Knowledge, Attitude, and Perception of COVID-19 among University Students: A Cross-Sectional Study

Ashraf Kan'an¹, Saddam F. Kanaan²

ABSTRACT

Objective: This study aimed to assess the level of Coronavirus Disease 2019 (COVID-19) knowledge and attitude among university students.

Design: A cross-sectional was conducted to collect the knowledge and attitude of university students about COVID-19. Currently registered undergraduate and postgraduate students from four independent universities in the northern part of Jordan were recruited.

Materials and Methods: Online questionnaire was sent to participants during April 2020. Data were analyzed using descriptive and inferential statistics using SPSS.

Results: Data from 1172 participants were analyzed: 31% were males and 60.8% were from scientific faculties. Students had a "poor" level of knowledge about the incubation period scale (32.2%) and COVID-19 symptoms (57.2%) and "excellent" level about practice of preventive behaviors scale (96.4%). There were significant differences between students from scientific faculties and students from other faculties, and students with higher academic achievement than lower achievement in the total COVID-19 knowledge. 61% of students reported that COVID-19 is very dangerous, while 72.4% of students believe that COVID-19 needs a specialist doctor for treatment. Most of the participants used the internet to obtain information about COVID-19 (79.50%).

Conclusion: These responses reflect the effect of health authorities’ campaigns to raise public knowledge about COVID-19. To make a government decision to return to campuses and return teaching to classrooms, students must have high knowledge of COVID-19.

KEY WORDS

COVID-19, knowledge, attitude, university students

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) is posing stress on people’s health worldwide. This viral infection was discovered in Wuhan China, and then it starts to spread rapidly which cause the outbreak (Khader et al., 2020). The viral infection is rapidly transmitted from human to other through respiratory droplets, contaminated surfaces, or direct contact with an infected person (Hu et al., 2020).

According to the WHO, the virus is now a pandemic affecting 210 countries. As of April 13, 2020, more than 1,912,438 cases were reported worldwide, including 118,683 deaths. In Jordan, 389 cases were reported including 7 deaths (Health Ministry of Jordan, 2020). Until now there is no viral vaccine or specific antiviral drug that has been reported effective for COVID-19 (Taghirir et al., 2020). The control of the COVID-19 infection source is the current recommended approach for infection control to decrease the transmission rate of the disease. (Hu et al., 2020).

The level of knowledge among people and their attitude is necessary for controlling the pandemic improves their prevention. The knowledge about infectious disease will increase by the rapid spread of the disease and the increasing rate of deaths (World Health Organization, 2020 march 11). Therefore, this study aims to assess COVID-19 knowledge among university students in northern Jordan to design and recommend protective measures. This will give an indicator of the effectiveness of government policies in the confrontation of this disease.

The main symptoms of COVID-19 are cough, fever, acute and malaise respiratory distress syndrome in some patients that may cause death, and its incubation period 2-14 days (Huang, 2020). There are practical recommendations to people by the Center for Disease Control and Prevention (CDC) and the World Health Organization (WHO) to control the spread of COVID-19. These recommendations include hand wash, avoid touching eyes, nose, and mouth, avoid close contact, covering mouth and nose when around others, covering coughs and sneezes, and cleaning and disinfect frequently touched surfaces daily (The Center for Disease Control and Prevention, 2020).

To control the outbreak of the disease, it is important to understand public knowledge and attitude toward COVID-19. A different cohort of the public has different knowledge and attitude, therefore assessment of each cohort group deemed necessary to design educational measures specific for each cohort.

There is limited research studied COVID-19 knowledge among the general population (i.e. Khader et al., 2020; Hu et al., 2020; Roy et al., 2020; Wolf et al., 2020; Shi et al., 2020; Giao et al., 2020; Abdelhafiz et al., 2020; Mohd Hanafiah & Wan, 2020; Olapegba et al., 2020; Mannan & Mannan, 2020; Saqlain et al., 2020; Harya, 2020; Tomar et al.,

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1) Department of Class Teachers, Irbid National University
Irbid, Jordan
2) Department of Rehabilitation Science, Jordan University of Science and Technology
Irbid, Jordan
Correspondence to: Ashraf Kan'an
(e-mail: kanaan_ashraf@yahoo.com)
2020; Lin et al., 2020; Austrian, et al.), with scarce studies focused on university students (Wadood et al., 2020; Alzoubi et al., 2020; Modi et al., 2020; Sallam et al., 2020; Srichan et al., 2020; Peng et al., 2020). Our research aimed to fill that research gap. Therefore, the main aim of the study was to explore the level of COVID-19 knowledge among university students and their attitude toward this pandemic. The second aim of the study was to examine the difference in knowledge between students according to their gender and their study major. This study also explored sources of student knowledge that could be utilized to raise knowledge about COVID-19. The study will give valuable feedback for the health-care and university administrations to determine the strengths and gaps in their campaign to prevent the spread of the disease.

**METHODOLOGY**

This was a cross-sectional study collected data recruited currently enrolled undergraduate and postgraduate university students in northern Jordan universities including Jordan University of Science and Technology (JUST), Yarmouk University (YU), Irbid National University (INU), and Jadara University (JU). The study was conducted during the last week of April 2020. Students were excluded from the sampling frame if they were already suffering from COVID-19 or have a family member suffering from COVID-19.

To collect the data, an online survey was designed on Google Forms. A face to face interview was not possible during data collection because of the locked-down and strict social isolation procedures in Jordan at that time. Convenience sampling was used and students were invited to participate in the study through their university emails. The target population was in the four universities was estimated to be 40000 students. Rasosoft sample size calculator was used to calculate the sample size. The required sample size was 381 students with a 5% margin of error and a 95% confidence level. To maintain the confidentiality of data and privacy, the surveys were anonymous. Ethical approval was obtained from the Deanship of Scientific Research at Irbid National University.

Questions of the survey were developed after reviewing pertinent literature (Khader et al., 2020; Taghir et al., 2020; Wadood et al., 2020; Alzoubi et al., 2020). The survey was designed in Arabic. The self-administered survey consisting of socio-demographic questions, and other questions based on students’ knowledge about COVID-19 incubation period, symptoms, transmission mode, and prevention infection control measures, and students perception of COVID-19 dangerous, attitude toward treatment of patients with COVID-19 and students knowledge source about COVID-19.

The first three scales represent total knowledge of COVID-19 (knowledge about COVID-19 incubation period, knowledge about COVID-19 symptoms and practice of preventive behaviors). According to experts’ estimation of the level of total students’ knowledge were assessed by categorizing the students’ respondents into four categorize: (1) “excellent” category consisted of those who correctly answered 86-100% of the questions, (2) “very good” category consisted of those who correctly answered 73-85% and the (3) “good” category consisted of those who correctly answered 60 2%, while the (4) “poor” category consisted of those who correctly answered less than 60% of the questions. Also, every “yes answer was scored 1 and every “no” answer was scored 0.

Two faculty members who have experience in survey design and two faculty members from pharmacy faculty reviewed the survey. Also, ten students from the faculty of educational sciences and five students from the faculty of information technology were asked to read the survey items and give their feedback about the clarity. Lastly, the survey reliability was piloted and checked by administering it to 30 students from outside the study sample, and the Kuder-Richardson formula 20 was used to estimate reliability. The questions had a reading of 0.70, was considered a suitable value.

Descriptive statistics (percentage, mean, and standard deviation) was applied to summarize the students’ responses to the survey. Independent sample t-test was used to test whether there were significant differences between the means of the participants responses about their general knowledge about COVID-19. The data was analyzed using Statistical Package for the Social Sciences (SPSS IBM Corp; Armonk, NY), version 23.0. All the differences were considered statistically significant if p < 0.05.

**RESULTS**

Table 1 summarizes the participants’ characteristics. A total of 1172 participants were between 18-50 years of age with 825 below 28 years of age, and 69% were females. Most of the students were Jordanian (91.6%) with 57.9% lived in urban areas. The students were from four different universities in the northern part of Jordan; JUST (29.0%), YU (30.7%), INU (31.8%) and JU (8.5%). The majority of students were undergraduate students (79%) and 60.8% were from scientific faculties and 39.2% of students were from humanities and social sciences faculties 45% (39.2%). Nearly the same number of students was taken from each year of study and the majority of students their GPA was low achievement.

Figure 1 shows students’ knowledge results. Students had a "poor" level of knowledge about the incubation period (32.2%), a "poor" level of knowledge about COVID-19 symptoms (57.2%), and an "excellent" level about practice of preventive behaviors (96.4%). The overall knowledge was "good" (71%).

Table 2 shows the difference in total knowledge according to student’s characteristics. There was a significant difference in total knowledge between scientific students from scientific colleges and students from humanities and social sciences (F (1,2) = 11.415, p = 0.001) and between higher academic achievement students and lower academic achievement (F(1,2) = 4.628, p = 0.032). There was no significant difference according to gender, residence, nationality, and program in the total knowledge of COVID-19.

Students’ main source of their knowledge about COVID-19 was the internet (79.50%), social media (73.50%), and television (73.30%). Other sources of knowledge were health-care professionals (54.30%), family and relatives (41.60%), friends and colleagues (28.20%), printed materials (newspaper, magazine, or books) (10.90%) or radio (10%) (Figure 2).

The results show that students’ perceptions of COVID-19 risk were as the following: 61% of students reported perceived COVID-19 is very dangerous, 41.6% is moderately dangerous, 8.6, and 8.8%, while only 8.8% of the students perceived COVID-19 is not a serious public health issue.

The attitude toward the treatment of patients with COVID-19 section results showed that 14.9% of students had agreed about the symptoms of COVID-19 can go away on their own and do not need special treatment, 23.4% of students agreed that COVID-19 can be treated by a general doctor and does not need a specialist, while 72.4% of students agreed that COVID-19 needs a specialist doctor for treatment.
showed that overall CPVID-19 knowledge was 82.34% (Peng et al., 2020). Also, another study surveyed medical students in Iran showed that students’ knowledge was insufficient about the extent of the ability to interact with a possible infected person. The perception of how dangerous this disease is associated with time. The decrease of COVID-19 spreading is the only known measure to control the disease and people’s knowledge, perception, and attitude are key factors of this control, especially in the absence of special treatment or vaccine for COVID-19. In this study we examined these factors in a cohort of undergraduate and postgraduate students. The level of knowledge is relatively good and differed between faculties and according to GPA. A high percentage of students perceived COVID-19 as a serious health issue and needs medical specialty treatment.

With the current increase of COVID-19 transmission, people became more aware of it, which reflects positively on their knowledge, attitude, and perception (Alzoubi et al., 2020). The calculated incubation period of COVID-19 is 2-14 days (World Health Organization, 2020, February 21). It was found that there is a difference in the students' knowledge about this period, and this knowledge is important in determining the ability to interact with a possible infected person. The study results showed that students’ knowledge was insufficient about COVID-19 incubation period, and knowledge about symptoms. However, there was sufficient knowledge practice of preventive behaviors and total knowledge. These results were aligned with Modi, et al. (2020). Another study surveyed medical students in Iran showed that overall CPVID-19 knowledge was 86.96% (Taghirir et al., 2020). Also, other study conducted on 10 universities in Shaanxi Province, China showed that overall CPVID-19 knowledge was 82.34% (Peng et al., 2020).

In another study that includes medical and non-medical university students in the South of Jordan, the overall knowledge estimated to be more than 90% (Alzoubi et al., 2020). This finding was relatively higher than our study because over half of the participants were medical students who tend to score higher than non-medical students in COVID-19 knowledge. Also, our results were not aligned with results of Wadood, et al. study (2020), one conducted on students of Rajshahi University, Bangladesh their results showed that participants had insufficient knowledge about COVID-19. The reason for this difference that Wadood, et al. study was conducted in the second week of March in 2020, and our study was conducted in the last week in April 2020, the Knowledge a particular infectious illness influenced by its spread (Alzoubi et al., 2020).

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According to the study results, students from scientific faculties scored higher than humanities and social faculties in total COVID-19 knowledge. COVID-19 is a scientific topic, and students in scientific faculties exposed more to medical experiences and topics relevant to COVID-19 than students in humanities and social faculties. High academic achievement students scored higher than low academic achievement students in total COVID-19 total knowledge. Students’ achievement results from their experiences and expertise within an academic course, in which students are assumed to have mastery in certain areas (World Health Organization, 2020, February 21). So, students who have high achievement will have more knowledge. While developing an awareness campaign on large scales, peer teaching can be utilized.

The main source of students’ knowledge about COVID-19 was the internet (79.50%), the primary sources were social media (73.50%), television (73.30%). The curfew and quarantine were applied in Jordan since 21 March 2020, and the Jordanian government provided great facilities to ensure internet access for all. This gave students accessibility and more time to access the internet and social media, and watch television. Nearly the same source of information reported in other studies (Wadood et al., 2020; Alzoubi et al., 2020). It is important to control these sources of information as some information may not be accurate, and health administration may provide channels to deliver knowledge through formal channels.

The results showed more than half of participants believe that COVID-19 is very dangerous (61%) and 41.6% believe that COVID-19 is moderately dangerous. These results were aligned with other study (Modi et al., 2020) that applied on two university students in the middle part of Jordan. In comparison to another study (Taghirir et al., 2020) that was conducted in the last week in April 2020, this percentage is higher. People, including university students, should have a high COVID-19 knowledge level be able to control and manage its spread.

### DISCUSSION

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### Table 2. Association between respondents’ characteristics and their COVID-19 knowledge

![Figure 1. Students' knowledge level](image1.png)

![Figure 2. Students' knowledge source](image2.png)
public perception and attitude positively to control the virus spreading and containment of the ongoing pandemic. This study also explored sources of student knowledge that could be harnessed to raise knowledge about COVID-19. Also, it is hoped that this study will open doors for future research to measure COVID-19 knowledge in other populations such as schoolchildren, employees, and housewives.

CONCLUSION

Jordanian university students have a good total level of COVID-19 knowledge, risk perception, and attitudes towards COVID-19 treatment. The best knowledge students were from scientific faculties and those who have high academic achievement. These responses reflect the effect of health authorities’ campaigns to raise public knowledge about COVID-19. To make a government decision to return to campuses and return teaching to classrooms, students must have high knowledge of COVID-19. Our study raises some weaknesses and possible strategies to improve this knowledge. This study will direct future research that aims to measure COVID-19 knowledge in other populations.

REFERENCES


