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RESEARCH ARTICLE

COVID-19 Community Survey, Knowledge, Attitude and Practice by Bangladeshi Population

Subrina Jesmin^{1,2*}, Adil Maqbool^{3,4}, Farzana Sohael⁵, Majedul Islam Md^{2,6}, Yujiro Matsuishi², Takeru Shima⁷, Nobutake Shimojo⁶, Satoru Kawano⁸, Arifur Rahman Md⁹, Naoto Yamaguchi⁸ and Masao Moroi¹

¹Faculty of Medicine, Toho University Graduate School of Medicine, Tokyo, Japan

²Health & Disease Research Centre for Rural Peoples (HDRCRP), Mohammadpur, Dhaka-1207, Bangladesh

³Allama Iqbal Medical College, University of Health Sciences (UHS) Lahore, Pakistan

⁴Jinnah Hospital, Lahore, Pakistan

⁵Department of Gynecology, Dhaka Medical College, Dhaka, Bangladesh

⁶Department of Emergency and Critical Care Medicine, Faculty of Medicine, University of Tsukuba, Tsukuba, Ibaraki, Japan.

⁷Department of Health and Physical Education, Cooperative Faculty of Education, Gunma University, Gunma, Japan

⁸Ibaraki Prefectural University of Health Sciences, Ami, Japan

⁹Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh

ABSTRACT

Background: In a public health crisis, knowledge and understanding of disease transmission modes, fundamental hygiene concepts, and procedures are critical for designing effective control measures. The purpose of this research was to assess the Bangladeshi population's Knowledge, Attitude and Practice (KAP) towards COVID-19.

Methods: A series of questions about the KAP of the population about COVID-19 were asked in this cross-sectional study, which was conducted among the general population of Bangladesh over the age of 15, and participants' demographic characteristics and source of information about COVID-19 were recorded and analyzed.

Results: Despite the fact that the majority of respondents (more than 60%) had a positive attitude about COVID-19, 70% of those questioned in Bangladesh had insufficient understanding and preventative actions. This latter discovery is promising and suggests a potential therapeutic strategy. Male and less educated respondents reported inadequate COVID-19 preventative methods, as well as a lack of understanding about signs and symptoms and transmission. The findings revealed a substantial link between knowledge, attitude, and practice among women of a certain gender, age, and education level. Male gender, non-healthcare-related jobs, single status, and a lesser degree of schooling were all substantially correlated with poorer knowledge scores, according to multiple linear regression analysis.

Conclusion: The present study revealed a high attitude among the study population towards COVID-19 but a poor response on knowledge and preventive practices, which can be enhanced by awareness campaigns and proper planning.

*Corresponding author

Subrina Jesmin, Faculty of Medicine, Toho University Graduate School of Medicine, 5-21-16 Omori-nishi, Ota-ku, Tokyo, Japan

Tel: +81-906-198-2673

E-mail: jsabrina@gmail.com

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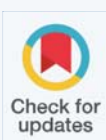
INTRODUCTION

Coronavirus Disease (COVID-19), caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus, is a worldwide pandemic that began in Wuhan, China, and soon spread to over 180 nations. As the new coronavirus

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evolves, our understanding of whom this virus will affect severely remains limited [1]. COVID-19 is presently one of the most serious worldwide health issues. The pandemic's spread has impacted numerous nations, producing issues in practically every facet of daily life. It has caused global economic realignment, exacerbated medical crises in many already fragile nations, and is presently the most widely covered issue in the media. For all healthcare systems across the globe, the pandemic offers an unprecedented challenge. This is the first medical disaster in modern history to strike several populations, regions, and continents, necessitating everyone's awareness and readiness [2]. SARC-CoV-2 was discovered in lower respiratory tract samples from afflicted individuals, according to a Chinese investigation. In February 2020, the newly identified virus was given the name COVID-19 [3]. This illness has become a huge public health issue across the world, causing widespread anxiety among people as it spreads swiftly over the globe [4]. The virus is very infectious and may quickly spread from person to person by respiratory droplets when infected persons sneeze or cough, and it can survive for many hours on the surface of various surfaces [5]. Contacting droplet-contaminated surfaces or items and then touching the eyes, nose, or mouth might readily transfer the virus to a healthy individual [6]. Fever, cough, malaise, and trouble breathing are the main clinical signs of COVID-19 [7]. While some have dubbed COVID-19 "the great equalizer," early reports from hard-hit regions in the United States indicate that the illness has a disproportionate impact on long-standing social determinants of health, such as racial/ethnic and socioeconomic inequality [8-10]. One of the first states to publish COVID-19 data by race/ethnicity and demographic factors was Michigan. Diabetes, hypertension, cancer, renal, lung, and heart disorders all increase the severity of the condition in elderly people [11]. In South Asia, especially Bangladesh, COVID-19 has shown significant gaps in public health preparation and response to infectious disease risks and outbreaks. [12] The absence of a robust public health monitoring system is especially noticeable. With over 160 million people, Bangladesh is one of the poorest and most densely inhabited nations on the planet [13]. The Institute of Epidemiology Disease Control and Research (IEDCR) detected the first COVID-19 case in Bangladesh on March 7, 2020 [14]. On March 9, 2020, the number of infected patients continued to climb, and by December 16, 2020, Bangladesh had recorded 494,209 infected cases and 7129 fatalities [14]. We are presently witnessing a global emergency impacting all cultures, and it has put billions of people under lockdown due to a lack of adequate treatment and vaccination for COVID-19. Desperate attempts are being made throughout the globe to stop the epidemic, which has resulted in the collapse of health systems and long-term geopolitical and economic consequences. Because there is currently no recognized medical therapy for the virus, social distance is the only viable option for halting its spread apart for the several vaccines, now available for COVID-19 [15]. Future

outbreaks of CoVs are anticipated to be inevitable due to changes in climate and ecology, as well as greater human-animal contact. As a result, effective treatments and vaccines against CoVs are required [16]. According to retrospective research of middle-aged and older COVID-19 patients, the elderly are more sensitive to the disease and are more likely to be admitted to the ICU, with a greater fatality rate [17]. Alterations in lung structure and muscle atrophy may contribute to age-related changes in the elderly population, resulting in changes in physiologic function, a loss in lung reserve, a reduction in airway clearance, and a reduction in defensive barrier function [17].

METHODS

The study included a total of 503 respondents from rural and urban areas Bogura, Bangladesh. The first questionnaires were gathered in March (August 5, 2021–November 6, 2021), which were gathered in two waves: at the beginning of the pandemic and during Bangladesh's most severe COVID-19 lockdown. Demographic characteristics of the sample are presented in (Table 1). The demographics,

Table 1: Sociodemographic and clinical characteristics of study subjects (n = 503).

Variable	Mean ± SD or number (%)
Age (years)	41.0 ± 14.7
Gender	
Male	166 (33.8)
Female	325 (66.2)
Anthropometric and behaviour parameters	
Weight (kg)	64.6 ± 13.8
Height (cm)	152.5 ± 20.2
Body mass index (kg/m ²)	29.3 ± 10.1
Waist circumference (cm)	102.8 ± 2.4
Body temperature (F)	99.3 ± 1.0
Smoking habit (%)	114 (31.3)
Tobacco consumption (%)	86 (24.2)
Maternal educational level	
No education	179 (41.6)
Primary education	98 (22.8)
Secondary education	116 (27.0)
Higher education	37 (8.6)
Maternal marital status	
Unmarried	39 (10.7)
Married	327 (89.3)
Occupation	
Housewife	21.9 (57.8)
Self-employment	4.6 (12.3)
Government Job	1.7 (4.4)
Business	9.5 (25.0)
Others	1 (0.5)

Monthly income (BDT)	
< 10000	34 (34.7)
> = 10000	64 (65.3)
Signs and symptoms	
Fever	198 (67.3)
Dry cough	108 (52.9)
Tiredness	9 (30.0)
Difficulty breathing	40 (65.6)
Loss of taste or smell	8 (16.0)
Headache	134 (54.9)
Co-morbidity	
Diabetes mellitus	195 (42.4)
Hypertension	91 (27.0)
Heart disease	51 (13.2)
Liver disease	34 (8.9)
Kidney disease	37 (9.6)
Pulmonary disease	49 (12.8)

Values are presented as mean ± SD for continuous variables and number (%) for categorical variables.
Based on T-test for continuous variable and Pearson Chi-square test for categorical variable.
SD: Standard Deviation

knowledge, attitudes, and behaviors parts of the survey were separated into four categories. The first component collected information about the respondent's employment, age, and current home. The second section assessed basic knowledge on COVID-19, including symptoms, infection pathways, and preventative strategies. The final section assessed people's dread of a pandemic and which lockdown limitations were the hardest to bear. The fourth section focuses on COVID-19 information sources. The fourth topic (affected bodily systems) had a single response option, but the other questions (symptoms, transmission pathways, preventive, what to do when experiencing symptoms, everyday life challenges, worries, information sources) were multiple choice questions with numerous answers.

ETHICS AND INFORMED CONSENT

The study was approved by the review board of our institution's research committee prior to survey participant's enrolment. Each participant was given access to all study materials as well as assurances of complete confidentiality. Only those who granted their consent were included in the study.

STATISTICAL ANALYSIS

To compare all demographic and clinical aspects between the two groups (COVID-19 positive and COVID-19 negative), the paired student's t-test and the Mann-Whitney test for normal and skewed continuous variables, respectively, were employed (IBM SPSS Statistics, version 20). For all categorical comparisons between the two groups, we used

the chi-square test (STATA, version 10). In Tables and figures 1-4, data is presented as Mean S.D. or percentage. A P-value of 0.05 was considered statistically significant for all parameters in this study.

RESULTS

A total of 503 survey data were collected in Bangladesh both in rural and urban communities (Table 1). The mean age was 41.0 ± 14.7 years. The majority of the participants were Muslims by religion (94.9%), while the rest were Hindus (5.1%). A large number of the population was illiterate (41.6%). Most of the participants are married (89.3%). Among participants, 57.8% are housewives while others are self-employed (12.3%), doing government jobs (4.4%), and Business (25.0%). Most of them (24.2%) have tobacco consumption with a monthly income of less than 10,000 tk. (34.7%) while 65.3% have monthly income >= 10000 tk (Table 1). Out of these common symptoms, fever 67.3% showed up as the most common symptom, followed by dry cough in 52.9% patients. Other symptoms noted were Loss of taste or smell (16.0%), tiredness (30.0%), and difficulty breathing (65.6%). 42.4% of patients had diabetes mellitus,

Prevalence of COVID-19 positive among the general population

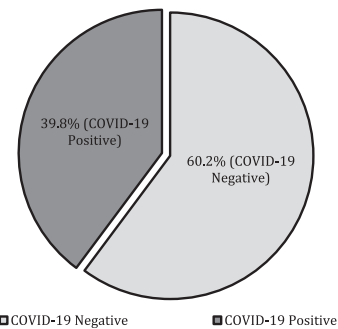


Figure 1 The percentage of participants with negative cases (60.2%) and positive cases (39.8%) COVID-19 RT-PCR test.

Prevalence of COVID-19 positive based on gender

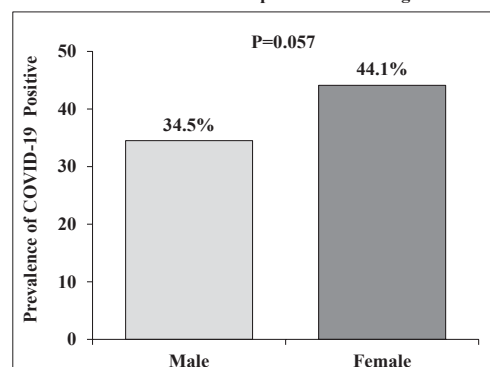


Figure 2 Prevalence of COVID-19 positive based on gender. The prevalence of COVID-19 RT-PCR results was positively higher in females than in males (44.1% vs.34.5%, p = 0.057).

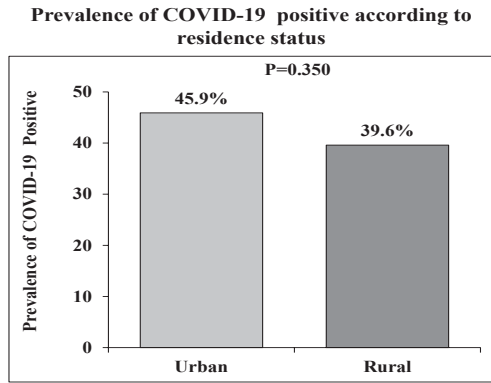


Figure 3 Prevalence of COVID-19 positive according to residence status. The prevalence of COVID-19 RT-PCR results was positively higher in the urban population compared to the rural population (45.9% vs.39.6%, $p = 0.350$).

Percentage of ICU support among COVID-19 positive cases

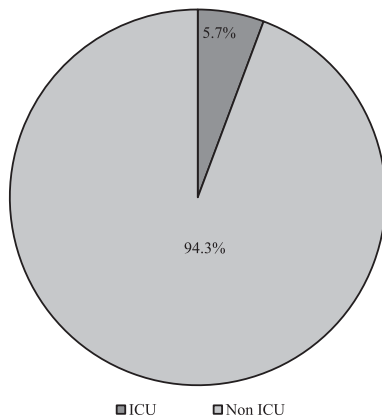


Figure 4 Among the total COVID-19 positive cases, only 5.7% of cases needed Intensive Care Unit (ICU) support and most of the cases (94.3%) had not needed Intensive Care Unit (ICU) support.

27.0% had hypertension, and 13.2% of patients had ischemic heart disease, according to the Co-morbidity variable (Table 1). The prevalence of positive COVID-19 RT-PCR results is higher in females than in males (72.2% vs.27.8%, $p = 0.057$) (Table 2). There was a significant difference between positive and negative RT-PCR result for smoking habit ($p = 0.005$), weight ($p = 0.001$), height ($p = 0.007$), BMI ($p < 0.001$), ICU support ($p = 0.018$), O₂ therapy ($p = 0.025$), fever ($p < 0.001$), dry cough ($p < 0.001$), headache ($p < 0.001$) and co-morbidity with COVID-19 patients. There was no significant difference in gender, residence status, waist circumference, body temperature, tiredness, loss of taste or smell, and ischemic heart disease in between positive or negative PCR result patients with COVID-19 (Table 2). Table 3 shows the association between the study subject's signs and symptoms and comorbidity characteristics and gender (male vs. female) of the COVID-19 general population, and the statistically significant result was in tiredness ($p = 0.011$) and headache ($p = 0.041$) by Chi-square analysis at $p < 0.05$. There was no significant difference between males and

females for fever ($p = 0.853$), dry cough ($p = 0.359$), difficulty breathing ($p = 0.684$), loss of taste or smell ($p = 0.709$), and comorbidity with COVID-19 patients. Table 4 shows, age, gender, residence status, body temperature, Intensive Care Unit (ICU) support, O₂ Therapy, diabetes mellitus and hypertension are statistically significant in binary logistic regression. The Odds Ratio (OR) for body temperature (F) was 0.97 (CI = 0.96–0.98, $p < 0.001$), for O₂ Therapy was 1.75 (CI 1.35–2.26, $p < 0.001$), for hypertension was 1.32 (CI = 1.00–1.73, $p < 0.047$), for ischemic heart disease was 1.13 (CI

Table 2: Characteristics of respondents corresponding to COVID-19 status.

Variable	COVID-19 Positive	COVID-19 Negative	P value
Age (years)	36.9 ± 12.3	44.2 ± 16.1	< 0.001*
Gender			
Male	49 (27.8)	93 (36.6)	0.057
Female	127 (72.2)	161 (63.4)	
Residence			
Rural	148 (84.1)	226 (87.3)	0.350
Urban	28 (15.9)	33 (12.7)	
Smoking habit	61 (37.0)	31 (22.1)	0.005*
Tobacco consumption	46 (27.7)	22 (16.7)	0.024*
Weight (kg)	66.5 ± 14.3	61.8 ± 12.9	0.001*
Height (cm)	147.5 ± 21.6	153.3 ± 18.6	0.007*
Body mass index (kg/m ²)	32.5 ± 11.6	27.3 ± 8.7	< 0.00*
Waist circumference (cm)	102.7 ± 2.5	102.8 ± 2.5	0.956
Body temperature (F)	99.3 ± 1.2	99.2 ± 1.0	0.872
ICU support	10 (5.7)	0 (0.0)	0.018*
O ₂ Therapy	13 (7.5)	1 (1.1)	0.025*
Signs and symptoms			
Fever	117 (92.1)	56 (39.4)	< 0.001*
Dry cough	65 (90.3)	38 (30.2)	< 0.001*
Tiredness	6 (37.5)	3 (21.4)	0.338
Difficulty breathing	18 (66.7)	1 (7.7)	< 0.001*
Loss of taste or smell	5 (35.7)	1 (14.3)	0.306
Headache	78 (91.8)	48 (38.4)	< 0.001*
Co-morbidity			
Diabetes mellitus	106 (65.8)	56 (23.0)	< 0.001*
Hypertension	49 (29.0)	20 (18.0)	0.037*
Ischemic heart disease	20 (11.5)	16 (10.5)	0.781
Liver disease	17 (9.8)	6 (4.0)	0.042*
Kidney disease	19 (10.9)	5 (3.3)	0.008*
Pulmonary Disease	27 (15.7)	9 (6.0)	0.006*
Asthma	10 (31.2)	15 (15.5)	0.050*
Chest pain	122 (71.8)	68 (29.1)	< 0.001*

Values are presented as mean ± SD for continuous variables and number (%) for categorical variables. Based on T-test for continuous variable and Pearson Chi-square test for categorical variable. COVID-19: Coronavirus Disease-2019; SD: Standard Deviation; * $p < 0.05$.

Table 3: Differences of signs and symptoms and co-morbidity between male and female.

Variable	Male	Female	P value
Signs and symptoms			
Fever	64 (68.1)	134 (67.0)	0.853
Dry cough	38(57.6)	70(50.7)	0.359
Tiredness	8 (50.0)	1 (7.1)	0.011*
Difficulty breathing	15(62.5)	25(67.6)	0.684
Loss of taste or smell	4(18.2)	4(14.3)	0.709
Headache	37 (45.7)	97 (59.5)	0.041*
Co-morbidity			
Diabetes mellitus	61 (40.4)	134(43.4)	0.545
Hypertension	34 (29.1)	57 (25.9)	0.535
Ischemic heart disease	23 (17.2)	28 (11.2)	0.101
Liver disease	11(8.3)	23 (9.3)	0.743
Kidney disease	8(6.0)	29(11.6)	0.073
Pulmonary Disease	17 (13.0)	32 (12.9)	0.972
Asthma	17 (26.2)	23 (23.5)	0.697
Chest pain	74 (47.7)	151 (49.3)	0.745

Values are presented as number (%).Based on Pearson Chi-square test. *p < 0.05.

Table 4: Univariate regression analysis corresponding to COVID-19 (negative vs. positive).

Variable	Regression analysis		
	Odds ratio (OR)	95% CI	P Value
Age (years)	0.99	0.98 - 0.99	< 0.001*
Gender	0.79	0.62 - 0.99	0.046*
Residence status	0.65	0.53 - 0.81	< 0.001*
Body temperature (F)	0.97	0.96 - 0.98	< 0.001*
Intensive care unit (ICU) support	1.76	1.37 - 2.27	< 0.001*
O2 Therapy	1.75	1.35 - 2.26	< 0.001*
Smoking habit	0.95	0.73 - 1.25	0.732
Tobacco consumption	1.09	0.84 - 1.41	0.510
Diabetes mellitus	0.29	0.22 - 0.40	< 0.001*
Hypertension	1.32	1.00 - 1.73	0.047*
Ischemic heart disease	1.13	0.90 - 1.43	0.291

COVID-19: Coronavirus Disease-2019; CI: Confidence Interval; *p < 0.05. Based on binary logistic regression.

0.90-1.43, p < 0.291). Among relevant indicators, Intensive Care Unit (ICU) support (days) exhibited a higher odds ratio (OR 1.76, CI 1.37-2.27, p < 0.001) (Table 4).

DISCUSSION

The intensity of the disease, the severity of its dissemination, and the mortality rate may all impact people's knowledge, attitudes, and practices when it comes to an infectious disease. Since the World Health Organization declared COVID-19 a pandemic, awareness, attitudes, and behaviors around COVID-19 have risen steadily. This

research was carried out in Bangladesh and abroad during the start of the COVID-19 epidemic. Despite the fact that the majority of respondents (more than 60%) had a positive opinion about COVID-19, 70 percent of those polled in Bangladesh had insufficient awareness and preventative actions [18]. This latter discovery is promising and suggests a potential therapeutic strategy. Male and less educated respondents reported inadequate COVID-19 preventive methods, as well as a lack of understanding about signs and symptoms and transmission. In Bangladesh, moreover, half of the respondents said they had "excellent awareness" of COVID-19, with age and education having a major influence on knowledge and preventative activities [19]. COVID-19 is now a worldwide health hazard that has people worried [20]. Even though vaccination studies are underway, and several vaccines are available for COVID-19. But to battle this pandemic better we have to take more measures. Therefore, boosting community knowledge, attitude, and behaviors concerning COVID-19 is an important way to avoid the illness [21]. The goal of this research was to evaluate the communities' knowledge, attitudes, behaviors, and government restriction policy for preventing COVID-19 in Bangladesh. The COVID-19 pandemic is a fast expanding worldwide menace that affects everyone, regardless of occupation or age, in some manner. The COVID-19 pandemic is a fast expanding worldwide menace that affects everyone, regardless of occupation or age, in some manner. The research described in this article was a spontaneous and swift response to a unique and novel social situation, with the goal of gaining a better understanding of Bangladesh's population's awareness of and responses to the pandemic during two distinct stages of its growth. According to the findings, the government must make significant efforts to spread knowledge, attitudes, and practices about COVID-19 to the public, particularly regarding specific control measures such as wearing masks, the role of a few herbs in preventing infection, and the ineffectiveness of antibiotics in COVID-19 treatment. The latter is critical since it will undoubtedly aid in the battle against bacterial resistance, which is a serious public health issue worldwide, as well as offering appropriate herbal guidance. We think that the Ministry of Health and general practitioners should devote significant resources to teaching the public about COVID-19 via social media and television, which are the primary sources of information for more than half of the research participants. Increasing public awareness about the disease may aid in correcting some incorrect information people have about the disease, as seen in this study, where a few participants believed that smoking or taking antibiotics would prevent infection, and others thought COVID-19 infection and quarantine was a stigma and thus would hide their infection. They might be a source of infection, which would very certainly end in death.

LIMITATIONS

One of the limitations of this research was that the respondents might offer socially desired replies. Another limitation of this research was that we were unable to compare the respondents' knowledge, attitudes, and

behaviors across age groups, gender, education, marital status, and profession. Another limitation of this research was the lack of uniformity of the measures we used to evaluate the respondents' knowledge, attitudes, and behaviors.

CONCLUSION

To conclude, the current research found that the study population had a positive view regarding COVID-19. Such a reaction shows the impact of the WHO's declaration of the COVID-19 as a pandemic, as well as efforts were undertaken by local health authorities to educate a broad range of the public about the virus. However, since a large majority of participants were illiterate, their responses to knowledge and prevention practices concerning COVID-19 were inadequate, necessitating the urgent need for media and mass communication-based awareness initiatives. The results of this research might serve as a foundation for developing public awareness campaigns and directing the efforts and strategies of the country's health authorities to control COVID-19 better and prevent its spread.

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Conflict of Interest

The authors declare that they have no conflict of interest.

Informed Consent

All study participants provided written informed consent.

Author Contributions

SJ has designed and executed the study. SJ has also drafted the manuscript. AM, FS, MMI, YM, NS, SK, MAR, NY and MM have assisted in sample collection and analysis. SJ and TS supervised this manuscript preparation and provided critical editing.

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