PUBLIC KNOWLEDGE, PRACTICES AND ATTITUDES TOWARDS COVID-19 IN AFGHANISTAN

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ABSTRACT
Background: COVID-19 has tremendously affected the world including Afghanistan since its outbreak.
Objective: This study aimed to investigate the public knowledge about COVID-19 in Afghanistan as well as practices used to prevent contracting the disease. It also studied the attitudes of the public towards the COVID-19 survivors, and the impact of the participants' gender, place of residence and marital status on their responses.
Method: The data were collected from 1472 individuals through an online survey questionnaire. SPSS version 24.0 was used to analyze the data.
Results: The findings showed that the public were very knowledgeable about COVID-19. They used various practices to varying extent to prevent contracting COVID-19 and its spread. Moreover, the participants' attitudes towards the COVID-19 survivors varied. They had negative attitudes towards them if close contact was concerned, but their attitudes were positive towards them if close contact was not involved, e.g., educating community members about the disease. Gender and place of residence had a significant impact on the participants' knowledge and practices, but they did not affect their attitudes towards the survivors. Furthermore, marital status significantly affected the participants' practices, but it did not have any impact on their knowledge and attitudes towards the survivors.

Keywords: COVID-19, novel coronavirus, knowledge, preventive practices, attitudes, Afghanistan

BACKGROUND

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by Novel Coronavirus. The Chinese researchers named it as 2019 coronavirus (2019-nCov). The virus was named as SARS-CoV-2 and the disease as COVID-19 by the International Committee on Taxonomy of Viruses (ICTV) (Cui et al., 2019; Lai et al., 2020; Shereen et al., 2020). World Health Organization (WHO, 2020a) characterized COVID-19 as a pandemic on March 11, 2020. As its name

implies, this virus is new and appeared as an outbreak for the first time in Wuhan, China, in December 2019. According to a recent structural analysis, the virus probably originated in bats and transmitted to humans after mutation in the spike glycoprotein and nucleocapsid protein. It was then transmitted from human to human (Benvenuto et al., 2020; Shereen et al., 2020; Cheng & Shan, 2020).

According to Cheng and Shan (2020), the virus has spread to almost all over the world. Since

December 2019 and as of June 28, 2020, the virus infected nations of 216 countries and territories with over 10 million confirmed cases and about 500,000 deaths from across the globe (WHO, 2020b). Afghanistan reported its first COVID-19 case on February 24, 2020 from Herat, the western province bordered with Iran (Shah et al., 2020). During this time, COVID-19 hit Iran, the western neighbor of Afghanistan, very hard and Afghan refugees started to return to their country for the fear of getting infected with the virus. The number of confirmed cases of COVID-19 in Afghanistan has since exponentially increased. As of June 28, 2020, there were 31,318 confirmed cases of COVID-19 and 755 deaths across the country (WHO, 2020b). These are just confirmed cases by the Afghanistan Ministry of Public Health. The real number of infected people and deaths were much higher than these numbers. Many Afghans, infected with COVID-19, did not refer to COVID-19 health centers due to lack of access to quality health services and mistrust to healthcare system. For example, five members of one of the author's extended family contracted COVID-19, but they did not refer to COVID-19 centers to get tested. Similarly, many deaths were not reported due to stigma attached to COVID-19 victims.

Healthcare system in Afghanistan has improved over the past two decades, but Afghanistan still remains one of the most vulnerable countries in the fight against COVID-19. Curbing the spread of the virus in the country was complicated for multiple reasons including but not limited to the influx of Afghan refugees from neighboring countries, i.e., Iran and Pakistan, lack of a strong public health system, high level of illiteracy and health illiteracy, low public awareness and vulnerable socioeconomic status. Furthermore, the cultural norms of shaking hands and hugging, community gatherings in many worship centers (i.e., mosques) and the paucity of masks and effective handwashing technique aggravated the crisis. The epidemic was further compounded by high levels of misconceptions due to limitations in knowledge about the disease thus creating room for stigma and discrimination leading to further the challenges of coronavirus control and mitigation (Shah et al., 2020).

The Afghan government took certain measures to curb the spread of COVID-19 in the country. They closed schools, universities, worship centers, government offices, government-run and private companies, land and air transportations, small businesses and borders with neighboring countries. They locked down the cities and people were banned from travelling from one city to another. Moreover, the Afghan government and organizations took actions in line with WHO guidelines to improve knowledge and practices of Afghans with regards to COVID-19 both at national and local levels. They published billboards and posters regarding COVID-19 risks and preventive measures across the country. Both government-run and private national and local TVs and radios broadcast programs around the clock to provide necessary information about COVID-19 to the public. Social networking sites (SNS), e.g., Facebook were extensively used both by the government and individuals to give awareness about COVID-19 to Afghan SNS users. For example, one of the authors posted scientific updates about COVID-19 on his social media platforms as well as through his podcast, hosting physicians and public health experts from across the globe to share their experience, knowledge, and insight with Afghan physicians and the public since the beginning of the outbreak in Afghanistan. This research investigates knowledge and practices of the Afghan public regarding COVID-19 and their attitudes towards its survivors. Furthermore, it attempts to explore the differences in responses of the participants by their demographic profile, i.e., gender, marital status and place of residence.

Literature Review
Contagion differs from virus to virus. Some viruses, e.g., measles are highly contagious while others are less contagious. The coronavirus spreads very easily and it is sustained, which means that it spreads from person to person without stopping. It is more contagious than influenza but not as contagious as measles. The risk of being infected with COVID-19 is higher as an individual interacts with other people more closely and for longer time (CDC, 2020a). The coronavirus spreads through various ways. It spreads mainly through close contact (shaking hands, hugging) from person to person. It also

spreads through respiratory droplets produced by people with COVID-19 when they sneeze, cough or speak. Some studies have suggested that even people infected with COVID-19, who do not show any symptoms, may spread the virus. The coronavirus also spreads through other ways. A person may be infected after touching a surface or an object with the virus on it and then touching her/his mouth, nose or eyes (CDC, 2020a; Hafeez et al., 2020).

People infected with COVID-19 have demonstrated various symptoms, which ranges from mild to severe sickness. Symptoms do not appear as soon as an individual is infected with the virus. Symptoms may appear 2-14 days after the person contracts the disease. The major symptoms of COVID-19 are fever, cough, shortness of breath, fatigue, headache, body aches, loss of senses (taste or smell), sore throat, runny nose, nausea and diarrhea (Hafeez et al., 2020; CDC, 2020b). It is worth mentioning that influenza (flu) has most of these symptoms. It does not mean that they are the same. There are some important differences between the two, one of which is the type of virus they are caused by. Flu is caused by infection with influenza viruses while COVID-19 is caused by infection with a new coronavirus called SARS-CoV-2. Therefore, it is important to test to make a diagnosis (CDC, 2020b).

As of June 28, 2020, there was no vaccine or medication for the virus. According to Centers for Disease Control and Prevention (CDC, 2020c), the best way to prevent COVID-19 is to avoid exposure to it. Health experts and organizations (e.g., WHO, CDC) have recommended certain precautions to prevent being infected with the virus, and to prevent the spread of COVID-19. These precautions are washing hands for 20 seconds regularly or using sanitizer containing at least 60% alcohol, avoiding crowded places, avoiding close contact, maintaining at least three feet distance between oneself and others, wearing mask when leaving home, staying home, disinfecting surfaces (e.g., doorknobs, switches, handles) at home, and covering mouth and nose when sneezing or coughing (CDC, 2020b; WHO, 2020c; Hafeez et al., 2020). The Afghan government and nongovernmental organizations

have made efforts to publicize these preventive measures to the public using TVs, radios, social networking sites, billboards, brochures and bullhorns. Moreover, some organizations distributed masks and basic hygienic needs, i.e., soap, hand wash liquids and sanitizers to the public in some parts of the country.

According to CDC (2020d), stigma is negative attitudes and beliefs towards a group of people. In other words, it is discrimination against a particular group of individuals. It may cause people to label, stereotype or discriminate against other people. With regards to COVID-19 and its survivors, it results from lack of knowledge about COVID-19, how it spreads, fears about the disease, death and the rumors that go around in the society. Stigma can take place when people associate a virus, e.g., coronavirus with a group of people, a community or a nationality. It can also occur even after people recover from a disease, e.g., COVID-19 or are released from isolation or quarantine. For example, survivors of COVID-19 may not be welcomed in their community. They may be at a disadvantage in employment, housing, and receiving social services. In extreme cases, they may be prone to verbal or physical abuses. Furthermore, stigma can create more fear among people, which may cause some people to hide COVID-19 symptoms and avoid seeking health care. In turn, it makes it more difficult to curb the spread of the virus. Moreover, stigmatized individuals are impacted emotionally, mentally and physically. They may experience anxiety, depression, isolation or embarrassment (CDC, 2020d; Scambler, 2009; Arwady et al., 2014; Lee-kwan et al., 2014). It is of utmost importance to educate the public about stigma attached to COVID-19 in order to make the society and people in particular survivors of COVID-19 safer and healthier. Everyone can play their part to stop stigma related to COVID-19. They should first try to understand the facts and then share them with others in their communities

Related Studies

Since the beginning of the outbreak, COVID-19 has produced a large number of studies. Different aspects of the virus have been studied by researchers around the world. Some researchers have investigated knowledge, attitudes,

perceptions, and preventive practices of people in different countries. For instance, Al-Hanawi et al., (2020) studied the knowledge, attitudes and practices of the Saudi public towards COVID-19 during the pandemic. They collected data from 3,388 people through an online questionnaire. They found out that the majority of the respondents were knowledgeable about COVID-19, and they had a positive attitude towards the measures taken to control the virus. They also reported that most of the respondents took very cautious actions to prevent being infected with the virus. Similarly, Rahman and Sathi (2020) investigated the knowledge, attitude and preventive practices towards COVID-19 among Bangladeshi Internet users. They collected their data from 441 individuals through a cross-sectional survey questionnaire. They used univariate, bivariate and multivariate techniques to analyze their data. They reported that the majority of the respondents were aware of the symptoms of the disease and preventive practices. However, they had negative attitudes towards the measures taken to curb the virus in Bangladesh. Moreover, they concluded that higher knowledge led to more preventive practices by the respondents.

Likewise, Azlan et al. (2020) investigated the levels of knowledge, attitudes, and practices of the Malaysian public towards COVID-19. They collected data from 4,850 respondents through an online questionnaire. The findings showed that some of the respondents had high level of knowledge of the virus while the rest had an acceptable level of knowledge about the disease. Moreover, most of the respondents had positive attitudes towards actions taken to control the virus. The results also showed that the majority of the respondents were practicing certain precautions, e.g., avoiding crowded places to prevent the spread of the virus.

Rabelo et al. (2016) investigated psychological distress among Ebola survivors in Monrovia, Liberia during their reintegration in their communities. They collected data from 17 Ebola survivors through focus group discussions, and they used thematic analysis approach to analyze their data. They reported that many of the survivors were not welcomed by their families,

employers, and community. Some survivors had been divorced, and some were kicked out of their houses. Some of them lost their jobs. Subsequently, the survivors lost their coping abilities and it was hard for them to resume their normal life in their own community.

In another study, Mayrhuber et al. (2017) studied media reporting on Ebola survivors in Liberia. They specifically wanted to explore how the Ebola survivors' situation was portrayed, and how stigma associated with Ebola was addressed. They used the qualitative data analysis software (atlas.ti) to analyze media reports from the Liberian Daily Observer, an English newspaper which was available online. That is, they analyzed 148 articles that reported on the situation of Ebola survivors. They found out that the newspaper articles reported various consequences for the survivors of Ebola. They were not welcomed and abandoned by their family members and friends, which left them vulnerable and stigmatized. Moreover, the articles reported that the Ebola survivors experienced isolation, homelessness, depression, discrimination, job loss and a wide range of other challenges.

Purpose of the Study

The research investigates knowledge of the public about transmission and symptoms of COVID-19 in Afghanistan. It also explores measures practiced by people to prevent the spread of the disease, and the attitudes of the public towards the survivors of COVID-19. Furthermore, the study attempts to determine the respondents' gender, marital status and place of residence on their responses. The research addresses the following research questions.

1. What is the level of knowledge of the public about COVID-19?
2. How often did they practice the measures to prevent the spread of COVID-19?
3. What are the participants' attitudes towards the survivors of COVID-19?
4. Are there statistically significant differences between the participants' responses by their gender, marital status, and place of residence?

METHODS

Participants

The respondents of the study were 1,472 individuals out of which 35.1% (516) were female. They were living in different provinces of Afghanistan at the time of the study. Around 91% of the respondents were living in the cities while 9% of them were living in rural areas at the time of the study (**Table 1**). The majority of the respondents (71.5%) were not married while around 29% of them were married at the time of the study. Half of the respondents (49.7%) held a bachelor's degree.

Table 1 Demographic characteristics of the respondents

Characteristics		Respondents (%)
Gender	Female	516 (35.1)
	Male	956 (64.9)
Marital Status	Single	1052 (71.5)
	Married	420 (28.5)
Education	High school	480 (32.6)
	Bachelor's degree	732 (49.7)
	Master's degree	232 (15.8)
	PhD	28 (1.9)
Place of Residence	Urban	1336 (90.8)
	Rural	136 (9.2)

Measures

The authors carried out a thorough literature review to develop the survey questionnaire. They used the information and guidelines provided by the Centers for Disease Control and Prevention (CDC, 2020a; CDC, 2020b; CDC, 2020c) and World Health Organization (WHO, 2020c) to construct the questionnaire items. They also adopted some of the questionnaire items from other studies (Dahn, 2015; Zhong et al., 2020). The questionnaire consisted of four parts. The first part sought the respondents' demographic information, i.e., gender, marital status, education and place of residence. The second part composed of 12 items aimed to elicit their knowledge about transmission and symptoms of COVID-19 as well as cure for it. They were required to respond to these items on a true/false basis with an additional option "I do not know". The third section consisted of 10 items that sought the participants' responses about measures they took to prevent being infected with the virus and to prevent its spread. The respondents were required to respond to these items on a five-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = very frequently). The last section composed of 10 items that sought the respondents' attitudes towards the survivors of COVID-19. They were required to respond to these items on a 5-point Likert scale (1 = Strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).

Two health experts were requested to revise the questionnaire. The problematic items were identified and edited using their feedback and comments. The English questionnaire was translated into Dari, one of the official languages of Afghanistan because English is a foreign language and the majority of population cannot speak and understand English. The Dari questionnaire was edited by two Dari editors to ensure its intelligibility and comprehensibility.

Procedure

The authors designed the questionnaire using Google survey tool (Google Form). That is, the data were collected online because the authors did not meet the participants face to face in order to abide by the public health directives and prevent contracting COVID-19. The survey was carried out from June 10 to June 20 during which COVID-19 cases were rapidly increasing in the country. The link was shared on social networking sites (SNSs), i.e., Facebook, Twitter, and it was shared on a number of Facebook groups with members from almost all parts of Afghanistan. The authors' friends on SNSs shared the link with their friends. Moreover, the survey link was shared with people through messaging applications, i.e., WhatsApp, Messenger, Viber and Telegram. The respondents were required to express their consent through ticking a box that contained "I agree to participate in the study" before completing the questionnaire. The respondents were required to read the instruction for each part of the questionnaire in order to complete it appropriately. The survey did not seek any information from the respondents that could identify them, which made them sure of the confidentiality of their responses.

Data Analysis

Microsoft Excel 2007 and SPSS version 24.0 were used to analyze the data. The data from Google form were downloaded in Excel spread

sheet after the questionnaire was closed. Microsoft Excel was used to numerically code the responses. The authors closely examined the data to make sure that the respondents completed the questionnaire appropriately although all the items in the survey questionnaire were marked as mandatory. They could not submit the questionnaire if they did not complete all the required items. The numerically coded data were imported to SPSS version 24.0 for analysis. Descriptive analysis was carried out to determine the frequency, the mean and standard deviation of the data. Moreover, the independent sample *T*-test was conducted to explore the differences between two groups, i.e., gender, marital status and place of residence.

RESULTS

Knowledge
The number and percentage of responses for each statement was calculated to answer the first research question. As **Table 2** shows, 93% and 88% of the participants stated that COVID-19 was caused by a virus and it was a fatal disease, respectively. Moreover, over 87% of the participants expressed that COVID-19 could spread from person to person through respiratory droplets, cough droplets, shaking hands, and hugging. However, over half of the participants (55%) believed that COVID-19 could be transmitted from animal to person, which based on the scientific data, is not true for the time being. Furthermore, 97% and 95% of the participants considered fever, cough and shortness of breath as symptoms of COVID-19, respectively. Similarly, 75% of them also regarded tiredness as a symptom of the disease. Almost all of the participants (96%) knew that there was not an effective cure for COVID-19. Thus, it is concluded that the Afghan public is highly knowledgeable about cause, danger, symptoms, transmission and cure of COVID-19 except its transmission from animal to human.

Table 2 Participants' knowledge about COVID-19

No	Item	True	False	Do not know
		n (%)	*n (%)*	*n (%)*
1	COVID-19 is caused by a virus.	1368 (92.9)	44 (3)	60 (4.1)
2	COVID-19 is a fatal disease.	1288 (87.5)	132 (9)	52 (3.5)
3	COVID-19 spreads via respiratory droplets of infected individuals.	1296 (88)	84 (5.7)	92 (6.3)
4	COVID-19 can be transmitted through cough droplets.	1412 (95.9)	20 (1.4)	40 (2.7)
5	COVID-19 can be transmitted from person to person.	1444 (98.1)	8 (0.5)	20 (1.4)
6	COVID-19 can be transmitted through hand shake with others.	1452 (98.6)	8 (0.5)	12 (0.8)
7	COVID-19 can be transmitted through hugging others.	1424 (96.7)	8 (0.5)	40 (2.7)
8	COVID-19 can be transmitted from animal to person.	816 (55.4)	224 (15.2)	432 (29.3)
9	Fever and cough are among the signs and symptoms of COVID-19.	1428 (97)	32 (2.2)	12 (0.8)
10	Shortness of breath is among the signs and symptoms of COVID-19.	1392 (94.6)	40 (2.7)	40 (2.7)
11	Tiredness is among the signs and symptoms of COVID-19.	1104 (75)	124 (8.4)	244 (16.6)
12	There currently is no effective cure for COVID-19, but early supportive treatment can help most patients recover from the infection.	1408 (95.7)	20 (1.4)	44 (3)

Practices
The frequency mean rating of practices was calculated to determine the frequency use of measures undertaken by the participants to prevent contracting COVID-19. As **Table 3** demonstrates, the participants used these practices to varying degree. washing hands with mean frequency rating of 4.33 (SD=0.968), avoiding going to gatherings with mean frequency rating of 4.21 (SD=1.021), avoiding going to crowded places with mean frequency rating of 4.17 (SD=0.995), avoiding shaking hands and hugging with mean frequency rating of 4.12 (SD=1.019), and staying home with mean

frequency rating of 4.09 were the very frequently used practices to prevent being infected with the virus. The participants also frequently used other measures, i.e., wearing masks, maintaining social distance, and avoiding going to mosques to prevent being infected with the virus. Moreover, the participants sometimes used alcohol-based hand sanitizer and disinfected surfaces to prevent infection with the virus.

Table 3 Participants' practices to prevent the spread of COVID-19

No	Item	N	Mean	Std. Deviation
1	I washed my hands with soap and water after returning home.	1472	4.33	0.968
2	I avoided going to gatherings.	1472	4.21	1.021
3	I avoided crowded places.	1472	4.17	0.995
4	I avoided shaking hands and hugging.	1472	4.12	1.019
5	I stayed home.	1472	4.09	1.079
6	I wore masks when going out.	1472	3.85	1.161
7	I maintained social distancing (at least 1m) when going out.	1472	3.76	1.108
8	I avoided going to mosque for congregational prayers.	1472	3.73	1.376
9	I used alcohol-based sanitizer right after touching a surface outside my house.	1472	3.48	1.222
10	I disinfected surfaces in my house.	1472	3.39	1.277
	Valid N (listwise)	**1472**		

Attitudes towards Survivors of COVID-19

The last 10 items of the questionnaire sought the participants' attitudes towards survivors of COVID-19. As **Table 4** shows, over 77% of the participants stated that survivors of COVID-19 did not put others at risk of infection and they would welcome them into their community. A large percentage of the participants (82%) disagreed and strongly disagreed with the idea of isolating the COVID-19 survivors for at least a year. Moreover, over 76% agreed and strongly agreed that the COVID-19 survivors could educate community about the disease, help take care of people suspected of having the disease, and they could be a source of inspiration for infected people. Over half of the participants stated that they would buy vegetables from a shopkeeper who survived COVID-19. However, over half of the participants stated that they would not share a meal, shake hands with and hug the COVID-19 survivors. Therefore, it is concluded that the participants have differing attitudes towards the survivors. That is, they have positive attitudes towards them when close contact is not an issue. However, they have negative attitudes towards them when close contact is concerned, e.g., shaking hands.

Table 4 Participants' attitudes towards survivors of COVID-19 (%)

No	Item	SD	D	N	A	SA
1	Survivors of COVID-19 put others at risk of infection.	37.3	41.6	7.8	7.5	5.8
2	I do not welcome a COVID-19 survivor into my community.	42.7	35.2	4.5	11.7	6.0
3	I do not share a meal with a COVID-19 survivor.	17.4	19.0	9.2	35.5	18.9
4	COVID-19 survivors should be isolated for at least a year.	42.1	40.2	5.1	9.3	3.3
5	I do not buy vegetables from a shopkeeper who survived COVID-19.	24.7	26.5	7.3	28.1	13.4
6	I do not shake hands with survivors of COVID-19.	17.7	18.8	11.2	37.4	14.9
7	I do not hug survivors of COVID-19.	14.1	20.9	6.5	45.2	13.3
8	Survivors can educate community members about COVID-19 prevention.	5.2	4.9	8.3	46.2	35.5
9	Survivors can help care for persons suspected of having COVID-19.	6.3	5.4	11.6	48.8	27.9
10	Survivors can be a source of inspiration for persons infected with COVID-19.	3.8	5.2	8.7	48.2	34.2

Participants' Demographic Profile

The researchers discuss the effects of the participant's demographic profile, i.e., gender, marital status, and place of residence on their knowledge and practices of COVID-19 as well as their attitudes towards the COVID-19 survivors.

Gender

Descriptive statistics and independent sample *T*-test were conducted to determine whether there were any significant differences in the responses of participants by their gender. As **Table 5** shows, the p-values for knowledge (0.001) and for practices (0.00) are less than the alpha level (0.05), which represents a significant impact. On the other hand, the p-value for attitudes towards the COVID-19 survivors is 0.807, which is greater than the alpha level. Therefore, it is concluded that there are statistically significant differences between participants' knowledge and practices towards COVID-19 by gender. Male participants were more knowledgeable than female ones. On the other hand, female participants practiced preventive measures more frequently than male participants did to prevent infection with COVID-19. However, gender does not have any significant impact on participants' attitudes towards the COVID-19 survivors.

Table 5 Participants' knowledge, practice and attitudes towards COVID-19 by gender

Aspect	Gender	N	Mean	Std. Deviation	P-value
Knowledge	Female	516	1.1441	.14934	0.001
	Male	956	1.1768	.19216	
Practice	Female	516	4.1240	.91595	0.00
	Male	956	3.8285	1.07414	
Attitudes	Female	516	3.0271	.68990	0.807
	Male	956	3.0371	.78027	

Place of residence

The authors ran inferential statistics and independent samples *T*-test to understand whether place of residence of the participants had any significant impact on their knowledge, practices and attitudes towards the COVID-19 survivors. As **Table 6** reveals, the p-values for knowledge (0.00) and for practices (0.00) are less than the alpha level (0.05), which imply significant impact. However, the p-value for attitudes is 0.625 which is greater than the alpha level (0.05). Thus, it is concluded that place of residence has a significant influence on knowledge and practices of the participants. However, it does not have any impact on the participants' attitudes towards the COVID-19 survivors.

Table 6 Participants' knowledge, practice and attitudes towards COVID-19 by place of residence

Aspect	Place of Residence	N	Mean	Std. Deviation	P-value
Knowledge	Urban	1336	1.1524	.16302	0.000
	Rural	136	1.2917	.26156	
Practices	Urban	1336	3.9970	.97688	0.000
	Rural	136	3.2941	1.30024	
Attitudes	Urban	1336	3.0367	.73907	0.625
	Rural	136	3.0037	.84874	

Marital status

To understand the differences between single and married participants' knowledge, practices and attitudes towards COVID-19, descriptive statistics and independent samples *T*-test were conducted. As **Table 7** reveals, the p-values for knowledge (0.153) and for attitudes (0.351) are greater than the alpha level (0.05). On the other hand, the p-value for practices is 0.013, which is less than the alpha level (0.05). Therefore, the authors conclude that the participants' marital status have no significant impact on their knowledge of COVID-19 and their attitudes towards its survivors. However, it has a significant impact on their practices. Married participants practiced measures more frequently than single ones to prevent infection with COVID-19.

Table 7 Participants' knowledge, practice and attitudes towards COVID-19 by marital status

Aspect	Marital Status	N	Mean	Std. Deviation	P-value
Knowledge	Single	1052	1.1695	.17087	0.153
	Married	420	1.1548	.19758	
Practices	Single	1052	3.8897	1.01051	0.013
	Married	420	4.0381	1.07409	
Attitudes	Single	1052	3.0452	.73489	0.351
	Married	420	3.0048	.78544	

DISCUSSION

To the best of the authors' knowledge, this research is the first study to investigate knowledge and practices of the public towards COVID-19 and their attitudes towards the COVID-19 survivors in Afghanistan. The findings revealed that the public were very knowledgeable about COVID-19. It corroborates the findings of studies carried out by Asraf et al. (2020), Almofada et al. (2020), Rahman & Sathi (2020), Dkhar et al. (2020), and Al-Hanawi et al. (2020). Most of the participants stated that COVID-19 was caused by a virus and it was a fatal disease. This finding is in line with research by Asraf et al. (2020), Almofada (2020), and Honarvar et al. (2020). Moreover, the majority of the participants were aware of the mode of transmission of the virus, i.e., respiratory droplets, close contact, e.g., shaking hands and hugging. It is similar with the findings of the study by Al-Hanawi et al. (2020).

On the other hand, over half of the participants stated that COVID-19 could be transmitted from animal to person, which is not true based on the data available at the time of the study. According to the Centers for Disease Control and Prevention (CDC, 2020e), the virus originally came from an animal, but no evidence has ever suggested that the virus is spread by animals. One of the preventive measures for COVID-19 advised on TV channels and radios was maintaining the distance from animals. This may have led to misperception about transmission of the virus from animals to humans. In addition, the level of awareness of the public about symptoms of COVID-19 was very high. Most of the participants stated that fever, cough, shortness of breath and tiredness were the major signs of COVID-19. This finding supports the findings of the research carried out by Rahman and Sathi (2020), Chen et al. (2020) and Dkhar (2020). Almost all the participants believed that there was not an effective cure for COVID-19. Al-Hanawi (2020), Dkhar (2020) and Asraf (2020) came to similar conclusions.

The authors believe that three major reasons account for the high level of knowledge of the public about COVID-19. Promotional activities played a key role in raising public's knowledge about the disease. The government and nongovernmental organizations started giving awareness about COVID-19 right after the first COVID-19 case was detected on February 24, 2020 in Afghanistan. They posted posters and billboards with information including symptoms, transmission modes and preventive measures about COVID-19 at public places. Local governments in provinces used bullhorns to give awareness to the public about COVID-19. Governmental and non-governmental TV channels and radios broadcast programs related to COVID-19 around the clock. The Ministry of Public Health and health experts posted information about COVID-19 on social networking sites (Facebook, Twitter) on a daily basis. Moreover, all the participants had access to social networking sites especially Facebook, which was extensively used for disseminating information about COVID-19. This may have played a significant role in raising the level of knowledge of the public. All the participants were literate, which enabled them to read posters and billboards at public places. Over 75% of them had a higher education degree. This may have also been significant in raising awareness of the public about COVID-19.

The public practiced various measures to varying extent to prevent infection with the virus and the spread of COVID-19. Washing hands, avoiding crowded places, gatherings (e.g., wedding),

shaking hands, hugging, and staying home were the very frequently used practices to prevent contracting COVID-19 and its spread. This finding is similar with the findings of the studies carried out by Afzal et al. (2020), Honarvar et al. (2020), and Rahman and Sathi (2020). Moreover, the pubic frequently wore masks, maintained social distance and they avoided going to mosques for prayers to prevent the spread of COVID-19. It corroborates the finding of the study by Afzali (2020) who reported that over 70% of the participants stopped going to the mosques to prevent the spread of the virus.

One major reason why people frequently avoided going to mosques was the issuance of a Fatwa (religious decree) by Ministry of Hajj and Islamic Affairs of Afghanistan that urged people to avoid going to mosques to prevent the spread of the virus. Another reason can be education of the participants. All the participants were literate and a large number of them had a higher education degree. One of the authors witnessed that a great number of people usually went to mosques in his neighborhood for congregational prayers most of whom were illiterate. Using alcohol-based sanitizer and disinfecting surfaces were the least frequently used practices to prevent infection with the virus. These findings contradict the results of the study carried out by Almofada et al. (2020) who reported that a large number of the participants used sanitizers to prevent infection with the virus, and a study by Honarvar et al. (2020) who found that the majority of the participants disinfected surfaces to prevent the spread of the virus. The authors believe that the high price of sanitizers and disinfecting materials is the major reason why the participants used them less frequently to prevent infection with the virus.

The findings also revealed that the public had differing attitudes towards the COVID-19 survivors. They had very positive attitudes towards them when it came to no risk to others, i.e., welcoming them in the community, not isolating them for at least a year, educating their community, source of inspiration, and helping to take care of the infected people. However, they held negative attitudes towards them when it came to having close contact with them, i.e.,

sharing a meal, shaking hands, and hugging survivors. These findings contradict the results of the study carried out by Jalloh (2017) in Sierra Leone who reported that the majority of the participants would not welcome Ebola survivors to their community and would not buy fresh vegetables from a shopkeeper who survived Ebola. However, these findings are similar with those of the research carried out by Nyakarahuka et al. (2017), Rabelo et al. (2016) and Mayrhuber et al. (2017). The authors believe that the participants' negative attitudes towards close contact with the COVID-19 survivors come from misperception about the disease, which results from lack of knowledge. The focus of almost all promotional activities about COVID-19 has been mainly on mode of transmission, symptoms and practices to prevent infection with the virus. They have failed to address other major aspect of the disease – its survivors.

In addition, the results showed that male participants were more knowledgeable than their female counterparts. It is in line with the finding of the study carried out by Almofada et al. (2020), but it contradicts the findings of the study conducted by Honarvar et al. (2020). Moreover, females practiced preventive measures more frequently than male did, which corroborates the results of the study by Al-Hanawi et al. (2020) and Honarvar et al. (2020). However, male and female participants were not significantly different on their attitudes towards the COVID-19 survivors. Likewise, place of residence has a significant impact on knowledge and practices towards COVID-19. Surprisingly, rural residents were more knowledgeable than urban residents, but the latter group used preventive measures more frequently than the former one to prevent infection with the virus. On the other hand, the participants' place of residence did not have any significant impact on their attitudes towards the COVID-19 survivors. Furthermore, the results showed that the participants were not significantly different in their knowledge of COVID-19 by their marital status, which contradicts the finding of the study by Afzal (2020) who reported that married participants had more knowledge about COVID-19 than single respondents did. However, married respondents practiced preventive measures more frequently

than single ones. It is similar with the result of the research by Afzal et al. (2020). Both single and married participants had similar attitudes towards the COVID-19 survivors.

CONCLUSION

The findings suggested that the general literate population of Afghanistan with access to the Internet in particular social networking sites were knowledgeable about COVID-19. They used various practices to varying extent to prevent contracting COVID-19 and its spread. Moreover, their attitudes towards the COVID-19 survivors varied. They had negative attitudes towards them when having close contact with them was involved, e.g., hugging. However, they had positive attitudes towards them if close contact was not involved, e.g., welcoming them to their community. The participants gender and place of residence had a significant impact on their knowledge and preventive practices towards COVID-19 while they did not significantly influence their attitudes towards the survivors. Moreover, marital status only affected their practices to prevent infection with COVID-19. That is, married participants practiced the preventive measures more frequently than their single counterparts to prevent contracting COVID-19. However, it did not affect their knowledge of COVID-19 and attitudes towards the survivors.

The study has some limitations. It is a cross-sectional study; therefore, it is very unlikely to make causal inferences based on the data. The researchers collected data through an online-based survey questionnaire to prevent possible infection with the virus. Thus, it was not representative of people without access to the Internet. It did not represent illiterate people, which makes up a large population of Afghanistan since all the participants were literate and the majority of them held a higher education degree.

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