Original Article

The Association of Knowledge, Perception and Attitude of COVID-19 with the Psychological Status of the Public in Saudi Arabia

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ABSTRACT

OBJECTIVE: To determine the association of knowledge, perception, and attitude of COVID- 19 with the psychological distress status of the public in Saudi Arabia.

METHODOLOGY: A cross-sectional study was performed among 429 participants using an online survey after approval from Umm Al-Qura University in March 2020. Data collection took three months during COVID- 19 outbreak (May-July 2020). An online survey was composed of items related to knowledge, perception, attitude, and the population's psychological status during COVID-19 in Saudi Arabia. Association tests were used at a significance level of < 0.05 and a 95% confidence interval.

RESULTS: Nearly 80% of the participants had variable degrees of psychological distress. There were significant associations of perception (fear of being infected with COVID-19, ($p < 0.05$), fear of being in contact with patients with COVID-19 ($p < 0.05$), and fear of inability to continue their usual activities/work ($p < 0.05$), changes in social habits ($p < 0.05$), and following the precautional measures to prevent acquiring COVID-19 infection ($p < 0.05$) with psychological status. At the same time, the association of Knowledge regarding COVID-19 with psychological level was not statistically significant ($p = 0.221$).

CONCLUSION: Most of the participants had variable degrees of psychological distress. There were significant associations of most of the elements of perception and attitudes of the public regarding COVID-19 with their psychological distress. The public should implement psychological support programs during the pandemic to help them overcome COVID-19-related psychological distress.

KEYWORDS: Attitude, COVID-19, Knowledge, Perception, Psychological Status, Public

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INTRODUCTION

In March 2020, the World Health Organization (WHO) declared coronavirus disease (COVID-19) a pandemic. The spread of any infectious disease seriously impacts public mental health, especially COVID-19, for many reasons, including its rapid spread, large numbers of affected patients, and deaths worldwide. Many countries have taken precautionary procedures to control COVID-19 spread, including isolation, quarantining, and social and physical distancing to prevent person-to-person contact, which can generate stressful experiences and feelings of loneliness and anger. These short-term effects can cause adjustment or may lead to post-traumatic stress disorders[1-3]. Moreover, many types of vaccines for controlling the impact of COVID-19 in affected individuals have been developed. Unfortunately, all vaccines have variable degrees of side effects and specific considerations, which make people worried about when this pandemic will be fully controlled. The availability of vaccines with side effects, the unpredictability of the situation, and the possibility of quarantine for indefinite periods have created a stressful situation for the public worldwide[2,3]. Many studies reported COVID-19 psychological impact, including varying degrees of depression, anxiety, psychological distress (PD), and post-traumatic disorder. The higher perceived threat was associated with a higher possibility of PD. The overflow of pandemic information on social media and other sources has also triggered severe PD that may lead to extreme attitudes/behaviour[3-5]. Public knowledge, perception, and attitude can reflect psychological status. Most of the public had high levels of expertise, a positive attitude, and a good perception regarding COVID-19, as revealed by some studies[3-5]. However, another study reported good attitudes and low to moderate knowledge levels and recommended improving public Knowledge related to COVID-19[7].

Saudi Arabia used to deal with millions of people during Hajj and Umrah seasons, and the Ministry of Health (MOH) always spreads awareness regarding transmissible diseases among families and communities. Many procedures were taken to control the spread of the pandemic, such as temporary curfew

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and social distancing; these measures may impact people's mental health. A considerable percentage of participants experienced variable psychological disturbance during the COVID-19 outbreak. Joseph R 2021[3] recommended reducing the burden of psychological disorders among the Saudi population through early detection and treatment. The Alhazmi A et al. [4] study had adequate knowledge and attitude, and older adults' understanding level was higher than the younger study by Al-Hanawi MK et al [5].

Perception, knowledge, and attitude regarding the pandemic have their impacts on the psychological status of people. Early detection and management of COVID-19-related psychological disturbance are vital to prevent its effects on mental health. The perception, knowledge, and attitude or the psychological impact of the pandemic on the public were investigated by several studies [3-8]. Therefore, it is crucial to identify if there is an association between COVID-19-related knowledge, perception, and attitude of the general public to their psychological distress status. The findings from this study will allow for the development of informed interventions to promote psychological well-being. Therefore, this study was conducted to determine the association of knowledge, perception, and attitude related to COVID- 19 with the psychological status of the public in Saudi Arabia.

To achieve this aim, there are 5 study questions:

(1) What is the degree of their psychological distress?
(2) What is the degree of their knowledge?
(3) What is the degree of their perceptions?
(4) What is the degree of their attitudes?
(5) Is there any association between the knowledge, perception, and attitude to the COVID-19 threat with the psychological status of the public in Saudi Arabia?

METHODOLOGY

A cross-sectional descriptive design was used in this study. The study was conducted among the general adult population in Makkah, Saudi Arabia, using an online Arabic survey after approval from Umm Al-Qura University in March 2020. Data collection took three months during COVID- 19 outbreak (May-July 2020). A statistical power analysis estimated that a minimum of 385 participants was needed for a power of 0.80, P=0.05, and moderate effect size (0.30); therefore, the number of required participants was 429. Due to the presence of the COVID-19 pandemic and its potential consequences, an online data collection method was followed. The study had ethical approval from the Human Research Ethics Committee from the Faculty of Nursing- Umm Al-Qura University, Saudi Arabia. As mentioned earlier, participants' rights were emphasized (the purpose, importance of the study, and consent were provided, and confidentiality of data was assured and maintained as data were being used for study purposes only. Willingness to participate for considered as an inclusion criterion, and no exclusion criteria were applied beyond the sample demographic. The survey comprised five sections and was developed after reviewing the related literature.

Section I**:** sociodemographic characteristics of the participants.

Section II**:** *The public Knowledge of COVID- 19;* this part consisted of 14 questions concerning knowledge of the public, such as the type of microbe, the meaning of the pandemic, the source of COVID- 19 infection etc. the range of this section score is 0-14 where the score is more than eight was considered to have adequate knowledge and ≤8 was considered to have inadequate Knowledge regarding COVID- 19.

Section III**:** *The public perception regarding COVID-19*; which contained items related to sufficiency of COVID-19-related information, fear of having COVID-19 infection (themselves or any individual of the family/relatives), fear of being in contact with an individual with COVID-19 infection, and fear of inability to continue their usual activities/work. The rating scale of this part was 1-10, where one indicates the least and 10 shows the maximum, the score from 4 to 6 was considered moderate perception, whereas > 6 was regarded as high perception.

Section IV**:** *COVID- 19 related attitude of the public* and contained nine items related to changes in personal habits, changes in social practices, and following precaution measures. A 5-point Likert scale was used to rate each question from 1 (never) to 5 (always). The total score range is 9-45, where a cut-off value for the positive attitude was ≥ 4. Higher scores represent positive attitudes.

Section V**:** The Kessler psychological distress (PD) scale (K10)[9-10] was used to measure the PD. The scale consists of 10 depression and anxiety items. The score ranges from 10 to 50 where, the person is considered well when the score is less than 20, the score from 20 to 24 is considered mild PS; if it is from 25 to 29 considered moderate PS, and if the score is 30 or more, it is considered severe PS. The scale has been translated into Arabic, and its reliability (using Cronbach's α) was 0.88.

The content validity of the combined tools in the survey was assessed by a panel of four experts (specialists in community health and mental health studies).

Pilot study: A pilot study was carried out on 25 subjects who were not involved in the study to measure the reliability of the survey, which was confirmed by Cronbach's alpha (0.86). No changes were required to the data collection tools.

Data Collection**:** An online survey was distributed through colleagues, friends, or family WhatsApp groups. A full explanation of the study objectives, nature of questions, the time needed for completion of the survey, and participants' rights to non-participation, were included on the survey's cover page. Returning a completed survey was taken to be

informed consent. The survey was distributed in the early period of emerging of COVID-19 when social distancing practices were carried out. Data collection continued until the previously estimated sample size was reached. Data collection took three months during COVID- 19 outbreak (May -July 2020).

Statistical Analysis: Descriptive statistics of frequencies means and standard deviations; median and inter-quartile range (as appropriate) were computed. Correlation statistics (Pearson and Chi-Square as appropriate) were used to identify an association between demographic characteristics, Knowledge of Covid-19 prevention practices, attitudes to preventive measures and psychological distress.

RESULTS

Participant's characteristics

Four hundred fifty subjects visited the online survey, and 429 completed it. Most of subjects were females 350 (81.6%) as compared to males 79 (18.4%), and Saudi 414 (96.5%). Although the difference in participants' psychological distress levels was not statistically significant (p=0.239), it was noted that more than a fifth of the participants, 89 (20.75%), were normal, while the rest of the participants had variable degrees of psychological distress; mild 159 (37.06%), moderate 96 (22.38%), and severe 85 (19.81%). Females (24.21±9.27) had higher mean psychological distress levels than males (22.21±9.77) **Table I.**

The average knowledge score of the participants regarding COVID-19 was adequate (10.96±1.23). The association of the participants' psychological status

TABLE I:
PARTICIPANTS CHARACTERISTICS (n=429)

Characteristics		N (%)
Gender	Male	79 (18.4%)
	Female	350 (81.6%)
Nationality	Saudi	414 (96.5%)
	Non- Saudi	15 (3.5%)
Age in years	Less than 20	55 (12.8%)
	20-30	362 (84.8%)
	More than 30	12 (2.8%)
Social status	Single	379 (88.3%)
	Married	45 (10.5%)
	Divorced or widowed	5 (1.2%)
Education	Bachelor's degree	399 (93%)
	Diploma degree	15 (3.5%)
	Master's degree	11 (2.6%)
	Doctor degree	4 (0.9%)
Kessler Psychological Distress scale (K10)	Well/normal	89 (20.75%)
	Mild	159 (37.06%)
	Moderate	96 (22.38%)
	Severe	85 (19.81%)
	Mean ± SD	23.87±9.38
	Male	22.21±9.77
	Females	24.21±9.27

TABLE II: THE ASSOCIATION OF KNOWLEDGE, PERCEPTION, AND ATTITUDE OF COVID-19 WITH THE PSYCHOLOGICAL STATUS OF THE PUBLIC IN SAUDI ARABIA

Knowledge	Correct Responses (n) (%)	Mean ± SD	P
Type of microbe causing the disease	405 (94.4%)	10.96±1.23	0.221
Meaning of pandemic	378 (88.1%)		
Source of the organism	297 (65%)		
Mode of transmission	378 (88.1%)		
Incubation period	354 (82.5%)		
Manifestations/symptoms	425 (99.1%)		
Severity of disease	397 (92.5%)		
The most affected groups	405 (94.4%)		
Spread of the organism /Transmission through surfaces	220 (51.3%)		
Cleaning/ Disinfection of surfaces	257 (59.9%)		
Possibility of treatment-cure	416 (97%)		
General precautions measures	424 (98.8%)		
Self-preventive measures	419 (97.7%)		
Actions performed with persons with COVID-19	362 (84.4%)		

Perception	Low (n) (%)	Moderate (n) (%)	High (n) (%)	Mean ± SD	P
Sufficiency of COVID-19-related information	34 (7.93)	101 (23.54)	294 (68.53)	7.38±2.35	0.373
Fear of being infected with COVID-19	100 (23.31%)	168 (39.16)	161(37.53)	5.77±3.04	0.001*

Fear of any individual of the family being infected with COVID-19	36 (8.39)	62 (14.46)	331(77.15)	8.16±2.69	0.013*
Fear of being in contact with patients with COVID-19	101(23.54)	150 (34.97)	178 (41.49)	5.88±3.006	0.000*
Understanding public fear from the spread of COVID-19	31(7.23)	73 (17.01)	325 (75.76)	7.96±2.54	0.000*
Fear of inability to continue their usual activities/work	128 (29.84)	67 (15.62)	234 (54.54)	6.37±3.610	0.000*
Attitude	**Low (n (%)**	**Moderate (n (%)**	**High (n (%)**	**Mean ± SD**	**P**
Change in personal habits	53 (12.35%)	76 (17.72%)	300 (69.93%)	14.45±3.24	0.319
Change in social habits	47 (10.69%)	110(25.64%)	272 (63.4%)	15.82±2.47	0.018*
Follow precautional measures	3 (0.7%)	111(25.88%)	315(73.42%)	14.45±3.24	0.000*

**Association is significant at the 0.05 level (Chi-square test)*

with their Knowledge regarding COVID-19 was not significant (p = 0.221). Participants had a high perception regarding fear of any individual of the family/relatives being infected with COVID-19 331 (77.15%), fear of being in contact with patients with COVID-19 178 (41.49%), and fear of inability to continue their usual activities/work 234 (54.54%).

However, participants had a moderate perception regarding fear of being infected with COVID-19 168 (39.16%). There were significant associations between the psychological status and anxiety about having COVID-19 infection (p= 0.001), fear that any individual of the family has COVID-19 infection (p= 0.013), fear of being in contact with patients with COVID-19 (p= 0.000), and fear of inability to continue their usual activities/work (p= 0.000).

Participants had a positive COVID-19-related attitude regarding changes in personal habits 300 (69.93%), changes in social practices 272 (63.4%), and following the precautional measures to prevent acquiring COVID-19 infection 315 (73.42%). As shown in **Table II**, there were significant associations between psychological status and changes in social habits (p=0.018) and following the precaution measures to prevent COVID-19 infection (p=0.000).

DISCUSSION

The findings of our study revealed that nearly eighty percent of the participants had variable degrees of PD. These results are consistent with many studies[23-28]. Alamri HS et al. [11] and Albagmi FM 2021[8] found that the participants had variable PD symptoms. On the other hand, Alaloul F 2021[12] reported lower PD levels among the public in Oman. The findings of this study may reflect participants' fear of the unknown, which has many reasons; uncertainty about the treatment/vaccine of COVID-19, confusion about the prognosis, and fear of separation /loss of family members because of COVID-19-related deaths. The findings of this study revealed that females had higher PD scores than males, which agrees with Albagmi FM 2021[8] and Alkhamees AA 2020[13]. In opposition, men had significantly more PD levels in Hawash et al. (2021)[14]. However, Pedrozo-Pupo JC 2020[15] and Elhessewi GMS 2021[7] could not find any significant relationship between gender and PD. The findings of our study may be related to fear about COVID-19 related impact on their close relatives, especially the elderly who may have chronic diseases.

The average of the participant's knowledge score regarding COVID- 19 was adequate. Sami W et al.[16] supported our findings in Saudi Arabia and reported participants' high COVID-19-related knowledge. On the other hand, a study by Zhong BL et al. [17] in China revealed inadequate participant knowledge. The adequacy of participants' Knowledge regarding COVID- 19 in our study reflects the great efforts made by the government and the Saudi Ministry of Health in spreading awareness and disseminating the correct information about COVID-19 on all accessible platforms for people in Saudi Arabia. All participants in our study were educated, which may explain their high knowledge level regarding COVID- 19.

Participants in our study had high COVID- 19 related perceptions. These results are consistent with the Sami W 2021[16] study, which revealed that most participants thought they or their family/relatives might get infected. In contrast, few participants in Asmelash D 2020[18] study were subjected to infection with COVID-19. Participants in our study perceived the seriousness of COVID-19 infection in public, which was also reported by Chee JCC et al. [19]. The participants in our research said they fear being in contact with patients with COVID-19, while most of the participants in the Alhazmi A 2020[4] study had dealt with an infected person. Fear of contact with patients with COVID-19 may be attributed to the participants' young age and inexperience in dealing with patients with infectious diseases. It may also be related to fear of the unknown because, at the beginning of the COVID-19 pandemic, many rumours were spreading about the disease and modes of transmission.

The participants in our study perceived fear of inability to continue their usual activities/work, contrary to Alrasheedy AA 2021[20], who reported that more than half of the participants had no/limited effect on their

duties. It is a normal reaction that people fear disease, especially if it is infectious, spreads rapidly, and leads to high rates of death worldwide. All these issues can increase people's fear, which may be reasons for the high COVID-19-related perception of the participants in our study.

The participants in this study had a positive COVID-19 -related attitude regarding changes in personal habits, changes in social practices, and following the precautionary measures to prevent infection with COVID-19. Similar findings were reported by previous Saudi studies 4-8 and correlated with international studies' findings, such as Hager E et al. [21]. In contrast to our findings, Haque T 2020[6] reported that the participants' COVID-19 attitude was not impressive. The participants' positive attitude reflects the government's extreme measures to control the pandemic's spread. Participants' level of education in our study may be another rationale for their positive attitude.

Our study showed a significant association of most of the elements of related perception and attitudes of the public regarding COVID-19 with their PD level, consistent with Joseph R 2021[3] results. In China, Jia Y et al. [22] found that knowledge and attitudes regarding COVID-19 were significantly associated with PD. Although participants in our study had high Knowledge regarding COVID-19, the association with their PD level was not statistically significant. The high participant knowledge regarding COVID-19 in our research may lead to changes in their attitudes to protect them from infection.

Our study aimed to assess the association of knowledge, perception, and attitudes of the public regarding COVID-19 with their PS. Subjects voluntarily participated in the study, and an online survey allowed them to freely express their perceptions and attitudes. However, participants may respond appropriately to social expectations, affecting the results. The sample was not randomly selected; most of them were females, educated, and young, affecting the results' generalizability.

CONCLUSION

Most of the participants were young and had variable degrees of PD ranging from mild to severe, with females having a higher degree of PD than males. Therefore, this age group needs monitoring and attention to determine and meet their needs during the pandemic. There was a significant association of most of the elements of perception and attitudes of the public regarding COVID-19 with their PD level. Surprisingly, the association of knowledge of the public regarding COVID-19 with their PD level was not statistically significant. The public should implement psychological support programs during the pandemic to help them overcome COVID- 19 related PD.

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AUTHOR CONTRIBUTIONS

Afsour HI: Principle investigator, contributed to the conception or design of this paper, involved in drafting the survey to collect and analyzing the significant parts (introduction, methodology, results and discussion) of the study, also participated in drafting, revising this paper critically for important intellectual content, final approval of the version to be submitted to the journal and to be published.

Hariri N: Involved in drafting, preparing the survey to collect and analyze the data, revising the results of this study, drafting, revising this paper critically for important intellectual content, and final approval of the version to be submitted to the journal for publication.

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