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Factors Influencing Anxiety Levels of Medical Sciences Students During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic has introduced a host of additional difficulties for medical sciences students, impacting their mental well-being alongside the already rigorous academic demands of their programs. The study aimed to assess the prevalence of anxiety experienced by students studying medical sciences during the pandemic, along with the factors contributing to this anxiety. A survey study was conducted over three months involving students from Ras Al Khaimah Medical and Health Science Colleges. Participants were provided with an anonymous, web-based, self-administered questionnaire to collect relevant information. The prevalence of anxiety among students was 23.9%, with a mean score of 9.59±4.7 out of 21. A significant association between anxiety levels and factors such as sleep duration, a history of COVID-19 among close contacts, time management, being informed about the COVID-19 pandemic, and online learning. Logistic regression analysis identified three significant determinants of anxiety during the pandemic: inadequate sleeping hours, challenges in time management, and a history of COVID-19 among close contacts. Addressing these determinants can be instrumental in developing targeted interventions and support systems to mitigate anxiety and enhance the overall well-being of the academic community.

Keywords: *COVID-19, Anxiety Level, Medical Sciences Students, GAD-7, UAE.*

Introduction

The novel coronavirus, responsible for the ongoing COVID-19 pandemic, has gained global recognition. This outbreak has introduced the potential for significant psychological pressures (Xiao, 2020). Besides the existing stressors, students have grappled with sustaining their mental well-being during periods of home isolation, social distancing, online learning, and the disappointment of missed milestones such as graduation (Lorraine et al., 2000). Furthermore, the fields of Medicine and Health Sciences, acknowledged for their complexity and fierce competition, as reported by prior research highlighting their challenges (Birmaher et al., 1996; Levine et al., 2006; Yusoff et al., 2011).

Studies have approximated that between 6% and 37.5% of medical students at various academic levels have experienced depression (Dyrbye et al., 2006; Mohd Sidik et al., 2003). The COVID-19 pandemic

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has brought into focus the mental health of populations. It is known that epidemics exacerbate or introduce new stressors that impact individuals on various levels. The fast spread of the virus and the associated health risks have generated fear and anxiety about the potential health consequences for oneself and loved ones. The uncertainty surrounding the virus, its transmission, and the severity of the illness intensified these emotions.

Clinical observation suggested that restrictions on physical movement and social activities such as quarantine, lockdowns, and social distancing to contain the spread of the disease can lead to feelings of isolation, boredom, and frustration (Zurlo et al., 2020). Furthermore, epidemics often necessitate sudden and radical lifestyle changes. People may have to adapt to remote work or education, alter their daily routines, and forgo regular activities or events they enjoy. These changes can disrupt the sense of normalcy and contribute to stress.

Indeed, uncertainty about the future can greatly impact individuals' well-being and increase overall stress levels. Epidemics can disrupt social support systems, with limited physical interactions and reduced access to emotional support from friends, family, and community networks. The absence of these support systems can further intensify stress levels. Nevertheless, information overload combined with misinformation and rumors can create confusion, anxiety, and additional stress. Academic stressors encompass various demands and challenges related to learning, exams, performance competition, and the need to acquire a significant amount of knowledge within a limited time frame (Abouserie, 1994).

It is crucial to recognize these stressors and take proactive steps to address them. Promoting access to reliable sources of information, disseminating accurate knowledge about the epidemic, preventive measures, and available resources can help alleviate anxiety and reduce misinformation-driven stress (Brooks et al., 2020). Mental health services should be made available and accessible to individuals experiencing stress and anxiety. This includes counseling, therapy, helplines, and online resources. Engaging in online communities, networking, and peer connection can provide a sense of belonging and alleviate feelings of isolation and loneliness. Encouraging individuals to prioritize self-care activities such as regular exercise, healthy eating, maintaining a consistent sleep schedule, and engaging in activities that promote relaxation can help manage stress and anxiety during challenging times.

By acknowledging the stressors associated with epidemics and taking proactive steps to address them, individuals can better manage their psychological well-being and navigate through such challenging periods (Turkish Psychiatric Association, 2020).

There is variability in reported anxiety rates across different studies and populations. Addressing the mental health challenges faced by medical sciences students is crucial. Indeed, universities need to provide support and resources to promote mental well-being during these challenging times. The current study aimed to assess the extent of anxiety experienced by students studying medical sciences during the COVID-19 pandemic, along with the determinant factors contributing to this anxiety.

Subjects & Methods

Study Design: A cross-sectional survey study.

Study Participants/Setting*:* The appropriate student population of Ras al Khaimah Medical and Health Science University (RAKMHSU) enrolled in the four colleges, namely: Medicine, Pharmacy, Dental, and Nursing.

Study Duration: Three months during the academic year 2020-2021.

Inclusion Criteria: All students from RAKMHSU, irrespective of age, gender, nationality, place of living, and years of college, who agreed to participate in the study were included.

Sampling Size and Method: The minimal estimated sample size was about 306 students, calculated based on the total population (1500), confidence interval 95%, margin of error 5%, and population proportion 50% (Rao soft sample size calculator).

Data Collection Tools: An anonymous web-based self-administered questionnaire was sent through their emails to collect data from all students in the four colleges. A written informed consent was obtained, assuring confidentiality after explaining the study's objectives. The questionnaire consisted of three main sections: demographic characteristics, stressors and coping mechanisms, and the Generalized Anxiety Disorder 7-item (GAD-7) scale. This widely used tool assesses generalized anxiety disorder through seven questions, each rated on a 4-point Likert scale (0 for "not at all," 1 for "several days," 2 for "more than half the days," and 3 for "nearly every day"). The total score, ranging from 0 to 21, is derived by summing the scores for the seven questions. Scores of 5, 10, and 15 on the GAD-7 indicate mild, moderate, and severe anxiety, respectively. In this study, a cutoff point of 8 or higher on the GAD-7 was employed to identify the presence of anxiety, given its demonstrated reliability, with a sensitivity of 92% and specificity of 76% (Spitzer et al., 2006).

Data Analysis: Data were entered and analyzed using SPSS 23 for Windows. Descriptive analysis using frequency counts, percentages, mean, and standard deviation was carried out. Chi-square test was used to assess the association between each sociodemographic characteristic, coping, and stressor factors on the levels of anxiety among the students. Logistic regression analysis was used to find out the determinants of anxiety among students during COVID-19. The significance level was set at ≤ 0.05.

Ethical Considerations: Ethical approval from the local institute was obtained before starting the study. The goals of the study were explained to the participants, ensuring anonymity and confidentiality. They were given the right to refuse to participate or withdraw whenever they wished to do so. Using the data for research purposes only was guaranteed. No personally identifiable data were included in the questionnaire.

Results

In total, 306 students responded to the questionnaire, and data were analyzed for 297 completed surveys (completion rate 97.1%) from four different colleges at RKMHSU. The mean age of students was 20 ± 3.7 years, and most participants were males (68%). About half of the students were Arab (48.1%), living in Ras al Khaimah (54.2%), and almost all were single (95.9%). Medicine and dental college students constituted 71.1%. More than half of the students were from basic science (53.9%). About 1 in 5 students was living away from family (17.5%) (Table 1).

Of these students, 35.7% reported being in contact with an infected or suspected case of COVID-19. More than half of the students reported that they are not smokers (58.9%) and practice physical activity (51.4%). More than two-thirds (62.3%) reported that they did not have a time management plan during COVID-19 quarantine, and 58.6% reported sleeping for less than 8 hours per day. A great proportion of students (70.9%) reported that they didn't receive counselling and psychological services from the university. One in ten reported that they didn't have enough information about COVID-19. The level of prayers changed for 35.7% of them during the quarantine. Almost seventy percent (69.9%) were unsatisfied with online learning and exams compared with the traditional one, and 77.1% didn't prefer to have future learning online. More than half of the studied students (57.2%) felt that online learning is more stressful than the regular one at the campus (Table 2).

Table 1: Socio-Demographic Characteristics of Students (N= 297.

	Frequency	Percentage
Age [mean ± SD]	20 ± 3.7	
Gender		
Male	202	68
Female	95	32
Nationality		
Emirati	29	9.8
Arab	143	48.1
Non – Arab	125	42.1
Place of living		
Ras al-Khaimah	161	54.2
Other emirates	136	45.8
Marital status		
Single	284	95.9
Married	13	4.1
College		
Medicine	132	44.5
Pharmacy	46	15.5
Dental	79	26.6
Nursing	40	13.4
Year of study		
First	128	43.1
Second	32	10.8
Third	28	9.4
Fourth	50	16.8
Fifth	59	19.9
Father occupation		
Not working	33	11.1
Employee	152	51.2
Private work	112	37.7
Father education		
Illiterate	7	2.4
Read& write	12	4
Primary	8	2.7
Secondary	34	11.4
University	103	34.7
Post – graduate	133	44.8
Mother occupation		
Not working	205	69
Employee	64	21.5
Private work	28	9.4

Table 2: Percent Distribution of the Studied Students According to Stressors and Coping Factors During the COVID-19 Pandemic.

Stressors and coping strategies	Frequency	Percentage
Are you a smoker?		
Yes	124	41.7
No	173	58.2
Sleeping hours		
<8	174	58.6
≥8	123	41.4
Living alone or with others		
Living alone	36	12.1
Living with the parents	235	79.1
Living with friends	26	8.8

Have any of your relatives or friends got COVID 19?		
Yes	106	35.7
No	191	64.3
Are you practicing any physical activity during the pandemic?		
Yes	153	51.4
No	144	48.5
Did you have time management plan during COVID 19 quarantine?		
Yes	85	28.6
No	212	71.4
Do you have counselling and psychological services from university?		
Yes	100	36.1
No	176	63.8
I don't know	21	7.1
Did you get enough information about COVID19?		
Yes	257	86.5
No	40	13.5
Have your prayers increased during the quarantine?		
Increased	79	26.6
Same	191	64.3
Decreased	27	9.1
Are you satisfied with online learning and exams than the traditional one?		
Yes	90	30.3
No	207	69.7
Did you find online learning more stressful than the regular one at the campus?		
Yes	170	57.2
No	127	42.8
Do you prefer future learning to be online?		
Yes	68	22.9
No	229	77.1

Study findings showed that the prevalence of anxiety was 23.9%, with a mean score of 9.59±4.7 out of 21. Sleeping for less than 8 hours per day is associated with more anxiety (30.4 vs 14.6%; P=0.009). Students who have a history of friends or relatives with COVID-19 infection reported more anxiety than others (68.1 vs 11.2%; P=0.01). Lacking a time management plan was associated with more anxiety (28.8 vs 11.7%; P=0.04). Lack of awareness about COVID-19 was also significantly associated with more anxiety than those who were aware (47.5 vs 10.2%; P=0.00). Study results also showed that online learning was associated with more anxiety than in-campus learning (32.9 vs 11.9%; P=0.04). On the other hand, no significant association was found with other variables, as shown in Table 3.

Table3: Association Between Level of Anxiety and Participants Sociodemographic Characteristics, Coping and Stressors Factors During the Pandemic (N=297).

Characteristic	**Anxiety level**	**P value***
	Absent NO. % Present NO. %	
Gender Male (202) Female (95)	149 (73.8) 53 (26.2) 77(81.1) 18 (18.9)	0.23
Nationality Arab (172) Non -Arab (125)	136(79.1) 36 (20.9) 90 (72.0) 35 (28.0)	0.51

Colleges Medicine (132) Pharmacy (46) Dental (79) Nursing (40)	91 (66.7) 41 (31.1) 37(71.9) 9 (19.6) 60(75.9) 19 (24.1) 33(82.5) 7(17.5)	0.1
Years of study First year (128) Second year (32) Third year (28) Fourth year (50) Fifth year (59)	105(82.0) 23 (18.0) 23(71.9) 9 (28.1) 20 (71.4) 8(28.6) 38(76.0) 12(24.0) 40(67.8) 19(32.2)	0.4
Marital status Single (284) Married (13)	217(76.1) 67 (34.0) 9(75) 4(25.0)	0.9
Father's occupation Not working (33) Employee (152) Private work (112)	24(72.7) 9(27.3) 114(75.0) 38(25.0) 88(78.6) 24(21.4)	0.239
Mother 's occupation Not working (205) Employee (64) Private work (28)	158(77.0) 47(23.0) 44 (68.8) 20 (21.2) 24(85.7) 4 (13.6)	0.424
Father's education - Illiterate (7) Read and write (12) Primary (8) Secondary (34) University (103) PG and above (133)	6 (85.7) 1(14.3) 10 (83.3) 2 (16.7) 7(87.5) 1(12.5) 28(82.4) 6(17.6) 76(73.8) 27 (26.2) 99(74.4) 44(25.6)	0.821
Place of living RAK (161) Other Emirates (136)	126(72.7) 35 (27.3) 100(73.5) 36(26.5)	0.9
Living alone or with others Living alone (36) Living with the parents (235) Living with friends (26)	26(72.2) 10 (27.8) 188 (80.0) 47(20.0) 12 (75.0) 4 (25.0)	0.7
Smoking status Smoker (124) Non-smoker (173)	88 (71.0) 36(17.7) 138(79.8) 35(20.2)	0.2
Sleeping hours <8 (174) ≥ 8 (123)	121(69.5) 53(30.4) 105(85.4) 18(14.6)	0.006
Any of friends or relatives got COVID 19 YES (66) NO (231)	21(31.8) 45(68.1) 205(88.8) 26(11.2)	0.001
Are you practicing any physical activity? Yes (153) No (144)	119 (77.8) 34 (22.2) 107(74.3) 37(25.7)	0.9
Do you have time management plan during the COVID 19 YES (85) NO (212)	75 (88.2) 10 (11.7) 151(71.2) 61(28.8)	0.003

Do you have counselling and psychological services? YES (100) NO (197)	80 (80.0) 20(20.0) 146(74.1) 51(25.9)	0.22
Have you got enough information about COVID19? YES (257) No (40)	205(79.8) 52(10.2) 21(52.5) 19 (47.5)	0.00
Have you changed your prayers during COVID pandemic? Increased (79) The same (191) Decreased (27)	63(79.7) 16(20.3) 146(76.4) 45(23.6) 17 (63.0) 10(37)	0.056
Did you find online learning stressful than the regular one at the campus? Yes (170) No (127)	114(67.05) 56 (32.9) 112 (88.1) 15 (11.9)	0.04
Do you prefer future learning to be online? Yes (68) No (229)	57(83.8) 11 (16.2) 169(73.8) 60(26.2)	0.16
Satisfaction with online learning and exams Yes (90) No (207)	76 (84.4) 14(15.6) 150(72.5) 57(27.5)	0.83

*P value of Chi square

Logistic regression analysis (Table 4) revealed that age did not exhibit a significant association with anxiety. While males demonstrated 1.4 times higher odds of experiencing anxiety compared to females, this difference was not statistically significant (OR=1.4, p=0.5). Non-Arab individuals were found to be 17% less likely to experience anxiety than their Arab counterparts, although this association did not reach statistical significance (OR=0.83, p=0.7).

Regarding academic disciplines, students in Medicine, Pharmacy, and Dental fields showed insignificantly different odds of anxiety compared to Nursing students, with Medicine presenting the highest odds (OR=3.2, p=0.3). Anxiety odds varied across academic years, marital status, and father's occupation; however, these differences did not achieve statistical significance.

Physical activity did not exhibit a significant association with anxiety. While receiving counseling services during COVID-19 was associated with lower odds of anxiety (p=0.07), the result was not statistically significant. Having sufficient information about COVID-19 (p=0.06), finding online learning stressful, residing in RAK, and living alone or with parents were associated with lower odds of anxiety, though these associations were not statistically significant.

Importantly, each unit increase in sleeping hours was significantly associated with a 40% decrease in the odds of anxiety (OR=0.6, p=0.006). Having a relative with COVID-19 was linked to a significant increase in the odds of anxiety (p=0.018), while effective time management was associated with significantly lower odds of anxiety (OR=0.3, p=0.03).

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Table4: Determinants of Anxiety Level During COVID19 Among University Students (N=297).

Variable	OR	P-value	95.0% CI for OR	
			lower	upper
Age	**1.08**	**0.45**	**0.8**	**1.3**

Gender				
- Male	1.4	0.5	0.2	2.2
- female	1			
Nationality				
- Arab	0.83	0.7	0.2	3.3
- Non-Arab	1			
College				
- Medicine	3.2	0.3	0.2	3.2
- Pharmacy	1.1	0.9	0.08	1.7
- Dental	1.3	0.8	0.1	1.3
- Nursing				
Year				
- First	0.5	0.4	0.08	2.9
- Second	1.02	0.9	0.13	7.8
- Third	0.8	0.8	0.14	4.5
- Fourth	0.7	0.7	0.1	4.09
- Fifth	1			
Marital status				
- Single	0.2	0.4	0.3	11.6
- Married	1			
Father occupation				
- Not working	3.5	0.2	0.3	34.2
- Employee	1.2	0.7	0.4	3.48
- private	1			
Maternal occupation				
- Not working	2.1	0.3	0.4	11.07
- Employee	2.02	0.4	0.3	13.4
- private	1			
Place of living				
- RAK	0.2	0.35	0.07	6.06
- Other emirates	1			
Father education				
- Illiterate	1.2	0.9		
- Read& write	3.5	0.5	0.013	11.9
- Primary	0.8	0.9	0.08	14.2
- Secondary	1.2	0.7	1.26	5.7
- University	2.15	0.17	0.7	6.5
- Post – graduate	1			
Living arrangement				
- Living alone	0.5	0.6	0.03	8.4
- With parents	0.4	0.5	0.03	6.2
- With friends	1			
Sleeping hours*	0.6	0.006*	0.5	0.8
COVID19 relative*				
- Yes	1.61	0.018*	1.084	2.393
- No	1			
Physical activity				
- Yes	0.84	0.41	0.56	1.26
- No	1			
Counselling services during COVID19				
- Yes	0.4	0.07	0.1	1.07
- No	1			
Got enough information about covid19				
- Yes	0.18	0.06	0.03	0.9
- No	1			

Time management* - Yes - NO	0.3 1	0.03*	0.1	0.9
Online learning stressful - Yes - NO	2.04 1	0.19	0.6	6.01

- Statistically Significant

Discussion

The COVID-19 pandemic has indeed placed a significant psychological burden on individuals worldwide. The fear and uncertainty surrounding the virus, coupled with the various social, economic, and personal challenges it has brought, have contributed to a rise in mental health issues, including stress, anxiety, and depression (WHO, 2020). Medical students, like many other groups, have not been immune to the psychological impact of the pandemic. The demanding nature of their studies, combined with the additional stressors caused by the pandemic, can exacerbate mental health concerns. About 25% of the studied students experienced anxiety during the COVID-19 pandemic, which is similar to the figures mentioned in other studies, ranging from 6% to 37.5% of medical science students experiencing anxiety and depression (Dyrbye et al., 2006; Mohd Sidik et al., 2003).

It is important to consider that stress among students can be influenced by various factors, including academic demands, personal expectations, social support, coping mechanisms, and life circumstances. While medical students may face unique challenges related to the demands of their program, clinical training, and exposure to high-pressure situations (Saddik et al., 2020), the current study results found no significant relationship between the type of college and the level of stress among students, including medical students. This suggests that the type of college alone does not predict the level of anxiety, but other factors are also important (Karaçadır & Çelik, 2019).

There was no significant relationship between gender and stress levels among the studied students. Gender differences in stress levels can exist but are not universally consistent across all studies and populations. Studies that have found higher stress levels among females (Saddik et al., 2020; Turan et al., 2019) do not imply that all females experience higher stress than males in all situations. Within each gender, there are individual variations in how individuals perceive and respond to stress. Personal factors, such as coping strategies, social support networks, and resilience, can influence stress levels independently of gender.

The presence of a friend or relative who has been infected with COVID-19 can indeed be a significant source of stress among students, as shown by the current study results. The experience of knowing someone close who has contracted the virus can have a profound impact on individuals' emotional well-being and stress levels. Several studies reinforce the understanding of this factor. The study by Zurlo et al. emphasized the unique aspect of forced full-time cohabitation during the pandemic. With limited opportunities for external interactions, students may spend more time with their relatives, leading to increased exposure to their concerns, emotions, and health conditions. This close proximity and continuous sharing of time and spaces can intensify stress levels (Zurlo et al., 2020). Also, the study by Aslan and Peknise indicated that students who personally knew individuals with positive COVID-19 test results experienced higher stress levels. This finding suggested that the direct connection to affected individuals, whether friends or acquaintances, can amplify stress due to the emotional impact and concerns for their well-being (Aslan & Pekinse, 2020). Given the significant impact of having a friend or relative infected with COVID-19 on students' stress levels, it is crucial to provide appropriate support and resources. This can include access to accurate information about the virus, guidance on preventive

measures, and mental health services to help students cope with the emotional impact of this stressful situation. Encouraging open communication, providing avenues for emotional support, and promoting self-care practices can also assist in managing stress related to this specific factor.

It is possible that low information or lack of accurate information about the pandemic can also contribute to increased anxiety levels (Ho et al., 2020). This finding aligns with the current study results, which also reported a significant association between uncertainty and a lack of understanding or having low information about the pandemic and increased anxiety levels. In such cases, individuals may experience fear of the unknown, concerns about personal milestones, and difficulties in making informed decisions. On the other hand, a study from Turkey suggested that students who frequently search for health information online may be more prone to experiencing health anxiety. Engaging in extensive online searches about health-related topics, including the pandemic, can expose individuals to a plethora of information, including both accurate and misleading content. This information overload can lead to heightened anxiety and stress, as individuals may become excessively worried about their health or the health of others (Kurcer et al., 2021). Indeed, both excessive information-seeking and low information levels can contribute to increased anxiety during the pandemic. Striking a balance between staying informed and avoiding overwhelming information overload is crucial. Accessing reliable and up-to-date information from credible sources, such as reputable health organizations and government authorities, can help individuals understand the situation, follow appropriate guidelines, and alleviate anxiety by providing a sense of clarity and control.

Adequate sleep plays a crucial role in both physical and mental health. Obtaining less sleep than what is needed for optimal functioning can increase the risk of experiencing anxiety symptoms (Watson et al., 2015). The current study results that associate sleeping for less than 8 hours per day with high levels of anxiety align with previous research in the field (Knickerbocker et al., 2022). The sleep patterns of individuals have undergone changes amid the pandemic, with a noticeable shift towards spending less time sleeping at night and an increase in daytime napping. Sleep patterns have also changed during the pandemic, with a noticeable shift towards spending less time sleeping at night and an increase in daytime napping (Krishnan et al., 2020). The heightened levels of fear and anxiety associated with the pandemic have induced alterations in the sleep-wake cycle, contributing to a decrease in sleep quality (Bhat & Chokroverty, 2022; Gupta & Pandi-Perumal, 2020). Therefore, it is essential to promote better sleep to reduce anxiety levels. This involves adhering to a consistent sleep schedule, establishing a sleep-friendly environment, engaging in relaxation techniques before bedtime, and reducing the consumption of stimulants like caffeine or the use of electronic devices in close proximity to bedtime. Without a doubt, academic advising services frequently advocate for time management as an effective strategy to address stress and, consequently, alleviate anxiety (Macan et al., 1990). The current study's findings underlined the significance of this advice, revealing that seven out of ten students who did not receive academic counseling and reported a lack of time management suffered from elevated anxiety levels compared to their counterparts. This supports the notion that disruptions to routines and schedules can contribute to heightened stress and anxiety levels, particularly in the context of the unique challenges posed by the pandemic, such as remote work, online learning, and increased uncertainty (Misra, 2004). The current study aligns with previous research by Nonis et al., which highlighted the positive impact of high perceived control over time on students' academic stress levels, academic performance, and problem-solving abilities. Those with greater perceived control over time reported better physical and mental health compared to their counterparts with lower perceived control over time (Alhasani et al., 2022).

It's understandable that some students may find online learning more stressful than traditional in-person learning on campus (Başağaoğlu Demirekin & Buyukcavus, 2022). The lack of face-to-face interaction and immediate feedback can make it harder to establish personal connections with peers and instructors, leading to feelings of isolation or detachment. Without the structure and routine provided by attending classes on campus, some students may struggle to stay organized and motivated, leading to increased

stress and procrastination. While online learning may come with its own set of challenges, it's important to note that some students may adapt well to online learning and even find it more convenient, flexible, or engaging (Lairead, D.2020). Students should be proactive in seeking support from their university's counseling services or academic advisors to mitigate the stress of online learning.

The comprehensive examination of various factors influencing anxiety levels within the surveyed students has yielded valuable insights into the dynamics of this psychological phenomenon. Particularly significant is the association observed between sleep duration and anxiety levels, wherein each additional hour of sleep correlated with a 40% decrease in the odds of experiencing anxiety. This underscores the potential impact of addressing sleep patterns in anxiety mitigation strategies. Additionally, the identification of a significant link between having a relative with COVID-19 and anxiety levels highlights the broader contextual influence of external stressors on mental health during challenging times, such as a global pandemic. Conversely, the finding that effective time management is associated with significantly lower odds of anxiety underscores the importance of organizational skills and structured routines in promoting psychological well-being. Collectively, these insights provide a potential understanding of the interplay between individual, contextual, and behavioral factors in shaping anxiety levels. They not only contribute to the academic understanding of anxiety determinants but also offer practical implications for tailored interventions and support mechanisms aimed at promoting mental health within this population.

On the other hand, it is important to understand that each student's journey is unique, and what works best for one may differ from another. A one-size-fits-all approach may not adequately address the complex factors influencing anxiety levels such as sleep patterns, external stressors like the impact of COVID-19 on family members, and the importance of effective time management. By combining these strategies with a personalized approach and a willingness to seek help, university students can navigate any crisis time with greater ease and prioritize their well-being as they pursue their academic goals.

The study's findings should be interpreted with consideration of certain limitations that may impact the generalizability and reliability of the results. Firstly, the external validity of the study may be compromised due to the use of a convenience sampling method in participant selection, specifically concentrating on students from a single Emirate. While it is acknowledged that this university represented the only medical science university in Ras Al Khaimah, UAE, the concentration on a specific geographic region could limit the broader applicability of the findings. To enhance the generalizability of the results, future research should consider employing a nationally representative sample that encompasses a broader demographic and geographic range. Secondly, the response rate was affected by the utilization of a web-based, self-administered questionnaire, leading to incomplete responses. This could introduce a potential bias as individuals who choose to participate may differ systematically from those who opt not to engage in the study. Addressing these limitations in future research endeavors will contribute to a more comprehensive and robust understanding of the factors influencing anxiety levels among students.

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