

# Knowledge, Attitude, and Practice of Jordanian Nursing and Pharmacy Students towards COVID-19: A Cross Sectional Study

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**Running Head:** Knowledge, Attitude, and Practice towards COVID- 19

**Abstract:** ***Background:** COVID-19 is considered as one of the most widespread pandemics worldwide. Different preventive and control measures have been implemented in whole over the world to counteract, control, and manage outbreak of this pandemic. **Purpose:** to assess knowledge, attitude, and practice of Jordanian nursing and pharmacy students toward COVID-19. **Method:** A cross-sectional descriptive design was used. Three hundred eighty-two participants from Jordanian Universities were included in this study. **Results:** More than 57% of the participants agreed that COVID-19 will finally be successfully controlled. Approximately 81.4% had confidence that Jordan can defeat COVID-19. Approximately 67 % of the participants had not visited any crowded place, and 79.8% wore masks when going out in recent days. **Conclusion:** The findings of the current study suggested that nursing and pharmacy students had adequate level of knowledge, positive attitudes, and good practices towards COVID-19. In addition, the positive attitudes are relatively associated with a good knowledge regarding COVID-19, which on other hand associated with appropriate practices towards COVID-19.*

**Keywords:** COVID-19, Corona Virus, Jordan, University Students, Attitudes

## 1. Introduction

Corona viruses are a group of enveloped and single- stranded RNA viruses with a glycoprotein spike on their surfaces. These viruses can invade the respiratory tract and cause infectious respiratory airway diseases with symptoms which might range from mild to severe [1]. In December 2019, the outbreak of the COVID-19 epidemic has begun in Wuhan, one of the largest cities in China, and then it was declared by World Health Organization (WHO, 2020) as a pandemic, due to the marked spread of COVID-19 in many countries over the world [2-4]. Estimates of WHO (2020) statistics suggested that more than 8.3 million cases were confirmed and more than 450 thousand deaths were recorded in the last third of June, 2020 [2].

It has been found that COVID- 19 is characterized by its rapid transmission from infected persons to their close contacts. The literature revealed that the primary route of COVID-19 transmission between people is through the contact with respiratory droplets of the infected person which might induced through sneezing, coughing, etc[4]. The incubation period for COVID-19 has been found to range from 2-14 days. Although it has been found the COVID-19 patients were accompanied with several signs and symptoms,

the most common reported symptoms were fever, dry cough, and tiredness[2,5,6]. Reverse-transcriptase polymerase chain reaction (RT-PCR) assay was developed by CDC (2020) to be utilized as a diagnostic test for COVID-19[5,7]. Up to the date of present study, there were no definite or clinical approved antiviral drugs or vaccinations against COVID-19 [8]. Different preventive and control measures have been implemented in whole over the world to counteract, control, and manage outbreak of this pandemic. The adherence to these measures was found to be influenced by community's knowledge, practices, and attitudes toward COVID-19 [9,10]. However, there have been few studies were conducted to study knowledge, attitudes, and practices in the Jordanian community toward COVID-19, particularly university students. Accordingly, this study was conducted to assess knowledge, attitude, and practice of Jordanian nursing and pharmacy students toward COVID-19. The findings of this study may be helpful in identifying gaps, strengthening of the implemented preventive effort, and providing useful information to the policymakers to be used in controlling the outbreak of COVID-19.

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## 2. Study Methodology

### Design

A cross-sectional descriptive design was used. This design is appropriate because the intention is to describe the knowledge, attitude, and practice of nursing and pharmacy students toward COVID-19 [11].

### Study participants

Study participants were undergraduate nursing and pharmacy students from governmental and private universities in Jordan. Inclusion criteria were that all participants: 1) should be nursing and/or pharmacy students; 2) studying in Jordanian universities; and 3) are willing to participate in the current study. Students who were not living in Jordan at the time of data collection were excluded from the study. Ten Jordanian universities were selected conveniently, six governmental universities and four private, two universities from the capital city, and the other eight schools from six more cities. A total of 600 questionnaires were sent to eligible nursing and pharmacy students electronically via social media. The response rate was 64.2% (385 nursing and pharmacy students). Three hundred eighty-two questionnaires were considered for data analysis, and three questionnaires were excluded due to missing data.

### Instruments

The study variables were measured using a questionnaire consisting of two parts: the first part was developed by the researchers based on the literature. It included questions related to age, gender, marital status, study specialization, academic year, type of university, and city of residence. The second part included the Arabic version of a tool developed by Zhong and others (2020) to study knowledge, attitude, and practice toward COVID-19 [10]. The tool consists of 16 items. The knowledge part consisted of 12 questions to which each participant was asked to respond on the basis of true/false/I don't know. The attitude part had two items whose answers were based on the basis of agree/disagree/I don't know. Finally, the practice part consisted of two items to which participants were asked to respond on a yes/no basis.

After gaining approval from the authors to use the research tool, the researchers followed the World Health Organization guidelines (WHO, 2020) for translating the research instrument. A pilot study was conducted, with a sample of 25 nursing and pharmacy students to check the quality, adequacy, and appropriateness of the Arabic version of the tool, and demographic questionnaire. The respondents revealed that both parts of the questionnaire were easy to read, easy to comprehend, and needed an average of 10 minutes to be answered.

The researchers prepared an electronic questionnaire form through a specialized internet website (Google Forms), which enabled the potential participants to review and answer the questionnaires anytime and anywhere they want during data collection. The prepared questionnaire was embedded in an electronic attachment link. Each questionnaire started with

the consent form, which includes the study description and purpose, confidentiality guarantee, in addition to rights to participate, refuse, and withdraw from the study. After reviewing the consent form, each participant is asked to click "Next" to answer the questionnaire. After obtaining the approval of the Institutional Review Boards (IRBs) from the Jerash University and the targeted universities. The researchers contacted several faculty members from the participating university to assist in identifying potential student and getting their emails. Then the electronic link was sent to the students. The participants were asked to avoid writing their names and academic identification numbers on the questionnaires.

## 3. Results

### Participants' Characteristics and Experiences

A total of 382 Jordanian undergraduate healthcare students participated in this study. The majority of participants were nursing students (86.1%). Among the final sample, 239 (62.6%) were female, 321 (84%) aged between 19 – 29 years, and 321 (84%) were single. Additionally, about 55% of student participants were studying in governmental universities.

### Participants' knowledge scores of COVID-19

The correct answer rates of the 12 questions on the COVID-19 knowledge questionnaire were 48 - 97% (table 1). The mean COVID-19 knowledge score was 10.5 (SD: 1.3, range: 3-12), suggesting an overall 87.5% ( $10.5/12 \times 100$ ) correct rate on this knowledge questionnaire. Knowledge scores significantly differed only according to the study specialization, in which nursing students got significant higher scores than pharmacy students ( $P < 0.05$ ). The questions of "To prevent the infection by COVID-19, individuals should avoid going to crowded places such as bus stations" and "Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of corona" were answered correctly by 97% of participants. On the other hand, the question of "Eating or contacting wild animals would result in the infection by the COVID-19 virus" was answered correctly by only 48% of participants. Detailed COVID-19 knowledge score of all 12 questions were shown in table 1.

### Participants' Attitudes toward COVID-19

More than 57% of the participants agreed that COVID-19 will finally be successfully controlled (90.8%). Rates of reporting "disagree" and "I don't know" were 17% and 25.7%, respectively. The attitude towards the final success in controlling COVID-19 significantly differed only across the type of university, in which student participants from private universities had more optimistic view toward controlling COVID-19 in the future (see table 2). Approximately 81.4% had confidence that Jordan can defeat COVID-19, while 18.6% had no such confidence. There were no significant differences in the attitude towards confidence of winning the battle against corona according to any demographic variables.

**Table 1:** Correct Rates on the Questionnaire of knowledge of COVID-19

1	The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.	96%
2	Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus	66%
3	There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection	92%
4	Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases	94%
5	Eating or contacting wild animals would result in the infection by the COVID-19 virus	48%
6	Persons with COVID-2019 cannot infect the virus to others when a fever is not present	82%
7	The COVID-19 virus spreads via respiratory droplets of infected individuals	95%
8	Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus	88%
9	It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus	96%
10	To prevent the infection by COVID-19, individuals should avoid going to crowded places such as bus stations.	97%
11	Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	97%
12	People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days	96%

**Table 2:** Attitudes towards COVID-19 by demographic variables (n=382)

Demographic Variables		Attitudes, n (%)					
		A1: Final success in controlling			A2: confidence of winning		
		Agree	Disagree	Don't Know	Agree	Disagree	Don't Know
Gender	Male	89 (23.3)	27 (7.1)	27 (7.1)	117 (30.6)	9 (2.4)	17 (4.5)
	Female	130 (34)	38 (9.9)	71(18.6)	194 (50.8)	13 (3.4)	32 (8.4)
Age group	19-29	181 (47.4)	57 (14.9)	83 (21.7)	256 (67)	22 (5.8)	43 (11.3)
	30-39	30 (7.9)	6 (1.6)	14 (3.7)	45 (11.8)	0 (0)	5 (1.3)
	>40	8 (2.1)	2 (0.5)	1 (0.3)	10 (2.6)	0 (0)	1 (0.3)
Marital status	Single	177 (46.3)	59 (15.4)	72 (18.8)	252 (66)	18 (4.7)	38 (9.9)
	Married	36 (9.4)	6 (1.6)	26 (6.8)	53 (13.9)	4 (1)	11(2.9)
	Divorced	6 (1.6)	0 (0)	0 (0)	6 (1.6)	0 (0)	0 (0)
Study specialization	Nursing	185 (48.4)	60 (15.7)	84 (22)	265 (69.4)	21 (5.5)	43 (11.3)
	Pharmacy	34 (8.9)	5 (1.3)	14 (3.7)	46 (12)	1 (0.3)	6 (1.6)
Types of University	Governmental	105 (27.5)	48 (12.6)	57 (14.9)	158 (41.4)	18 (4.7)	34 (8.9)
	Private	114 (29.8)	17 (4.5)	41 (10.7) *	153 (40.1)	4 (1)	15 (3.9)

**Participants' Practices toward COVID-19**

Approximately 67 % of the participants had not visited any crowded place, and 79.8% wore masks when going out in recent days. The practice of avoiding visiting crowded places was differed significantly only based on gender variable (see table 3), in which female participants avoided visiting

crowded places than male participants (P < 0.05). The practice of wearing mask when getting out of the house was differed significantly based only on the study specialization (see table 3), in which nursing students tended to wear masks than pharmacy students (P < 0.05).

**Table 3:** Practices towards COVID-19 by demographic variables (n=382)

Demographic Variables		Practices, n (%)			
		A1: going to crowded places		A2: wearing masks	
		Yes	No	Yes	No
Gender	Male	60 (15.7)	83 (21.7)	120 (31.4)	23 (6)
	Female	68 (17.8)	171 (44.8) *	185 (48.4)	54 (14.1)
Age group	19-29	107 (28)	214 (56)	256 (67)	65 (17)
	30-39	19 (5)	31 (8.2)	38 (9.9)	12 (3.1)
	>40	2 (0.5)	9 (2.4)	11 (2.9)	0 (0)
Marital status	Single	108 (28.3)	200 (52.4)	243 (63.6)	65 (17)
	Married	19 (5)	49 (12.8)	57 (14.9)	11 (2.9)
	Divorced	1 (0.3)	5 (1.3)	5 (1.3)	1 (0.3)
Study specialization	Nursing	109 (28.5)	220 (57.6)	270 (70.7)	59 (15.4) *
	Pharmacy	19 (5)	34 (8.9)	35 (9.2)	18 (4.7)
Types of University	Governmental	79 (20.7)	131 (34.3)	166 (43.5)	44 (11.5)
	Private	49 (12.8)	123 (32.2)	139 (36.4)	33 (8.6)

\* P<0.05

#### 4. Discussion

The current study aimed to assess knowledge, attitude, and practice of Jordanian nursing and pharmacy students towards COVID-19. The overall correct rate of the knowledge score was found to be 87.5%, which indicating that most of the participants have adequate level of knowledge regarding COVID-19. This finding is consistent with the results of a study conducted by Taghrir, Borazjari and Shiraly (2020) study, in which they found that medical student's knowledge level about COVID-19, was adequate with an average knowledge score of about 87% [12]. Participant's adequate level of knowledge about COVID-19 might be attributed to COVID-19 awareness-raising campaigns conducted by global health organizations and Jordanian ministry of health through Internet and audiovisual media, in addition to the great efforts of the National Center for Security and Crises Management (NCSCM) in Jordan, which provided regular updated recommendations for fighting COVID-19 to the Jordanian population through official authorities [13-15]

The current study found that participants held positive attitudes towards COVID-19, as 81.4% of the participants had confidence in that Jordan can defeat COVID-19, and 57% of them agreed on that COVID-19 will finally be successfully controlled. This finding is consistent with a previous Chinese study [10]. Participants' positive attitude might be attributed to the preventive and control measures performed by Jordanian government to fight COVID-19, such as international travel restrictions, curfew commands, widespread COVID-19 screening procedures, and isolation of infected persons (Jordanian Ministry of Health, 2020). The impact of these governmental interventions was reflected in the current study, as that more than two-thirds of participants had not visited any crowded places and about 80% of them were wearing masks when going out in the recent days. Both the adequate level of knowledge about COVID-19, particularly those related to COVID-19 transmission issues, and governmental policies might explain the participants' adherence to these positive practices.

The current study found that participants' practices were significantly differed by gender and study specialization. Female participants were less likely to visit crowded places than males. This is inconsistent with findings of a previous study conducted by Hasan, Sobnom and Uzzaman (2019) who found that males are more likely to participate in risk taking behaviors. Furthermore, the current study revealed that nursing students were significantly more adhered to wearing mask than pharmacy students [16]. This is consistent with Malik et al. (2020) study [17]. This might be attributed to that nursing students were used to wear masks during their clinical training in hospital as they deal with clients and health care providers.

#### 5. Conclusion

The findings of the current study suggested that nursing and pharmacy students had adequate level of knowledge, positive

attitudes, and good practices towards COVID-19. In addition, the positive attitudes are relatively associated with a good knowledge regarding COVID-19, which on other hand associated with appropriate practices towards COVID-19. There is a strong need to hold health education programs and sessions associated with COVID-19 preventive practices in order to improve and raise knowledge among healthcare students and enhance their adherence with safe health practices. Due to the small sample size, more studies are needed to investigate the knowledge, attitudes, and practices of COVID-19 among large sample size and to assess the improvement in the newly scores of knowledge, attitudes, and practices of COVID-19 after health education programs.

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