

PUBLIC AWARENESS AND PERSONAL HYGIENIC PRACTICES OF RURAL PEOPLE IN THE COVID-19 SITUATION

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ABSTRACT

BACKGROUND

The study attempted to understand rural Bangladesh's health information, awareness level, and preventive measures in the Coronavirus disease -19 (COVID-19) pandemic.

METHODS

A cross-sectional survey by face-to-face interview was conducted with rural people from 14 June 2020 to 13 August 2020. An ordered logistic regression model was employed for data analysis. A total of 3,007 people (Female = 55.97%; Male = 44.03%) participated in the survey who met the inclusion criteria.

RESULTS

The demography of respondents revealed that a significant portion of villagers were within the ages 21-30 (26.80%), had primary education (23.88%), unemployed (31.73%), and middle class (56.17%). The most common and influential used media to know about the Coronavirus disease were electronic media and relative/family/friend/neighbors. Change of demography created a spectacular difference in public awareness level and hygiene practice. Female, illiterate, poor, and age above 60 were comparatively less aware of seven essential facts about the disease. There was no mentionable difference in personal hygienic practices due to sex. But participants who were aged 51-60 years, graduates or postgraduates, unmarried, government or non-government employees and middle class exhibited the best hygiene practice over other features. Invariably, the education level of rural people had a positive effect on awareness and preventive measures.

CONCLUSIONS

Overall, the government and policymakers must identify vulnerable groups whose awareness and hygienic practices are not at the optimum level. Afterward, the government and related organizations should take necessary measures immediately to protect these groups from COVID-19 threats until the complete immunization.

KEYWORDS

COVID-19; awareness; health information; ordered logit; rural people

INTRODUCTION

Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), a zoonotic infectious virus, is the causative organism of the 21st-century pandemic. [1, 2] It was a novel coronavirus, and the infection pattern was entirely hypothetical from the beginning of the outbreak in December 2019. Therefore, better preventive and curative measures were obscure. [3,4] As the enveloped RNA virus mainly spreads human-to-human through respiratory droplets, the World Health Organization and other national and international health authorities provided guidelines to enforce standard personal hygiene practice to prevent the contagious virus from community transmission. [1, 5, 6] They suggested maintaining public distancing, using face masks, regular hand sanitization, and a healthy diet. The general attitudes towards these hygiene measures relied on their knowledge and awareness development. [7] The people who live below the margins of literacy, economy, and adequate information sources were considered vulnerable to prevent the disease. [8,9]

Bangladesh is the South Asian eighth-most populated country with 162 million, and 62.60% live in rural areas [10]. Therefore, the virus transmission control at the community level was challenging for government. When the entire world was preparing to prevent the virus, Bangladesh faced difficulties with one of the world's dense populations. Furthermore, a lower-middle-income economy is a barrier to maintaining social distancing, sanitization facilities, temporary quarantine sites and healthcare facilities at a local level. [11,10]

The country experienced two waves of infection with a death toll of 13,282 until 16 June 2021, and virologists have warned of a chance of a third wave by the Indian SARS-CoV-2 variant. [12,13] During that time, low-income rural areas suffered from a scarcity of food, treatment, and medication during the multiphase lockdown and partial lockdown. [14] In addition, the private sector's jobholder, day laborers, fishermen, vehicle drivers, small employee industry and cottage industry employees have lost their jobs. This led to psychological disturbances such as fear, anxiety, and depression. [15]

Public knowledge, awareness levels, attitudes, and cultural norms have been considered as crucial indicators for an individual's perspective of disease prevention from the very beginning of the pandemic. [16] Based on these indicators,

the rural people of Bangladesh are behind the urban people. [10, 11] Additionally, the knowledge level of rural men, women, and adolescents about different infectious diseases and chronic diseases was deficient compared to the urban community. [17-19] Some recent studies have found that the Indonesian, Nepalese and Pakistani communities had an excellent experience and a positive approach regarding the COVID-19 pandemic. However, it was reported half of those populations did not understand the quarantine concept and the distance between people to be kept up to limit the transmission. [20-22] Like these communities of the three nations, most of the rural Bangladeshi people are also not aware about pandemic.

The present study was aimed at demonstrating the health information sources, people's awareness level, and the extent of hygienic procedures people maintain to combat the COVID-19 grim circumstance in rural Bangladesh. To our knowledge no previous investigations on Bangladesh's perspectives about the rural people's awareness and preventive measures are still to be conducted.

METHODS

DATA COLLECTION

This study relies on a database generated from a cross-sectional survey. It was conducted in the rural areas of all divisions of Bangladesh from 14 June 2020 to 13 August 2020. The random invited participants needed to meet the following inclusion criteria: age ≥ 18 years, psychologically healthy, not temporally visiting rural areas, excluding the standard gender ratio of the 2011 Bangladesh census. A structured questionnaire was developed considering previous related empirical studies. [23,20,24] Sureveys were in the Bengali language for the convenience of both interviewers and interviewees. The questionnaire was finalized after pretesting and checking its reliability using Cronbach (1951). [25] The Cronbach's alpha for the sources of awareness of COVID-19 was 0.7520, while the Cronbach's alpha for the awareness level regarding the COVID-19 diseases and the practices of health guidelines during the COVID-19 pandemic were 0.9176 and 0.9202, respectively.

To ease data entry, we created a Google form along with the questionnaire in a printed format, As most rural dwellers neither use smartphones or access to the internet, [26,10] we hired and trained 16 young interviewers who had their university graduation and had a smartphone. In addition,

we verified their performance by a pilot study on this survey and personal safety measures were ensured before inaugurating the interviewers' field surveys. The questionnaires mainly comprised two parts: the first part involved participants' sociodemographic characteristics. The second part covered questions regarding awareness levels and hygiene techniques that combine the variables for combating COVID-19. [45,46] The first section consisted of multiple-choice questions and the second section was based on responses on a 5-point Likert scale. This survey's actual sample size was 3,007, justified at a 5% significance level and a 2% margin of error.

ECONOMETRIC TOOLS FOR DATA ANALYSIS

Stata 16 was used for the data analysis. The Ordered Logit (ologit) model was employed to estimate the likelihood of awareness and practice of hygiene in daily life in terms of each sociodemographic category, specifically, sex, age, level of education, and marital status, occupation, and socioeconomic status. [27] Since all independent variables considered in this study were categorical variables, we estimated the odds ratio for each category of the independent variables keeping the first category as a benchmark. The Odds vary from zero to positive infinity. If

odds exceed 1, the likelihood of success is greater than the possibility of failure.

RESULTS

RESPONDENTS' DEMOGRAPHIC INFORMATION

This study was conducted in rural Bangladesh and tried to determine the level of awareness and hygienic practices the surveyed people maintained regarding COVID-19, which were subsequently evaluated with their demographic characteristics. The sociodemographic aspects, including sex, age, education level, socioeconomic status, marital status, and occupation, are worthy of mentioning independent variables in the reverse of awareness and hygiene measures. Table 1 reports the demographic characteristics of the respondents. Out of 3,007 respondents, males and females were 55.97% and 44.03%, respectively. The most significant number of respondents were within the age range of 21-30 (26.80%). Among the respondents, 36.88% of people were impoverished. In terms of education, about 20% were illiterate, and 23.88% had only primary education. Finally, it was found that only 15.6% of people are directly affiliated with farming, although diversity in occupation was noteworthy.

TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS IN RURAL BANGLADESH (n = 3007)

DEMOGRAPHY	CATEGORY	PERCENTAGE	DEMOGRAPHY	CATEGORY	PERCENTAGE
Sex	Male	55.97	Education	Illiterate/only can sign	19.72
	Female	44.03		Primary education	23.88
Age	Less than 21	17.03	SSC level	20.15	
	21-30	26.8	HSC level	12.87	
	31-40	20.65	Graduate	15.43	
	41-50	18.09	Post-graduate	7.95	
	51-60	10.81	Marital status	Married	61.02
	above 60	6.62		Unmarried	33.12
Residence (Division)	Dhaka	1.76		Widows	4.82
	Chittagong	9.78		Divorced	0.73
	Barisal	33.89	Others	0.3	
	Khulna	9.44	Occupation	Unemployed	31.73
	Mymensingh	2.06		Farmer	15.6
Rajshahi	1	Housewife		25.17	
Rangpur	28.9	Self-employed		5.52	
Sylhet	13.17	Local Businessman		8.05	
Socio-economic status	Poor class	36.88	Non-government worker	5.65	
	Middle class	56.17	Government worker	5.19	
	Rich class	6.95	Others	3.09	

SSC - Secondary School Certificate; HSC - Higher Secondary School Certificate

SOURCES OF AWARENESS OF THE COVID-19 BY DEMOGRAPHIC CHARACTERISTICS

Table 2 illustrates the percent contribution of information sources for getting awareness of COVID-19 within five levels of agreements (Strongly disagree, Disagree, Neutral, Agree, Strongly agree). Over 40% of participants agreed on relative/family/friend/neighbors' contribution source; more than that, nearly one-fourth strongly agreed on that source.

Furthermore, the agree and strongly agree levels on electronic media information sources were 38.78% and 34.62%, respectively. The contributions of print media, social media, workplace, and doctors and other healthcare service providers strongly disagreed with each most significant percentage. Interestingly, the awareness development role of social media didn't show any notable difference among the five levels, where each level was around 20%.

TABLE 2: CONTRIBUTION OF DIFFERENT SOURCES OF AWARENESS ABOUT COVID-19 IN RURAL BANGLADESH (IN PERCENTAGE)

SOURCES	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
Electronic media (Television, Radio, Internet)	3.86	8.48	14.27	38.78	34.62
Print media (Magazines, Newspapers, Flyers, Newsletters)	24.84	20.05	17.99	23.74	13.37
Social media (Facebook, YouTube, Twitter, Instagram, Blog)	22.18	18.89	20.98	22.31	15.63
Workplace (Peers, Colleagues)	29.83	20.65	27.97	17.23	4.32
Doctors and other healthcare service providers)	31.56	19.52	24.54	19.69	4.69
Relatives/ family members/ friends/ neighbors	11.27	5.85	12.5	43.23	27.14

AWARENESS LEVEL OF RURAL PEOPLE ABOUT COVID-19 DISEASE

The study investigated the extent of the eight COVID-19 related information sources that people know vital for awareness and attitude development. The knowledge source was used as indicators to determine the awareness. Table 3 correlates among demographic features on the five levels of awareness (Nothing, Little, Fair, Good, Excellent) through an ordered logit model. The chi-square values of all estimated variables were significant at the level of 1%, which confirmed the ologit models' fitness in data analysis.

41-50 age group, also found highly significant health literacy values on self-isolation and preventive measures. As the level of education increased, this study revealed the improvement of health literacy in all cases. Most of the odd's ratios were highly significant.

In all categories, the odds ratio for females was less than 1. This indicated the female knowledge level about the pandemic was lower than males in every case, nevertheless, literacy on respiratory complications was moderately significant with signs and symptoms and self-isolation were minimally substantial for women. On the other hand, depending on information, age showed diversity in health awareness. Surprisingly, in most cases, the values of the age range 21-30 and above 60 were relatively smaller than the others. The age group 21-30 had highly significant values on the knowledge about the respiratory complications, the extent of severity, and the transmission through tiny respiratory droplets. Whereas the age groups above 60 had a highly compelling value for respiratory droplet knowledge. Furthermore, age levels, such as for the

Compared to married individuals, unmarried people showed a little better result except for the extent of severity. On the contrary, divorced individuals and widows/widowers were less likely to be aware of the COVID-19 since the odds ratios were highly significant in most cases and less than 1. Furthermore, we found a heterogeneous level of awareness across different occupations. In contrast with unemployed respondents, the awareness levels of non-government and government employees were significant. In the case of self-isolation and preventive measures, most occupations had considerable knowledge. Moreover, in terms of socioeconomic status, the middle class had highly effective health literacy relative to the poor respondents. Analogously, the middle class's odds ratios were larger and statistically significant than the rich class except for the presence of mild symptomatic or asymptomatic infection and the spread of disease via asymptomatic patients.

TABLE 3: AWARENESS LEVEL OF RURAL PEOPLE OF BANGLADESH REGARDING THE COVID-19 DISEASES BY SOCIODEMOGRAPHIC FEATURES (n = 3007)

Variable	Respiratory complications	Extent of severity	Common Signs and symptoms	Transmission through small respiratory droplets	Presence of mild symptomatic or asymptomatic infection	The spread of infection via asymptomatic patients	Containment of outbreaks keeping Self-isolation	Common preventive measures
Sex (Male → Ref)								
Female	0.800**	0.915	0.844*	0.869	0.901	0.871	0.846*	0.891
Age (< 21 → Ref)								
21-30	0.648***	0.673***	0.807*	0.651***	0.917	0.845	0.816	0.770**
31-40	0.866	0.902	0.859	0.712**	1.065	0.857	1.312*	1.270
41-50	0.926	1.103	1.112	0.801	0.923	0.777*	1.925***	1.874***
51-60	0.785	0.858	0.908	0.666**	0.848	0.759	1.370*	1.274
above 60	0.867	0.850	0.618**	0.457***	0.700*	0.636**	1.118	1.189
Education (Illiterate → Ref)								
Primary education	1.161	1.575***	1.126	1.261**	1.371***	1.312**	1.246**	1.262*
SSC level	1.531***	2.141***	1.291**	1.303**	1.387***	1.384***	1.382***	1.519***
HSC level	1.984***	3.264***	1.936***	1.594***	1.764***	1.818***	1.754***	1.899***
Graduate	2.940***	4.116***	3.062***	3.390***	3.847***	4.361***	3.065***	3.212***
Post-graduate	3.397***	4.435***	3.416***	4.022***	4.932***	5.093***	3.116***	3.452***
Marital status (Married → Ref)								
Unmarried	1.230*	0.858	1.032	1.163	1.038	1.172	1.035	1.142
Widows	0.719*	0.666**	0.868	0.644**	0.777	0.815	0.662**	0.751*
Divorced	0.283***	0.206***	0.299***	0.252***	0.381**	0.317***	0.233***	0.321***
Others	0.671	1.358	1.132	0.700	0.907	0.509	0.586	0.646
Occupation (Unemployed → Ref)								
Farmer	1.084	0.845	0.915	1.112	0.866	0.905	0.890	0.948
Housewife	1.283*	1.056	1.035	1.128	0.778*	0.906	1.109	1.160
Self-employed	1.147	1.511**	1.333*	1.307	1.077	1.020	1.763***	1.629***
Local Businessman	1.394**	1.014	1.481**	1.533***	1.110	1.083	1.531***	1.506**
Non-government employee	2.049***	1.169	1.564**	1.653***	1.447**	1.349*	1.456**	1.589**
Government employee	1.478**	1.117	1.414*	1.667***	1.439**	1.524**	1.651***	1.536**
Others	0.791	0.878	1.403*	1.295	0.582**	0.608**	1.019	2.004***
Socioeconomic status (Poor class → Ref)								
Middle class	1.366***	1.337***	1.311***	1.619***	1.469***	1.654***	1.412***	1.460***
Rich class	1.198	1.195	0.954	1.318*	1.682***	2.198***	0.946	0.969
/cut1	-2.523	-2.209	-3.303	-2.452	-1.286	-1.125	-2.630	-2.281
/cut2	-0.966	-0.584	-1.245	-0.343	0.070	0.362	-0.792	-0.676
/cut3	0.837	0.712	0.580	1.034	1.485	1.650	0.738	0.610
/cut4	2.208	2.258	2.159	2.571	2.984	3.119	2.160	2.002
χ^2	319.33***	348.38***	335.55***	470.21***	537.70***	647.26***	334.97***	337.95***

Note: *, **, and *** indicate 10%, 5% and 1% significance level, respectively

TABLE 4: THE PRACTICES OF HEALTH GUIDELINE DURING THE COVID-19 PANDEMIC BY SOCIODEMOGRAPHIC FEATURES IN RURAL BANGLADESH (n = 3007)

Variable	Proper handwashing while coming back from outside	Use of mask when going outside	Sanitation in sudden sneezing at a public place	Proper handwashing before eating food	Maintenance of social distance	Abstain from touching eye, nose, and mouth	Eating more fruits and vegetables than ever before
Sex (Male → Ref)							
Female	1.005	1.018	1.097	1.027	1.131	1.133	1.066
Age (< 21 → Ref)							
21-30	0.722**	0.589***	0.923	0.682***	0.790*	0.810*	0.715***
31-40	0.780	0.545***	0.713**	0.728**	0.718**	0.783*	0.684**
41-50	0.814	0.588***	0.742*	1.054	0.727**	0.790	0.744*
51-60	1.027	0.937	0.907	1.047	0.898	0.957	1.286
above 60	1.152	0.828	0.606***	0.996	0.722*	0.897	0.984
Education (Illiterate → Ref)							
Primary education	1.287**	1.591***	1.263**	1.415**	1.244**	1.144	0.864
SSC level	1.439***	1.513***	1.565***	1.001	1.161	1.166	0.815*
HSC level	2.281***	2.302***	2.312***	1.327**	1.528***	1.633***	1.243
Graduate	4.095***	5.292***	4.606***	3.565***	3.066***	3.187***	2.499***
Post-graduate	4.104***	4.887***	5.225***	3.241***	3.186***	3.218***	2.528***
Marital status (Married → Ref)							
Unmarried	1.238*	1.117	1.145	1.223	1.384***	1.491***	1.463***
Widows	0.625***	0.562***	0.734*	0.704**	0.559***	0.672**	0.883
Divorced	0.438**	0.397***	0.541	0.383**	0.409**	0.391**	0.410**
Others	1.751	0.888	0.789	0.844	0.571	0.316**	0.526
Occupation (Unemployed → Ref)							
Farmer	0.833	0.849	0.679***	0.933	1.050	1.088	1.461***
Housewife	0.968	0.927	0.589***	1.081	0.841	0.871	1.171
Self-employed	0.737*	0.765	0.727*	0.936	0.893	0.842	0.958
Local Businessman	1.266	1.466**	0.986	1.728***	1.110	1.354**	1.408**
Non-government employee	1.685***	1.725***	1.160	2.046***	1.985***	1.616***	1.990***
Government employee	1.876***	1.968***	1.158	2.100***	1.996***	1.543**	2.111***
Others	0.602**	0.499***	0.489***	1.105	0.543***	0.351***	0.659
Socioeconomic status (Poor class → Ref)							
Middle class	1.317***	1.438***	1.651***	1.210**	1.662***	1.624***	1.632***
Rich class	0.856	0.969	1.627***	0.700**	1.422**	1.441**	1.434**
/cut1	-2.986	-2.479	-1.426	-2.597	-1.933	-1.339	-1.431
/cut2	-1.462	-0.696	-0.120	-1.108	-0.438	0.172	-0.472
/cut3	0.686	0.730	1.300	0.264	1.055	1.362	0.929
/cut4	1.670	1.807	2.533	1.307	2.197	2.647	2.240
χ^2	439.42***	586.40***	764.55***	335.38***	533.21***	512.09***	406.60***

Note: *, **, and *** indicate 10%, 5% and 1% significance level, respectively

PRACTICES OF PERSONAL HYGIENIC PROCEDURES OF RURAL PEOPLE DUE TO COVID-19

Table 4 illustrates the seven health-related daily practices and the odds ratio on the five levels of hygiene practice (Never, Rarely, Sometimes, Often, Always) among the aforesaid demographic features obtained from ordered logistic regressions. The first category of each demographic variable was considered as a reference. The seven questions covering the essential personal hygiene practices were (i) proper handwashing while coming back home, (ii) use of a mask when going outside of the house, (iii) sanitation in sudden sneezing at a public place, (iv) proper handwashing before eating food, (v) maintenance of social distance, (vi) abstain from touching eye, nose, and mouth, (vii) eating more fruits and vegetables than ever before.

In all cases, the female odds ratio against the male was not a statistically significant event at a 1% significance level. It implies that practices of personal hygiene did not significantly vary among different sexes. The age groups' significant odds ratio from 21 and above were less than the reference age group (oddsratio < 1). It implied that people aged 21 and above were less likely to practice hygienic procedures than the younger respondents.

Like awareness level, we found a significant positive effect of education level on the likelihood of the sanitizing level. Moreover, people who had tertiary education, were more likely to practice hygienic procedures. In marital status, unmarried and married respondents practiced sanitary measures more frequently than widows/widowers, divorced respondents.

The government and non-government employees continued hygiene practice regularly than other categories of occupation. However, sanitation in sudden sneezing in public places was statistically significant, and substantially, the odds values were more prominent for farmers, homemakers, and self-employed, respectively, than unemployed people. Moreover, farmers' odds of eating more fruits and vegetables than ever before were also 1.461 times larger. In terms of socioeconomic status, almost all odds value of the middle class and the rich class was greater than 1. Surprisingly, the middle class practiced health safety measures more steadily compared to the affluent class.

DISCUSSION

This study was conducted to determine rural people's information-seeking behavior, such as sources of information they used for getting COVID-19 related health information, awareness levels, and preventive measures they practiced during the COVID-19 pandemic. The most reported sources of information for people in rural areas were electronic media, relatives, and other interpersonal sources. Most young villagers also stated that they first knew about this Coronavirus from social media platforms. An early paper set out that primarily rural people get information from television and radio followed by public speaking with neighbors, friends, and relatives [28]. That is mainly because of insufficient print media supply and have no information center in the rural area in Bangladesh. Similarly, another recent study also confirmed that it was not easy for rural people to access and understand official website news (e.g., the World Health Organization, Ministry of Health), official pages of social media, newspapers, and video broadcasts through electronic sources due to their poor media knowledge and language gaps. [29-31]

Moreover, the study of Abdelhafiz et al. (2020) found similar findings where senior citizens of Egypt obtained information from social media (66.9%) and the internet (58.3%). [23] Similarly, another investigation found that the north-central Nigerians had enough knowledge (99.5%) of COVID-19, and where 55.7% of them achieved information primarily through the internet and social media, and television [32]. In their study, Karim et al. (2020) also mentioned that using the internet positively correlates with good knowledge in demographic characteristics such as gender, higher education, living in a town/urban area, and good financial condition. [33]

This study also found that females' knowledge level was lower than males in every case. The age groups, such as those above 60 years, had a highly significant value for respiratory droplet knowledge. Furthermore, age levels, such as 41-50 years, also found highly significant health awareness values in self-isolation and preventive measures. Remarkably, the odds ratio for the awareness level from SSC to the postgraduate education level was highly effective. Furthermore, some other investigations similarly observed that more than half of the participants in Bangladesh declared "had a good understanding" about COVID-19, and in the case of their age and education

levels, the knowledge and prevention practices of COVID-19 had a notable impact. [34-37] Previous studies have also found that the COVID-19 related knowledge was significantly lower among the people with less education, which led to a poor attitude and practice to prevent the disease. [23,38-41] Another paper by Rahman et al. (2021) showed that urban people comparatively had sufficient knowledge, attitudes, and practices (KAP) than rural citizens [34]. The authors further stated that this might be mainly because of adequate education, have enough flexibility of internet access, communication procedures, and health facilities that influenced the respondents' level of KAP. Similarly, Islam et al. (2021) conducted investigations on Bangladeshi citizens, and findings showed that approximately 89.80% of the residents in Bangladeshi expressed knowing about the COVID-19 and its preventive measures, which had many differences that of our study because this study only covered rural dwellers [8]. However, the difference might be that there are more higher education facilities in the urban areas than the rural area.

In preventive measures among Bangladesh's rural people, none of the female odds ratios were statistically significant. Therefore, sex was not an essential determinant of hygienic procedures. These findings confirmed that the respondents, including all demographic levels, usually maintained and practiced preventive measures to combat COVID-19. For example, the graduate and postgraduate education levels saw a higher attitude towards practicing hygienic processes than the other education groups. Additionally, the government and non-government employees always try to keep in maximum practice level, and the odds ratios for the two occupations are almost highly significant in all cases. The national and international welfare organizations have provided guidelines to enhance the daily food list with fruits, vegetables, and whole-grain foods from the very beginning. Adjustment of daily protein needs is an essential preventive action to combat COVID-19. [42] Yet, the people's knowledge and awareness of food and nutrition are deficient, and the access to economic resources of rural Bangladesh is limited. Rahman et al. (2021) found their respondents had a low level of adequate knowledge of COVID-19 (i.e., 70.8%, and preventative practices were 73.8%). [34]

Additionally, rural residents had an exceptionally high risk of COVID-19 than urban people. Ferdous et al. (2020) found that 48.3% of participants in Bangladesh had comprehensive knowledge, and 55.1% of residents,

especially females, frequently practice COVID-19 prevention than did males. [36] In contrast, our findings revealed that male respondents were more conscious of maintaining hygienic procedures. In these health difficulties, particularly with a contagious disease outbreak, such as COVID-19 that causes millions of deaths, public well-being, and social measures and vaccines are the most powerful tool to save lives. [43] Therefore, inadequacy of a proven vaccine or medicine, several precautions, and preventive measures have been adopted worldwide to limit the transmission of COVID-19. [8] Unfortunately, in some areas, with word of mouth, rumors start raising distrust about vaccines and people fail to believe in the vaccination. However, these types of findings may be useful for public health policymakers and health workers to identify target populations for health-related knowledge development and disease prevention. [44]

The rural people of Bangladesh are neither entirely incompetent nor so much fit for this pandemic situation. The direction in rural pandemic prevention relies on segregating vulnerable groups of people like old, illiterate, unwealthy by focusing on the criterion. Though it is an arduous approach, it should highlight vulnerable groups whose awareness and hygienic practices are not at the optimum level. Therefore, the government and development agencies should immediately take necessary measures to protect rural people from COVID-19 threats until complete immunization can be achieved.

DECLARATIONS

Ethics approval and consent to participate

Before the study was initiated, the present research achieved ethical consideration from the Noakhali Science and Technology University (reference no# 27/2020).

Consent for publication

Patient consent for publication is not required.

Availability of data and material

Upon request in the future, we confirm that all the pertinent information will be disclosed for further use.

Competing interests

There are no competing interests.

Funding

We did not receive any financial assistance from any agency—all the costs associated with preparing the article bear by authors solely.

Authors' contributions

WM, PKB, UH, and MEI conceptualized and designed the study. Data collections were done by UH, PKB, and MEI. WM, PKB, and UH analyzed the data, and PKB wrote the first draft, and WM, UH wrote the final draft. All authors contributed to the critical reviews. All authors examined the entire manuscript and approved it for submission.

Acknowledgments

We would like to thank all survey respondents conducted among Bangladesh's rural dwellers for their cooperation.

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