

Assessment of Factors Associated with Generalized Anxiety Disorder and Psychological Distress amid COVID-19 Pandemic: Cross-Sectional Study on the Students of Ras Al Khaimah Medical and Health Sciences University

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ABSTRACT

Background: Worldwide, the COVID-19 pandemic has caused higher levels of anxiety and psychological distress among university students. To effectively implement interventions in the UAE setting, it is crucial to have an awareness of the factors affecting the mental health of students. In the present study, we evaluated the prevalence of anxiety and psychological distress and the associated factors among medical and health sciences university students amid the COVID-19 outbreak. **Materials and Methods:** This cross-sectional study was conducted after two weeks from the commencement of the fall 2020 semester with a hybrid method of teaching (online and partially on-site teaching). Through the online survey, we used the generalized anxiety disorder 7-items (GAD-7) and Kessler psychological distress (K10) scales. **Results:** Out of 309 respondents, students reported moderate to severe GAD [26.2%, Mean=6.75, SE=0.297, 95%CI (6.165; 7.334), Cronbach α 0.898] and psychological distress [40.5%, Mean=23.05, SE=0.527, 95%CI (22.012; 24.087), Cronbach α 0.934]. Feeling lonely was a significantly predicted variable for higher anxiety (β =0.215, 95%CI (0.108; 0.322) and psychological distress (β =0.293, 95%CI (0.175; 0.412). Additionally, online learning from home and COVID-19 news updates were contributing factors to high anxiety. **Conclusion:** The findings signify the need for the implementation of periodic psychological counseling sessions for university students.

Keywords: COVID-19, Generalized anxiety disorder, Kessler psychological distress, Prevalence, Factors, United Arab Emirates.

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INTRODUCTION

Mental health is an essential part of an individual's quality of life, which can be affected by various social, psychological, and biological factors.¹ Conditions such as stress, depression, and anxiety may disrupt a person's routine and interfere with normal daily activities, maintaining relationships, college, and job performance. The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) induced by COVID-19 posed several challenges for public mental health and triggered different levels of anxiety and psychological distress around the world.²⁻⁴

During previous pandemic outbreaks such as Middle East Respiratory Syndrome (MERS) epidemic in 2012, which spread to 27 countries, stress and fear affected the capacity of the majority of the population to function normally, in particular college students who seemed to be more stressed and anxious than ever before.⁵ Similarly, the current COVID-19 pandemic has brought further serious emotional challenges (anxiety, depression and social stigma) in college student's living dynamics due to the unexpected lockdown, excessive exposure to news, and information related to COVID-19, and the sudden implementation of online classes.⁶⁻¹⁰ Since March 2020, the Ministry of Education (MOE) in the United Arab Emirates (UAE) has implemented a distance learning approach via smart learning platforms in public and private schools and higher education institutions that was extended until the end of the 2019-2020 academic year.¹¹ As per the protocols and procedures of the MOE, Ras Al Khaimah Medical and Health Sciences University (RAKMHSU) implemented hybrid methods



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of teaching, learning, and clinical rotation through the Fall 2020 semester.¹²

Early pandemic studies in the UAE assessed the effect of COVID-19 on the mental health of medical and non-medical university students during the lockdown period, where students switched to remote learning and reported increased levels of anxiety among the students.¹³⁻¹⁵ The present study assessed the levels of anxiety and psychological distress and identified the main stressors related to the COVID-19 pandemic and their effect on the mental health of medical, dental, pharmacy, and nursing college students. It differs from earlier studies,¹³⁻¹⁵ as it was conducted two weeks after the commencement of the Fall 2020 semester, where hybrid teaching and learning platforms were used.

MATERIALS AND METHODS

A cross-sectional web-based survey composed of multiple-choice questions was conducted among the undergraduate students of RAKMHSU, Ras Al Khaimah, UAE. According to the hypothesis of the present study, students are more likely to experience anxiety and psychological distress and also the demographics may be associated with perceived causes. The study was approved by the research and ethics committee of the University (RAKMHSU-REC-255-2020-F-P). The minimum sample size of 289 was calculated at a 95% confidence level with an anticipated 50% response distribution and a margin of error of $\pm 5\%$ using Raosoft® sample size calculator based on approximately 1500 enrolled students. The electronic survey via the google survey tool (Google Docs) was communicated to all the students. An informed consent statement for participation in the survey was included in the questionnaire and after giving the consent student participated in the study. The data of students who completed the survey was collected from September 13 to 24, 2020, after two weeks of the commencement of the new academic session. Students who had already been diagnosed with any mental or psychological diseases were excluded and data from 309 students were used.

Survey instrument

The questionnaire consists of self-designed questions related to general demographic information (gender, marital status, age, nationality, degree, and year of study), perceived causes of anxiety and stress, the generalized anxiety disorder 7-items (GAD-7) scale¹⁶ and Kessler psychological distress scale (K10).^{17,18} The study's classification of anxiety levels was "none-minimal=5", "mild=5-9," "moderate=10-14," and "severe=15". A GAD-total score of 9 points or greater was considered as the presence of anxiety symptoms. A cut-off of 10 with a sensitivity of 89% and specificity of 82% for GAD was used.¹⁹ The levels of psychological distress using K10 were categorized as follows: no psychological distress (score less than 19), mild psychological distress (scores

20 to 24), moderate psychological distress (scores 25 to 29); severe psychological distress (over 30). To strengthen the validity of the questionnaire, a pilot study with 12 volunteers, who were equally selected from the medical and health sciences colleges in the university, was carried out. The study's final responses did not include the pilot study's responses. The primary goal of the pilot study was to include participant comments and suggestions to improve the questionnaire's depth and clarity.

Perceived causes of anxiety/stress

Participants were asked to mark one or more possible perceived causes that they consider for anxiety or stress. The causes listed were learning from home (online learning), changing daily routine, eating and sleeping patterns, staying at home, missing friends/family, social gathering, missing university life, feeling lonely, fear of getting an infection myself/family, COVID-19 news updates, infection in the family/friends/relatives, overuse of mobile, television, games, financial issues and worry for the job after graduation.

Statistical analysis

Statistical analysis was done using the Statistical Package for the Social Sciences (SPSS) version 27 (IBM Corp., Armonk, NY, USA). Descriptive statistics are used to summarize the demographic characteristics, scores and the percentage of perceived causes. Descriptive data including mean, standard deviation, percentage, and frequency were presented. The Chi-square test was used for assessing the statistical association of categorical variables and means were compared using a t-test and one-way ANOVA. A P-value lower than 0.05 was considered significant. Linear regression with the stepwise method was used to measure the association between the GAD, psychological distress, and the variables. The distribution parameters of the GAD-7 and K-10 scores were established via skewness (statistics, standard error and z) and kurtosis (statistics standard error and z).

RESULTS

The obtained data from 309 undergraduate university students were from medicine (107, 34.6%), dentistry (75, 24.3%), pharmacy (57, 18.4%), and nursing (70, 22.7%). Table 1 and Figure 1 represents the demographic data of the respondents. Among the entire cohort, 242 (78.3%) were females and 296 (95.8%) students were declared single status. Students of Arab nationality were 127 (41.1%) followed by Asian (97, 31.4%), Emirati (57, 18.4%), GCC (7, 2.3%) and others (21, 6.8%).

Prevalence of anxiety among university students

About 131 (42.4%) of university students had no symptoms of anxiety, whereas the proportions of the students with mild, moderate, and severe anxiety were 31.4%, 15.9%, and 10.4%, respectively. The average GAD-7 score for anxiety was 6.75 (SE=0.297, SD=5.222, variance 27.267, skewness 0.733 [SE 0.139],

kurtosis -0.256 [SE 0.276], 95% CI=6.1655, 7.3345, Cronbach alpha 0.898). Using the cut-off score of 9, we found the severity of anxiety (moderate and severe) among the students studying in pharmacy was the highest (36.8%), followed by nursing (28.5%), medicine (25.3%) and dentistry (17.3%) as shown in Table 1.

Prevalence of psychological distress among university students

About 130 (42.1%) of university students had no symptoms of psychological distress, whereas the proportions of the students with mild, moderate, and severe anxiety were 17.5%, 14.6% and

Table 1: Demographic data.

Demographics		Entire cohort (n=309)	Medicine (n=107)	Dentistry (n=75)	Pharmacy (n=57)	Nursing (n=70)	X ² /F	p value ^a
Gender (n, %)	Female	242 (78.3)	81 (75.7)	52 (69.3)	46 (80.7)	63 (90.0)	9.813	0.020
	Male	67 (21.7)	26 (24.3)	23 (30.7)	11 (19.3)	7 (10.0)		
Marital status (n, %)	Single	296 (95.8)	106 (99.1)	74 (98.7)	57 (100)	59 (84.3)		
	Married	13 (4.2)	1 (0.9)	1 (1.3)	0	11 (15.7)		
Age (n, %)	17-19 years	153 (49.5)	62 (57.9)	41 (54.7)	29 (50.9)	21 (30.0)	38.033	<0.000
	20-22 years	111 (35.9)	39 (36.4)	24 (32.0)	24 (42.1)	24 (34.3)		
	23-25 years	33 (10.7)	6 (5.6)	10 (13.3)	4 (7.0)	13 (18.6)		
	26 years and above	12 (3.9)		-	-	12 (17.1)		
Nationality (n, %)	Emirati	57 (18.4)	6 (5.6)	9 (12.0)	5 (8.8)	37 (52.9)	0.264	0.850 ^b
	Arab	127 (41.1)	31 (29.0)	35 (46.7)	38 (66.7)	23 (32.9)		
	GCC	7 (2.3)	0	6 (8.0)	1 (1.8)	0		
	Asian	97 (31.4)	65 (60.7)	19 (25.3)	5 (8.8)	8 (11.4)		
	Other	21 (6.8)	5 (4.7)	6 (8.0)	8 (14.1)	2 (2.9)		
Year of study level (n, %)	First year	116 (37.5)	48 (44.9)	31 (41.3)	17 (29.8)	20 (28.6)	45.338	<0.000
	Second year	69 (22.2)	12 (11.2)	12 (16.0)	12 (21.1)	33 (47.1)		
	Third year	53 (17.2)	19 (17.8)	8 (10.7)	16 (28.1)	10 (14.3)		
	Fourth year	46 (14.9)	17 (15.9)	10 (13.3)	12 (21.1)	7 (10.0)		
	Fifth year	25 (8.1)	11 (10.3)	14 (18.7)	-	-		
GAD	No	228 (73.8)	80 (74.7)	62 (82.7)	36 (63.2)	50 (71.5)	6.641	0.084
	Yes	81 (26.2)	27 (25.3)	13 (17.3)	21 (36.8)	20 (28.5)		
Psychological distress	No	184 (59.5)	64 (59.8)	49 (65.3)	27 (47.3)	44 (62.8)	4.872	0.181
	Yes	125 (40.5)	43 (40.2)	26 (34.7)	30 (52.6)	26 (37.1)		
Causes								
Learning from home (online learning)		172 (55.7)	60 (56.1)	41 (54.7)	31 (54.4)	40 (57.1)	0.137	0.987
Changed daily routine, eating and sleeping pattern, staying at home		161 (52.10)	54 (50.5)	42 (56.0)	25 (43.9)	40 (57.1)	2.835	0.417
Missing friends/family, social gathering		193 (62.5)	81 (75.7)	44 (58.7)	33 (57.9)	35 (50.0)	13.602	0.003
Missing university life		186 (60.2)	68 (63.6)	38 (50.7)	41 (71.9)	39 (55.7)	7.207	0.065
Feeling lonely		86 (27.8)	44 (41.1)	15 (20.0)	15 (26.3)	12 (17.1)	15.746	0.001
Fear of getting infection to myself/family		188 (60.8)	74 (69.2)	43 (57.3)	35 (61.4)	36 (51.4)	6.105	0.106
Covid-19 news updates		96 (31.1)	31 (29.0)	23 (30.7)	24 (42.1)	18 (25.7)	4.404	0.220

Demographics	Entire cohort (n=309)	Medicine (n=107)	Dentistry (n=75)	Pharmacy (n=57)	Nursing (n=70)	X ² /F	p value ^a
Infection in the family/ friends/relatives	118 (38.2)	51 (47.7)	24 (32.0)	24 (42.1)	19 (27.1)	9.275	0.025
Overuse of mobile, television, games	96 (31.1)	48 (44.8)	21 (28.0)	15 (26.3)	13 (18.6)	15.436	0.001
Financial issues	105 (34.0)	50 (46.7)	22 (29.3)	20 (35.1)	13 (18.6)	15.913	0.001
Worry for job after graduation	78 (25.2)	32 (29.9)	18 (24.0)	16 (28.1)	12 (17.1)	3.969	0.264

Abbreviations: n: number; GAD: Generalized anxiety disorder.a Pearson correlation.b ANOVA.

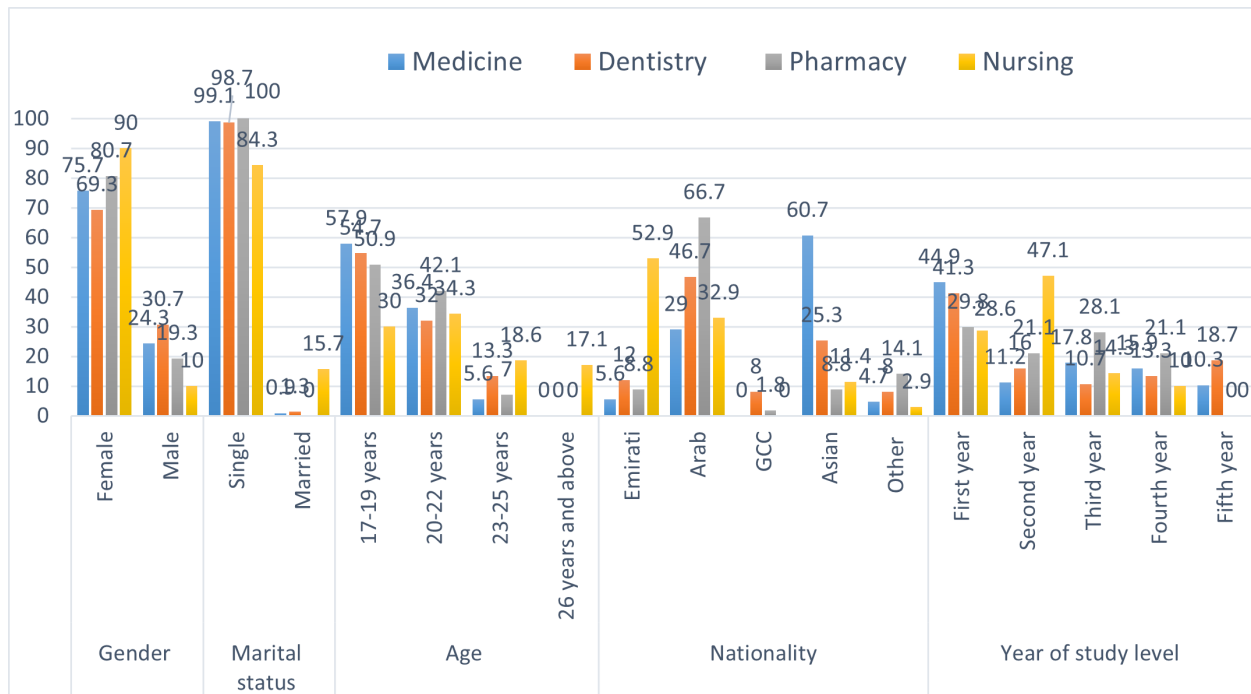


Figure 1: Graphical representation of the demographic data.

25.9%, respectively. The average K10 score for psychological distress was 23.05 (SE=0.527, SD=9.268, variance 85.894, skewness 0.539 [SE 0.139], kurtosis -0.491 [SE 0.276], 95% CI=22.0126, 24.0874, Cronbach alpha 0.934). Using the cut-off score of 24, we found the severity of psychological distress (moderate and severe) among the pharmacy students was highest (52.6%) followed by medicine (40.2%), nursing (37.1%) and dentistry (34.7%). However, no significant difference in the severity levels of GAD and psychological distress was observed among the different degrees of university students (X²=1.009, p=0.799) (Table 1).

Factors influencing university students' anxiety and psychological distress

Univariate analysis: Demographic variables

Table 2 display the relationship between the demographic variables and students' anxiety and psychological distress.

Gender, marital status, nationality, age, degrees, and year of study level had no significant effect on anxiety (p>0.05). Regarding gender differences, a higher level of anxiety was found among females (mean 6.86, SD 5.240, SE 0.337) than males (mean 6.36, SD 5.175, SE 0.632) (t₍₃₀₉₎=0.698, p=0.491, 95% CI=-0.923 to 1.917). Similarly, a higher level of anxiety was found among singles (mean 6.82, SD 5.278, SE 0.307) than among married (mean 5.00, SD 3.416, SE 0.947) t₍₃₀₉₎=1.234, p=0.218, 95% CI=-1.085 to 4.734). There was no significant difference in GAD-7 score for anxiety between females and males as well as single and married students.

High levels of psychological disorder were found among females (mean 23.24, SD 9.328, SE 0.600) than males (mean 22.34, SD 9.083, SE 0.600) t₍₃₀₉₎=0.700, p=0.484, 95% CI=-1.623 to 3.416 was found. Whereas, the psychological disorder score among singles (mean 23.05, SD 9.253, SE 0.538) was higher than married students (mean 22.92, SD 9.996, SE 2.772) t₍₃₀₉₎=0.049, p=0.961, 95% CI=-5.049 to 5.304. All demographic variables

Table 2: Distribution of variables and association of anxiety and psychological distress among the university students.

Variables (n=309)	Generalized Anxiety Disorder (GAD ^a)		Psychological Distress	
	t/F	P ^c	t/F	P ^c
Gender	0.689	0.489	0.700	0.484
Marital status	1.234	0.218	0.049	0.961
Nationality	1.695	0.122	2.247	0.039
Age	0.623	0.600	0.556	0.644
Degrees	1.740	0.159	2.207	0.087
Year of study level	0.904	0.462	0.894	0.468
GAD			184.436	0.000
Psychological distress	251.481	0.000		
Learning from home (online learning)	-2.698	0.008	-2.558	0.011
Changed daily routine, eating and sleeping pattern, staying at home	-2.499	0.013	-4.024	0.000
Missing friends/ family, social gathering	-1.051	0.294	-2.094	0.037
Missing university life	-0.488	0.626	-1.591	0.113
Feeling lonely	-5.236	0.000	-6.194	0.000
Fear of getting infection to myself/family	-0.970	0.333	-0.584	0.560
Covid-19 news updates	-2.961	0.003	-2.551	0.011
Infection in the family/ friends/relatives	-0.802	0.423	-1.950	0.052
Overuse of mobile, television, games	-1.345	0.180	-3.061	0.002
Financial issues	0.057	0.954	-1.732	0.084
Worry for job after graduation	-1.906	0.058	-3.175	0.002

^a GAD was defined as individuals who scored ≥ 10 points. ^b Psychological distress included the individuals who scored ≥ 30 points. ^c t-test/ANOVA.

had no significant effect on the psychological distress among the university students ($p > 0.05$) except nationality ($p = 0.039$).

Univariate analysis: COVID-19 related perceived causes

Learning from home (online learning); changing daily routine, eating and sleeping patterns, staying at home; feeling lonely and COVID-19 news updates had a significant effect on anxiety among university students ($p < 0.05$). In addition to the above factors that were associated with anxiety, the overuse of mobile television games and worry for the job after graduation were significantly associated with psychological distress among the students ($p < 0.05$). Radar plots of the distribution of perceived causes in students by field of study are depicted in Figure 2.

Linear regression analysis

The results of the linear regression analysis used to test the association between generalized anxiety disorder, psychological distress, and perceived causes are summarized in Table 3. The final model accounted for a significant proportion of variance in anxiety ($R = 0.316$; $R^2 = 0.100$; $\text{Adj } R^2 = 0.091$; $F = 5.113$; $p = 0.024$). Feeling lonely, learning from home (online learning), COVID-19 news updates predicted a significantly higher level of generalized anxiety disorder. Similarly, the final model accounted for a significant proportion of variance in the psychological distress ($R = 0.268$; $R^2 = 0.072$; $\text{Adj } R^2 = 0.069$; $F = 23.742$; $p < 0.000$) significantly predicted feeling lonely as a variable responsible for the higher level of psychological distress.

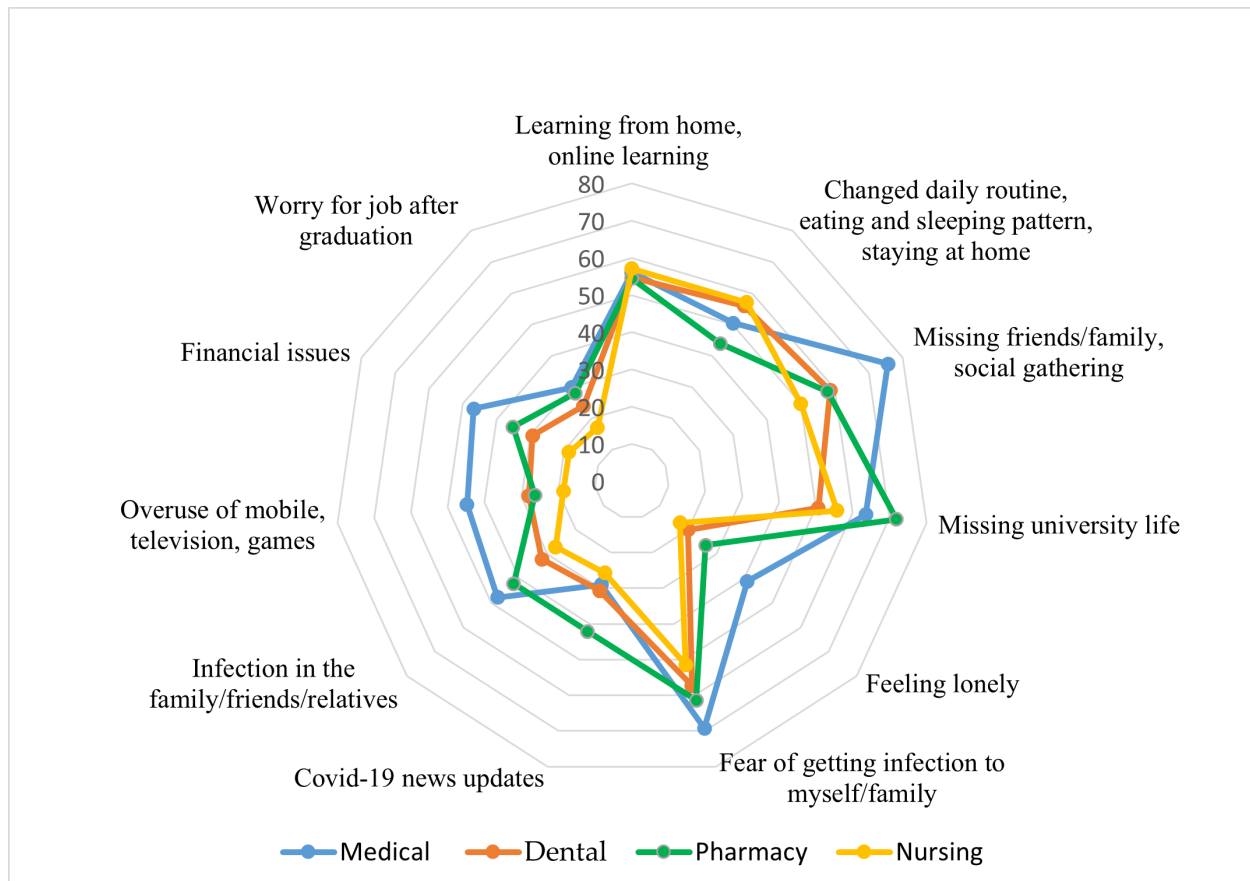


Figure 2: Radar plots with the distribution of perceived causes in students by field of study.

Table 3: Linear regression model for independent variables that predict generalized anxiety disorder and psychological distress (Dependent variable).

Generalized Anxiety Disorder						
R=0.316; R ² =0.100; Adj R ² =0.091; SEE 0.420; F=5.113; p=0.024	β	SE	β	T	P level	95% CI
Constant	0.096	0.040		2.384	0.018	0.017; 0.175
Feeling lonely	0.215	0.054	0.219	3.953	0.000	0.108; 0.322
Learning from home (online learning)	0.125	0.048	0.141	2.584	0.010	0.030; 0.220
COVID-19 news updates	0.119	0.053	0.125	2.261	0.024	0.015; 0.222
Psychological distress						
R=0.268; R ² =0.072; Adj R ² =0.069; SEE 0.474; F=23.742; p=0.000	β	SE	β	T	P level	95% CI
Constant	0.323	0.032		10.163	0.000	0.260; 0.385
Feeling lonely	0.293	0.060	0.268	4.873	0.000	0.175; 0.412

DISCUSSION

The present study aimed at evaluating the effect of the COVID-19 outbreak on the mental health of undergraduate students of RAK Medical and Health Sciences University during the 2020-2021 academic years, which involved hybrid methods of teaching and learning. According to our findings, anxiety and psychological distress were prevalent among college students regardless of their gender, marital status, nationality, age, educational degrees, and year of study level. Among the 309 undergraduate students, the prevalence of generalized anxiety disorder was 81 (26.2%), while that of psychological distress was 125 (40.5%). Higher levels of anxiety were associated with higher levels of psychological distress among the students in the current study. The results of our study are consistent with earlier research where high levels of stress, anxiety, and other underdiagnosed psychological illnesses were reported among health sciences students, with a negative impact on students' learning and clinical training.^{7,20-22} A strong association between psychological distress and anxiety among health sciences students was also reported.²²

In a study in the UAE, anxiety (55%) was found to be the most common disorder among undergraduate university students.²³ Another study found a significant frequency of anxiety among university students undergoing clinical training during the pandemic, with 63% reporting high state anxiety and 62% reporting high trait anxiety, respectively.²⁴ The prevalence of anxiety was higher in our study compared to the study conducted in the UAE by Saravanan *et al.* using the Coronavirus Anxiety Scale, which showed that 69 (15.9%) university students reported having anxiety.²⁵ However, the students in our study experienced lower levels of psychological distress compared to the earlier study (221; 51%).²⁵

With an average GAD-7 score of 6.75, 26.3% of students in our study experienced moderate to severe anxiety symptoms, out of which pharmacy students demonstrated a higher prevalence (36.8%) compared to other health sciences students. A high prevalence rate of anxiety using the GAD-7 scale was also reported by another study in the UAE with almost half of the university students experiencing mild to moderate/severe levels of anxiety.¹³ Our results are also in accordance with earlier studies that examined the mental health of university students in several other countries. In one study, moderate and severe anxiety disorders affected around 24% and 21% of the students, respectively,²⁶ while another study using GAD-7 scale, showed that 24.9% of medical students reported feeling some level of anxiety, ranging from moderate to severe, with almost 21.3% reporting mild anxiety as a result of the ongoing COVID-19 pandemic.⁸ However, our results differed from a study in Saudi Arabia, where 50% of participants reported extremely severe anxiety symptoms.²⁷

Research studies using K10 scales to explore the prevalence and causes of psychological distress among university students and the general population during the COVID-19 epidemic were scarce.^{14,28,29} However, a study using the Kessler 6-item scale (K6) reported that 26.63% health professional students were showing clinically severe psychological distress symptoms during the early pandemic.²² Another research study indicated that the majority of university students in Jordan (265; 69.5%) experienced severe psychological distress during the pandemic.²⁸ Similarly, 14.6 and 25.9% of the students in our study experienced moderate to severe psychological distress with an average K10 score of 23.05. The severity of psychological distress was the highest (52.6%) among the pharmacy students compared to other healthcare sciences students.

We also observed a high prevalence of generalized anxiety disorder (20; 37.7%) and psychological distress (32; 46.4%) among the different college students studying in the third year and second year levels respectively in comparison to the other year of study levels. The results of this study are consistent with previous studies reporting the proneness of pharmacy students in experiencing symptoms of anxiety and depression.³⁰ Similar to our study, the psychological impact of the COVID-19 pandemic on higher education levels was noticeably more prominent than that in lower education levels.³¹ In a study from Lebanon, where pharmacy students experienced depression, anxiety, and stress during the pandemic, higher academic years (third and fourth year) showed low resilience.³² Nearing graduation, the students are probably worried about their future professions. Moreover, pharmacy students were under added stress and anxiety during the pandemic as there might be limited job recruitments in the pharmacy sector during the pandemic. In contrast to our results, a research study conducted in teaching hospitals in the Kingdom of Saudi Arabia, using the Depression, Anxiety, and Stress scale (DASS-21), reported increased anxiety among nursing students compared to medical students and lower stress in dental and pharmacy students compared to medical students.³¹ Additionally, in their analysis of nursing students' attitudes during the initial phase of the pandemic, Thornton *et al.* (2021) found that they expressed anxiety and distress over the rapid spread of the SARS-CoV-2 virus as well as concern for other people, particularly the weak and healthcare professionals.³³ Our findings also showed high levels of anxiety (20; 28.5%) and psychological distress (26; 37.1%) among nursing students.

On examining the factors that influenced students' anxiety and psychological distress, we found an insignificant association between demographic factors such as gender, marital status, nationality, age, degrees, and year of study level ($p > 0.05$) with anxiety and psychological distress. However, there was a significant association between psychological distress and nationality ($P = 0.039$). Around 43 (33.9%) Arab nationality students experienced generalized anxiety disorder and 62 (48.8%)

had psychological distress during the study period. Additionally, 17 (17.5%) students of Asian origin showed anxiety and 35 (36.1%) experienced psychological distress symptoms. In a poll of around 3,000 Emirati students in UAE, nearly half of them (45%) believed that the COVID-19 outbreak has harmed their mental health.³⁴ The females, medical and science students affected by the pandemic, reported educational pressure as a source of stress along with many other factors.³⁵ In our study, both male and female students experienced anxiety and psychological distress. However, the female students showed slightly higher generalized anxiety disorder (6.86 ± 5.240 vs. 6.36 ± 5.175), and psychological distress symptoms (23.24 ± 9.328 vs. 22.34 ± 9.083) as compared to the male students, with no significant difference in the overall general anxiety and psychological distress levels. Our findings are in accordance with various research studies reporting higher levels of anxiety of female students.^{7,36}

Studies showed different results regarding the influence of single and marital status on the level of stress, anxiety, and depression of participants during the COVID-19 pandemic. While Odriozola-González *et al.* and Kowal, Marta *et al.* presented evidence that single (as opposed to married) people scored higher on measures of anxiety, depression, and stress.^{35,37} Wang *et al.* and Tian *et al.* showed no relation between single and marital status with perceived stress and higher levels of distress during the pandemic.^{38,39} This study also reported no significant influence of single and married status on the mental health of university students, although the majority (296; 95.8%) of students were single and showed high levels of psychological distress (23.05 ± 9.253 vs 22.92 ± 9.996) and generalized anxiety (6.82 ± 5.278 vs 5.00 ± 3.416) as compared to married individuals. Moreover, research studies indicated that the COVID-19 lockdown significantly changed the daily routine of people from different age groups, particularly the adult population. According to a study from Canada, young people of the age group ≤ 25 years experienced the highest prevalence of anxiety, stress, and depression during the pandemic.⁴⁰ Since undergraduate university students usually belong to this age group, they are often more susceptible to the effects of excessive information and news on social media, especially if they stay away from their families. The age range of students experiencing higher anxiety (33; 29.7%) and psychological distress (48; 43.2%) in our study was 20-22 years, which falls within the age ranges of students with the highest rates of anxiety, depression and psychological distress in different parts of the world.^{30,31}

In comparison to the traditional sources of information (newspapers, radio, and television channels), studies showed that more than 80% of students used the internet and social media as their primary source of information, which became increasingly evident during the pandemic.⁴¹ Due to the increased internet usage as a result of distance learning, in addition to social distancing and change in daily routine, students from different

parts of the world demonstrated nomophobia, escapism and other mental conditions with varying degrees of anxiety and psychological distress.⁴² Another study on health professional students established that psychological distress during the COVID-19 pandemic was significantly associated with internet addiction, childhood, and recent bad events.⁴³

Previous research revealed that the factors connected to students' anxiety disorders during the pandemic also included economic stressors, effects of COVID-19 on daily life, academic delays due to the pandemic and a family member, relative or friend having COVID-19.¹¹ Another study showed that everyday necessity, the effectiveness of preventive and control measures, and, particularly, the threat that COVID-19 poses to life and health were the main factors associated with anxiety and depression among Chinese college students.⁴³ Similarly, the findings of the present study showed that college students' anxiety and psychological distress regarding the pandemic were related to their distance learning from home, feeling lonely, and COVID-19 news updates. Other stressors included changing daily routines, eating and sleeping patterns and staying at home. Moreover, psychological distress among the students was mainly triggered by the feeling of loneliness, in addition to missing friends/family and social gatherings, overuse of mobile and television games, and worry about a job after graduation.

Given the high academic standards expected of pharmacy and other health sciences students, as well as the amount of work associated with their degree programs, research studies have shown that the majority of students who experienced mental health issues during the pandemic did not ask for help.^{8,25} Therefore, academic institutions should ensure that students have access to psychosocial services and should address the underlying factors.

LIMITATIONS

One of the limitations of this study is that the self-administered questionnaire provided subjective measures. Moreover, the cross-sectional design of the survey examined the influence of the COVID-19 pandemic on mental health in the context of students' learning experiences rather than the overall influence of the COVID-19 pandemic on their lives.

CONCLUSION

During traumatic events, university students are usually at risk of psychological discomfort. The current study showed a strong association between psychological distress and anxiety among the health sciences students during the pandemic. The students have experienced moderate to higher anxiety and psychological distress symptoms, out of which students of the age group 20-22 years, pharmacy students and students studying in the third year and second year levels demonstrated a higher prevalence. We also found high levels of anxiety (20; 28.5%) and psychological

distress (26; 37.1%) among nursing students. However, there was no statistically significant relationship ($p>0.05$) between anxiety and psychological distress and the major demographic characteristics. Our study also revealed the factors associated with the negative impact on the mental health of undergraduate medical and health sciences students. Among them, distance learning from home, feeling lonely, and COVID-19 news updates were the main triggers of anxiety and psychological distress. The pandemic's trajectory is unknown, and with many different variants of the virus circulating across the world, it could have a long-term impact on the mental health of students. To lessen the burden of psychological problems, it is critical to detect the most effective interventions, identify susceptible students, and provide acute and long-term psychological care such as on site and online counseling, spreading positive mental health messages and utilizing coping techniques which can be further explored in future work.

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CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus-2; **GAD-7:** Generalized anxiety disorder 7-items; **K10:** Kessler psychological distress scale.

SUMMARY

Medical and health sciences university students comprise an important sect of the community that have a direct impact on other community members' health and well-being. The validated self-administered online survey helped in identifying the various stressors influencing the mental health of undergraduate university students during COVID-19 pandemic. The identified contributing factors were feeling lonely, online learning from home and COVID-19 news updates. Our study suggests the need for psychological counselling in the higher educational institutions.

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