ORIGINAL RESEARCH

Knowledge, Attitudes, and Practices of Medical Students Regarding COVID-19 in Afghanistan: A Cross-Sectional Study

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Background: The coronavirus pandemic has had devastating effects on many nations, including Afghanistan. Public awareness and following recommendations play an important part in managing such a large-scale crisis, which are affected largely by knowledge, attitudes, and practices (KAP). Medical students can act as reliable sources of information for the public in such a scenario. This study aimed to investigate KAP of medical students regarding COVID-19.

Methods: A cross-sectional online survey was conducted in October 2020 among medical students in Afghanistan, Kabul University of Medical Sciences. Information on sociodemographics and KAP, was collected using a web-based questionnaire.

Results: A total of 1,169 medical students completed the survey. More than half were female (54.6%), a majority (95%) aged ≥20 years, and more than half (56.2%) lived in the city of Kabul. Overall, students had acceptable KAP regarding COVID-19, except for a few undesirable responses with regard to the risks of close contact with COVID-19 patients, incubation periods, and groups vulnerable to COVID-19.

Conclusion: Overall, the students had acceptable KAP regarding COVID-19, except for the few undesired aforementioned responses, which need more focus during awareness campaigns in future.

Keywords: SARS-COV2, pandemic, surveys and questionnaires, public health

Introduction

In late December 2019, a number of cases of pneumonia-like disease caused by a new coronavirus were reported in Wuhan, China.[1] It was named coronavirus disease 2019 (COVID-19) by the World Health Organization (WHO).[2] On January 30, 2020, due to the amazingly rapid spread of COVID-19, the WHO declared the situation a global public health emergency of international concern.[3] On March 11, 2020, the WHO announced that the outbreak was a global pandemic.[4]

As of February 21, 2021, there were 110,609,979 confirmed cases of COVID-19, including 2,452,510 deaths, worldwide.[5] In Afghanistan, the first COVID-19 case was confirmed in Herat, a western province of Afghanistan, on February 24, 2020,[6,7] and there were 55,604 confirmed cases of COVID-19 with 2,432 deaths as of February 21, 2021.[8]

Only 165,628 people were confirmed to have been tested, due to a limited number of test centers with limited capacity.[9] The Afghanistan Ministry of Public

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Health (MPH)confirmed that the actual number of positive cases in the country could be higher than the numbers reported.[10]

Although an effective treatment to cure the disease was lacking, there were some encouraging reports on vaccines against COVID-19. The BNT162b2 vaccine is a modified RNA that encodes a version of the SARS-CoV2 spike protein containing mutations that lock the protein into a conformation that can induce neutralizing antibody responses. Early clinical trials showed that it was able to induce both humoral and cellular immunity, though at that point, we did not know whether these responses would protect against symptomatic infections.[11]

The symptoms generated by COVID-19 range from mild fever, cough, and shortness of breath to severe pneumonia, severe acute respiratory syndrome, kidney failure, and multiple-organ failure resulting in death.[12] The fight against COVID-19 is ongoing, and almost all governments have implemented measures to contain, control, and curb the disease, such as partial or complete lockdowns.[13] In Afghanistan, the lockdown that was announced in early April 2020 included partial movement restrictions for the elderly and children below the age of 12 years, which were followed by additional measures later that year.[14] These constraints affected all aspects of life in almost all countries,[15] including dramatic changes in international business and education at all levels and in all fields.[16,17]

Public awareness and conforming with recommendations play an important role in managing and overcoming such a global crisis. International studies have pointed out ways of preventing, managing, and reducing the spread of COVID-19 globally. Current guidelines continue to emphasize the importance of washing/disinfecting hands, observing social distancing of 1–2 m, avoiding crowds, avoiding touching one's mouth and nose, and using appropriate masks. People suffering from coughs and other medical complaints are advised to seek medical attention.[12,18] In Afghanistan, the MPH also issued a set of guidelines and preventive measures to fight COVID-19.[19] With Afghanistan's high rate of infected cases and deaths, accurate figures were needed to work better on perceptions of the public about the disease.[10]

Medical students are an important section of the younger generation who can influence the health status and perceptions of their families and friends, as they are mostly deemed acceptable sources of health information by society.[20] Therefore, systematically assessing their knowledge, attitudes, and practices (KAP) regarding COVID-19 is crucial.

This study aimed at investigating the KAP of medical students, who represent an important part of the Afghan society and whose behavior likely influences their personal health and that of other people.

Methods

A cross-sectional survey was conducted to obtain responses from medical students in Afghanistan during October 2020. A total of 1,169 medical students from all over Afghanistan participated in the survey. The study was carried out using online platforms, as conducting face-to-face interviews in the community was not feasible during the pandemic. A bilingual (Persian and English) web-based questionnaire was sent to the students online.

Ethics

Ethics approval was obtained from the ethics committee of the Microbiology Department of Kabul University of Medical Sciences (104/September 23, 2020). The committee reviewed and approved the study protocol, participant information sheet, informed-consent form, and survey. Participants were briefed about the nature of the study, its voluntary nature, and the right to withdraw at any time without negative consequences. Those who wanted to participate in the study had to grant permission for data to be generated from their answers, and only then were allowed to proceed with filling out the questionnaire. This study was conducted in accordance with the Declaration of Helsinki.

Development, Validation, and Distribution of the Questionnaire

A questionnaire with 26 items (in English) was formulated using reference material, fact sheets, and information leaflets on COVID-19 developed by the WHO, national health services, and relevant literature.[20–23] To ensure the content was valid and appropriate for the study, it was reviewed by three experts working in the field and revised according to their comments. Subsequently, the questionnaire was pretested on 20 medical students selected randomly to make sure that the questions were clear and understandable. None of the participants made comments implying a need to change the questionnaire. The final survey link was distributed among the students via various media platforms, such as WhatsApp, Gmail, and Facebook.

Sampling Method

Participants were selected for the survey randomly from online platforms. The sample size required for the study calculated using Morgan's table. Considering the total number of medical students in Afghanistan as 10,000[24] with 99% CI and 5% margin of error, the sample size calculated was 622. Due to the wider outreach of the survey, we received almost twice (1,169) the number required.

Content of the Questionnaire

The questionnaire included multiple-choice questions designed to assess participants' sociodemographic characteristics and KAP in the context of COVID-19.[20–23] Sociodemographic information comprised age, sex, education, and current residence. Questions addressing the knowledge of medical students included characteristics of coronavirus, symptoms, incubation period, the concept of close and transient contacts, and availability of therapeutics. The part on attitudes included questions related to the seriousness of COVID-19 and whether it was important to use face masks to prevent infection. Other questions asked whether a COVID-19 patient could be treated at home without being referred to a doctor, whether handling COVID-19 patients put the career at risk of getting the disease, and whether health education was important in disease prevention/reduction. Questions on practices section were related to washing hands and mouth frequently, using masks in crowded areas, eating cooked food, and drinking cold water. This section also asked about placing known/suspected COVID-19 patients in well-ventilated rooms, maintaining physical distance of at least 1 m, avoiding touching the eyes, nose, and mouth, and following good respiratory hygiene.

Data Analysis

Descriptive statistics were used to calculate frequencies and percentages using IBM SPSS 25. Each correct answer wasgiven one point. Total scores were then converted to percentages. Scores of ≤60% were considered poor knowledge, negative attitudes, or high-risk practices, 60.1%–80% moderate knowledge, moderate attitudes, or moderate-risk practices, and ≥80.1% good knowledge, positive attitudes, or low-risk practices.[25,26]

Implications of the Study

The study findings provide a useful insight into KAP of medical students in Afghanistan, which could help the policy/decision-makers in public health to design better programs based on the information gaps reported.

Table 1 Sociodemographic characteristics of the study participants (n=1,169)

	Categories	% (n)
Age (years)	≥ 20 < 20	95.1 (1,112) 4.9 (57)
Sex	Female Male	54.6 (638) 45.4 (531)
Education	Postgraduate Undergraduate	16.9 (198) 83.1 (971)
Residence	Kabul Other provinces	56.2 (658) 43.8 (511)

Results

Table 1 shows the sociodemographic characteristics of the study participants. Of the 1,169 who participated in the survey, 971 (83.07%) were undergraduate students, 55% female, and 95.1% aged ≥20 years. More than half the participants (56.2%) lived in Kabul.

Table 2 shows the knowledge of the students about COVID-19. A large percentage (93.2%) correctly identified that COVID-19 was caused by a virus. More than three

Table 2 Knowledge of the participants about COVID-19 (n=1,169)

Item	Yes, % (n)	No, % (n)
The cause of COVID-19 is a virus.	93.2 (1,089) *	6.8 (80)
The type of genetic material in COVID-19 is DNA.	18 (211)	82 (958) *
COVID-19 is a gastrointestinal disease.	3 (35)	97 (1,134) *
COVID-19 is transmitted by close contact with an infected person.	82.1 (960)*	17.9 (209)
Its incubation period is 2–14 days.	77.1 (902)*	22.9 (267)
Fever, cough, and shortness of breath are common symptoms of COVID-19.	88.6 (1,036)*	11.4 (133)
Patients with underlying chronic diseases are at higher risk of infection.	79.9 (934)*	20.1 (235)
At this moment, there is no effective treatment for COVID-19.	76 (889)*	24 (280)

Note: *Good knowledge score.

Table 3 Attitudes of participants toward COVID-19 (n=1,169)

Item	Yes, % (n)	No, % (n)
COVID-19 is a serious disease.	91.1 (1,066) *	1.9 (103)
It is important to use a face mask to prevent the disease.	95.2 (1,112)*	4.8 (57)
It can be treated at home without involvement of a doctor.	44.5 (520)	55.5 (649) *
Treating a COVID-19 patient does not put you at risk of infection.	15.4 (180)	84.6 (989)*
Health education helps in disease prevention.	87.6 (1,025)*	12.3 (144)

Note: *Positive attitudes.

Table 4 Practices of the participants related to COVID-19 (n=1,169)

Item	% (n)	
	Yes	No
Wash hands frequently with soap and water.	97.9 (1,144) *	2.1 (25)
Wash mouth frequently.	37.1 (434)	62.9 (735) *
Apply mask in crowded areas.	97.3 (1,138)*	2.7 (31)
Eat cooked food.	44.4 (519)*	55.6 (650)
Drink cold water.	4.7 (55)	95.3 (1,114) *
Place known or suspected patients in well-ventilated individual rooms.	87.3 (1,021)*	12.7 (148)
Maintain at least 1 m distance between yourself and others.	94.1 (1,101)*	84.6 (68)
Avoid touching your eyes, nose, and mouth.	92.7 (1,088)*	6.3 (81)
Follow good respiratory hygiene.	66.4 (776)*	33.6 (393)

Note: *Low-risk practices.

quarters knew that the genetic material in COVID-19 was not DNA, while 18% of them answered incorrectly. Almost all students (97%) said that COVID-19 was not a gastrointestinal disease. About 80% were aware that COVID-19 was transmitted by close contact with an infected person, while some 20% answered incorrectly. Three quarters of participants knew that the incubation period of COVID-19 is about 14 days, while 22.9% did not know the correct answer. A majority (88.6%) correctly identified that fever, cough, and shortness of breath were common symptoms of COVID-19. About 20% did not know that patients with underlying chronic diseases were at higher risk of being infected, while the remaining 80% gave the correct answer. Three quarters of students knew that currently there was no effective treatment for COVID-19, while 25% did not know this.

Table 3 shows the attitudes of study participants toward COVID-19. A majority (91%) believed that COVID-19 was a serious disease. Almost all students (95%) agreed that using a face mask was important in preventing infection. Nearly half (45%) thought that COVID-19 could be treated at home without referring to a doctor. A small portion (15%) agreed that handling a COVID-19 patient did not put a person at risk of getting the infection, while the rest did not agree. A large percentage (87.6%) thought that health education could help in disease prevention.

Table 4 presents what medical students reported about their behavior with regard to COVID-19. Almost all reported that they washed their hands frequently with soap and water and used a face mask when going to crowded places (98% and 97%, respectively). A majority (87%) reported placing known/suspected COVID-19 patients in a well-ventilated individual room, while 13% did not seem to practice this. A large percentage (94%)

practiced social distancing, and a majority (92%) knew of the importance of not touching eyes, nose, or mouth. Two thirds of the participants informed that they followed good respiratory hygiene, while the remaining third did not.

Discussion

Since the announcement of the first case of COVID-19 in Afghanistan in February 24, 2020, there was great concern raised among the Afghan public and governmental institutions. Despite recent achievements in vaccine developments against COVID-19, there is still no definitive treatment to cure the disease, and medical students along with other health-care professionals are expected to play a significant role in raising awareness among the public. Lack of knowledge among this group regarding the nature, transmission, and other aspects of the virus, negative attitudes, and high-risk practices could lead to misinformation and put people at higher risk of getting infected. This study was conducted to evaluate the KAP of Afghan medical students regarding COVID-19. Although the students in this study had acceptable knowledge, positive attitudes, and adequate practices, certain areas needed further improvement, as follows.

A large proportion of participants were aware and had general knowledge about COVID-19. A majority (93.15%)

believed "a virus" was the causative agent of COVID-19. This finding is higher than what was reported from medical and allied health–science students in India (70.91%).[20] More than three quarters of study participants knew that the genetic material in COVID-19 was not DNA, whereas in a study conducted among health-science and other students at the University of Sharjah, United Arab Emirates, almost two thirds of students from all majors were not able to identify the genetic material of the virus.[12]

About 80% of respondents were aware that COVID-19 was transmitted by close contact with an infected person, while some 20% gave the incorrect response. This finding is lower than what was reported from a study conducted among Jordanian medical students (94.7%).[27] Knowledge about the risk of close contact should be improved, as this may cause medical students not to consider physical distancing and hence put themselves/others at increased risk of getting the infection.

Three quarters (77%) of participants knew the incubation period of COVID-19. This finding is higher than what was reported by a study conducted among medical students in India (70%) and lower than what was reported about medical students in Pakistan (96.38%).[20] Information about the incubation period would be useful to correctly identify suspected individuals and provide medical care/quarantine at an early stage.

A majority of students in our study (88.6%) were aware of common symptoms of COVID-19, such as fever, cough, and shortness of breath. Similar findings were reported from students at the University of Sharjah[12] and nursing students in China (100% and 91.2%, respectively).[28] It is important that people be informed about common symptoms of COVID-19, via valid sources to prevent misconceptions.

More than three quarters (80%) of our study participants knew that patients with underlying chronic illnesses are at higher risk of getting COVID-19. Similarly, in a study conducted among students of the University of Sharjah, >80% of the students were able to identify the elderly and those with comorbidities as being at higher risk of getting COVID-19.[12] Another study conducted among medical students in India reported that 40% of participants knew that persons with comorbidities were more prone to COVID-19.[20] Three quarters of students knew that currently there was no effective treatment for the COVID-19, which is very similar to that reported from health-science students at the University of Sharjah.[12]

In terms of attitudes, a majority (91%) in this study believed that COVID-19 was a serious illness. This is similar to what was reported among United Arab Emirates and Pakistani students.[12,29] Almost all (95%) students in our study thought that wearing a face mask was important in preventing COVID-19 infection. This is higher than that reported for medical and allied health–science students in India (73.1%).[20] Nearly all students believed that treating a COVID-19 patient put them at risk of getting the infection and that health education could help in disease prevention. These findings highlight positive attitudes of the study participants toward COVID-19.

Almost all respondents knew about measures that should be adopted to prevent COVID-19 spread, such as washing hands with soap and water frequently (98%), applying a mask in crowded areas (97.3%), avoiding touching the eyes, nose, and mouth (92.7%), and maintaining at least 1 m physical distance. These results are in line with reported rates in studies conducted on medical students in Pakistan[29] and India.[20]

Limitations

The questionnaire was adopted from other studies. However, content validation was performed to increase the reliability of the results. The chances of recall bias could not be ignored, as this was an on-line cross-sectional survey. Participants were asked specific questions that might not have covered all issues involved in KAP. It was conducted among medical students, and thus the findings cannot be extrapolated to health-care professionals or the general public. Lastly, as this was an Internet-based online survey, students from far-reaching areas without access to the Internet may not have participated, which could have led to demographic selection bias.

Conclusion

The current global pandemic requires substantial awareness about causative agents, clinical aspects, transmission, treatment, and preventive measures. It also tests the integrity of various platforms, particularly in a socially active and reliable population like medical students. In this study, all students showed good KAP regarding prevention of COVID-19. Knowledge about the risk of close contact, information about the incubation period, and identification of high-risk groups are areas that need more focus in awareness campaigns for medical students. Various means, eg, posters, seminars, information through social channels, and TV advertisements, can be used to fill these gaps and improve the KAP of medical students and society at large.

Abbreviations

KAP, knowledge, attitudes and practices; WHO, World Health Organization; MPH, Ministry of Public Health.

Data Sharing Statement

To ensure confidentiality of the participants and observe relevant ethical considerations, data cannot be shared publicly. However, data can be accessed upon request from Professor Dr Ahmad Wali Atayee, Head of Department of Microbiology, Kabul University of Medical Sciences via email: drataye1@gmail.com.

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