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Knowledge, attitude and practices toward COVID-19 among healthcare workers in National Institute of Laboratory Medicine and Referral Center, Dhaka, Bangladesh

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ABSTRACT

Background: The World Health Organization (WHO) declared COVID-19 as a pandemic on the 11th of March 2020. Since then, many efforts are being carried out to contain the virus. Knowledge and attitude of people should be directed towards strict preventive practices in order to halt the spread of the virus. The aim of the current cross-sectional study is to assess the knowledge, practice and attitude of healthcare workers (HCWs) of National Institute of Laboratory Medicine and Referral Centre, Dhaka, Bangladesh using a structured questionnaire. **Methods:** A cross-sectional study among 139 healthcare persons was performed between April 2020 and May 2020 at National Institute of Laboratory Medicine and Referral Centre. A systematic random sampling strategy was carried out and the data was collected through a self-administered questionnaire of the knowledge, attitude and practice of healthcare workers regarding COVID-19. **Results:** About 87.2% of eligible subjects completed and returned the questionnaire had a mean age of (30.1±6.1) years, most of them were male (75.53%), the highest percentage of HCWs were medical technologists (53.23%) and the majority of them had less than 5 years' experience (45.3%). A total of 96.4 % of the respondents were aware of coughing and sneezing etiquette, 93.52% followed hand washing steps but only 70% knew the duration of the hand hygiene procedure, while 89.92% uses face mask when go outside. The main sources of COVID-19 information were social media and the CDC/WHO website (38% and 23%, respectively). **Conclusions:** The majority of HCWs had good knowledge and positive attitude toward COVID-19. However, the level of some knowledge and attitude lower than that expected for their position level towards the virus. So, there is a need for awareness campaigns to improve their knowledge, in some aspects.

Introduction

The recent emergence of a novel corona virus of zoonotic origin has spread fast throughout Wuhan (Hubei province) to other provinces in China and around the world since the beginning of the 21st

century [1]. The virus involved- SARS-CoV-2- has posed great threat to global public health and caused tremendous economic losses and creates significant threat to global health security due to its rapid national and international spread [2].

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Coronavirus is transmitted by touching a surface or object that has the virus and also from person-to person by close contact (within about 6 feet) with infected people via respiratory droplets, according to centers for disease control and prevention (CDC) [3].

Most patients have mild symptoms and good prognosis without any medical intervention. So far, a few patients with 2019-nCoV have developed severe pneumonia, pulmonary oedema, ARDS, or multiple organ failure and have died. Patients with any comorbidity yielded poorer outcomes than those without. The best prevention is to avoid being exposed to COVID-19 by hand hygiene, using face masks and others Infection prevention and control (IPC) measures and also by isolating confirmed and suspected cases [4,5].

Healthcare workers (HCWs) are at a high risk of getting the infection and the source of transmission in the community. Some previous studies showed that HCWs had a lack of knowledge and attitude toward MERS CoV [6], and SARS [7].

In Bangladesh, the fight against COVID-19 is continuing. People's adherence to these control measures is essential, which is affected by their knowledge, attitudes, and practices (KAP) towards COVID-19. There are a limited number of studies on knowledge and attitudes during epidemics that have been conducted in Bangladesh [8].

National Reference Laboratories are at the pinnacle of diagnostic service provision. They play pivotal roles in the diagnosis, disease surveillance and statistical analysis of epidemiological data [9]. It is also responsible for training and research, as well as supporting the medical workers to treat the suspected cases of COVID-19 infection in HCMC. Due to the importance of this facility, and from evidence obtained from Wuhan in China that HCWs were at a high risk of getting the virus within medical facilities and also transmission to other patients within the community.

This study aimed to assess the knowledge and attitude toward COVID-19 among HCWs National Institute of Laboratory Medicine and Referral Centre. The findings will help authorities organize the necessary educational programs in order to provide up-to-date information and deliver the best practice to control the COVID-19 disease and the learning approaches will help to improve their knowledge and practices.

Considering the lack of studies related to epidemics and how to facilitate outbreak management of COVID-19 in Bangladesh, and hence there is an urgent need to understand the public's perception and awareness of COVID-19. This study aimed to investigate the KAP towards COVID-19 among general people during the rapid rise period and immediately after the lockdown of Bangladesh of the COVID-19 outbreak.

Materials and Methods

A cross-sectional study was conducted immediately after the lockdown on April and May, 2020 and when National Institute of Laboratory Medicine and Referral Centre started doing SARS Cov2 polymerase chain reaction (PCR). A systemic semi structured questionnaire was given to the HCWs of this institute and after completion they returned the questionnaire. The HCWs including physicians, medical technologists, lab attendant, cleaner and technical staffs.

Both English and Bangla versions of the questionnaire were agreed by a panel comprising of one clinical professor, two epidemiologists, five physicians, two medical students, and four non-medical researchers. The questionnaire was developed by researchers with help from previous published literature to cover key areas of IPC guidelines, including hand hygiene, knowledge about standard isolation precautions, respiratory hygiene and cough etiquette, use of personal protective equipment, cleaning and disinfection of medical equipment, as well as their satisfaction with their IPC teaching and education and infection prevention and control measures for COVID-19 by WHO and guidelines suggested by the country's Institute of Epidemiology, Disease Control and Research (IEDCR) and the question and answer about COVID-19 in the webpage of WHO.

A structured questionnaire included three parts. The first section comprised demographic characteristics of the participants such as age, gender, occupation, years of experience, and the source information of COVID-19 knowledge. The second section included questions regarding the knowledge of COVID-19, and the last one estimated the attitude regarding COVID-19. After translating to English and Bangla and correcting to fit the COVID-19 virus, the questionnaire was sent. All were held National Institute of Laboratory Medicine and Referral Centre. Participants were assured that the information collected would remain anonymous.

With regard to assessing the level of knowledge, attitude, and practice of the respondents, a total of 28 questions (including 11 for knowledge, 9 for attitude, and 8 for practice) was asked to the respondents during the survey.

Data was analyzed using Stata 13.0 software. Descriptive analysis was reported as frequency, percentage and mean scores. All the differences of estimated variables were considered statistically significant if $p < 0.05$.

Ethical approval

The Ethics Committee of National Institute of Laboratory Medicine and Referral Centre approved our study protocol, procedures, and information sheet and consent statement.

Results

Of the study population, 139 (87.2%) of eligible subjects who completed and returned the questionnaire had a mean age of (30.1±6.1) years, most of them were male (75.53%), the highest percentage of HCWs were medical technologists (53.23%) and the majority of them had less than 5 years' experience (45.3%). There were 96.4% of participants who knew the COVID-19 outbreak. The main sources of COVID-19 information were social media and the CDC/WHO website (38% and 23%, respectively) (**Figure 1**). The majority of participants knew that COVID19 is a virus, how to prevent transmission between humans, and that infected cases could result in death (96.4%, 91.3%, and 79.1%, respectively). However, about two thirds of participants knew that the transmission was due to close contact with the infected person, the suspected cases should be isolated for a minimum of

two weeks, and antibiotics were not the first-line treatment (89.0%, 71.94%, and 35%, respectively). The overall response to the survey was good; the participants possessing sufficient knowledge were recorded as 88.4%. The results of the questionnaire relating to attitude were summarized in **table (3)**. More than 90.0% of the participants responded positively toward COVID-19. However, there were some negative attitudes, only three-quarters of participants thought that they get the illness their family members may get an infection (79.13%) but they will accept the isolation if infection is suspected (71.94%). The association of demographic characteristics (**Table 1**) and knowledge (**Table 2**), attitude (**Table 3**) and practices (**Table 4**) of HCWs were presented, in which occupation was correlated with knowledge and attitude scores, according to which pharmacists who showed higher levels of knowledge also found significantly higher levels of a positive attitude about COVID-19 compared to those who were employed as physicians, nurses and technical staff (8.55 vs. 8.33, 8.09, 7.80, $p < 0.01$).

Figure 1. Main sources of COVID-19 information.

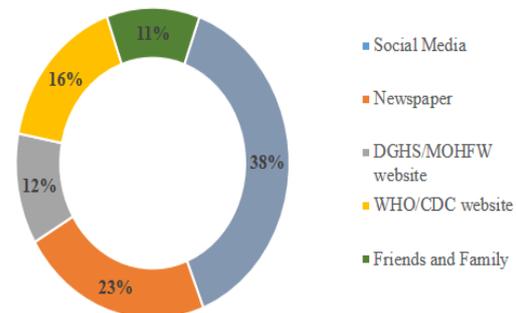


Table 1. Baseline characteristics of HCWs, National Institute of Laboratory Medicine and Referral Center, Dhaka, 2020 [n (%)].

Characteristics	Participants (n=)	Percentage %
Age (mean ± SD) (years)		
18-29	41	29.49%
30-39	80	57.55%
40-49	15	10.79%
50-59	3	2.15%
Sex		
Male	105	75.53%
Female	34	24.46%
Occupation		
Physician	23	16.54%
Medical Technologists	74	53.23%
Cleaner	32	23.02%
Technical staff	10	7.19%
Years of experience		
<5	63	45.32%
5-10	44	31.65%
>10	32	23.02%

Table 2. Knowledge of HCWs toward COVID-19, National Institute of Laboratory Medicine and Referral Center, Dhaka, 2020 [n (%)].

Question (correct answer)	Correct answer	Response (%)
1. COVID-19 is an infection by a virus. Yes	134	96.4%
2. Main source of infection of SARS CoV2 is respiratory droplets and with close contact of an infected person Yes	120	89%
3. Incubation period of SARS CoV-2 (2–10 days) Yes	134	96.4%
4. Antibiotics are used (No)	50	35.97%
5. The isolation period after infection is 15 days. Yes	100	71.94%
6. Healthcare workers are at a higher risk of infection. Yes	80	57.55%
7. Patients with chronic diseases are at a higher risk of infection and death. Yes	76	54.67%
8. COVID-19 could be fatal. Yes	110	79.13%
9. The minimum time needed for hand washing is 20 sec. Yes	98	70.50%
10. Fever, cough, sore throats and shortness breath are possible symptoms of COVID19 (yes)	112	80.57%
11. COVID 19 has no specific treatment (No)	35	25.17%

Table 3. Attitude of HCWs toward COVID-19, National Institute of Laboratory Medicine and Referral Center, Dhaka, 2020 [n (%)].

Item (correct answer)	Correct answer	Response (%)
1. Hand washing is necessary for prevention of infection. Yes	130	93.52%
2. Face mask can prevent viral transmission and I use it when go outside. Yes	125	89.92%
3. If getting infected I will go to hospital for isolation. Yes	110	79.13%
4. PPE should not be shared. Yes	87	62.58%
5. Transmission of COVID-19 can be prevented by washing hands with soap frequently. Yes	127	91.36%
6. Infectious waste to be disposed of Yellow garbage bag. Yes	70	50.35%
7. Water and soap are the preferred hand washing method to prevent transmission of COVID 19	106	76.25%
8. Satisfied with the steps of ministry of health to contain COVID-19	72	51.79%
9. You are worried that if you are infected then one of your family members may get an infection (yes)	110	79.13%

Table 4. Practice of HCWs toward COVID-19, National Institute of Laboratory Medicine and Referral Center, Dhaka, 2020 [n (%)].

Item (correct answer)	Correct answer	Response (%)
1. Do you follow the coughing and sneezing etiquette?	134	96.4%
2. Do you practice 6 feet distance from another person?	70	50.35%
3. Do you feel any anxiety during your job in COVID 19 situation?	100	71.94%
4. Do you ever abuse or shouted over any patient or his/her attendant?	70	50.35%
5. In this situation, do you feel about resigning from your current job?	51	36.69%
6. During duty do you feel over burden?	120	86.33%
7. Do you take perform any Aerosol generating procedures?	55	39.56%
8. Do you think your hospital has good infection control management and practice?	50	35.97%

Discussion

Exposure to infectious diseases is one of the most frequently identified occupational hazards facing HCWs in general. Awareness and adequate knowledge about prevention of such infections are important requirements for all [10].

COVID-19 is a relatively new virus that has had devastating effects within the short time since it was first detected in December 2019 [11]. To date, there has been limited published data on population knowledge, attitudes and practices toward COVID-19, specifically in Bangladesh.

Bangladesh is one of the most densely populated countries in the world and also a lower-middle-income country. Therefore, it is overbearing to know about the knowledge and attitudes of the population towards COVID-19 to develop effective strategies. Given the social distancing measures in place in most countries, the studies quantifying KAP of the population were mostly conducted through internet with some exceptions [12].

In this study predominantly male and well-educated population, we found an overall correct rate of 90% on the knowledge questionnaire, indicating that most respondents are knowledgeable about COVID-19.

The findings in our study showed that HCWs had a high level of knowledge and a positive attitude towards the COVID-19 outbreak. We found that the majority of the respondents know the COVID19 is a global issue and gathered their information through a variety of media such as social media (38%), newspaper (23%), the website

of CDC/WHO/Health Ministry (16%). However, this result is in line with some reported news earlier [13]. The findings indicated that HCWs are more interested in social media for acquiring knowledge on COVID-19 than the official website of the Ministry of Health at the present time. By contrast, only 89%, 59% and 25.17% of good answers relate to the transmission by close contact with an infected person, the isolation period and treatment of the COVID-19 virus.

In this study, the findings regarding the knowledge about COVID-19 among the healthcare workers reflect a good relationship between their understanding and the information available about COVID-19 in the literature and social media. For example, most of healthcare workers knew that fever, cough and dyspnea are the common clinical manifestation of COVID-19 and they know that there is no specific treatment. The study showed that participants have high level of attitude and good practice towards the disease preventive. To prevent the infection by hand washing, using alcohol rub, avoidance of hand shaking and follow preventive etiquettes during coughing and sneezing, all are followed by the participants. These measures are enough to prevent respiratory transmitted infections as well as COVID-19. Around 2/3 of the participants, wear mask and follow its practice as a preventive measure. As large amount of information disseminated in the community, may be wearing mask is for that. Surprisingly, 36% of study sample wrongly believed that taking antibiotics is needed for treatment of COVID-19. Such response indicates that we are not giving adequate treatment

knowledge to the people, so it is extremely necessary to remain informative as world is facing antimicrobial resistance and it needs to halt the emergence of multidrug resistant organisms.

Of the participants 79% choose to visit hospital or subject to quarantine if necessary, which is believed to be an important attitude towards containment of ongoing infection transmitted via respiratory routes as per reports and available data. Maximum people were not satisfied with the efforts contributed by the ministry of health. This is supported by our findings which suggest that only 12% of the participants visit the official site of the ministry of health for upcoming advisories to combat the disease.

Thirty five (35) % people has no knowledge about treatment of COVID 19. This result is similar to the study of **Bener and Khan et al.** in which 40% and 57.6% of participants had no knowledge of the treatment of SARS and MERS [5].

The majority of HCWs were aware that patients with underlying chronic diseases are at a higher risk of infection and mortality accounted for 79.2%. This was similar to some previous studies about COVID-19 in Vietnam and China [5].

Another interesting finding was that the majority of the participants had a positive attitude about COVID-19. They are concerned that they could contact with the virus and in turn pass the virus to family members. 72% of the participants agree to isolation if it was needed.

We have to focus on the HCW's with insufficient knowledge and hopefully it will improve the rate of positive attitudes of HCWs. Our study had some limitations because the study samples were collected at the National Institute of Laboratory Medicine and Referral Center, Dhaka in HCMC in the current condition and we can't compare results at that time with others or general population. Further studies could estimate the knowledge and attitude of HCWs on a larger scale on national level. The findings showed the majority of HCWs at the National Institute of Laboratory Medicine and Referral Center, Dhaka had good knowledge and positive attitude toward COVID19, but there are some lower knowledge and negative attitudes than expected. For the risk of personal and family infection with COVID-19, additional education intervention and campaigns are required for HCWs.

Conflict of interest

The authors declare that they have no conflict of interest

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