

Knowledge, Attitude and Practice toward Prevention of COVID-19 among Nursing Students in Vietnam

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Abstract— Evaluating the knowledge, attitude, and practice of nursing students during infectious diseases outbreaks is a fundamental step in developing effective preparedness for clinical practice. The study aimed to assess the knowledge, attitude, and practice toward COVID-19 prevention and identify the related factors among nursing students. Materials and methods: A cross-sectional descriptive study was conducted on 320 nursing students at Da Nang University of Medical Technology and Pharmacy in 2021. Data were collected using a selfreport questionnaire comprising three parts: Knowledge (11 questions), Attitude (4 questions), and Practice (8 questions) toward COVID-19 prevention. Data were analyzed using the SPSS 22.0. Pearson's correlation test was used to examine the relationship between variables. Results: Nursing students demonstrated good knowledge (mean score: 9.11 ± 1.05), a positive attitude (mean value: 3.83 ± 0.41), and appropriate practice (mean score: 7.37 ± 0.99) regarding COVID-19 prevention. Positive correlations were found between knowledge and attitude (r=0.200, p<0.05), and attitude and practice of COVID-19 prevention ((r=0.314, p<0.05)). Conclusion: The findings demonstrated a right knowledge, positive attitude, and sufficient practice of nursing students toward COVID-19 prevention. Although the results are very positive, more efforts should be done toward preparing the nursing students to deal with the outbreak in order to make patients and public safety.

Keywords— Attitude, COVID-19 prevention, knowledge, nursing student, practice.

I. INTRODUCTION

On March 2020, the World Health Organization (WHO) announced that the COVID-19 was a global pandemic [1]. The number of infections is rapidly increasing and becoming complicated in many countries around the world [2]. There are 13 different types of vaccine to prevent COVID-19 which has being used and 312,915,170 doses of COVID-19 vaccine have been injected by the June of 2021 [3].

The knowledge, attitude and practice of people play a fundamental role in controlling COVID-19 [4]. Understanding, updating knowledge and practicing following to the guidelines recommended by the WHO are extremely necessary in prevention and minimising the spread of the SARS-CoV-2 virus [5].

During the period of the study and practice in healthcare facilities, nursing students have to work in environment with high risk of infection. Some researches pointed out that medical students, especially nursing students, are high risk of exposure to pathogens due to limited knowledge and clinical experience [6]. Therefore, nursing students with good knowledge, attitude and practice of COVID-19 prevention is essential to minimize

the risk of COVID-19 infection for themselves and those around them [7].

As a result, determining the level of knowledge, attitude and practice of nursing students regarding to COVID-19 prevention will be useful for educational administrators in plaining and implementing intervention programs and help nursing students become good communicator about COVID-19 to the community as well.

Therefore, this study aimed to 1) evaluate the knowledge, attitude, and practice toward the prevention of COVID-19 among nursing students and 2) identify the relationship between the knowledge, attitude, and practice in COVID-19 prevention of nursing students.

I. MATERIALS AND METHODS

A. Design

This study was descriptive cross-sectional design.

B. Sample size and Sampling

Eligible participants were nursing students of Da Nang University of Medical Technology and Pharmacy, agreed in the study, and present at the time of the data collection.

The sample size was calculated using the formula:

$$n = \frac{z^2 \cdot \delta^2}{d^2}$$

Where z = 1.96, d = 0.05, and $\delta = 0.43$ that based on the study conducted by Giao Huynh et al on knowledge and attitude towards COVID-19 of healthcare staff in Ho Chi Minh City in 2020 [8].

The calculated sample size was 284. To compensate for missing or incorrect date, the sample size was increased by 10%. The sample size taken was 320.

The simple random sampling method was used in the study because each respondent had the similar probability of being collected. The participants were randomly collected by the authors from the first to final year nursing students.

C. Data collection

Data collection was carried out from January to March 2021. The authors met nursing students in the breaking time or at the end of the classes. After explaining all information of the study, the authors gave the forms for participants to self-report. The process took about 10 minutes. All information was used for the research only, without any other purposes.

D. Instruments



The study used a self-report questionnaire to collect data. The first part is information consisted of questions regarding gender, age, religion, and university year.

The second part is the scale of knowledge, attitude and practice (KAP) of COVID-19 prevention. We utilized the scale developed by Sonam Maheshwari and colleagues to measure KAP of COVID-19 prevention among medical students in Indian universities [9]. The self-design questionnaire comprised 11 questions regarding knowledge, 4 for attitude and 8 for practice. Each question was responded on a true/false or I don't know. The true answer was assigned with 1 point, false/I don't know answers were assigned with 0 point. The total score was from 0 to 23, with higher scores indicating higher levels of students' knowledge, attitude and practice toward COVID-19 prevention.

After the preparation of the questionnaire, it was sent to five experts to consult their opinions regarding the validity of the questionnaire followed by a small pilot study of 30 participants to test its simplicity and difficultly. As a result, Cronbach's Alpha of 3 components were 0,83, 0,76 and 0,82, respectively.

E. Data Analysis

Data was analyzed and interpreted by the SPSS 22.0. Descriptive statistics were used to describe personal characteristics, the knowledge, attitude, and practice toward COVID-19 prevention among nursing students. Pearson test was used to analyze the relationship between the variables. The statistical significance level of the test was less than 0.05.

F. Ethics

This study was approved by Ethical Council for Biological Research of Da Nang University of Medical Technology and Pharmacy (N0.01/QĐ-HĐĐĐ). All participants fulfilled in the informed consent when received a full explanation the aim of the study, confidentiality, and the right to refuse or withdraw anytime.

III. RESULTS

Total of 320 nursing students participated in the study. The majority of nursing students were female (94.7%) and more than a half of participants aged from 18-20 (52.8%). Almost 83.1% of the participants did not belong to any religion or others without Buddhism and Catholicism. The percentage of first year nursing students joining in the study was highest (29.4%) (Table 1).

The results of the knowledge towards COVID-19 are presented in Table 2. The mean value for the knowledge score was 9.11 ± 1.05 . The study also showed that the average percentage of correct answers regarding knowledge was 83%. Particularly, the majority of participants had correct knowledge about the main clinical symptoms of COVID-19 (97.8%). Furthermore, almost nursing students had correct knowledge regarding the transmission routes of COVID-19 virus, including via respiratory droplets (97.8%). In the questions about students' knowledge of COVID-19 prevention and treatment, the vast majority of participants (94.4%) answered that avoiding crowded places gathering like train stations and taking public transportations is the crucial way to prevent COVID-19

infection. Additionally, approximately 98% of the participants figured people who have contact with someone infected with the COVID-19 virus would be immediately isolated in an appropriate place. More importantly, 99.4% of participants recognized that isolation and treatment of people who are infected with the COVID-19 virus are infective ways to reduce the spread of the virus. More than 82% nursing students also agreed that ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.

Table 3 revealed the results of participants' attitude and practice towards COVID-19 prevention. The mean value of the attitude score is 3.83 ± 0.41 . In particular, almost nursing students (98.1%) agreed that media coverage (e.g. newspaper, television, online) give much exposure to the news regarding the COVID-19 virus. Moreover, all participants (100%) asserted that "Curfew Order" is the significant application to contribute to win the battle against the COVID-19 virus. Furthermore, the application of lockdown of major cities during the outbreak in order to help the country control the COVID-19 was the agreement of 92.2% participants in the study. Table 3 also showed that the average value for the practice score was 7.37 ± 0.99 and the average rate of accurate answers about practice was 92.2%. Maintaining social distance during the outbreak was the most prevalent behavior reported by the participant (100%). Furthermore, a high percentage of the participants who were well-practiced in using personal protective equipment (98.1%) and washing their hands (97.5%).

The study found that knowledge has a statistically significant positive correlation with attitude (r= 0.200; p < 0.05). In addition, a statistically significant positive correlation was identified between attitude and practice of COVID-19 prevention (r=0.314; p < 0.05) (Table 4).

IV. DISCUSSION

1. Knowledge towards COVID-19 among nursing students

This study revealed that the knowledge related to COVID-19 of nursing students was at a high level with an average score of 9.11 ± 1.05 . The percentage of correct answers about knowledge was 83%. Similarly, the study conducted by Kavita et al on 381 dental students in India also showed the same rate of correct answers regarding COVID-19 knowledge (83%) [10]. Another study on Iranian medical students founded that the percentage of correct answers about COVID-19 knowledge was higher than our study (89.96%) [11]. These results might be due to that since the outbreak of COVID-19, the media has been actively reporting about COVID-19. Furthermore, the participants in this study was healthcare students and most of them have volunteered against COVID-19 so that they have already participated in trainings regarding COVID-19.

Particularly, in terms of knowledge, the study found that the majority of students (97.8%) had correct knowledge about the main symptoms and transmission routes of COVID-19. A study by Nada Fakhri et al on Moroccan nursing students' knowledge, attitude and practice towards COVID-19 also revealed that 82% correct answers regarding the transmission routes of the COVID-19 virus, the main symptoms of infected people were fever, dry cough, shortness of breath and fatigue accounting for 97.6%, 92.4%, 82% and 74.9% respectively [12]. Another study which conducted by Sonam Mheshwari et al showed that



86.7% of participants had accurate knowledge about COVID-19 and 92.7% of them knew exactly about the transmission route of the virus [9]. Regarding students' knowledge of COVID-19 prevention and treatment, the majority of students (94.4%) knew that COVID-19 can be prevented by avoiding crowded places. Additionally, 97.8% of participants responded that people with COVID-19 need to be immediately isolated in an appropriate place. The study of Sonam Mheshwari et al pointed out similar results, with 96.9% and 96.6% of people who knew that they needed to avoid crowded places and should isolate and treat COVID-19 infected people in order [9]. Moreover, 82.2% of students responded that people can wear medical masks to prevent COVID-19. This rate was higher than the result in the study of Ashraf I. Khasawneh et al (19.3%) [13]. These differences might be due to the diversities of government regulations, national culture and experience in dealing with previous pandemics.

2. Attitude towards COVID-19 among nursing students

The study showed positive attitude of students towards COVID-19 prevention. The mean value for the attitude score was 3.83 ± 0.41 . Similarly, the study conducted by Mohammed K. AI-Hanawi et al, revealed positive attitude towards COVID-19 with a mean value was 28.23 ± 2.76 [14]. It is because that the Vietnamese government made the early and appropriate policies to prevent the spread of COVID-19 in the community. They also encouraged and propagated through information channels in order to enhance attitude of students toward COVID-19 prevention. Particularly, the study found that 98.1% of participants agreed that media coverage (e.g. newspaper, television, online) provided them with a lot of access to information about COVID-19. Another study also reported that media was the main source of information for the participants with 76.6% [9]. Similarly, a study by Khasawneh et al. on medical students at six universities in Jordan showed that students mainly used social media (88.4%) and online search engines (84.8%) to find reliable sources regarding COVID-19 information [13]. Currently, due to the significant development of media and its convenience and continuous updates, young people have more access to information related to COVID-19. Furthermore, our study showed that all students (100%) believed applying "Curfew Order" provinces/cities with outbreaks will help Vietnam win the battle against the COVID-19 virus. Also, 92.2% of them agreed with the application of the lockdown in major cities during outbreak in order to control the COVID-19 virus. This is quite similar to the study of Sonam Mheshwari et al, which supported "Curfew Order" and locking down of cities with 75% and 94.1% in order [9].

3. Practice regarding COVID-19 prevention among nursing students

The finding disclosed that the students' COVID-19 preventive practices were at a high level with a mean score of 7.37 ± 0.99 . The average rate of accurate answers about practice was 92.2%. Some studies in Iran and Jordan stated similar levels of practice in preventing COVID-19 of healthcare students. Conversely, research by Bui Huy Tung et al on nursing students in Hanoi Medical College showed that the percentage of students with good practice regarding COVID-19 prevention

was less than a haft (43.3%) [15]. These differences are because of the time to conduct study differently. While the study by Bui Huy Tung et al conducted in the early outbreak, our study was taken after the Vietnamese government applied many strong measures as well as widely communicated to the population to prevent COVID-19. Therefore, it might be a factor to enhance the perception and practice for participants. Particularly, maintaining social distance during the outbreak was the most prevalent practice reported by the participants (100%). The result of Sonam Mheshwari also showed that 98.3% students practiced maintaining social distance [9]. In addition, WHO has recommended that wearing a mask is one of the key measures to prevent the spread of COVID-19 virus and everyone should wear a mask to protect themselves and others [16]. Our study revealed a high percentage of the participants who were well-practiced in using personal protective equipment (98.1%). A study by Nada Fakhri et al. on Moroccan nursing students similarly showed that up to 93.4% of participants declared wearing masks when going out in the community [12]. In contrast, a study conducted in Lahore, Pakistan found that only 18.3% of students agreed that they always used masks in crowded places and when visiting healthcare facilities [17]. This difference may be due to distinction in government regulations and messages from the Ministry of Health and people's beliefs in each country. People expressed that those who wear masks are sick, as a result, people being concerned about wearing masks when going out [12]. Furthermore, when asked about participants' COVID-19 prevention practices in particularly, the majority of students (97.5%) increased frequency of hand washing. Another research also showed that 89.5% of dental students washed their hands more frequently during COVID-19 outbreak than usual

4. Relationship between knowledge, attitude and practice regarding COVID-19 prevention

A statistically significant positive correlation between knowledge and attitude (r= 0.200; p < 0.05) of nursing student towards COVID-19 has found in this study. It means the better knowledge, the higher attitude. This result was similar to the studies of Giao Huynh et al and Dimitrios Papagiannis et al. Those authors reported that students with high knowledge scores showed more positive attitude about disease prevention solutions [8, 18].

In this study, attitude and practice of nursing students toward COVID-19 prevention had a statistically positive relationship with relation coefficient of r= 0.314 (p < 0.05). This correlation also means the better of attitude, the correctly practice of COVID-19 prevention. Another study conducted in Greece similarly revealed that attitude scores were significantly association with practice value (p < 0.05), the participants with higher attitude scores were more likely to perform better SARS-CoV-2 transmission prevention activities [18].

Nevertheless, the findings revealed that there was no correlation between level of knowledge and practice in preventing COVID-19 transmission (p>0.05). These results are different from the study of Kavita Batra et al on dental students in India, the author pointed out that knowledge regarding COVID-19 was significantly associated with preventive behavior correlation coefficient (p < 0.01) [10]. This difference



may be due to the study of Kavita Batra et al conducted in many education levels of dental students, such as undergraduate, postgraduate, and trainee.

This research faced several constraints. To begin with, the data was gathered through a self-reported survey, which could introduce social bias. This suggested that respondents may have provided answers that were socially acceptable. Moreover, the research was limited to a single public university, which could affect the ability to generalize the findings.

V. CONCLUSION

Nursing students in Vietnam have a high level of knowledge towards the prevention of COVID-19, with an average score of 9.11 \pm 1.05. The average rate of correct answers on knowledge was 83%. Regarding attitude towards COVID-19 prevention, nursing students showed a positive attitude, the average value for attitude score was 3.83 \pm 0.41. In term of COVID-19 practices, students reported a high level of practice with mean score of 7.37 \pm 0.99, the average rate of correct answers on practice was 92.2%. Additionally, there is a positive correlation between knowledge and attitude (r= 0.200, p < 0.05), attitude and practice (r= 0.314, p < 0.05) of nursing students toward COVID-19 prevention. Nursing students are expected to maintain high level of knowledge, positive attitude, correct practice and behavior toward COVID-19 prevention as future health workers at the forefront of health services.

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TABLE 1. Personal characteristics of nursing students (n= 320)

Character		Number Frequency (%	
		Number	
Gender	Male	17	5.3
Gender	Female	303	94.7
	18 - 20	169	52.8
Age	21 - 23	149	46.6
	≥ 24 2		0.6
Religion	Buddhism 42		13.1
	Catholicism	12	3.8
	Others	266	83.1
University years	1 st	94	29.4
	2 nd	70	21.9
	3 rd	71	22.2
	$4^{ ext{th}}$	85	26.5

TABLE 2. Knowledge toward COVID-19 prevention (n= 320)

TABLE 2. Knowledge toward Co	O VID-17 picv		
	True (%)	False/ I don't know (%)	
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.	313 (97.8)	7 (2.2)	
2. There currently is no effective cure of COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection	286 (89.4)	34 (10.6)	
3. Not all persons with COVID-19 will develop severe cases. Only those who are the elderly, have chronic illnesses, and are obese, are more likely be severe cases.	216 (67.5)	104 (32.5)	
Eating or contacting with wild animals would not result in the infection by the COVID-19 virus	40 (12.5)	280 (87.5)	
5. Persons with COVID-19 can transmit the virus to others when a fever is not present.	269 (84.1)	51 (15.9)	
6. The COVID-19 virus spreads via respiratory droplets of infected individuals.	313 (97.8)	7 (2.2)	
7. Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus	263 (82.2)	57 (17.8)	
8. It is necessary for children and young adults to take extra precautions to	285 (89.0)	35 (11.0)	



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prevent the infection by the COVID-19 virus		
9. To prevent the infection by the COVID-19 virus, individuals should avoid going to crowded places such as train stations and avoid taking public transportations.	302 (94.4)	18 (5.6)
10. Isolation and treatment of people who are who are infected with the COVID-19 virus are infective ways to reduce the spread of the virus.	318 (99.4)	2 (0.6)
11. People who have contact with someone infected with the COVID-19 virus would be immediately isolated in an appropriate place. In general, the observation period is 14 days.	313 (97.8)	7 (2.2)
Knowledge towards COVID-19		$SD = 9.11 \pm 1.05$
prevention	(Min = 6, Max = 11)	

TABLE 3. Attitude and Practice toward COVID-19 prevention (n= 320)

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	Yes (%)	No/I don't know (%)		
Attitude		` /		
Media coverage (e.g. newspaper, television, online) gives much exposure to the news regarding the COVID-19 virus?	314 (98.1)	6(1.8)		
2. The application of "Curfew Order" in the outbreak provinces/cities will help Vietnam to win the battle against the COVID-19 virus?	320 (100)	0 (0)		
3. Lockdown of major cities will help Vietnam to control the COVID-19 virus?	295 (92.2)	25 (7.8)		
4. The COVID-19 virus finally will be successfully controlled	297 (92.8)	23 (7.2)		
Attitude towards COVID-19	Mean ±	Mean \pm SD = 3.83 \pm 0.41		
prevention	(Min	$(\mathbf{Min} = 2, \mathbf{Max} = 4)$		
Practice				
1.Did the outbreak of the COVID-19 virus make you increase the frequency of washing hands?	312 (97.5)	8 (2.5)		
2.Did the outbreak of the COVID-19 virus make you use hand sanitizer more frequently?	309 (96.6)	11 (3.4)		
3.Did the outbreak of the COVID-19 virus make you uses personal equipment (e.g. mask) more often than you used to?	314 (98.1)	6 (1.9)		
4. Did you carry hand sanitizer with you during the outbreak in Vietnam	269 (84.1)	51 (15.9)		
5. Did you write down or store in your phone any helpline number to contact in case you suspected that you or someone you know had the COVID-19 virus?	219 (68.4)	101 (31.6)		
6. Did you maintain social distance during the outbreak?	320 (100)	0 (0)		
7. Did you cover cough and sneeze with a tissue, handkerchief,, during the outbreak?	306 (95.6)	14 (4.4)		
8. Did you avoid unnecessary travel or outing during the outbreak?	312 (97.5)	8 (2.5)		
Practice towards prevention of COVID-19	Mean \pm SD = 7.37 \pm 0.99 (Min = 3, Max = 8)			

TABLE 4. Relationship between knowledge, attitude, and practice toward COVID-19 prevention

		Knowledge	Attitude	Practice
Knowledge	Pearson's Correlation	1	.200	.092
	Sig. (2- tailed)		.000*	.101
Attitude	Pearson's Correlation	.200	1	.314
	Sig. (2- tailed)	.000*		.000*
Practice	Pearson's Correlation	.092	.314	1
	Sig. (2- tailed)	.101	.000*	

^{*}Correlation is significant at the 0.01 level (2-tailed)