

# KNOWLEDGE, ATTITUDES, AND PRACTICES REGARDING COVID-19 PREVENTION AMONG MEDICAL STUDENTS OF CAN THO UNIVERSITY OF MEDICINE AND PHARMACY

Phan Viet Hung\*, Tran Duc Long, Tran Cong Ly

Can Tho University of Medicine and Pharmacy

\*Corresponding author: pvhung@ctump.edu.vn

## ABSTRACT

**Background:** The COVID-19 pandemic has been affecting all over the world; medical students are a successor force, providing great support to the prevention of the COVID-19 pandemic. **Objectives:** to assess the completeness of knowledge, attitudes, and practices of COVID-19 prevention as well as utilize factors influencing the good practices of medical students at Can Tho University of Medicine and Pharmacy. **Materials and methods:** A 2-week cross-sectional study (from October 1 to October 15, 2021) was conducted among 729 of 4<sup>th</sup> and 6<sup>th</sup> – year medical students at Can Tho University of Medicine and Pharmacy through an online survey with a set of 36 questions. **Results:** The score of the Fear of COVID-19 Scale was moderately high ( $17.61 \pm 4.55$ ). The percentage of students with good general knowledge (overall score  $\geq 11$ ) was 56.2%. Approximately 97.5% of the participants had positive attitudes about complying with disease prevention measures. There were 94.2% of students had good practices with preventive measures. The study showed that 2 factors related to good practices were good sufficient knowledge and positive attitudes ( $p < 0.05$ ). Students with sufficient knowledge and positive attitudes performed better than students with insufficient knowledge and negative attitudes by 2.4 times (95% confidence interval: 1.18-4.8) and 7.2 times (95% confidence interval: 2.5-21.9), respectively. **Conclusions:** The majority of students had enough knowledge (56.2%), positive attitudes (97.5%) and good practices (94.2%) in COVID-19 prevention. High FCV-19S, females, sufficient knowledge, and positive attitudes had a significant correlation with good practices.

**Keywords:** Knowledge, attitudes, practices, COVID-19, prevention, FCV-19S

## I. INTRODUCTION

COVID-19-associated acute respiratory distress syndrome is a pandemic that has covered the whole world, greatly affecting global health and the global economy. Until October 27, 2021, there were approximately 245,247,280 people worldwide infected with COVID-19 and 4,978,048 deaths from COVID-19 [10]. In Vietnam, the first case of SARS-CoV-2 infection was recorded on December 22, 2019, and since the beginning of the epidemic, the number of infected cases and deaths from COVID-19 has been 896,174 and 21,802 people, respectively [1]. Can Tho University of Medicine and Pharmacy has launched many campaigns to send students to support the prevention and control of the COVID-19 pandemic in the Mekong Delta provinces. It is critical for medical students to participate in campaigns to have the proper knowledge, attitudes, and practices of COVID-19 prevention. Therefore, we conducted this study to assess the completeness of knowledge, attitudes, and practices of COVID-19 prevention among the medical students at Can Tho University of Medicine and Pharmacy.

## II. MATERIALS AND METHODS

### 2.1. Study design and sample size

A cross-sectional descriptive study was conducted for 2 weeks (from October 1 to October 15, 2021) on the 4th and 6th-year medical students of Can Tho University of

Medicine and Pharmacy who had undergone clinical training and taken part in COVID-19 prevention campaigns in the Mekong Delta provinces. According to a study by Pham Le An et al. on the prevention of the COVID-19 epidemic: the percentage of medical students with good knowledge was 86.6%, with positive attitudes was 68.8% and with good practices was 92.8% [8] (5% alpha and 95% confidence interval). The 3 calculated sample sizes were at least 179, 330 and 103, respectively. In fact, we performed the study with 729 students.

## 2.2. Data collection

We performed a survey to collect data via a questionnaire to analyze the completeness of knowledge, attitudes, and practices of COVID-19 prevention and access factors influencing good practices among medical students in the study sample.

The questionnaire was built based on the WHO's COVID-19 information, national guidelines, and references to studies from the University of Medicine and Pharmacy at Ho Chi Minh City [3], [8]. The questionnaire consisted of 36 questions and was divided into 4 parts: *Part 1* included 6 questions about general characteristics of general medical students such as age, gender, year of student, with whom they currently lives, sources of information about COVID-19 students have accessed to and the Fear of COVID-19 Scale (FCV-19S). FCV-19S scoreboard included 7 questions to assess students' fear of the COVID-19 pandemic according to Linkert scores, a total score of  $>19$  was associated with very high fear. *Part 2* included 14 questions about students' knowledge; a correct answer gives 1 point, a wrong or uncertain answer gave 0 points. A total score of this section  $\geq 11$  was good knowledge,  $<11$  was bad knowledge. *Part 3* included 6 questions about students' attitudes; the correct answer gave +1, an incorrect or uncertain answer gave -1. Overall score for this section "+" was a positive attitudes and "-" was negative. *Part 4* included 10 questions about students' practices; a correct answer (frequently) got 2 points; "sometimes" got 1 point, answer "no" gets 0 points. A total score of  $\geq 15$  was considered a good practices and  $<15$  was considered a bad practices.

## 2.3. Statistical analysis

The questionnaire was sent to students via email to fill out by themselves (via Microsoft form), then using Microsoft excel and SPSS 26 software to process and analyze the collected data. We used descriptive statistics to calculate the indices and ratios for each qualitative variable, and the mean and standard deviation for the quantitative variable. The chi-square test was used to evaluate potential statistical relationships between general student characteristics and knowledge, attitudes, and COVID-19 prevention measures. If the expected value of the cells is  $<5$ , then we used the Fisher's exact test. A value of  $p < 0.05$  was considered to be statistically significant.

# III. RESULTS

## 3.1. Study sample characteristics

A total of 729 students (272 4<sup>th</sup>-year medical students and 457 6<sup>th</sup>-year medical students) participated in the study. Table 1 showed some common characteristics of the research population: female of 56.8%, the majority lived alone (55.1%) and received information about COVID-19 from the media and the Ministry of Health website and university training courses. Notably, the score FCV-19S was moderately high ( $17.61 \pm 4.55$ ).

**Table 1.** Demographics and characteristics of the study sample

| Characteristics                   |                   | N (%)              |
|-----------------------------------|-------------------|--------------------|
| Age (Mean±sd)                     |                   | 22,62±1,33 (20-28) |
| FCV-19s (Mean±sd)                 |                   | 17,61±4,55 (6-30)  |
| Medical student                   | 4th-year          | 272 (37.3%)        |
|                                   | 6th-year          | 457 (62.7%)        |
| Gender                            | Male              | 315 (43.2%)        |
|                                   | Female            | 414 (56.8%)        |
| Currently live (with)             | Family            | 162 (22.2%)        |
|                                   | Relatives         | 29 (4%)            |
|                                   | Friend            | 136 (18.7%)        |
|                                   | Alone             | 402 (55.1%)        |
| Information source about COVID-19 | Communications    | 712 (97.7%)        |
|                                   | Family/Relatives  | 328 (45%)          |
|                                   | Training courses  | 592 (81.2%)        |
|                                   | Websites          | 599 (82.2%)        |
|                                   | Local governments | 416 (57.1%)        |

### 3.2. Knowledge, attitudes, and practices of COVID-19 prevention

#### 3.2.1. COVID-19 prevention knowledge of the study sample

The majority of students had good knowledge about how to prevent COVID-19 (>75%) except for questions 4, 6, 8, 11, 12, so the percentage of students with good general knowledge (total score above ≥11) was only 56.2%. Only 49.8% of students knew that social distancing was a measure to prevent the spread of COVID-19; 52.3% of students knew that closing supermarkets, as well as schools, was a contribution to prevent the spread of COVID-19 and more surprisingly, only 30.3% of students knew that traveling by plane had a higher risk of COVID-19 transmission.

**Table 2.** Students' knowledge about COVID-19 prevention

| Question (Right answer)   | N (%)      |
|---|------------|
| K1: COVID-19 disease is caused by SARS-CoV-2 (Y)  | 714 (97.9) |
| K2: COVID-19 is spread through respiratory droplets of an infected person (Y)   | 724 (99.3) |
| K3: All members of the community are at equal risk for COVID-19 (Y)   | 554 (76)   |
| K4: The best way to prevent the spread of COVID-19 is social distancing (Y)   | 363 (49.8) |
| K5: The SARS-CoV-2 virus is man-made and intentionally released (N)   | 652 (89.4) |
| K6: Any group activity can spread COVID-19 (Y)  | 447 (61.3) |
| K7: Patients with COVID-19 during the incubation period (without symptoms) are not capable of transmitting the disease (Y)  | 653(89.6)  |
| K8: The risk of infection COVID-19 when traveling by plane will be higher (Y)   | 221 (30.3) |
| K9: Infection with SARS-CoV-2 can be avoided by washing hands frequently with soap (Y)                                      | 604 (82.9) |
| K10: Quarantine points of entry for people coming from areas affected by COVID-19 are a good measure to avoid spreading (Y) | 599 (82.2) |
| K11: Nationwide social distancing will control the spread of SARS-CoV-2 (Y)   | 526 (72.2) |
| K12: Closing schools and supermarkets are effective ways to practices social distancing (Y)                                 | 381 (52.3) |
| K13: The most common cause of COVID-19 spread is people moving from an infected area to another place (Y)                   | 610 (83.7) |

| Question (Right answer)  | N (%)              |
|--|--------------------|
| K14: The isolation period for infected people and people exposed to whom infected with COVID-19 is 14 days (according to the guidance of the Ministry of Health) (Y) | 622 (85.3)         |
| <b>Good knowledge (total score <math>\geq 11</math>)</b>   | <b>410 (56.2%)</b> |

### 3.2.2. COVID-19 prevention attitudes of the study sample

About students' practices to prevent COVID-19 infection was presented in Table 4. Overall, 94.2% of students had good practices with preventive measures such as wearing a mask (>95%), washing hands frequently (95.7%), obeying the social distance measures of the government and the Ministry of Health (>98%). However, there were still many students who have not used ATMs well (51.6%) and have not restricted the use of elevators (37.2%).

**Table 4.** Student practices on COVID-19 prevention

| Question (Right answer)   | N (%)              |
|---|--------------------|
| P1: I have/are avoiding seeing my friends and relatives   | 520 (71.3)         |
| P2: I have/are avoiding going to crowded places   | 649 (89)           |
| P3: I'm avoiding ATMs   | 376 (51.6)         |
| P4: I was/was walking the stairs then using the elevator  | 271 (37.2)         |
| P5: I have/am using a mask when leaving the house   | 719 (98.6)         |
| P6: I often use alcohol or soap to wash my hands  | 689 (95.7)         |
| P7: I usually wear a mask when in contact with others   | 721 (98.9)         |
| P8: I usually wear a mask to cover my mouth and nose  | 713 (97.8)         |
| P9: I comply with the "social distancing" adjustment according to the guidance of the Government and the Ministry of Health | 719 (98.6)         |
| P10: I follow the instructions of the Ministry of Health if unfortunately, I am suspected of being infected with COVID-19   | 716 (98.2)         |
| <b>Good practices (total score <math>\geq 15</math>)</b>  | <b>687 (94.2%)</b> |

### 3.3. The factors influencing the good practices of the study sample

Table 5 presented the results of the analysis of factors related to medical students' practices on the prevention of SARS-CoV-2 infection. The results showed that FCV-19S, gender, information sources from the Ministry of Health website, knowledge and attitudes were related to practices.

**Table 5.** Univariate analysis results of factors related to good practices

| Variable                |           | COVID-19 prevention Practices |                          | p    |
|-------------------------|-----------|-------------------------------|--------------------------|------|
|                         |           | Good, n (%):<br>687 (94.2%)   | Bad, n (%):<br>42 (5.8%) |      |
| Age (Mean $\pm$ SD)     |           | 22.6 $\pm$ 1.32               | 22.31 $\pm$ 1.29         | 0.11 |
| FCV-19S (Mean $\pm$ SD) |           | 20.15 $\pm$ 5.05              | 17.77 $\pm$ 5.33         | 0.03 |
| Gender                  | Male      | 291 (92.4%)                   | 24 (7.6%)                | 0.04 |
|                         | Female    | 397 (95.9%)                   | 17 (4.15%)               |      |
| Students                | 4th-year  | 251 (92.3%)                   | 21 (77%)                 | 0.05 |
|                         | 6th-year  | 436 (95.6%)                   | 20 (4.4%)                |      |
| Currently live (with)   | Family    | 156 (96.3%)                   | 6 (3.7%)                 | 0.18 |
|                         | Relatives | 25 (86.2%)                    | 4 (13.8%)                |      |

| Variable           |                   | COVID-19 prevention Practices |                          | p      |
|--------------------|-------------------|-------------------------------|--------------------------|--------|
|                    |                   | Good, n (%):<br>687 (94.2%)   | Bad, n (%):<br>42 (5.8%) |        |
|                    | Friend            | 128 (94.1%)                   | 8 (5.9%)                 |        |
|                    | Alone             | 379 (94.3%)                   | 23 (5.7%)                |        |
| Information source | Communications    | 672 (94.4%)                   | 40 (5.6%)                | 0.63   |
|                    | Family/Relatives  | 309 (94.2%)                   | 19 (5.8%)                | 0.85   |
|                    | Training courses  | 561 (94.8%)                   | 31 (5.2%)                | 0.34   |
|                    | Websites          | 570 (95.2%)                   | 29 (4.8%)                | 0.04   |
|                    | Local governments | 688 (94.4%)                   | 41 (5.6%)                | 0.63   |
| Knowledge          | Good              | 397 (96.8%)                   | 13 (3.2%)                | 0.001  |
|                    | Bad               | 291 (91.2%)                   | 28 (8.8%)                |        |
| Attitudes          | Positive          | 677 (95.2%)                   | 34 (4.8%)                | <0.001 |
|                    | Negative          | 11 (61.1%)                    | 7 (38.9%)                |        |

Table 6 presented a multivariable regression analysis for factors related to medical students' practices on prevention of SARS-CoV-2 infection. We found that there were only 2 factors related to good practices, which were good sufficient knowledge and positive attitudes (p <0.05).

**Table 6.** Results of multivariate analysis of factors related to good practices

| Variable                         |              | COVID-19 prevention Practices |                          | Adjusted OR        | p     |
|----------------------------------|--------------|-------------------------------|--------------------------|--------------------|-------|
|                                  |              | Good, n (%):<br>687 (94.2%)   | Bad, n (%):<br>42 (5.8%) |                    |       |
| Knowledge                        | Sufficient   | 397 (96.8%)                   | 13 (3.2%)                | 2,4<br>(1.18-4.8)  | 0.01  |
|                                  | Insufficient | 291 (91.2%)                   | 28 (8.8%)                |                    |       |
| Attitudes                        | Positive     | 677 (95.2%)                   | 34 (4.8%)                | 7,2<br>(2.5-21.9)  | 0.001 |
|                                  | Negative     | 11 (61.1%)                    | 7 (38.9%)                |                    |       |
| Gender                           | Male         | 291 (92.4%)                   | 24 (7.6%)                | 1,5<br>(0.76-2.95) | 0.23  |
|                                  | Female       | 397 (95.9%)                   | 17 (4.1%)                |                    |       |
| Information source from websites |              | 570 (95.2%)                   | 29 (4.8%)                | 1,7<br>(0.84-3.65) | 0.13  |
| FCV-19S                          | ≥ 19         | 463 (95.7%)                   | 21 (4.3%)                | 1,7<br>(0.89-3.37) | 0.1   |
|                                  | <19          | 225 (91.8%)                   | 20 (8.2%)                |                    |       |

Students with sufficient knowledge and positive attitudes performed 2.4 times better than students with insufficient knowledge and negative attitudes (95% confidence interval: 1.18-4.8) and 7.2 times (95% confidence interval: 2.5-21.9), respectively.

## IV. DISCUSSION

### 4.1. Study sample characteristics

According to the results of Table 1, in addition to the means of communications (TV, newspaper, radio, etc.), the information provided by university with prevention instructions, such as wearing a mask, washing hands, cleaning surfaces and keeping a distance from others helped improve students' knowledge. This result was similar to that of other authors in Vietnam. Research by Pham Le An et., the majority of information about COVID-19 received by students was from social networks (85.6%), websites of the Ministry of Health (82.8%), from university training manuals (76.99%) [8]. According to Truong Quang Tien and colleagues' research in Dak Lak, more than 80% of health workers received information about COVID-19 from television, newspapers, radio, and the Ministry of Health's website [9]. It also meant that the school has contributed to providing enhanced

knowledge, attitudes and practices for all students to prevent the potential spread of COVID-19. Most of the 729 students were females and in the final year, so they had had time to practices at the hospital. In general, most students had high knowledge, positive attitudes and good practices, but some core knowledge needed to be improved. This result was also consistent with many other studies, both in Vietnam and other countries.

## **4.2. Knowledge, attitudes, and practices of COVID-19 prevention**

### **4.2.1. COVID-19 prevention knowledge of the study sample**

Regarding knowledge of COVID-19, most of them already had enough knowledge. In a study conducted by Truong Quang Tien and his colleagues in Dak Lak, 91.3% of workers had good knowledge of COVID-19 prevention measures [9]. Research by Pham Le An et al found that the percentage of students with good knowledge was moderately high (86.6%) [8]. According to Noreen et al study, 71.7% of medical students in Pakistan had good knowledge about COVID-19 prevention [7]. This difference could be explained by the fact that we chose the cut-off of good knowledge, as students correctly answered 75% of the total questions, whereas the previous studies all used the 50% cut-off. The difference could also be due to the fact that our research subjects were medical students, whereas Truong Quang Tien's study subjects were the medical staff. Only 49.8% of students knew that social distancing was a measure to prevent the spread of COVID-19. Surprisingly, only 30.3% were aware that traveling by plane increases the risk of contracting COVID-19. This finding was consistent with the findings of Mohsin et al, who found a lack of knowledge about the disease's transmission mode among students (only 30% had correct understanding) [5]. As a result, one of the most important jobs in preventing COVID-19 infection is to educate students about the issues of social distancing and the increased risk of COVID-19 infection when flying.

### **4.2.2. COVID-19 prevention attitudes of the study sample**

In this study, approximately 95.2% had a positive attitudes. This result was higher than the previous similar study by Pham Le An, only 68.8% of the students had positive attitudes [8]. The majority of students in our study had positive attitudes in compliance with disease prevention measures, such as preventive measures (98.5%), acceptance of safety measures in controlling the spread of disease (98.2%), acceptance of isolation if infected with COVID-19 (96.2%), and awareness of the importance of infection control programs, all important to reduce the number of cases (93.8%). These findings showed that they had a positive attitudes towards the preventive measures introduced by the Ministry of Health to control the spread of the virus.

### **4.2.3. COVID-19 prevention practices of the study sample**

The results of this study showed that most students have a good level of practices, with 7 correct answers reaching over 90%. This result was higher than the previous study of Huynh Giao et al., but similar to the study of Pham Le An et al., showing that most students wear masks and wash their hands frequently with hand sanitizer. In a study by Huynh Giao et al, it was found that only 41% of 551 health science students had good practices in preventing the spread of COVID-19 in the early stages and 50.5% of students did not wash their hands properly enough (at least 20 seconds) [4]. In the study of Pham Le An et al., for all practical measures, students answered >90% such as frequent hand washing (94.6%), hand washing with hand sanitizer and alcohol (94.3%), hand washing for at least 20 seconds (96.5%), wearing a mask (98.4%), wearing a mask properly covering both

mouth and nose (90.1%) [8]. This demonstrated that students' practices has grown over time. Our results were similar to that of Noreen et al, 95.4% of medical students in Pakistan had good practices on COVID-19 prevention measures [7].

#### 4.3. The factors influencing the good practices of the study sample

High FCV-19S and females were frequently associated with better infection prevention practices than low FCV-19S and males ( $p=0.03$  and  $0.04$ , respectively). This finding was similar to the findings of Nguyen T. Hiep et al., who discovered that the higher the FCV-19S score, the more it was related to medical students' understanding of health and health-related behaviors [6]. This could also explain why students with high FCV-19S scores had higher rates of good practices in COVID-19 infection prevention than students with low FCV-19S scores. Furthermore, this study indicated that knowledge and attitudes had a significant relationship with good practices (OR 2.4 and 7.2, respectively). Research by Al-Rawajfah et al. in Oman showed the importance of knowledge, attitudes and good preventive practices for patient protection and public safety [2]. According to Pham Le An et al.'s research, students with sufficient knowledge and positive attitudes towards COVID-19 performed 4.4 times and 4 times, respectively, more likely to practice well than those with insufficient knowledge [8]. Therefore, medical students should continue to improve their knowledge and attitudes, which play an important role in the fight against this pandemic.

## V. CONCLUSIONS

The findings of the study revealed that medical students at Can Tho University of Medicine and Pharmacy had positive attitudes (97.5%) and good preventive practices (94.2%) toward COVID-19 prevention; however, sufficient knowledge about COVID-19 prevention was lacking (56.2%). Furthermore, this study also found that high FCV-19S, females, sufficient knowledge, and positive attitudes had a significant relationship with good practices.

## REFERENCES

1. Ministry of Health (2021), " *Portal of the Ministry of Health on the COVID-19 pandemic: COVID-19 Bulletin*", accessed on October 27, 2021 at page <http://ncov.moh.gov.vn>.
2. Al-Rawajfah O. M., Al-Mugeed K. A., Alaloul F., et al. (2021), "COVID-19 knowledge, attitudes, and precautionary practices among health professional students in Oman", *Nurse Educ Pract*, 52, pp. 103041.
3. Huynh Giao, Nguyen Thi Ngoc Han, Tran Van Khanh, et al. (2020), "Knowledge and attitudes toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City", *Asian Pacific Journal of Tropical Medicine*, 13(6), pp. 260-265.
4. Huynh Giao, Pham Le An, Nguyen Truong Vien, et al. (2020), "Factors relating to preventive practices of health science students during the early stage of the COVID-19 pandemic", *MedPharmRes*, 4(4), pp. 27-32.
5. Mohsin S. F., Agwan M. A., Alsuwaydani Z. A. (2021), "Knowledge towards COVID-19 among healthcare students in the central region of Saudi Arabia: a cross-sectional observational study", *Postgrad Med J*, 97(1149), pp. 448-451.
6. Nguyen T. Hiep, Do N. Binh, Pham M. Khue, et al. (2020), "Fear of COVID-19 Scale—Associations of Its Scores with Health Literacy and Health-Related Behaviors among Medical Students", *International Journal of Environmental Research and Public Health*, 17(11), pp. 4164.

7. Noreen K., Rubab Z. E., Umar M., *et al.* (2020), "Knowledge, attitudes, and practices against the growing threat of COVID-19 among medical students of Pakistan", *PLoS One*, 15(12), pp. e0243696.
8. Pham Le An, Huynh Giao, Nguyen Thi Ngoc Han, *et al.* (2021), "Knowledge, Attitudes, and Practices Towards COVID-19 Among Healthcare Students in Vietnam", *Infect Drug Resist*, 14, pp. 3405-3413.
9. Truong Quang Tien, Tran Thi Tuyet-Hanh, Tran Nu Quy Linh, *et al.* (2021), "Knowledge, Attitudes, and Practices Regarding COVID-19 prevention among Vietnamese Healthcare Workers in 2020", *Health Serv Insights*, 14, pp. 11786329211019225.
10. World Health Organization (2021), "*WHO Coronavirus (COVID-19) dashboard*", accessed on October 27, 2021 at page <https://covid19.who.int/>.

(Received: 25/01/2022 – Accepted: 14/03/2022)

---