

Levels of fear and uncertainty regarding the spread of coronavirus disease (COVID-19) among university students

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Abstract

Purpose: This study aimed to assess the levels of fear and uncertainty regarding the spread of coronavirus disease 2019 among Jouf University students and to explore the factors influencing those fears and uncertainties.

Design and Methods: This was a cross-sectional study of 416 undergraduate students who used an electronic questionnaire. Fear and intolerance of uncertainty scales were used to assess students' fear and uncertainty.

Findings: Results indicated a positive correlation between fear and intolerance of uncertainty, and a negative correlation between the level of knowledge and fear. Gender, age, and type of college emerged as significant predictors of fear.

Practice Implications: Developing strategies to respond positively to students' worries and fears and proactively help them to solve their problems and guide them in preparing a plan for the future.

KEYWORDS

COVID-19, fear, uncertainty, university students

1 | INTRODUCTION

Coronaviruses are a family of ribonucleic acid viruses that cause diseases in individuals, extending from the common cold to severe illnesses, such as Middle East respiratory syndrome (MERS-CoV), severe acute respiratory syndrome coronavirus (SARS-CoV), and diseases that spread among mammals (e.g., bats and camels) and birds.¹ Gorbalenya et al.² reported that multiple epidemic outbreaks occurred during 2002 (SARS-CoV), with 800 deaths, and 2012 (MERS-CoV), with 860 deaths.

Coronavirus disease 2019 (COVID-19) is a likely severe acute respiratory disease caused by SARS-CoV-2. The virus was specified as the generator of an outbreak of pneumonia of an anonymous cause in Wuhan City, Hubei Province, China, in December 2019. The clinical display of COVID-19 varies from mild common cold to severe pneumonia causing acute respiratory distress syndrome, which can potentially lead to death.¹ Since then, the COVID-19 outbreak has increased rapidly, with the World Health Organization (WHO) first declaring COVID-19 to be a public health emergency of international

concern on January 30, 2020, and then formally declaring it a pandemic on March 11, 2020; at that time, 125,000 confirmed cases across 118 countries and more than 4600 deaths had been reported.^{3,4} The worldwide number of reported COVID-19 cases between December 31, 2019, and September 23, 2020, was 31,658,573, including 971,869 deaths. The number of reported cases in Saudi Arabia was 331,000, with 4,569 deaths.⁵

Available evidence suggests that the transmission of infection occurs via direct contact with respiratory droplets produced when an infected person coughs or sneezes, or via contact with fomites. Individuals can also be infected by touching objects or surfaces contaminated with the virus and then touching their face (e.g., mouth, nose, or eyes). COVID-19 can continue to live or exist on surfaces for several hours, but simple detergents and antiseptics can kill it. Transmission is also potential through aerosol-generating procedures performed in clinical care.⁶ The contribution to transmission by the existence of COVID-19 in different body fluids is unrecognized; however, the virus has been identified in conjunctival secretions, saliva, tears, and blood, and may also be transmitted through feces.⁷⁻¹⁰

The early stages of the outbreak had major effects on the well-being of people and the nation's worldwide with major health, economic, and safety implications.¹¹ There was a lack of knowledge about the disease, a lack of information and news sharing, fear, worry, uncertainty, and a lack of urgency in quickly recognizing the disease's threat to physical and emotional well-being, likely due to the uncertainty of individuals about the future course of their illness. Policies to deal with the outbreak varied between countries; however, response actions such as social distancing, lockdown, and stay-at-home recommendations or orders were introduced.¹²⁻¹⁴

Educational institutions in Saudi Arabia and around the world suddenly transitioned from classroom lectures to distance learning as a measure to prevent the spread of COVID-19. On March 8, 2020, the Saudi Ministry of Education instructed all schools, colleges, and universities in the country to suspend student attendance indefinitely and to implement distance learning as an alternative. Currently, teaching is being carried out remotely through virtual classrooms. This was made possible by online learning management systems such as blackboard and Microsoft teams. In addition, to ensure student satisfaction, the Ministry of Education instructed all program management teams to adjust the allocation of assessments by basing 80% of a student's total grade on coursework-related activities and the remaining 20% on his or her performance on the final evaluations. Lecturers have been given a wide variety of assessment approaches from which to choose.¹⁵

Fear, as a multifaceted factor, is often one of the most important underlying factors of compromised mental health and well-being.¹⁶ Fear of people and exaggerated reactions to the spread of COVID-19 from person to person could do more harm and spread faster than the disease itself, but there are ways to slow it down. As the virus spreads to more countries and the death toll rises, the uncertainty of what lies ahead is concerning. The reality is that the virus itself will not potentially do great harm when it arrives. We have a great chance to learn about personal hygiene and how to reduce the spread of infectious diseases in our community. Let us accept the challenge presented to us with a kind of sympathy for others, patience, and search, to enrich information and facts instead of guessing.

Outbreaks can cause significant psychological distress, fear of vagueness, and uncertainty, which may lead to unpleasant effects on overall learning, academic achievement, and the general well-being of students. Few researchers have examined fear and uncertainty in the negative and unpleasant consequences that may not consider the actual fear and uncertainty individuals felt during the actual event. Many studies have explored similar issues among hospital workers and residents; however, only a few studies have assessed fear and uncertainty among university students during the COVID-19 outbreak.^{17,18}

Any crisis offers the opportunity for learning, refining sympathy, and increasing flexibility while constructing a secure and more caring community. More knowledge and certainty regarding COVID-19 will relieve students' fears and worries about the disease and support their ability to adapt to any secondary effects in their lives.⁴ However; current COVID-19 treatment worldwide has focused mainly on the control of infections, effective vaccines, and cure rates.^{19,20} The

psychosocial dimensions of the virus must also be examined thoroughly. Nevertheless, as countries strive to reduce the COVID-19 transmission rate, their goal should also be to alleviate the fears and uncertainties of their residents.

We hope that the results of this study will help colleges and universities in Saudi Arabia to create a theoretical framework for assessing psychological well-being and to recognize evidence-based psychological intervention practices that will help students during any future pandemics. The results can also assist policymakers by revealing the potential mechanisms for reducing the effect of anxiety on students during such health crises. This study will provide a preliminary assessment of university students' levels of fear and uncertainty regarding COVID-19 outbreaks to reduce adverse psychological outcomes and foster social stability among this group. We aim to explore the levels of fear and uncertainty among Jouf University students regarding the spread of COVID-19 and to explore the influencing factors.

2 | METHODS

2.1 | Research design

A cross-sectional research design was adopted to assess the current research topic, and an electronic questionnaire was used to collect the data.

2.2 | Setting

Males and females were recruited from various colleges at Jouf University, a university in Saudi Arabia.

2.3 | Participants

The target population was all undergraduate students at the university. The inclusion criteria were as follows: undergraduate students at Jouf university, aged 18 years or more, enrolled in a bachelor's degree program, and willing to participate in the study. The Raosoft²¹ sample size calculator was used based on the total population size of 24,996 bachelor's degree-seeking Jouf University students, including both the male and female sections, an alpha of 0.05, power of 0.95, and an estimated response rate of 50%, the desired sample size was 379. To compensate for the low anticipated response rate and incomplete questionnaires, a large convenience sample of 416 students was chosen.

2.4 | Instruments

A four-section questionnaire was used to address the study objectives.

2.4.1 | Demographic characteristics

This section assessed participant demographic characteristics (age, gender, educational level, and marital status). This section was also used to collect data on the participants' college and previous exposure to COVID-19 among their family members.

2.4.2 | Knowledge of COVID-19 questionnaire

Knowledge of COVID-19 was assessed with a knowledge questionnaire, which has been developed by Zhang et al.²² The questionnaire consists of 12 questions, four items regarding clinical presentations, three items regarding transmission routes, and five items about control and prevention of COVID-19. The response options were "true," "false," and "I do not know." A correct response was assigned one point, and an incorrect or unknown response was assigned zero points. The total knowledge score ranged from 0 to 12, with a higher score indicating better knowledge of COVID-9. A score of 9–12 indicated excellent knowledge, 5–8 indicated good knowledge, and 0–4 indicated poor knowledge. The internal consistency of the knowledge questionnaire has been found to be acceptable in previous research (0.71).²³ In this study, this questionnaire yielded a Cronbach's alpha of 0.74.

2.4.3 | Fear questionnaire

A fear questionnaire was used to assess the global fear score. The questionnaire was developed by Marks and Mathews.²⁴ Each item score ranged from 0 ("not affected") to 8 ("very severely disturbed" (and summation of items ranged from 0 to 40). Higher scores indicate more anxiety and depression associated with fear. Cronbach's alpha for this questionnaire was 0.79, indicating strong reliability.

2.4.4 | Intolerance of uncertainty scale

The intolerance of uncertainty scale was used to measure participants' responses to uncertainty, ambiguous situations, and issues regarding the future. The scale was developed by Carleton et al.²⁵ It consists of 12 items, with answers based on a 5-point scale, ranging from 1 ("Not at all characteristic of me") to 5 ("Entirely characteristic of me"). Higher scores indicate lower tolerance of uncertainty. Total score items ranged from 12 to 60. The seven-item subscale examines fear and anxiety associated with future events, which may best be described as prospective anxiety. In contrast, the five-item subscale examines uncertainty inhibiting action or experience, which may best be described as inhibitory anxiety. The scale has been found to have high internal consistencies (alpha = 0.85).²⁵ In this study, Cronbach's alpha was 0.75. Permission to use the scale was obtained from the developers. Then, the scale was translated into the Arabic language and back-translated to check the accuracy of the translation. The questionnaires were reviewed and validated by three experts in the field of nursing.

2.5 | Ethical considerations

The present study was approved by the Local Committee of Bioethics at Jouf University (IRB number: 16-9/41) and then registered with the Saudi Center for Disease Prevention and Control (Weqaya; registration number 202006041). An electronic informed consent request was presented on the first page of the online survey. The participants were electronically informed on the first page of the survey that their participation in the study was voluntary and that they could withdraw from the survey at any time. In addition, the questionnaire also contained the authors' contact information to allow the students to ask questions related to the study. Anonymity and confidentiality of the data were ensured, and the completion and submission of the questionnaire indicated the students' consent to participate.

2.6 | Data collection

An electronic questionnaire was distributed through an online link. The link was sent to potential participants via university email. In addition, students were encouraged to pass on the link to their classmates. At the end of the data collection period, the authors pressed a button to avoid accepting further submissions. All data were then transferred and stored as a soft copy of the SPSS file (SPSS version 20; IBM Corp.), with password protection on the first author's laptop. The demographic data of the participants were coded to maintain confidentiality. All completed survey questionnaires were saved and managed electronically by the authors only via a password-protected Google Drive account (Google, Inc.).

2.7 | Data analysis

Data were tabulated and analyzed using SPSS version 20. Reliability was assessed using Cronbach's alpha test. Descriptive statistics of quantitative variables were presented in the form of means, standard deviations, or frequencies, and percentages for the demographic data and the assessment of qualitative variables was performed using the χ^2 test. Univariate analysis was performed to explore the associations between knowledge, fear, and uncertainty with other related factors by using both the Student's *t* test and *F* test (analysis of variance) or Pearson's correlation. Then, multiple linear regression analysis was performed to identify the unique contribution of relevant predictors on the intolerance to uncertainty scores. $p < 0.05$ was considered statistically significant.

3 | RESULTS

3.1 | Demographic characteristics of the participants

A total of 416 Jouf university students completed the study questionnaire. Their mean age was 21.66 ± 2.33 years. About two-thirds

were females studying in practical colleges (60.1%), and the majority of the sample were single (88.9%). Students were from different academic years, and about two-thirds of them were from practical colleges (60.3%). The majority of students (97.4%) did not have family members who had been previously exposed to COVID-19. About one-third (34.1%) of them relied on social media, television, family, and acquaintances as a primary source of COVID-19 information. The mean COVID-19 knowledge score was 10.24 ± 1.83 (range: 0–12), and the overall accuracy rate for the knowledge test was 85.33% ($10.24/12 \times 100$).

3.2 | Knowledge of COVID-19 among university students

The mean (\pm standard deviation) COVID-19 knowledge score was 9.53 ± 1.65 (range: 0–12), with an overall correct rate of 79.45% ($9.53/12 \times 100\%$). A score less than 5 points (<50%) indicates poor knowledge, between 5 and 9 points (between 50% and 75%) indicates average knowledge, and greater than 9 (more than 75%) indicates good knowledge. Accordingly, the numbers of participants with poor, average, and good knowledge were 4 (1.0%), 95 (22.8%), and 317 (76.2%), respectively. Mean knowledge scores showed statistically significant differences between knowledge level and participant's age, marital status, and educational level ($p < 0.001$, $p = 0.049$, and $p < 0.001$, respectively), whereas older, single, and higher educational level participants had higher levels of knowledge (Table 1).

3.3 | Fear and uncertainty regarding COVID-19 among university students

Results indicated that 93 (22.4%) of the Jouf University students had a higher level of fear, and 150 (36.1%) had a higher level of tolerance of uncertainty. Females studying in humanities colleges who had family members who had been previously exposed to COVID-19 reported higher levels of fear ($p = 0.001$, $p < 0.001$, and $p = 0.018$, respectively), whereas males studying in humanities colleges who had family members who had been previously exposed to COVID-19 reported higher levels of intolerance of uncertainty ($p < 0.001$ and $p = 0.024$, respectively). As shown in Table 2, there were statistically significant differences in the mean scores of knowledge, fear, and intolerance of uncertainty by age and educational level ($p < 0.001$). The youngest participants and lower academic year students had low knowledge scores and higher levels of fear and uncertainty.

3.4 | Correlation matrix among participants' knowledge, fear, and level of uncertainty regarding the spread of COVID-19

Table 3 presents the correlation matrix between study variables. There was a statistically significant negative correlation between

participants' level of knowledge and their fear ($p = 0.004$). However, there was a statistically significant positive correlation between the level of fear and intolerance to uncertainty ($p < 0.001$).

3.5 | Multiple linear regression analysis of the factors influencing intolerance of uncertainty

Table 4 presents the results of the multiple linear regression analysis conducted to determine whether demographic variables could independently predict higher levels of intolerance of uncertainty among study participants. Younger age and earlier academic years were independently associated with more intolerance of uncertainty.

4 | DISCUSSION

The COVID-19 pandemic emerged as the most severe and daunting public health crisis of our time. Aside from the increasing mortality rate, nations across the world have also suffered from overwhelming negative psychological outcomes, like anxiety, depression, and fear are expected in pandemics, among people of all ages.²⁶ In Saudi Arabia, university students are no exception, as all educational institutions have been closed. This closure causes a general sense of confusion and uncertainty regarding academic and professional careers among educators and exacerbates ongoing psychological health problems among university students. Efforts are underway around the world to resolve the effects of COVID-19. Understanding and alleviating human fear, particularly those related to physical and mental well-being, is a major concern and focal point for action.²⁷

Studies have shown that public health crises can have many psychological impacts on university students, which can be expressed as anxiety, fear, and worry.²⁸ This indicates the necessity of concerted efforts to maintain safety and reduce the levels of distress, fear, and uncertainty among this group. Thus, this study aimed to assess the levels of fear and uncertainty regarding the spread of COVID-19 among Jouf University students and to explore the factors influencing the fears and uncertainties.

Our findings indicate that most study participants were knowledgeable about COVID-19. Study participants achieved a mean score of 9.53 ± 1.65 (79.45%) on the knowledge questionnaire. Our findings serve as evidence of the efficacy of the governmental public health education programs of the Saudi Ministry of Health and the technology in increasing students' knowledge and awareness of COVID-19. The findings are also consistent with those of other studies that have shown satisfactory levels of knowledge among the Saudi population,^{29,30} and for other epidemic situations such as the MERS outbreak.^{31–33} Our study results were also in line with this of previous studies indicating a higher level of knowledge among college students worldwide.^{23,34} The results of the present study reflected the extent to which the students' desire to actively seek information on COVID-19 strongly affected their lives, including educational, social, and mental aspects.

TABLE 1 Demographic characteristics of participants and knowledge score of COVID-19 by demographic variables (*n* = 416)

Characteristics	No.	%	Total knowledge score						Test of Sig.	<i>p</i>
			Poor (<i>n</i> = 4)		Fair (<i>n</i> = 95)		Good (<i>n</i> = 317)			
			No.	%	No.	%	No.	%		
Sex										
Male	166	39.9	2	50.0	39	41.1	125	39.4	$\chi^2 = 0.424$	^{MC} <i>p</i> = 0.836
Female	250	60.1	2	50.0	56	58.9	192	60.6		
Age/year										
<21	150	36.1	2	50.0	50	52.6	98	30.9	$\chi^2 = 15.075^*$	^{MC} <i>p</i> < 0.001*
≥21	266	63.9	2	50.0	45	47.4	219	69.1		
Minimum–maximum	18–28		19–22		18–27		18–28		<i>F</i> = 4.313*	0.014*
Mean ± <i>SD</i>	21.66 ± 2.33		20.5 ± 1.29		21.09 ± 1.92		21.84 ± 2.43			
Marital status										
Single	370	88.9	3	75.0	79	83.2	288	90.9	$\chi^2 = 5.707^*$	^{MC} <i>p</i> = 0.049*
Married	46	11.1	1	25.0	16	16.8	29	9.1		
Academic year										
First academic year	89	21.4	1	25.0	28	29.5	60	18.9	$\chi^2 = 25.686^*$	^{MC} <i>p</i> < 0.001*
Second academic year	67	16.1	0	0.0	17	17.9	50	15.8		
Third academic year	92	22.1	1	25.0	26	27.4	60	18.9		
Fourth academic year	106	25.5	2	50.0	22	23.2	82	25.9		
Fifth academic year	62	14.9	0	0.0	2	2.1	65	20.5		
College										
Humanities	165	39.7	1	25.0	47	49.5	117	36.9	$\chi^2 = 5.090$	^{MC} <i>p</i> = 0.077
Health and Scientific	251	60.3	3	75.0	48	50.5	200	63.1		
Previous exposure to COVID-19 among the family members										
Yes	11	2.6	0	0.0	4	4.2	7	2.2	$\chi^2 = 1.991$	^{MC} <i>p</i> = 0.360
No	405	97.4	4	100.0	91	95.8	310	97.8		

Note: *p*: *p* value for association between different categories; χ^2 : Chi-square test.

Abbreviations: COVID-19, coronavirus disease 2019; MC, Monte Carlo.

*Statistically significant at *p* ≤ 0.05.

The high level of knowledge was explicitly clear among participants who were older, single, and in later academic years. This finding is supported by other studies that have found that older and more educated respondents are more knowledgeable about emerging communicable diseases.^{29,32,35,36} Our findings suggested that older students and students at higher educational levels may be more concerned with raising awareness and educating others about the disease through social networking platforms, families, and friends to protect themselves and others.

Our results indicated that nearly one-quarter (22.4%) of Jouf University students have a higher level of fear associated with anxiety and depression; therefore, further psychological assessment and, in some cases, intervention is required. This finding may be due to the rapid spread of the virus, which resulted in the subsequent development of fears in this group. In addition, there have been changes in behavior among this group to better ensure safety, such as reducing physical contact and visits to health care facilities, canceling plans, and more frequent handwashing. The WHO has

released recommendations for minimizing worry and anxiety that should be promoted in this group. Some of these recommendations are to avoid watching and listening to news constantly; staying connected with loved ones through digital media; reassuring and supporting each other; and taking care of one's own health by exercising, eating healthy, and sleeping well.

In the present study, females, students studying in humanities colleges, and students with family members who had been exposed to COVID-19 reported more fear. This finding may be due to a high level of fear among females, as they made up the majority of our study population (60.1%). This may also be explained by the fact that females have been found to exaggerated emotional reactions and negative emotions in response to stressful situations, and typically have a greater burden than men during a pandemic, including housework, caregiving role, or domestic violence. In addition, females usually suffer from more stressful life events than males.³⁶ In reality, undergraduate Saudi students are concerned that education standards have been compromised by the forced shutdown and the

TABLE 2 Comparison of demographic characteristics and mean knowledge, fear, and intolerance of uncertainty scores ($n = 416$)

Variable	Knowledge			Fear			Intolerance of uncertainty		
	Mean \pm SD	Test of Sig.	p	Mean \pm SD	Test of Sig.	p	Mean \pm SD	Test of Sig.	p
Gender									
Male	9.39 \pm 1.64	$t = 1.437$	0.151	21.55 \pm 9.09	$t = 3.327^*$	0.001*	19.15 \pm 6.05	$t = 0.089$	0.929
Female	9.63 \pm 1.65			24.61 \pm 9.22			19.20 \pm 5.92		
Age/year									
<21	8.95 \pm 1.68	$t = 5.596^*$	<0.001*	29.74 \pm 9.13	$t = 11.453$	<0.001*	20.85 \pm 5.87	$t = 4.364$	<0.001*
≥ 21	9.86 \pm 1.54			19.81 \pm 7.23			18.24 \pm 5.82		
Marital status									
Single	9.61 \pm 1.61	$t = 2.831^*$	0.005*	23.31 \pm 9.15	$t = 0.523$	0.601	19.09 \pm 5.88	$t = 0.933$	0.351
Married	8.89 \pm 1.77			24.07 \pm 10.36			19.96 \pm 6.62		
Academic year									
First academic year	8.92 \pm 1.58	$F = 15.199^*$	<0.001*	28.47 \pm 9.78	$F = 11.646^*$	<0.001*	22.72 \pm 6.15	$F = 11.847^*$	<0.001*
Second academic year	9.46 \pm 1.70			23.94 \pm 11.35			18.58 \pm 5.22		
Third academic year	9.38 \pm 1.67			23.00 \pm 7.89			18.82 \pm 5.59		
Fourth academic year	9.45 \pm 1.67			20.16 \pm 8.46			17.42 \pm 6.43		
Fifth academic year	10.85 \pm 0.60			21.60 \pm 5.72			18.32 \pm 3.89		
College									
Humanities	9.35 \pm 1.70	$t = 1.897$	0.058	25.27 \pm 9.01	$t = 3.399^*$	0.001*	20.95 \pm 6.03	$t = 5.027^*$	<0.001*
Health and Scientific	9.66 \pm 1.60			22.15 \pm 9.26			18.02 \pm 5.64		
Previous exposure to COVID-19 among the family members									
Yes	8.82 \pm 1.99	$t = 1.464$	0.144	33.45 \pm 12.17	$t = 2.797^*$	0.018*	23.18 \pm 6.52	$t = 2.265^*$	0.024*
No	9.55 \pm 1.63			23.12 \pm 9.05			19.07 \pm 5.92		

Note: t : Student t test; F : F for ANOVA test; p : p value for association between different categories.

Abbreviations: ANOVA, analysis of variance; COVID-19, coronavirus disease 2019.

*Statistically significant at $p \leq 0.05$.

transition to crisis distance education, and they fear that their grade point average will decrease due to the shift from classroom learning to virtual courses.³⁷ This finding is consistent with other studies that have found that females who studied in social colleges in Israel and Russia reported higher fear levels.³⁸

This study's findings indicated that one-third (36.1%) of Jouf University students have a higher level of uncertainty. Students in

humanities colleges and those who had family members who had been previously exposed to COVID-19 reported higher levels of uncertainty ($p < 0.001$ and $p = 0.024$, respectively), suggesting that the COVID-19 pandemic and its related stressors cause confusion, loss of control, and uncertainty. Savitsky et al.³⁹ suggested that the faculty have a major role in establishing a sense of control and providing students with a secure educational framework. Faculty should minimize abrupt changes to the curriculum, disclose the

TABLE 3 Correlational matrix among participants' knowledge, fear, and level of uncertainty regarding the spread of COVID-19

		Knowledge	Fear	Uncertainty
Knowledge	r	1		
	p			
Fear	r	-0.142*	1	
	p	0.004*		
Uncertainty	r	0.065	0.459*	1
	p	0.254	<0.001*	

Note: r , Pearson coefficient.

Abbreviation: COVID-19, coronavirus disease 2019.

*Statistically significant at $p \leq 0.05$.

TABLE 4 Multiple linear regression analysis of the factors influencing intolerance of uncertainty ($n = 416$)

Variable	Coefficient B	SE	β	t	p
Sex (male vs. female)	0.215	0.585	0.018	0.368	0.713
Age group ≥ 21	-1.822	0.689	-0.147	2.645*	0.008*
Educational level (4-5)	-1.518	0.676	-0.125	2.246*	0.025*
$R^2 = 0.056$, adjusted $R^2 = 0.049$, $SE = 5.82$, $F = 8.089^*$, $p < 0.001^*$					

Note: R^2 : coefficient of determination; B , unstandardized coefficients; SE: estimates standard error; and β : standardized coefficients.

details of any changes as soon as possible, and offer continuity in the details and exams through the academic year.³⁹ High levels of fear and uncertainty were found among participants who had family members with previous exposure to COVID-19. These students were most likely worried about their family health status, the transmission of infection to other family members, the uncertainty of disease progression, manifestations of complicated cases that necessitate the utilization of mechanical ventilators, and the mortality rate.

The results showed that there were statistically significant differences in the mean scores of knowledge, fear, and uncertainty ($p < 0.001$) in terms of age and educational level; participants who were younger and in the earlier academic years had low knowledge scores and higher levels of fear and uncertainty. This could be explained by the fact that senior students had better knowledge about the disease and prevention measures than junior students, which could further protect them from fear of COVID-19. This finding is in line with that of a previous study that demonstrated that students at older ages and later academic years had lower scores for fear than those at younger ages and earlier academic years.³⁶ Students who were in health and science colleges, such as pharmacy, science, medicine, and applied medical sciences, showed lower levels of fear and intolerance of uncertainty regarding COVID-19 compared with students who were studying in humanities colleges. This may be due to more related subjects in their curriculum, and they are having a better general understanding of the disease. In addition, the study results indicate the capability of medical students to utilize their knowledge as infection control, utilize the aseptic technique, and so forth, to potentiate their adaptability to threatening situations.

The results showed a negative correlation between knowledge and fear ($p = 0.004$). Despite the rapid increase in the number of publications regarding COVID-19, some aspects of the disease have not yet been clearly identified. This vagueness is mainly related to the origin of the virus, availability of the specific antiviral treatment, and effective vaccines, which result in a wide range of opinions and reactions.⁴⁰

5 | LIMITATIONS

This study has some limitations, including an online sample with no random selection, weak generalizability, and the inability to infer causality because of the nature of study design (cross-sectional). Self-reported psychological and emotional levels of fear, uncertainty, and other conditions may not always be aligned with one another. The study participants were mainly females and a higher number of students from health and scientific colleges. The study findings are mainly concerned with the Jouf community, and thus cannot be generalized.

6 | CONCLUSION

The present study showed that Jouf University students in Saudi Arabia have a high level of knowledge with low levels of fear and intolerance of uncertainty regarding the spread of COVID-19.

Factors such as older age, later academic year level, and being a man, may protect students from fear and uncertainty during the pandemic. In addition, students with a higher score of fear and uncertainty are more likely to be female, studying in humanities colleges, with family members with previous exposure to COVID-19.

7 | IMPLICATIONS FOR NURSING PRACTICE

- University and college personnel responsible for counseling services should address students' needs and support and protect students during pandemics, which may further protect students' psychological health and well-being.
- It is necessary to potentiate the role of academic advisers and faculty in helping students adapt to the current educational environment.
- Future studies are needed to overcome the study limitations.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

Nadia B. Elsharkawy and Enas M. Abdelaziz contributed to conception and study design, data collection, analysis, interpretation, manuscript writing, reviewing, and revising it. All authors read and approved the final manuscript.

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