrating greater compliance across both practices.

#### 4. DISCUSSION

Among the participants, 79% visited crowded places during the pandemic. In contrast, another study conducted in China found that only 3.6% of participants had visited crowded places [11]. The stark contrast between the 79% prevalence of crowded place visits among young adults in Bangladesh and the mere 3.6% reported in the Chinese study is striking. This disparity suggests significant differences in behavior and underlying factors between the two populations. Potential explanations could be socioeconomic disparities, cultural norms prioritizing social gatherings in Bangladesh, variations in government policies and enforcement, differing perceptions of COVID-19 risk, and unequal access to health information.

Among the participants, 89% wore a mask when leaving home. Another study conducted in China found that almost all participants (98%) wore masks when going out [11]. While mask usage was high in Bangladesh and China, the significantly higher rate in the Chinese study suggests potential differences in influencing factors. Possible explanations could be stricter government regulations

and enforcement in China, a cultural emphasis on collective well-being, more effective public health campaigns, a higher perceived risk of COVID-19 infection, and socioeconomic factors that might have facilitated wider mask adoption in China.

After leaving public areas, 94.5% of the participants cleaned their hands with soap. Another study conducted in Bangladesh found that 93.8% of participants frequently washed their hands using water and soap [12]. The remarkably similar high rates of hand hygiene in both studies suggest that factors such as increased public awareness, accessible hand washing facilities, cultural emphasis on cleanliness, and potential government initiatives might have contributed to this positive behavior.

Among the participants, 92% obeyed government restrictions on COVID-19 prevention strategies. Another study conducted in Bangladesh found that 88.4% of participants adhered to all government rules related to COVID-19 [12]. Both studies revealed high levels of adherence to government-imposed COVID-19 restrictions. Several factors might have contributed to this positive outcome, including clear government messaging, public fear of infection, social norms promoting compliance, and effective enforcement mechanisms.

However, a discrepancy emerges between the highly reported adherence to government COVID-19 restrictions and the observed behavior of 79% of participants visiting crowded places. This inconsistency suggests potential issues with social desirability bias, misunderstandings of guidelines, insufficient enforcement, complex decision-making processes balancing risks and benefits, or changes in behavior over time.

This study revealed significant differences in mask-wearing behavior between males and females. Specifically, 96.4% of females wore masks when leaving home, compared to 79.78% of males. The chi-square test ( $X^2 = 13.93$ ) and the p-value below 0.001 indicate a strong and statistically significant association between gender and the likelihood of wearing a mask. This suggests that gender influenced whether individuals complied with mask-wearing guidelines.

Several factors might have contributed to this gender difference. Females may have had a higher perceived risk of COVID-19 infection, leading them to be more diligent in adhering to preventive measures like mask-wearing. Cultural norms and social expectations could have also contributed, as women often feel a greater responsibility to follow public health recommendations closely, potentially due to traditional caregiving roles. Additionally, women might have been more influenced by health education campaigns and peer networks encouraging protective behaviors.

This finding highlights the need for gender-specific public health interventions to improve compliance with mask-wearing among males. Tailor messaging and strategies that address the unique motivations and barriers men face could be a key to enhancing their adherence to preventive practices.

The study observed that 88.76% of males and 99.1% of females disinfected their hands with soap upon returning from public places. The statistical analysis shows a very

strong association between gender and the practice of hand disinfection ( $X^2 = 10.15$ ,  $p = 0.001$ ). This significant result suggests that females were more likely to engage in hand hygiene practices after being in public spaces than males.

Several factors might have contributed to this gender difference in behavior. Females may have had a higher awareness or concern about the transmission of COVID-19, leading to more consistent hand hygiene practices. Social and cultural expectations could have also played a role, with women perhaps feeling a stronger sense of responsibility toward maintaining cleanliness and protecting their health and the health of others in their household. Moreover, women might have been more receptive to public health messaging that emphasized the importance of hand hygiene as a preventive measure against the virus.

The study found that 59.55% of males and 79.28% of females carried hand sanitizer when leaving home. The chi-square test result ( $X^2 = 9.24$ ) with a p-value of 0.002 indicates a significant association between gender and the practice of carrying hand sanitizer. This suggests that females were more likely to carry hand sanitizer than males when going out, reflecting a gender-based difference in adopting this preventive measure.

Several factors could have contributed to this gender difference. Females might have had a greater awareness of the importance of maintaining hygiene on the go, influenced by health education, social norms, or personal health concerns. Additionally, women may have prioritized preparedness by carrying hand sanitizer, viewing it as a necessary tool for protecting themselves and others from potential infection, especially when soap and water are not readily available.

The study revealed significant associations between education level and preventive practices related to COVID-19, such as changing clothes after coming back from public places ( $X^2 = 13.07$ ,  $p < 0.001$ ) and disinfecting hands after sneezing or coughing into hands ( $X^2 = 10.07$ ,  $p = 0.002$ ). Several factors might have contributed to this. Higher education levels are often correlated with greater awareness and understanding of health-related risks and the importance of hygiene practices, especially during the pandemic. Educated individuals likely had better access to accurate information about the risks associated with COVID-19 and the potential for virus transmission through surfaces like clothing, which made them more inclined to follow public health recommendations rigorously. Additionally, education could have enhanced their understanding of the connection between hygiene practices and disease prevention, leading to more consistent adherence to behaviors like hand disinfection. Moreover, individuals with higher education levels may have had a heightened perception of personal and public health responsibility, motivating them to adopt diligent practices to reduce the risk of transmitting the virus to others and to prevent contamination of their home environments.

## 5. CONCLUSION

This study assessed the preventive practices of young adults in Tangail town during the COVID-19 pandemic and explored the influence of socio-demographic factors

on adherence to these practices. The findings reveal a generally high level of compliance with key preventive measures among the respondents, including mask-wearing, hand hygiene, and adherence to government restrictions. Notably, a significant percentage of participants engaged in these practices, with 89% wearing masks, 94.5% disinfecting their hands with soap, and 92% following government guidelines. This suggests a strong public health response within the community.

However, discrepancies between reported behaviors and actual practices were evident. For example, despite high adherence to government restrictions, 79% of participants still visited crowded places, indicating potential issues with guideline understanding, enforcement, or social desirability bias. This inconsistency highlights the need for improved communication and enforcement strategies.

The study also uncovered significant gender differences in preventive behaviors. Females demonstrated higher compliance with mask-wearing, hand hygiene, and carrying hand sanitizers compared to males. This suggests that gender-specific public health interventions could be beneficial in addressing these disparities. Tailoring health messages to different genders' unique motivations and barriers could enhance overall adherence to preventive practices.

Education level also played a crucial role in preventive behaviors. Higher educational attainment was associated with greater adherence to practices such as changing clothes after returning from public places and disinfecting hands after sneezing or coughing. This underscores the importance of targeted health education, as individuals with higher education levels are likely to understand better the importance of these practices and the risks associated with COVID-19.

While young adults in Tangail town demonstrated a commendable level of engagement in COVID-19 preventive practices, there remains room for improvement, particularly in enhancing understanding and compliance with preventive measures. Future public health strategies should address gaps in adherence, particularly among specific demographic groups, and leverage the insights gained from this study to better prepare for future pandemics.

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#### CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this article.

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