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Knowledge and attitude toward COVID–19 among healthcare workers at District 2 Hospital, Ho Chi Minh City

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ABSTRACT

Objective: To assess the knowledge and attitude toward coronavirus disease-2019 (COVID-19) among healthcare workers at District 2 Hospital in Ho Chi Minh City (HCMC).

Methods: A cross-sectional study was performed between January 2020 and February 2020 at District 2 Hospital. A systematic random sampling strategy was carried out and the data was collected through a self-administered questionnaire of the knowledge and attitude of healthcare workers regarding COVID-19. Descriptive analysis was reported to describe the demographic, mean knowledge and attitude score of healthcare workers. Inferential statistics including *t*-test, ANOVA and Spearman's correlation were used to evaluate the relationship between study variables.

Results: A total of 327 eligible healthcare workers had a mean score of knowledge and attitude of 8.17 ± 1.3 (range 4-10) and 1.86 ± 0.43 (range 1-5), respectively. They showed good knowledge and a positive attitude. However, approximately two thirds of the participants knew the mode of transmission, the isolation period and treatment (67.0%, 65.8%, and 58.4%, respectively), and 82.3% and 79.8%, respectively, held positive attitude regarding the risk of personal and family members getting illness. There was a negative correlation between knowledge scores and attitude scores ($r = -0.21$, $P < 0.001$). Additionally, healthcare workers predominately used social media to inform themselves about COVID-19 (91.1%).

Conclusions: The majority of healthcare workers 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. Additional education interventions and campaigns are required for healthcare workers.

KEYWORDS: Knowledge; Attitude; COVID-19; Healthcare worker; District 2 Hospital

1. Introduction

Coronaviruses are a large group of viruses that are rather common throughout the community. Historically, evidence has shown that the virus is transmitted through birds and mammals, with humans being particularly vulnerable to infection and transmission of the virus[1]. The previous outbreaks of coronaviruses such as Severe Acute Respiratory Syndrome-Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) in 2003 and 2015, show similarities to the novel coronavirus, which was first reported in December 2019, and is currently the disease in questions resulting in the worldwide Coronavirus disease-2019 outbreak, COVID-19[2]. It was reported by Chinese authorities in Wuhan city, the capital of Hubei province in China at the end of December 2019[3]. The infection began to spread rapidly throughout many countries including Vietnam, the World Health Organization (WHO) declared that COVID-19 infection was a Public Health Emergency of International Concern. The WHO data was updated on 6 March 2020, there were 98 192 confirmed cases and 3 380 deaths worldwide[4]. In Vietnam, the first case originated from a Chinese man on a trip to Vietnam on 22nd December 2019[5]. Until now, 17 cases of COVID-19 infection have been confirmed. The

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infected cases in Vietnam were mainly from travelers returning from Wuhan and following human-to-human transmission to their family members[6]. Accordingly, the emergence of this infectious disease has caused much anxiety within the Vietnamese and Expat population across Vietnam due to the increasing number of suspected cases and the virus' unpredictable future. Currently, there is no specific antiviral treatment and preventive vaccine. Therefore, the guidelines are recommended to decline the spread of infection and respond to the challenges during the epidemic. As CDC recommends, coronavirus spreads mainly from person-to-person by close contact (within about 6 feet) with infected people *via* respiratory (coughs or sneezes) or transmitted by touching a surface or object that the virus on it[7]. In terms of symptoms, the WHO reported that more than 80% of COVID-19 patients showed mild symptoms and recovered without any medical intervention, approximately 20% of infected cases had a severe illness such as shortness of breath, septic shock and multi-organ failure, and it has been reported that an estimated 2% of cases can be fatal[8]. The risk of increased severity was noticed in the elderly and with underlying chronic diseases. The best prevention is to avoid being exposed to COVID-19. This is done by washing hands with soap and water, and using face masks, isolating confirmed and suspected cases[7,8]. In addition, 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[9,10], and SARS[11]. District 2 Hospital is one of the largest hospitals in Ho Chi Minh City (HCMC) with specialist service, so that the response to major medical issues are available to all patients. 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 at District 2 Hospital in HCMC. 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.

2. Material and methods

2.1. Study population

A cross-sectional study was conducted between January 2020 and February 2020 in District 2 Hospital. A systematic random sampling strategy was carried out on all of 751 HCWs, with $k=2$ and we

chose 375 participants, but only 327 HCWs agreed and returned the questionnaire. Thus, 87.2%(327/375) HCWs completed and returned the questionnaire. The HCWs including physicians, pharmacists, nurses, and technical staff, were evaluated as eligible to participate in the study.

2.2. Data collection

The data was collected through a self-administered questionnaire, which was designed according to Ahmed M. Asaad' study towards the Middle East Respiratory Syndrome Coronavirus (MERS CoV) and the Question and Answer about COVID-19 in the webpage of WHO[12,13]. After translating to Vietnamese and correcting to fit the COVID-19 virus, the questionnaire was sent to three infectious disease specialists at the University of Medicine and Pharmacy at Ho Chi Minh City to give their opinions regarding its simplicity and full content. And then it was followed by a pilot study, which was carried out by 10 HCWs at District 2 Hospital who gave their opinions relating to the intelligibility of the questionnaire. According to the result of the pilot study, the final questionnaire was determined by the authors. The data of the pilot analysis was not used for the final sample of the study. 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 10 questions regarding the knowledge of COVID-19, and the last one estimated the attitude regarding COVID-19, including 8 questions in which the participants' answers were assessed through 5 points Likert scale of agreement. All were held at District 2 Hospital. Participants were assured that the information collected would remain anonymous.

2.3. Data analysis

Each correct answer in relation to the knowledge of COVID-19 was given one point. The total knowledge score for the HCWs varied between 0 (with no correct answer) and 10 (for all correct answers), and a cut off level of <7 was evaluated as poor knowledge, and ≥ 7 indicated good knowledge. The score of the attitude based on 5 points Likert scale, in which the score of 1 to 5 was given from strongly agree to strongly disagree. A mean score of ≤ 2 (answering for strongly agree or agree) was carried out as a positive attitude and a score of 3 to 5 indicated a negative attitude (answering strongly disagree or disagree or undecided). Therefore, the lower the attitude scores were, the higher the probability of positive attitudes and the reverse applied for a high score.

Data was analyzed using Stata 13.0 software. Descriptive analysis was reported as frequency, percentage and mean scores. *T*-test

and ANOVA were used to analyze the relationship between the dependent (knowledge and attitude), and independent variables (demographic characteristics of the participants). Spearman's correlation was used to assess the relationship between mean knowledge and attitude scores. All the differences of estimated variables were considered statistically significant if $P < 0.05$.

2.4. Ethical approval

All the eligible HCWs were informed about the objectives of the study, and they agreed and signed consent form before participation. The study was approved by the Ethics Council of District 2 Hospital (protocol number 16/District 2 Hospital-Scientific Research).

3. Results

Of the study population, 327 (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 female (74.0%), the highest percentage of HCWs were nurses (70.9%) and the majority of them had less than 5 years experience (62.9%). There were 98.2% of participants who knew the COVID-19 outbreak. The main sources of COVID-19 information were social media and the Ministry of Health website (91.1% and 82.6%, respectively) (Table 1). As depicted in Table 2. The majority of participants knew that COVID-19 is a virus, how to prevent transmission between humans, and that infected cases could result in death (99.1%, 98.2%, and 98.8%, 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 (67.0%, 65.8%, and 58.4%, 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 would probably get the illness (82.3%), one of their family members may get an infection (79.8%) but they will accept the isolation if suspected infection (97.9%). The association of demographic characteristics and knowledge and attitude of HCWs were presented in Table 4, 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, $P < 0.05$), and (1.79 *vs.* 1.97, 1.85, 1.86, $P < 0.01$).

Besides, Spearman's analysis found that a significant negative correlation between the mean knowledge and attitude scores of HCWs about COVID-19 ($r = -0.21$, $P < 0.001$). The lower the attitude scores were, the higher the probability of positive attitudes; while the higher the knowledge scores were, the higher the probability of good knowledge. Therefore, a good knowledge COVID-19 was directly associated with a positive attitude.

Table 1. Baseline characteristics of healthcare workers, District 2 Hospital, 2020 [n(%)].

Characteristics	Participants (n=327)
Age (mean±SD) (years)	30.1±6.1
20-29	187 (57.2)
30-39	111 (33.9)
≥40	29 (8.9)
Sex	
Male	85 (26.0)
Female	242 (74.0)
Occupation	
Physician	43 (13.1)
Nurse	232 (70.9)
Pharmacist	42 (12.8)
Technical staff	10 (3.1)
Year of experience (n=318)	
< 5	200 (62.9)
5-10	98 (30.8)
> 10	20 (6.3)
Know the COVID19 outbreak is happening globally in 2020 (yes)	321 (98.2)
Source of COVID-19 information (yes)	
Television	259 (79.2)
Social media	298 (91.1)
Websites of hospital/Health Ministry	270 (82.6)
Friends, relatives	142 (43.4)
Unheard	3 (0.9)

Table 2. Knowledge of healthcare workers toward COVID-19, District 2 Hospital, 2020 [n(%)].

Question (correct answer)	Correct answer
COVID-19 is a virus infection (yes)	324 (99.1)
COVID-19 is transmitted by close contact with the infected person (yes)	219 (67.0)
Fever, cough, sore throats and shortness breath are possible symptoms of COVID-19 (yes)	238 (72.8)
The isolation period is 2 weeks (yes)	215 (65.8)
COVID-19 vaccine is available in markets (no)	292 (89.3)
Antibiotics are the first-line treatment (no)	191 (58.4)
Washing hands with soap and water, and using face masks can help in the prevention of disease transmission (yes)	321 (98.2)
Patients with underlying chronic diseases are at a higher risk of infection and death (yes)	259 (79.2)
Healthcare workers are at a higher risk of infection (yes)	290 (88.7)
COVID-19 could be fatal (yes)	323 (98.8)
Knowledge toward COVID-19 (mean±SD)	8.17±1.30
Sufficient	289 (88.4)
Insufficient	38 (11.6)

Table 3. Attitude of healthcare workers toward COVID-19, District 2 Hospital, 2020 [n(%)].

Item (correct answer)	Response
You think you will probably get illness (yes)	269 (82.3)
You are worried one of your family members may get an infection (yes)	261 (79.8)
If getting COVID-19, you will accept isolation in health facilities (yes)	320 (97.9)
Transmission of COVID-19 can be prevented by washing hands with soap frequently (yes)	303 (92.7)
Prevalence of COVID-19 can be reduced by the active participant of HCWs in hospital infection control programs (yes)	321 (98.2)
If a COVID-19 vaccine was available, I would have it (yes)	302 (92.4)
Covid-19 patients should be kept in isolation (yes)	321 (98.2)
Medical staffs are ready to participate in anti-epidemic in the community (yes)	320 (97.9)
Attitude (mean±SD)	1.86±0.43 (1-4)
Sufficient	305 (93.3)
Insufficient	22 (6.7)

4. Discussion

To the best of our understanding, there are no cases of COVID-19 among HCWs reported in Vietnam[6]. Till now, the COVID-19 outbreak is considered an emergency and healthcare workers are seen to have an increased risk of infection while there is no other investigation of the knowledge and attitude of healthcare workers towards the COVID-19. In view of this, the difference in our findings has been compared with other related content as MERS, SARS.

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 COVID-19 is a global issue and gathered their information through a variety of media such as television (79.2%), social media (91.1%), the

website of hospital/Health Ministry (82.6%). However, this result has not previously been described in Albarrak I.'s study with the highest main source being seminars and workshops accounting for 48%[14]. The findings showed that HCWs are more interested in social media to gather knowledge on an emerging infectious disease like COVID-19 than the official website of the Ministry of Health at the present time. This is an important issue for the government of Vietnam because it's important to consider a variety of channels to update knowledge and learning materials about this epidemic and, especially, to communicate information to the minority of HCW's who have a lack of knowledge or are not currently aware of any issue relating to COVID-19 (0.9%). Also, it is necessary that the website of the Ministry of Health or hospital should update its website information regularly to encourage HCWs to access this channel for all health-related issues and information. In addition, valuable information was gathered from questions such as possible symptoms and the best way of the prevention of transmission is by washing hands and using face masks. Our results are similar to the findings of Khan's study about MERS[15], but different from a research from the US in which participants had poor knowledge of the symptom of SARS[16]. It can thus be suggested that the positive influence of the educational program on the HCWs from the Ministry of Health in Vietnam. By contrast, only 67.0%, 65.8% and 58.4% of good answers relate to the transmission by close contact with an infected person, the isolation period and treatment of the COVID-19 virus. Currently, no vaccine or specific treatment for COVID-19 is available, the treatment aims to reduce the symptoms without any specific antiviral medication for 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

Table 4. Distribution of knowledge and attitude scores among healthcare workers, District 2 Hospital.

Characteristic	Knowledge	t-value	F-value	P-value	Attitude	t-value	F-value	P-value
Age								
20-29	8.15±1.25	-	0.08	0.300	1.82±0.45	-	1.92	0.151
30-39	8.19±1.42	-			1.92±0.40	-		
≥40	8.24±1.24	-			1.82±0.35	-		
Sex								
Male	8.21±1.27	-0.333	-	0.740	1.92±0.41	1.522	-	0.129
Female	8.16±1.32	-	-		1.83±0.43	-	-	
Occupation								
Physician	8.33±1.19	-	1.85	0.015*	1.97±0.40	-	1.44	0.001*
Nurse	8.09±1.38	-			1.85±0.45	-		
Pharmacist	8.55±0.92	-			1.79±0.27	-		
Technical staff	7.80±1.34	-			1.86±0.30	-		
Year of experience (n=318)								
< 5	8.29±1.24	-	2.52	0.325	1.82±0.44	-	1.55	0.453
5-10	7.92±1.40	-			1.91±0.40	-		
> 10	8.10±1.37	-			1.88±0.38	-		
Average	8.17±1.30				1.86±0.40			

Data were expressed as mean±SD. t-test and ANOVA were used for a comparison between demographic characteristics of healthcare workers and the score of knowledge and attitude, *P<0.05.

and MERS[15,17]. These findings suggested that media campaigns should focus on the transmission, the isolation of suspected cases and the treatment of COVID-19 to avoid an outbreak. 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[3,5]. It showed that HCWs need to be cautious in patients with chronic diseases because these patients are more likely to die from the illness.

Another important finding was that the vast majority of the participants had a positive attitude about COVID-19. However, there remains a significant concern that they could contract the virus and in turn pass the virus to family members, particularly their parents. Only 97.9% of the participants agree to isolation if it was needed. These results are likely to be related to a lack of knowledge within the HCW's about current and important prevention and isolation strategies.

It was also observed that occupation was significantly associated with knowledge and attitude. Pharmacists showed relatively more knowledge. Additionally, good knowledge has a higher probability of positive attitudes, this result has not previously been described[15]. The goals of the upcoming educational program should focus on the HCW's with insufficient knowledge and this should improve the rate of positive attitudes of HCWs.

This study had some limitations in interpreting the results because COVID-19 is a novel coronavirus and no research has been studied to compare; the study samples were collected at the District 2 Hospital in HCMC in the current condition. Therefore, it was difficult to generalize results across the general population. Future studies could estimate the knowledge and attitude of HCWs on a larger scale to be able to design appropriate interventions on a national level.

The findings showed the majority of HCWs at the District 2 Hospital had good knowledge and positive attitude toward COVID-19, but there are some lower knowledge and negative attitudes than expected. Additional education intervention and campaigns are required for HCWs to avail them with the knowledge of the mode of transmission, the isolation period and treatment strategies, as well as the risk of personal and family infection with COVID-19.

Conflict of interest statement

The authors declare that there is no conflict of interest.

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Authors' contributions

All authors substantially contributed to drafting and revising the article, as well as the final approval of the version to be submitted. HG, PLA, and NTNH contributed to the conception and design of the study and acquisition of the data. VVT and VKN conducted the data analysis and HG and TVK were the contributors to the interpretation of the data.

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