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General

Prevalence of Anxiety among Qassim university female medical students during Covid-19 Pandemic in Saudi Arabia

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Background and Objectives

Anxiety disorders are common but under-recognized psychiatric disorders. The objectives of the study were to determine the prevalence of anxiety and factors associated with anxiety during the Covid 19 pandemic among female medical students at Qassim University, Saudi Arabia.

Methods

An online cross-sectional survey, using a self-administered questionnaire, was conducted from August to December 2021. The questionnaire using Google Forms, submitted to the WhatsApp groups of female medical students, gathered personal data and information related to the Covid19 pandemic effects. Beck Anxiety Inventory (BAI) was used for measuring the severity of anxiety.

Results

Out of 278 invited students, 179 responded (response rate: 64.4%). Mean age of the respondents was 22.45 (±1.57) years, 89.9% were living with their parents, and 46.9% perceived their academic performance as 'Good'. A total of 34 (19%) suffered from COVID-19, and 50.3% (n=90) of students reported family members affected by COVID-19, and 24.4% of the affected family members were hospitalized. The prevalence of anxiety among study participants was 26.8% (n=48); 31 (17.3%) participants had moderate and 17 (9.5%) had severe anxiety. The overall median anxiety score was 11 (IQR=21). In the younger age group (18-22 years), those who perceived their academic performance as 'poor or fair, and those living alone or with relatives and friends had higher anxiety scores, and the differences were statistically significant at p=0.042, p=0.018, and p=0.01, respectively.

Conclusion

Anxiety among female medical students during the COVID-19 pandemic was high. Mental health services including counseling and mental health education in universities are recommended.

INTRODUCTION

According to the American Psychiatric Association, anxiety disorders are the most common type of psychiatric disorder.[1] In spite of the increased prevalence rates of anxiety disorders, they are often under-recognized and under-treated clinical problems.[2] Anxiety disorders are common in a highly stressful new environment such as medical school, because of high academic obligations, and limited time to achieve them.[3]

Globally, many studies have reported an increased rate of anxiety among medical students. It is also reported that anxiety is more prevalent among medical students from the Middle East and Asia as compared to other parts of the

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world.[4] It has been demonstrated that the quality of health care provided by anxious medical students was negatively affected, as they were less empathetic when dealing with chronically ill patients, and were less efficient in their work. These findings underscore the importance of conducting research on anxiety and its implications on the future of health care, as there is limited data available regarding the impact of student distress on academic performance.[5]

Females are the key members of a community as well as the medical profession. An anxious female may not only have a negative health outcome for herself but also has negative implications on her personal and professional life. Anxiety is reported to be more prevalent in female medical students,[5,6] which can negatively affect their studies and professional achievements.

Globally, Covid 19 pandemic has affected the physical and mental health of human beings. Internationally, various studies have explored the psychological impact of the Covid 19 pandemic among the general population,[7] as well as among healthcare workers.[8,9] Also, studies have been conducted among students. A study in Chennai, India found that levels of anxiety and stress have increased in medical students during COVID19.[10] A study in China also showed an increased level of anxiety among college students because of the COVID19 pandemic effects.[11]

In Saudi Arabia, various studies have been conducted to explore the psychological impact of the COVID19 pandemic among the general population.[12–17] Researchers have studied the prevalence of anxiety and stress among healthcare workers during the COVID-19 pandemic in Saudi Arabia.[18–21] Few studies are also conducted to determine the psychological impact of the pandemic on students,[22,23] including dental students,[24] and nursing students.[25] COVID19 pandemic is reported to have more psychological impact on females and students.[26] However, there is a dearth of literature regarding the psychological impact on medical students in Saudi Arabia generally and in Qassim province particularly.

Because of the demanding and stressful nature of medical studies, it is important to explore the added psychological impact of the COVID-19 pandemic on medical students. Moreover, the effect of various strategies for the prevention of Covid 19 among medical students, such as the introduction of online education, needs to be determined. In this context, we designed the current study to determine the prevalence of anxiety during Covid 19 pandemic among female medical students, identify the factors associated with anxiety in female medical students, and to explore the effect of COVID19-related circumstances on the anxiety level of medical students in Qassim University, Qassim region, Saudi Arabia.

METHODS

A cross-sectional study was conducted among female medical students at Qassim University, Saudi Arabia. A self-administered questionnaire was designed in English and translated into Arabic. The questionnaire was back-translated to check the accuracy of the translation. The questionnaire consisted of 2 sections. The first section gathered personal data (age, marital status, year of study, academic performance, and household income) and information related to the Covid19 pandemic. The second section comprised the Beck Anxiety Inventory (BAI) which is a 21-item scale consisting of statements measuring the severity of anxiety. BAI is a validated instrument with high internal consistency (α=0.92) and test-retest reliability.[27] The items comprise of symptoms such as 'numbness or tingling', 'unable to relax', 'dizzy or lightheaded, and 'terrified or afraid'. There are four response options ranging from 0 to 3 for each item, where 0 stands for 'not at all 1 for 'mildly but it didn't bother me much', 2 for 'moderately, it wasn't pleasant at times, and 3 for 'severely, it bothered me a lot. The maximum score for all items is 63, with the score of 0-21 categorized as 'low anxiety; a score of 22-35 as 'moderate anxiety' while a score of 36 and above, as 'severe anxiety'. The questionnaire was pre-tested for clarity and understandability.

The data were collected by an online survey, designed and submitted to the WhatsApp groups of female medical students, using Google Forms. All Qassim university female medical students of the first year, 2nd year, 3rd year, 4th year, and 5th year, were invited to participate in the survey. The study was facilitated by the group leader for each year. To improve the response rate, multiple reminders were sent to the participants. The data were collected from August to December 2021.

The data collected were coded and cleaned in Microsoft Excel. Variables were processed and analyzed using IBM SPSS Statistics (version 21). The results were expressed as means, medians, frequencies, and percentages. Relevant inferential statistical tests were used to determine the significance. Statistical significance was considered as a two-tailed p-value <0.050.

ETHICAL CONSIDERATIONS

The study was approved by the Qassim Research Ethics Committee (registration no. H-04-Q-001). The study was conducted in accordance with the principles of the Declaration of Helsinki. An explanation of the study's objectives, as well as the informed consent form, were included in the questionnaire. The survey was anonymous, and data were kept confidential. The participation was voluntary, and the participants were informed that they could withdraw from the survey at any time. The respondents did not receive any compensation for their participation in the survey.

RESULTS

The questionnaire was distributed to 278 female medical students. Out of these, 179 students responded and completed the study questionnaire, leading to a response rate of 64.4%.

The age of the respondents ranged from 18 to 26 years, with a mean of 22.45 (±1.57) years. Table 1 shows the demographic characteristics of the participants. More than half of the participants (55.3%) belonged to the 23–26-year-old age group. Most of the respondents (n=84, 46.9%) perceived their academic performance as 'Good'. A total of 50 (27.9%) students reported their family income ranging from 10,000 to 14,999 Saudi Riyals. A vast majority of the students (89.9%) were living with their parents.

Table 1. Demographic characteristics of the study participants (n=179)

Variables	Number (n)	Percentage (%)
Age Group (Years):		
18-22	80	44.7
23-26	99	55.3
Academic performance:		
Poor	8	4.5
Fair	33	18.4
Good	84	46.9
Very good	33	18.4
Excellent	21	11.7
Study level:		
First/ Second year	29	16.2
Third/Fourth/Fifth year	150	83.8
Marital status:		
Single	176	98.3
Married	3	1.7
Income/household income:		
Less than 5000	18	10.1
5000 - 9999	31	17.3
10000 - 14999	50	27.9
15000 - 20000	30	16.8
More than 20000	50	27.9
Living status:		
With parents	161	89.9
With husband	3	1.7
with Relatives/friends/ alone	15	8.5

Table 2. COVID-19 among the study participants and their family members (n=179)

Variables	Number (n)	Percentage (%)
Suffered from Covid-19		
Yes	34	19
No	133	74.3
Don't know	12	6.7
Immediate Family member suffered from Covid-19		
Yes	90	50.3
No	89	49.7
Family members affected by COVID-19 living in your household (n=90)		
Yes	69	76.6
No	21	23.4
Family members affected by COVID-19 got admitted to the hospital (n=90)		
Yes	22	24.4
No	68	75.6

The study participants were asked whether they or their family members had suffered from COVID-19. A total of 34 (19%) respondents suffered from COVID-19. Regarding COVID-19 among immediate family members, 50.3% (n=90) students answered in affirmation; out of these 76.7% (n=69) reported that the affected family member was living in the same household. Among the family members suffering from COVID-19, 24.4% were admitted to the hospital.

Figure 1 shows the study participants' level of anxiety according to the Beck Anxiety Inventory (BAI). A total of 31 (17.3%) participants had moderate and 17 (9.5%) had a severe levels of anxiety according to Beck Anxiety Inventory. Thus, the overall prevalence of anxiety among study participants was 26.8% (n=48).

The study participants were asked about their thoughts and feelings regarding COVID-19 and related situations. In response to the statement, 'During past one year, I have felt anxious and worried about COVID-19'. A total of 48 (26.8%) respondents were worried either most of the time or all the time regarding online learning and 72 (40.2%) were worried either most of the time or all the time about their academic performance due to online learning (Table 3).

Out of the total 63 scores, the overall mean anxiety score among study participants was 14.6 (±13.5) with a minimum of 0 and a maximum of 58 while the overall median score was 11 (IQR=21). Table 4 shows the association between anxiety scores and the demographic characteristics of the study participants. The younger age group (18-22 years) had higher median anxiety scores [15 (28.5)] as compared to the 23-26 years age group [8 (21)]. This difference was statistically significant at p=0.042. The participants who perceived their academic performance as 'poor or fair' had higher anxiety scores as compared to those considering their performance as 'good, very good, or excellent, with a statistically significant difference of p=0.018. Similarly, there was a statistically significant difference in anxiety scores among those living with parents or husbands as compared to those living alone or with relatives and friends (p=0.01).

As regards the association between COVID-19-related situations of the participants and total anxiety scores, we found no statistically significant association of anxiety scores with COVID-19-related anxiety, lockdown, online learning, and performance due to online learning. On exploring the association between anxiety scores and being affected by COVID-19, anxiety scores were statistically significantly higher among those whose family members got hospitalized due to COVID-19 (p=0.035).

DISCUSSION

Medical students are in a highly stressful field during their medical training.[3] Because of the stressful situation, they may become anxious, and their career can be negatively affected if anxiety is not identified and minimized.[5] A study in Saudi Arabia during the COVID-19 pandemic showed that

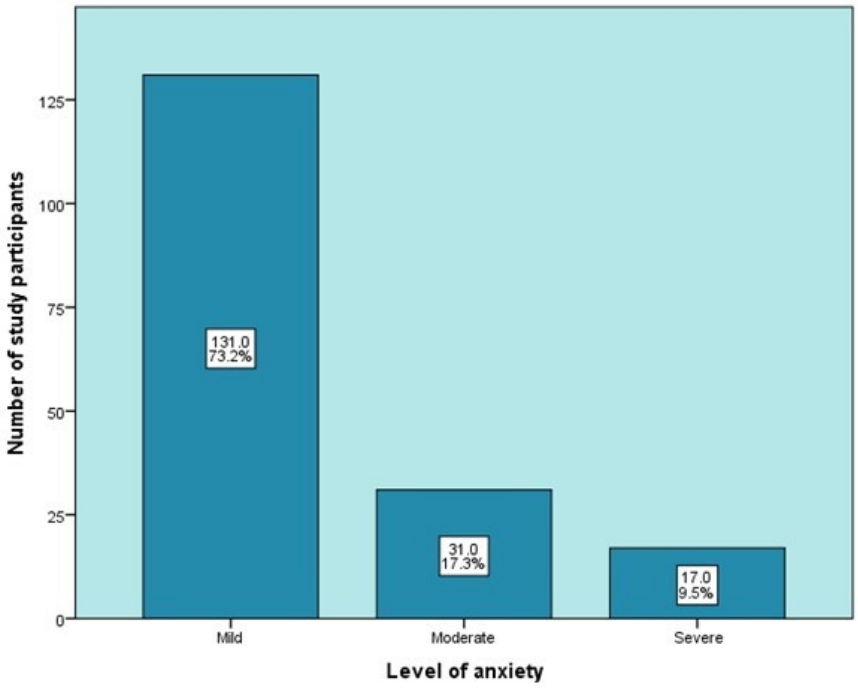

Figure 1. Study participants' level of anxiety by the Beck Anxiety Inventory (n=179)

Table 3. Study participants' feelings regarding COVID-19 and related situations (n=179)

During the past 1 year, I have felt anxious, worried, and nervous about ..	Never/ Occasionally	Half of the time	Most of the time/ All the time
Covid-19	113 (63.2%)	37 (20.7%)	29 (16.2%)
Lock down	127 (71%)	28 (15.6%)	24 (13.4%)
Online learning	104 (58.1%)	27 (15.1%)	48 (26.8%)
Academic performance due to online learning	81 (45.3%)	26 (14.5%)	72 (40.2%)

females were having higher levels of anxiety, and most of them were students during the peak of the outbreak.[17]

In our study, 17.3% had moderate, and 9.5% had potentially concerning levels of anxiety, leading to an overall anxiety prevalence of 26.8%, according to the Beck Anxiety Inventory (BAI). In a meta-analysis on the prevalence of anxiety among medical students, the overall prevalence of anxiety was found to be 33.8% among medical students globally, which is substantially higher than the general population. Similar to the findings of our study, a study done in Saudi Arabia found 21.5% of the respondents having "minimal to moderate", and 13% experiencing "severe to extreme" levels of anxiety.[23]

A study was done at college students in Almaarefa University, Saudi Arabia, during the COVID-19 pandemic to see the impact of distance learning method on anxiety, using the GAD-7 scale. It was found that anxiety was mild in 32.2%, moderate in 36.2%, and severe in 22.8%.[22] A study in Jazan found that 31% of undergraduate students at Jazan University had psychological distress.[28] Similarly, a study of the prevalence and predictors of anxiety and depression among female medical students in King Abdulaziz University, Jeddah, Saudi Arabia showed that 33.3% and 34.9% of students had borderline and morbid anxiety, respectively.[29] The prevalence of anxiety (moderate and severe) among medical students was found to be 40% in a study exploring the correlation between academic performance and anxiety in medical students of Majmaah University, Saudi Arabia.[6]

The present study showed a significant association between age and anxiety; the younger the age, the higher the anxiety scores. Also, there is a significant association between higher anxiety scores and junior year of study (first and second year). This finding is in line with other studies.[30–33] Similar to the findings of our study, a study was done in Saudi Arabia measuring the anxiety level of university students during COVID-19 and found that students in their fourth year were more anxious compared to students in their fifth year or final year.[23]A decrease in anxiety symptoms of senior medical students may be attributed to a gradual adaptation to the environment and the study courses.[32] Internationally, a study conducted in Egypt showed a significant association between stress and student age of more than 20 years (p=0.049).[34] On the contrary, other studies showed higher levels of anxiety among senior study years in comparison to first-year medical students.[6,10]

Our study found a significant association between increased levels of anxiety and lower levels of income. Sim-

Table 4. Association between Demographic characteristics of the participants and anxiety score (n=179)

Variables	Mean (SD)	Median (75%IQR)	*p*-value
Age Group (Years):			
18-22	16.36±12.89	15 (28.50)	.042*
23-26	13.10±13.82	8 (21)	
Academic performance:			
Poor / Fair	19.24 (13.25)	17(31)	.018¶
Good	13.36(12.84)	11(20.75)	
Very good / Excellent	12.87(14.04)	8.50(18.25)	
Study level:			
First / Second year	20.03±14.11	20(31.50)	.019*
Third / Fourth / Fifth year	13.50±13.13	10(20)	
Income/household income (Saudi Riyals):			
Less than 5000- 15000	16.31±13.06	15(28)	.016*
More than 15000	12.38±13.74	9.50(18.75)	
Living status:			
With parents/ husband	13.90±13.52	10(21.75)	.010*
With relatives/friends/alone	21.80±10.92	19(32)	

* Mann Whitney U test ¶ Kruskal Wallis Test

ilarly, a study from Syria found higher anxiety prevalence among those reporting insufficient income.[30]Another study conducted among medical students in Egypt found a significant association of stress scores with lower socioeconomic class, as higher stress scores were detected in low and very low socioeconomic groups.[34]

One of the findings of the current study was the significant association between lower levels of anxiety and participants' perceived 'very good/ excellent' academic performance. Likewise, a lower anxiety score was found among students who were satisfied with their educational performance in India.[10]

In the present study, those who had their family members hospitalized due to COVID-19 were having higher scores of anxiety. This finding is similar to another study done in Saudi Arabia that showed higher anxiety among those who had a vulnerable household member at increased risk of COVID-19.[17]

LIMITATIONS

Our study has certain limitations. Firstly, the study included only female medical students, studying in a medical university in a single city, leading to the limited generalizability of the study. Secondly, the study was conducted as an online survey through a self-administered questionnaire. Thus, some of the questions might be misunderstood by the study participants. However, the questionnaire was pretested for clarity and understandability.

CONCLUSION

According to the Beck Anxiety Inventory (BAI), the prevalence of anxiety among female medical students during the COVID-19 pandemic was 26.8%. There was a significant association of anxiety with the junior level of study, lower household income, and perceived poor academic performance. Our study has highlighted the need for accessible mental health services for medical students, specially counselling and mental health education. We recommend that medical colleges focus their efforts on educating medical students about their mental health and encouraging them to seek help when needed. Supportive strategies to minimize stress, such as stress management courses, can also be introduced in medical colleges. Furthermore, we recommend that medical colleges collaborate with mental health specialists to have specialized approaches to alleviate anxiety in medical students. For the students needing treatment, psychotherapy may be included in the treatment plan as it has an important role in the management of anxiety disorders.

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AUTHORS' CONTRIBUTION

AAM designed the study, collected the data, performed data analysis, and drafted the manuscript. SJ participated in the design of the study, and data analysis, and critically revised the manuscript for its intellectual content. AAM had the final responsibility to submit for publication. Both authors approved the final version of the manuscript for publication.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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CONFERENCE PRESENTATION

None.

DATA AVAILABILITY

The data used to support the findings of this study are included within the research article and are available from the corresponding author upon request.

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REFERENCES

1. Get Help With Anxiety Disorders. Accessed January 27, 2021. https://www.psychiatry.org/patients-families/anxiety-disorders

2. Anxiety Disorders: Background, Anatomy, Pathophysiology. Accessed January 27, 2021. https://emedicine.medscape.com/article/286227-overview

3. Rahman AGA, al Hashim N, al Hiji K, Al-Abbad Z. Stress among Medical Saudi Students at College of Medicine, King Faisal University. 2013;54.

4. Quek TTC, Tam WWS, Tran BX, et al. The global prevalence of anxiety among medical students: A meta-analysis. *International Journal of Environmental Research and Public Health*. 2019;16(15):2735. doi:10.3390/ijerph16152735

5. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic Review of Depression, Anxiety, and Other Indicators of Psychological Distress Among U.S. and Canadian Medical Students. *Academic Medicine*. 2006;81(4):354-373. doi:10.1097/00001888-200604000-00009

6. Lateef Junaid MA, Auf AI, Shaikh K, Khan N, Abdelrahim SA. Correlation between Academic Performance and Anxiety in Medical Students of Majmaah University - KSA. *J Pak Med Assoc*. 2020;70(5):865-868. doi:10.5455/jpma.19099

7. Wang Y, Kala MP, Jafar TH. Factors associated with psychological distress during the coronavirus disease 2019 (COVID-19) pandemic on the predominantly general population: A systematic review and meta-analysis. *PLoS ONE*. 2020;15(12):e0244630. doi:10.1371/journal.pone.0244630

8. Labrague LJ, de los Santos JAA. Fear of COVID-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *J Nurs Manag*. 2021;29(3):395-403. doi:10.1111/jonm.13168

9. Dosil Santamaría M, Ozamiz-Etxebarria N, Redondo Rodríguez I, Jaureguizar Alboniga-Mayor J, Picaza Gorrotxategi M. Psychological impact of COVID-19 on a sample of Spanish health professionals. *Revista de Psiquiatría y Salud Mental*. 2021;14(2):106-112. doi:10.1016/j.rpsm.2020.05.004

10. Saraswathi I, Saikarthik J, Kumar KS, Srinivasan KM, Ardhanaari M, Gunapriya R. Impact of COVID-19 outbreak on the mental health status of undergraduate medical students in a COVID-19 treating medical college: a prospective longitudinal study. *PeerJ*. 2020;8:e10164. doi:10.7717/peerj.10164

11. Wang C, Zhao H. The Impact of COVID-19 on Anxiety in Chinese University Students. *Frontiers in Psychology*. 2020;11:1168. doi:10.3389/FPSYG.2020.01168/BIBTEX

12. Alqahtani AS, Alrasheed MM, Alqunaibet AM. Public Response, Anxiety and Behaviour during the First Wave of COVID-19 Pandemic in Saudi Arabia. *International Journal of Environmental Research and Public Health*. 2021;18(9):4628. doi:10.3390/ijerph18094628

13. Alamri HS, Algarni A, Shehata SF, et al. Prevalence of Depression, Anxiety, and Stress among the General Population in Saudi Arabia during Covid-19 Pandemic. *International journal of environmental research and public health*. 2020;17(24):9183. doi:10.3390/ijerph17249183

14. Alyami HS, Naser AY, Dahmash EZ, Alyami MH, Alyami MS. Depression and anxiety during the COVID-19 pandemic in Saudi Arabia: A cross-sectional study. *Int J Clin Pract*. 2021;75(7):e14244-e14244. doi:10.1111/ijcp.14244

15. Alsaif B, Elhassan NEE, Itumalla R, Ali KE, Alzain MA. Assessing the Level of Awareness of COVID-19 and Prevalence of General Anxiety Disorder among the Hail Community, Kingdom of Saudi Arabia. *International journal of environmental research and public health*. 2021;18(13):7035. doi:10.3390/ijerph18137035

16. Ahmed HG, Abboh EAA, Abdalla RAH, Elhussein G. Association between socio-demographical characteristics, comorbidities and anxiety burden during COVID-19 lockdown in Saudi Arabia. *Medical Science*. Published online 2020:3709-3716.

17. Albagmi FM, Alnujaidi HY, al Shawan DS. Anxiety Levels Amid the COVID-19 Lockdown in Saudi Arabia. *International Journal of General Medicine*. 2021;14:2161-2170. doi:10.2147/ijgm.s312465

18. Alzaid EH, Alsaad SS, Alshakhis N, Albagshi D, Albesher R, Aloqaili M. Prevalence of COVID-19-related anxiety among healthcare workers: A cross-sectional study. *J Family Med Prim Care*. 2020;9(9):4904. doi:10.4103/jfmpc.jfmpc_674_20

19. Alenazi TH, BinDhim NF, Alenazi MH, et al. Prevalence and predictors of anxiety among healthcare workers in Saudi Arabia during the COVID-19 pandemic. *Journal of Infection and Public Health*. 2020;13(11):1645-1651. doi:10.1016/j.jiph.2020.09.001

20. Maganur PC, Ramya HK, Vishwanathaiah S, Patil S. Depression, Anxiety, and Psychological Distress among Health-care Providers During the Outbreak of the Life-threatening Coronavirus Disease (COVID-19). *J Contemp Dent Pract*. 2020;21(5):471-472. doi:10.5005/jp-journals-10024-2836

21. Meo SA, Alkhalifah JM, Alshammari NF, Alnufaie WS. Comparison of Generalized Anxiety and Sleep Disturbance among Frontline and Second-Line Healthcare Workers during the COVID-19 Pandemic. *International journal of environmental research and public health*. 2021;18(11):5727. doi:10.3390/ijerph18115727

22. Marwa K, AlKthiri H, Shicker H, et al. Impact of distance learning during COVID-19 on the anxiety of college students of Almaarefa University. *International Journal of Medicine in Developing Countries*. Published online 2020:1844-1846. doi:10.24911/ijmdc.51-1601032316

23. Khoshaim HB, Al-Sukayt A, Chinna K, et al. Anxiety Level of University Students During COVID-19 in Saudi Arabia. *Front Psychiatry*. 2020;11. doi:10.3389/fpsyt.2020.579750

24. Kharma MY, Koussa B, Aldwaik A, et al. Assessment of Anxiety and Stress among Dental Students to Return to Training in Dental College in COVID-19 Era. *Eur J Dent*. 2020;14(S 01):S86-S90. doi:10.1055/s-0040-1717052

25. Alsolais A, Alquwez N, Alotaibi KA, et al. Risk perceptions, fear, depression, anxiety, stress and coping among Saudi nursing students during the COVID-19 pandemic. *Journal of Mental Health (Abingdon, England)*. 2021;30(2):194-201. doi:10.1080/09638237.2021.1922636

26. Alkhamees AA, Alrashed SA, Alzunaydi AA, Almohimeed AS, Aljohani MS. The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia. *Comprehensive Psychiatry*. 2020;102:152192. doi:10.1016/j.comppsych.2020.152192

27. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*. 1988;56(6):893-897. doi:10.1037/0022-006x.56.6.893

28. Hakami R. Prevalence of psychological distress among undergraduate students at Jazan University: A cross-sectional study. *Saudi J Med Med Sci*. 2018;6(2):82. doi:10.4103/sjmms.sjmms_73_17

29. Arabia S, Ibrahim N, Al-Kharboush D, El-Khatib L, al-Habib A, Asali D. Prevalence and Predictors of Anxiety and Depression among Female Medical Students in King Abdulaziz University. 2013;42. http://ijph.tums.ac.ir

30. al Saadi T, Zaher Addeen S, Turk T, Abbas F, Alkhatib M. Psychological distress among medical students in conflicts: a cross-sectional study from Syria. *BMC Med Educ*. 2017;17(1). doi:10.1186/s12909-017-1012-2

31. Ahmed I, Banu H, Al-Fageer R, Al-Suwaidi R. Cognitive emotions: Depression and anxiety in medical students and staff. *Journal of Critical Care*. 2009;24(3):e1-e7. doi:10.1016/j.jcrc.2009.06.003

32. Alvi T, Assad F, Ramzan M, Khan FA. Depression, anxiety and their associated factors among medical students. *J Coll Physicians Surg Pak*. 2010;20(2):122-126.

33. Bassols AM, Okabayashi LS, da Silva AB, et al. First- and last-year medical students: is there a difference in the prevalence and intensity of anxiety and depressive symptoms? *Rev Bras Psiquiatr*. 2014;36(3):233-240. doi:10.1590/1516-4446-2013-1183

34. Abdel Wahed WY, Hassan SK. Prevalence and associated factors of stress, anxiety and depression among medical Fayoum University students. *Alexandria Journal of Medicine*. 2017;53(1):77-84. doi:10.1016/j.ajme.2016.01.005