

***Knowledge and Attitudes of the Students of Mazandaran University
of Medical Sciences Towards COVID-19 in 2020***

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Abstract

Background: The COVID-19 pandemic has become a great threat to public health and affected the study and lives of undergraduate students in Iran.

Objectives: The current study aimed to investigate the knowledge and attitude of students towards COVID-19 at Mazandaran University of Medical Sciences.

Methods: This descriptive correlational study was conducted on 151 students of Mazandaran University of Medical Sciences from July 8 to July 14 in 2020. Convenience sampling was conducted based on the census method after completing and signing a consent form. The data were collected using an online questionnaire and analyzed by SPSS 16 software and the statistical tests of Mann-Whitney, Kruskal-Wallis, and Pearson correlation. ($P\text{-value} \leq 0.05$).

Results: The total mean scores of the students' knowledge and attitudes towards COVID-19 were 80.26 ± 5.02 and 16.05 ± 1.65 , respectively. A positive and significant relationship was found between the students' total scores of attitude and knowledge towards COVID-19 ($r=0.35$, $P<0.05$). The total score of knowledge was significantly associated with the field of study ($P=0.004$), employment in medical centers ($P=0.004$), and voluntarily working during the pandemic ($P=0.039$).

Conclusion: The present findings indicated that the students were equipped with the right knowledge and attitude towards the COVID-19 pandemic. Since this disease is new, and authentic academic centers come up with daily updates on relevant information about the prevention, treatment, symptoms, and transmission of the disease, health policymakers and the directors of training centers are recommended to make continuous efforts to promote and upgrade medical sciences students' information about the disease.

Keywords: knowledge, attitude, students, COVID-19

Introduction

Coronaviruses are important pathogens in humans and animals [1]. Since the emergence of the acute respiratory syndrome (SARS-COV) and middle-east respiratory syndrome (MERS-COV), coronaviruses have long been identified as serious threats to human health [1-3]. In late 2019, a new coronavirus was detected as the culprit of a group of pneumonia cases in Wuhan City, Hubei Province, China [2,4-5]. Soon, the virus led to a rapidly spreading epidemic around the world [5,6]. Following the outbreak of the virus across

cities and provinces throughout China, it then appeared in some parts outside China, including South Korea, Italy, Iran, and Japan [1]. As the world health organization (WHO) reported, as of May 20, 2020, the highest incidence has been related to the United States, Russia, the United Kingdom, Brazil, Spain, Italy, Germany, Turkey, France, Iran, India, and South American countries, respectively [7].

In Iran, the first case was identified in Qom city on 19 February 2020. The number of the patients contracting the coronavirus in Iran reached

124,603 by May 20, 2020, and the number of deaths was announced as 7,119 [8]. At the moment, to prevent the spread of the virus and to spare time to develop the due vaccines and drugs, as recommended by the WHO, the best primary strategy is to timely diagnose and isolate infected symptomatic individuals and subsequently consider public interventions and recommendations to avert the virus's propagation [9].

Medical personnel and medical students have always been exposed to the risk of infectious diseases, so it is essential for them to be aware of the fact that COVID-19 can be probably transmitted even from symptom-free individuals, which raises the risk of its huge and sudden outbreaks [10-13]. The COVID-19 pandemic has affected all people, including students [14]. So, students' not possessing appropriate relevant knowledge about the disease can exaggerate the outbreak, increasing students' stress and anxiety and disintegrating their judgment. In a study in China, students' knowledge and attitudes about the COVID-19 disease have been favorable [15]. In a survey in India, over 70% of the students studied had adequate knowledge about COVID-19 symptoms, as well as its transmission manners and preventive measures, and 66% have been aware of its relevant medical practices [14]. According to a research carried out in Iran on medical students, high levels of COVID-19 associated knowledge and self-reported preventive behaviors and average risk perception were reported [13].

Since we are tackling a newborn disease, medical students' having appropriate knowledge and attitudes towards the disease is critical regarding their direct involvement in providing care to COVID-19 sufferers. This is also essential to prevent students from being afflicted with the virus and transmitting it to others. On the other hand, information about this disease becomes constantly updated. Medical students' knowledge about the disease and their preventive behaviors are significant as they can be role models for other groups of the society amid this pandemic. Thus, this study aimed to investigate the knowledge and attitudes of the students of Mazandaran University of Medical Sciences towards COVID-19.

Methods

This descriptive correlational study was performed on the students of Mazandaran University of Medical Sciences from July 8 to July 14 in 2020. Convenience sampling was conducted using the census method after completing a consent form by the participants.

The data was collected using a researcher-made questionnaire. The initial version of the tool was compiled after comprehensively reviewing the studies related to the research subject, the instructions of the Ministry of Health, the protocol (sixth edition) for the diagnosis and treatment of the COVID-19 disease, and experts' opinions. After preparing the questionnaire and confirming its reliability and validity, the final version of the questionnaire was prepared and provided to the students online.

The online data collection tool automatically allowed each person to fill the questionnaire once. The questionnaire was organized in two parts: section A including demographic information (gender, marital status, the field of study, and semester, as well as four questions about experiences with COVID-19) and section B addressing the students' knowledge and attitudes towards the COVID-19 disease. Questions 1 to 5 were related to knowledge about the transmission routes and preventive measures of the disease, questions 6 to 11 addressed knowledge about COVID-19 symptoms, questions 12 and 13 were about knowledge regarding at-risk groups amid the pandemic, questions 14 and 15 covered knowledge about the disease's course, questions 16 to 21 asked about the medicines used for managing COVID-19, questions 22 to 28 encompassed care provision protocols and how to manage COVID-19 patients, questions 29 to 32 were about the awareness of triage during the COVID-19 pandemic, questions 33 and 34 addressed knowledge about sampling in patients with COVID-19 and suspected individuals, and finally, questions 35 to 40 scrutinized the students' attitudes towards COVID-19.

The answers were scored on a 3-option Likert scale (I agree=3, I do not know=2, I disagree=1). A higher score for each question indicated more knowledge and a better attitude. Each question had a minimum score of 1 and a maximum score of 3, giving the total maximum and minimum knowledge scores (questions 1-34) of 102 and 34,

respectively. Regarding attitude towards COVID-19 (questions 35-40), the maximum score was 18, indicating favorable and positive attitudes, and the minimum score was 6, denoting wrong and negative attitudes.

The face validity of the tool was determined both quantitatively (via calculating the item impact score) and qualitatively (via adjusting the instrument's appearance with the study's objectives by consulting with 10 nursing experts). In addition, the tool's content validity was evaluated by calculating the content validity index (CVI) and content validity ratio (CVR) and consulting with the expert group (CVI = 0.90 and CVR >0.62) to ensure that its content represents the structure claimed to be analyzed. To confirm the internal reliability by Cronbach's alpha and split-halves methods, the participants were divided into two groups. The alpha coefficients of the questionnaire's total score were 0.71 and 0.73 in the first and second groups, respectively.

After collecting the data, they were entered to an excel file for a primary inferential processing. Data analysis was performed by SPSS 22 software. Before conducting statistical tests, the normalization of the calculated score was assessed by the Kolmogorov-Smirnov test. The Mann-Whitney and Kruskal-Wallis tests were employed to compare the mean values of the variables.

Pearson correlation was used to ascertain correlations between each two variables. A P value of <0.05 was considered statistically significant.

Results

A total of 247 students viewed the uploaded questionnaire, and 151 questionnaires were completed, of which 64 (42.4 %) were related to men, and 87 (57.6 %) were filled by women. Twelve (8%) of the participants were married. Most of the participants were studying nursing (32.7%) and medicine (23.3%). Nineteen (12.6%) of the participants were working as a volunteer during the COVID-19 pandemic, and 14 (9.3%) of them had the experience of providing home-based care to COVID-19 patients.

Overall, 21 (14%) of the participants answered yes to the question asking "if they had previously contracted the coronavirus". Regarding the questions addressing knowledge about the transmission ways and preventive measures of COVID-19, the average of providing correct answers by the students was 90.4%. Regarding the students' attitudes towards the disease, 42% of them stated that they would provide care to patients with COVID-19. The participants' knowledge and attitudes regarding a number of the queries asked have been shown in Table 1.

Table 1: The Knowledge and Attitudes of the Participants for Some of the Questions Asked

| Knowledge about | True percent | Attitude towards | Positive percent |
|--|--------------|--|------------------|
| Transmission ways and preventive ways | 90.4 | Taking care of patients | 42 |
| The most important way of transmission | 89 | Raising knowledge by reading authoritative scientific articles | 86 |
| Symptoms of COVID-19 | 67.1 | Not recommending hospitalization if their own family members have mild COVID-19 | 78 |
| The most important symptoms | 97 | Informing the people who were in contact with them within the past two weeks if they become infected | 84 |
| High-risk groups | 79 | Recommending infected people to be quarantined in a well-ventilated room | 91 |
| The period of COVID-19 | 58 | Updating information and following WHO recommendations | 81 |
| The drugs used and their interactions and side effects | 26 | | |
| Managing and providing care to patients | 33.8 | | |
| Triage | 65.5 | | |
| Sampling methods | 9 | | |

The total minimum and maximum knowledge scores were 69 and 100, respectively. The mean total knowledge score was 80.26 ± 5.02 , indicating

that the students had good and sufficient levels of knowledge. The mean scores of the subscales of the questionnaire have been noted in Table 2. The

total minimum and maximum attitude scores were 11 and 18, respectively, and the mean score was 16.05 ± 1.65 , indicating that the students had

positive and favorable attitudes towards COVID-19.

Table 2: The Means and SDs of Knowledge (Total and Sub-scales) and Attitude Scores

| Items | Sub-scales | Mean | SD |
|-----------|-----------------------------------|-------|------|
| Knowledge | Total | 80.26 | 5.02 |
| | Disease prevention | 14.30 | 1.02 |
| | Disease symptoms | 15.47 | 1.49 |
| | At-risk groups | 5.51 | 0.65 |
| | Disease course | 4.62 | 1.02 |
| | The drugs used | 12.22 | 1.18 |
| | Disease managing and patient care | 14.46 | 2.32 |
| | Triage during the disease | 10.52 | 1.48 |
| | Sampling methods | 3.19 | 1.65 |
| Attitude | Total | 16.05 | 1.65 |

The Kolmogorov-Smirnov test suggested that none of the variables had a normal distribution. Thus, non-parametric tests were employed for statistical analysis. A spearman correlation

coefficient of $r=0.35$ ($P<0.001$) was obtained between the knowledge and attitude scores, indicating that an increase in knowledge would improve attitude towards the disease (Table 3)

Table 3: Relationships Between the Studied Variables and the Students' Scores of Knowledge and Attitude Towards COVID-19

| Variables | | N (%) | Knowledge score | | Attitude score | |
|--|---------------------------|-----------|-----------------|--------------------|----------------|--------------------|
| | | | Mean | P-value | Mean | P-value |
| Gender | Man | 64(42.4) | 80.27 | 0.935 ^a | 16.13 | 0.450 ^a |
| | Woman | 87(57.6) | 80.25 | | 15.94 | |
| Marital status | Single | 138(92) | 80.20 | 0.363 ^a | 16.04 | 0.650 ^a |
| | Married | 12(8) | 81.33 | | 16.33 | |
| Field of study | Nursing | 49 (32.7) | 82.57 | 0.004 ^b | 16.55 | 0.104 ^b |
| | Medicine | 35 (23.3) | 79.31 | | 16.06 | |
| | Midwifery | 9(6) | 80.89 | | 16.11 | |
| | Operation room technician | 5 (3.3) | 79.20 | | 16.00 | |
| | Pharmacy | 9(6) | 81.67 | | 15.33 | |
| | Dentistry | 5(3.3) | 75.60 | | 15.20 | |
| | Other | 38(25.4) | 78.58 | | 15.200 | |
| | | | | | | |
| Employment at medical centers | Yes | 30(20) | 82.43 | 0.004 ^a | 16.07 | 0.841 ^a |
| | No | 121(80) | 79.72 | | 16.04 | |
| Working as a volunteer during COVID-19 | Yes | 19(12.6) | 82.42 | 0.039 ^a | 16.26 | 0.608 ^a |
| | No | 132(87.4) | 79.95 | | 16.04 | |
| Home-based patient care experience | Yes | 14(9.3) | 79.14 | 0.508 ^a | 16.07 | 0.711 ^a |
| | No | 137(907) | 80.37 | | 16.04 | |
| Contact with COVID-19 patients | Yes | 21(14) | 80.67 | 0.588 ^a | 16.19 | 0.638 ^a |
| | No | 130(86) | 80.19 | | 16.02 | |

a: Mann-Whitney test, b: Kruskal-Wallis test

As seen in Table 3, knowledge score was significantly different comparing the students in terms of the field of study ($P=0.004$), and it was

higher in the students studying nursing, pharmacy, and midwifery compared to other students. Besides, knowledge score had a significant

relationship with the variables of working in medical centers ($P=0.004$) and working as a volunteer during the COVID-19 pandemic ($P=0.004$). In this regard, the students working in medical centers and those volunteered to work in medical centers during the pandemic had higher knowledge scores. Other variables did not exhibit a meaningful relationship with the knowledge or attitude score

Discussion

The present study aimed to investigate the knowledge and attitudes of the students studying different disciplines in Mazandaran University of Medical Sciences towards COVID-19. According to our results, the students had positive attitudes and sufficient knowledge about COVID-19. The score of knowledge was significantly associated with the field of study, employment at medical centers, and working as a volunteer during the COVID-19 pandemic.

Previous studies have revealed that students possess sufficient knowledge and positive attitudes towards COVID-19. In this research, the students' knowledge was sufficient, and their attitudes towards the disease were positive. There was also a significant positive correlation between the scores of attitude and knowledge so that an increase in the knowledge predicted a better attitude towards COVID-19. This result was consistent with the observations of several other reports on university students' knowledge and attitudes towards COVID-19 in Saudi Arabia, Pakistan, China, India, and Iran [13,15-18].

In the current study, no relationship was discovered between gender and knowledge. In a similar research performed in China, women had significantly better attitudes towards COVID-19 [15]. On the one hand, a research on the knowledge and performance of health care professionals in Punjab at the time of the COVID-19 pandemic described that men had significantly higher attitude scores towards preventive measures ($P=0.013$) [19].

Moreover, a meaningful relationship was found between the students' fields of study and their attitudes and knowledge so that nursing students had better knowledge and attitudes towards the COVID-19 disease. In a similar study conducted in one of the medical universities in Lahore, the levels of knowledge and awareness of nursing

students were high [17]. Likewise, in another study conducted in Punjab to examine the knowledge, awareness, and performance of health care professionals about COVID-19, knowledge, attitude, and performance scores were significantly high among physicians and nurses [20]. Our results revealed that the students working at medical care centers (employed or volunteer) had significantly higher knowledge scores. Accordingly, the medical students working closely with nurses in the role of health assistants to help them provide care for patients gain valuable experiences during this inter-professional cooperation, which can help them acquire practical perceptions on various roles in the hospital setting and how to provide care for patients [21]. Therefore, due to the unprecedented pressures imposed on health care systems amid the COVID-19 pandemic, it is recommended to provide the opportunity for medical students to be volunteered and help medical teams in hospitals. In the present research, 97% of the participants identified dry cough, shortness of breath, and fever as the most prevalent symptoms of COVID-19. Similar results were achieved in the studies conducted in Saudi Arabia (68.6%) and Punjab (India) (54.8%) (16, 19).

In this research, 99% of the participants identified the elderly, pregnant women, individuals with underlying cardiovascular diseases, and those undergoing chemotherapy as at-risk groups for contracting the COVID-19 disease. In a similar study in India, this rate was reported to be 33% [22]. In the present study, the participants stated that in case of being infected with the virus, they would inform the people who had been in contact with them during the last two weeks, which was consistent with the results of a similar study conducted on medical students in Jordan. In the present study, only 15.3% of the participants said that in the case of being infected with the virus, they would not divulge the issue [23].

The strength of this study was that it was the first report on the knowledge and attitude towards the COVID-19 disease among the students of Mazandaran University of Medical Sciences. Although our results indicated acceptable levels of knowledge and positive attitudes among the students, our small sample size was another important limitation of the present study. For this reason, we could not generalize the results to all

medical students in the country, and it is recommended to perform further studies on larger statistical populations in other Iran's universities.

Conclusion

According to the results of the current study, medical students possessed sufficient knowledge and favorable attitudes towards COVID-19. There was a statistically significant relationship between the knowledge score and working in medical centers as a volunteer at the time of the COVID-19 pandemic. It seems that students being volunteers can be a viable alternative for training them during the COVID-19 crisis. Volunteer students can satisfy the requirements of hospitals and society, and in this way, they become familiar with humanitarian activities as well. Since the disease is a newly-emerged condition, and fresh information are daily published in reputable scientific centers about its prevention, treatment, symptoms, and transmission routes, health policymakers and the directors of training hospitals are recommended to make continuous efforts to promote medical students' information to protect them from contracting the virus.

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Conflict of interest

There is no conflict of interest.

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