Graduate Medical Students' Mental Health Concerns During COVID-19 Pandemic

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Abstract

Medical students are more likely than the general population to experience perceived stress during the pandemic due to many variables. This study aimed to evaluate the stress levels and prevalence of different mental health conditions among graduate medical students in Al Kharj City. An anonymous online survey was conducted among graduate medical students of Prince Sattam bin Abdulaziz University (PSAU). For this investigation, the following scales were used to measure the prevalence of common mental health issues: DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure-Adult (CCSM-A); Perceived Stress Scale (PSS-10-C), to measure COVID-19-related student stress; and the COVID-19 Student Stress Questionnaire to get the global stress score (GSS). Two hundred twenty-one students were contacted, and 214(96.8%) consented to participate in the study. According to the CCSM-A scale, anxiety (73%) and depressive symptoms (71%) were the most frequently reported symptoms by the students. After correcting for age and self-perceived COVID-19 risk, there was a significant relationship between anger, suicidal ideation, and substance use, on one hand, and the study year on the other graduate medical students who have mental health issues bear a heavy load. In the post-pandemic recovery period, regular mental health assessments and providing early and adequate mental health assistance to needy people are imperative.**(International Journal of Biomedicine. 2023;13(4):334-340.)**

Keywords: medical students • COVID-19 • mental health

Introduction

The COVID-19 outbreak in KSA and related lockdowns have severely disrupted people's daily lives and negatively impacted their mental health. Lockdown measures like school and college closures have generally impacted education. Similarly, higher education has also been affected, especially medical programs. The education supply has continued in KSA through other channels, including online learning and instructional materials sent to medical students throughout the pandemic.[1] Medical students' mental health is an issue because they are more likely than non-medical students to experience depression, anxiety, and burnout, which they experienced even before the COVID-19 pandemic.[2-4] These increased risks have

been linked to several stressors associated with medical school training, including academic pressures; working in a demanding clinical setting where doctors are exposed to ethical dilemmas, death, and suffering; as well as the support and culture of the medical school. This includes the unspoken rule that illness is a sign of weakness and that doctors should be strong.[5] Medical education requires extensive study and training compared to many other academic fields; this may impact the student's mental health. Medical students' emotional, physical, and spiritual health is compromised by the numerous obligations and demands they must meet. Previous studies have revealed that the prevalence of identified mood disorders, suicidal thoughts, and psychological distress was much higher in medical students.[6] Due to their numerous added pressures, medical students are at a higher risk of experiencing stress during the COVID-19 pandemic. That includes the pupils' ongoing elevated risk of developing COVID-19 infection and the ensuing risk of spreading the virus to family members. Additionally, increased strain is brought on by the intense competition for admission to medical schools, adaptation to the more recent online teaching method, uncertainties surrounding examinations, and clinical postings.[7]

According to the current literature, medical students are more likely to experience stress, and it is important to determine their level of stress and its contributing factors. Considering this, this study's objectives were to determine the incidence of common mental health symptoms across psychiatric disorders and to measure stress levels during the COVID-19 pandemic among medical students in Al Kharj.

Materials and Methods

The study was launched at Prince Sattam bin Abdulaziz University (PSAU) in Al Kharj in the 2022-2023 academic year. A cross-sectional online survey of PSAU medical students from all years was intended for this study. All medical school students were eligible to participate. The ethical review board of the institution gave its prior approval (SCBR-120-2023). Students who declared an anxiety or depression diagnosis were subject to exclusion criteria.

Google Forms was employed to collect data and to create self-administered surveys for the study. To prevent repeated submissions for the study's completion, participants must be signed into their Google accounts when filling out Google Forms. Participants' email addresses were kept private to ensure confidentiality. All PSAU medical students were invited to participate in this survey during their first semester. The university's internet portal was used to distribute the survey. We began with second-year students, and participants ranged from second to fifth year. The university oversees the first year as the preparatory year through a single program. The online survey had a voluntary participation period that ended on May 20, 2023. The following data was gathered for the study: first, sociodemographic details about the participants and symptoms to evaluate mental health domains crucial for all psychiatric diagnoses; second, data on students' subjective levels of personal stress and sources of stress connected to COVID-19.

The Perceived Stress Score (PSS-10-C), a self-reported scale to measure the global level of perceived stress, and DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure-Adult (CCSM-A) were employed. In addition, we used the COVID-19 Student Stress Questionnaire, a 7-point scale that yields a global stress score (GSS). CCSM-A, PSS, and GSS were analyzed according to the procedures outlined in the scales.[8,9] By the medical-school year, the percentage of participants with above-threshold domain scores on the CCSM-A instrument, PSS, and GSS were separated. According to the CCSM-A scale, adjusted odds ratios were analyzed to find the determinants of common mental health domains. Similarly, crude and adjusted beta coefficients (using linear regression) were performed to identify the predictors of PSS and GSS.

Statistical analysis was performed using the statistical software package SPSS version 26.0 (SPSS Inc, Armonk, NY: IBM Corp). Baseline characteristics were summarized as frequencies and percentages for categorical variables and as mean (M) ± standard deviation (SD) for continuous variables. A multiple logistic regression analysis was conducted to calculate the unadjusted and adjusted odds ratios (UOR and AOR) with 95% confidence intervals (95%CI). A value of *P<0.05* was considered significant.

Results

Out of the 221 people who were contacted, 214 agreed to participate in the survey (a response rate of 96.8%). The participants' average age was 22.4±2.9 years. Second-year students made up the largest percentage of the participant cohort (27.6%), followed by third-year students (27.1%), fourth-year students (24.8%), and fifth-year students (20.5%). Every student, except four, had received their complete doses of the COVID vaccine. However, almost one-fifth of the 43(20.1%) students had a high self-perceived risk of COVID-19 transmission (Table 1).

Table 1.
Sociodemographic characteristics of the participants (n=214)

	n	Percentage
Age in years of the study participants, M±SD	22.4 ± 2.9	
Year of medical school		
Second	59	27.6 %
Third	58	27.1 %
Fourth	53	24.8 %
Fifth	44	20.5 %
High self-perceived risk of COVID-19 transmission	43	20.1%
Fully vaccinated for COVID-19	210	98.1 %

The distribution of participants who reported mild or severe CCSM-A symptoms and some illustrations of the questions are presented in Table 2. Table 3 shows the GSS distribution. The CCSM-A results, using the multivariate logistic regression method, connected to students' year in PSAU, are presented in Table 4.

Table 2.

Distribution of participants experiencing mild or severe symptoms of the CCSM-A tool (n=214). Below are example questions.

Participants' symptoms	n	Percentage
Less interest or pleasure in performing activities		
a	38	17.8
b	54	25.2
c	62	29.0
d	38	17.7
e	22	10.3
Feeling down, depressed, or hopeless		
a	46	21.5
b	63	29.4
c	42	19.6
d	33	15.4
e	30	14.0
Sleeping fewer hours than usual, but though have plenty of energy		
a	66	30.8
b	56	26.2
c	52	24.3
d	26	12.1
e	14	6.5
Feeling panic or being frightened		
a	74	34.6
b	54	25.2
c	48	22.4
d	24	11.2
e	14	6.5
Unexplained pains and aches (e.g., back, head, abdomen, joints, legs)		
a	104	48.6
b	30	14.0
c	44	20.5
d	22	10.3
e	14	6.5
Thoughts of actually hurting yourself		
a	150	70.09
b	28	13.08
c	26	12.1
d	8	3.7
e	2	0.9
Perceive sound, i.e., not audible to people around, for instance, voices, even while no one was in the vicinity		
a	175	81.8
b	22	10.3
c	14	6.5
d	2	0.93
e	1	0.47

Table 2 (continued).

Distribution of participants experiencing mild or severe symptoms of the CCSM-A tool (n=214). Below are example questions.

Participants' symptoms	n	Percentage
Difficulties with sleep that disturbed your quality of sleep over all		
a	92	43.0
b	36	16.8
c	25	11.7
d	32	15.0
e	29	13.5
Troubles with memory (e.g., acquiring new information) or with locality (e.g., locating your way to home)		
a	96	44.8
b	54	25.2
c	32	15.0
d	24	11.2
e	8	3.7
Experiencing powered to perform specified mental acts or behaviours over and over again		
a	128	59.8
b	32	15.0
c	28	13.1
d	16	7.4
e	10	4.7
Not knowing who you really are or what you want out of life		
a	126	58.9
b	32	15.0
c	30	14.0
d	14	6.5
e	12	5.6
Not feeling dear to other people or liking your relations with them		
a	96	44.8
b	34	15.9
c	32	15.0
d	28	13.1
e	24	11.2
Smoking any type of tobacco, i.e., a cigar, cigarette, or pipe, or chewing or snuffing tobacco		
a	166	77.6
b	18	8.4
c	14	6.5
d	4	1.9
e	12	5.6
Taking any of the undermentioned medicines ON YOUR OWN, i.e., without a prescription from a doctor		
a	182	85.0
b	15	7.0
c	10	4.7
d	6	2.8
e	1	0.47

a) Not at all; b) Occasional; less than a day or two;
c) Numerous days; d) More than half the days; e) Almost every day

Table 3.

Distribution of participants COVID-19 related Global Stress Score (n=214)

Perception during COVID-19 pandemic	n	Percentage
Perception of the possibility of contamination through his time pandemic		
a	70	32.7
b	72	33.6
c	48	22.4
d	18	8.4
e	6	2.8
Perception of the circumstances of social isolation imposed during this time of pandemic		
a	80	37.4
b	50	23.4
c	52	24.3
d	22	10.3
e	10	4.6
Perception of the associations with your relatives during this time of pandemic		
a	88	41.1
b	66	30.8
c	36	16.8
d	14	6.5
e	10	4.6
Perception of the rapport with colleagues at the university at the time of pandemic		
a	84	39.2
b	64	29.9
c	46	21.5
d	14	6.5
e	6	2.8
Perception of your relations with your university professors during time of COVID-19		
a	90	42.1
b	54	25.2
c	56	26.2
d	6	2.8
e	8	3.7
Perception of academic knowledge during time of COVID-19 pandemic		
a	64	29.9
b	62	29.0
c	44	20.5
d	24	11.2
e	20	9.3
Perception of the changes due to the social isolation in your sexual life during the period of COVID-19 pandemic		
a	156	72.9
b	26	12.1
c	24	11.2
d	7	3.3
e	1	0.47

a) Not at all stressful; b) Somewhat stressful; c) Moderately stressful; d) Very stressful; e) Extremely stressful

Symptoms of anxiety (73%) and depression (71%) were the two most prevalent among the various symptom measurements. The fifth-year medical students showed above-average levels of anxiety (88%) and depressive symptoms (88%) across all study years. The fourth-year students displayed the most anger. Throughout all study years, substance abuse, psychosis, and feeling alienated were the least common symptoms.

According to the PSS, approximately 65% of fifth-year students experienced significant stress, compared to 21% of other students (Figure 1). The mean PSS was 18.3 ± 5.7, with third-year students having the lowest mean (16.7) and fifth-year students having the highest mean (22.4). In the unadjusted analysis, no statistically significant relationship existed between PSS and year of study.
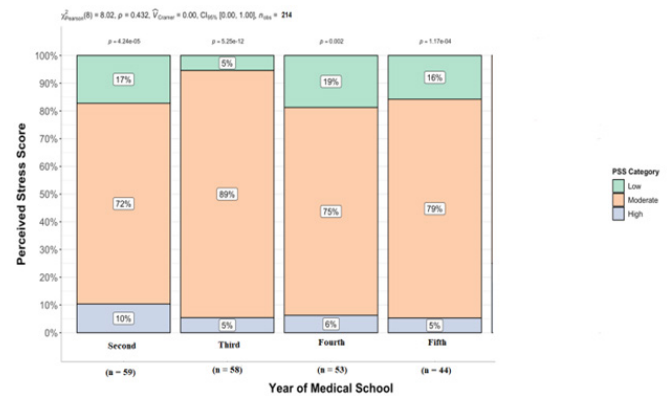

Fig. 1. *Distribution of participants' PSS categories by the year of medical school.*
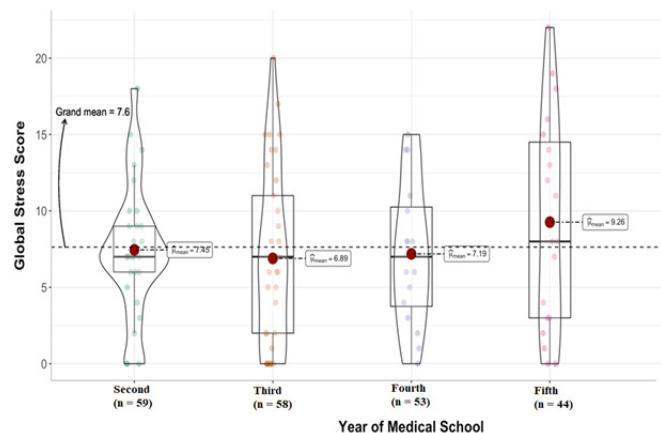

Fig. 2. *Distribution of GSS by year of medical school.*

Table 4.

Scores on CCSM-A associated with students' year in PSAU (multiple logistic regression analysis).

Symptoms	Second year	Third year	Fourth year	Fifth year	Age		High self-perceived risk of COVID-19	
					UOR	AOR	UOR	AOR
Depression	1.12 (0.28 – 3.99)	1.66 (0.29 – 6.28)	1.77 (0.40 – 8.66)	0.49 (0.12 – 4.31)	1.08 (0.89 – 1.32)	1.07 (0.85 – 1.35)	1.20 (0.46 – 3.16)	1.50 (0.52 – 4.36)
Anger	0.49 (0.23 – 1.44)	0.49 (0.43 – 1.77)	0.22 (0.11 – 0.79)	0.31 (0.19 – 1.55)	0.96 (0.82 – 1.11)	1.06 (0.87 – 1.29)	1.00 (0.40 – 2.57)	1.27 (0.45 – 3.59)
Mania	0.78 (0.33 – 2.99)	0.89 (0.21 – 3.88)	1.23 (0.21 – 8.11)	0.43 (0.14 – 3.99)	1.24 (1.00 – 1.53)	1.38 (0.93 – 2.04))	1.21 (0.49 – 3.01)	1.78 (0.65 – 4.89)
Anxiety	1.00 (0.31 – 4.74)	1.23 (0.33 – 5.00)	1.77 (0.44 – 8.11)	0.43 (0.15 – 5.11)	1.04 (0.87 – 1.25)	1.06 (0.86 – 1.32)	0.80 (0.28 – 2.25)	1.11 (0.37 – 3.31)
Somatic symptoms	0.99 (0.45 – 2.99)	0.86 (0.31 – 4.23)	1.23 (0.41 – 5.32)	0.85 (0.21 – 5.11)	1.03 (0.89 – 1.18)	1.02 (0.88 – 1.19)	1.22 (0.48 – 3.11)	1.26 (0.48 – 3.32)
Suicidal ideation	0.34 (0.17 – 0.88)	0.67 (0.32– 3.32)	0.29 (0.23 – 1.44)	0.34 (0.17 – 4.11)	1.05 (0.91 – 1.21)	1.10 (0.91 – 1.35)	0.44 (0.17 – 1.12)	0.39 (0.14 – 1.09)
Psychosis	0.89 (0.32 – 3.41)	0.79 (0.32 – 4.11)	0.79 (0.32 – 2.99)	0.59 (0.87 – 499)	1.10 (0.94 – 1.30)	1.17 (0.92 – 1.48)	0.46 (0.18 – 1.19)	0.64 (0.23 – 1.78)
Sleep problems	1.22 (0.43 – 4.23)	0.59 (0.22 – 3.00)	1.14 (0.39 – 3.99)	0.81 (0.22 – 3.99)	1.06 (0.91 – 1.22)	1.07 (0.89 – 1.28)	1.54 (0.60 – 3.99)	1.65 (0.61 – 4.48)
Substance use	0.14 (0.04 – 0.85)	0.25 (0.05 – 1.32)	0.19 (0.05 – 0.87)	0.33 (0.05 – 2.43)	0.90 (0.72 – 1.22)	1.00 (0.91 – 1.22)	1.21 (0.39 – 4.11)	1.96 (0.41 – 6.15)

The mean GSS for all students was 7.6±5.4, with third-year students scoring the lowest (6.89) and fifth-year students scoring the highest (9.26) (Figure 2). In the unadjusted analysis, there was no discernible relationship between GSS and year of study.

Only anger, suicidal thoughts, and substance use remained strongly correlated with the study year after controlling for age and perceived COVID-19 risk. Fourth-year students showed significantly less anger than first-year students. Second-year students had considerably lower rates of suicidal ideation and substance use, while fourth-year students had significantly lower rates of both. Throughout the trial, all other domains remained consistent. Age and perceived COVID risk were considered, and neither PSS nor GSS substantially correlated with the student's year in PSAU.

Discussion

This study aimed to examine how the COVID-19 pandemic affected medical students' mental health symptoms. Anxiety and depression were the most frequent psychiatric symptoms mentioned by the medical students.

The students reported fewer instances of dissociation, psychosis, and substance usage. According to the COVID-19 Student Stress Questionnaire and the perceived stress scale, 8.3% of individuals had high-stress levels. The final-year students had the highest mean PSS, whereas the fourth-year students had the highest mean GSS. We contrasted our findings with research on student stress levels and psychiatric symptoms that have been published.

Medical students exhibited significantly higher rates of diagnosed mood disorders, diagnosed anxiety disorders, suicidal thoughts, and psychological distress than the overall population of postsecondary graduates. Natalia et al.[6] used the Fear of COVID-19 (FCV-19) Scale and the Depression, Anxiety, and Stress Scale-21 to assess FCV-19, anxiety, stress, and depression. Out of 1027 samples, 44.6% had stress, 47.8% had anxiety, and 18.6% had depression. The gender (P=0.000), educational stage (P=0.000), and the comorbidity factor (P=0.001 for stress and anxiety, P=0.036 for depression, and P=0.000 for FCV-19) had a significant association with stress, anxiety, depression, and FCV-19 in medical students.

According to several studies, stress, anxiety, and depression are more common among medical students. Suicidal thoughts, moderate to severe psychological distress, mood and anxiety disorders, and clinical training were all linked to being a medical student. Anxiety affects about one in three medical students worldwide, and it is especially common among those from the Middle East and Asia. A study by Maser et al.[10] showed that relative to the general population of postsecondary graduates aged 20–34, medical students aged 20–34 had significantly higher rates

of diagnosed mood disorders, anxiety disorders, suicidal ideation, and psychological distress. In a study by Harries et al.[11], most students (74.7%) agreed the pandemic had significantly disrupted their medical education. .

A study by Huckins et al.[12] included 217 undergraduate students, with 178(82.0%) students providing data during the Winter 2020 term. The authors assessed the differences in behaviors and self-reported mental health collected during the Winter 2020 term compared to previous terms in the same cohort were modeled using mixed linear models. Compared with prior academic terms, individuals in the Winter 2020 term were more passive, anxious, and depressed.

Another study performed by Liu et al.[13] on 217 medical students found that anxiety symptoms and depression were observed in 22.1% and 35.5% of students, respectively, during the pandemic. There were no significant differences in students, in terms of gender and grade, for the prevalence of depression and anxiety. COVID-19 has exacerbated uncertainty about one's personal and family relationships. This raises the stress level of medical students, combined with the uncertainties surrounding their education and skill development during medical school. In a study by Iqbal et al.[14], more than half of all respondents (n=353) were affected by depression (51.3%), anxiety (66.9%) and stress (53%). Morbidity was found to be higher in 5th-semester students rather than students in 2nd-semester students. Females reported higher scores as compared to their male counterparts.

More than half of the medical students in KSA indicated signs of mania, depression, and anxiety. According to the perceived stress scale and the COVID-19 Students Stress Questionnaire, 88.1% and 57.8% of students indicated moderate and high levels of stress, respectively. A thorough analysis of the causes of this high level of stress and other psychiatric symptoms is necessary. In order to prioritize the students for future management, this analysis should be supplemented by routine assessments of the mental health of medical students. Moreover, our findings are consistent with other research on the baseline frequency of depression and anxiety among Saudi medical students. Ewid et al.[15] conducted the study to assess the prevalence of depression, stress, and anxiety symptoms among Sulaiman Al Rajhi University (SRU) 278 medical students during the quarantine and while learning online shortly after the announcement of documented COVID-19 cases in KSA. Depression, anxiety, and stress symptoms were found in 23%, 11%, and 6% of students, respectively. Females were more likely to have anxiety (P=0.03) than males. The Fear of COVID-19 Scale was positively correlated with all depression, anxiety, and stress components (depression: r=0.36, anxiety: r=0.45, and stress: r=0.39, P<0.001 for all cases). The authors highlighted the importance of mental health screening for female students, students of low socioeconomic status, and relatives of COVID-19 cases.

Strong recommendations on medical students' ongoing education growth during crises and potential pandemics are required. We would also include recommendations for how medical schools could assist mental health. Future studies should examine both potential benefits and negatives, such as whether medical schools have kept up with the rise in understanding of mental health and investigations of attitudes toward stigmatization of mental health.

Conclusion

According to the study's findings, graduate medical students bear an immense load in terms of their mental health. They need proper care as soon as possible because this is likely to have a long-term negative impact on their performance. Therefore, having a clinical psychologist available to conduct regular evaluations of medical students is essential. Depending on the resources available and the needs identified by the ministry, these psychologists may be hired at the institutional or ministry level.

Competing Interests

The authors declare that they have no competing interests.

Acknowledgments

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