

**Evaluation of depression and anxiety behaviors among medical field students in Umm Al-Qura University during Covid-19 outbreak, Saudi Arabia.**

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- Depression
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**Abstract**

**Background:** Medical students are at high risk for depression and suicidal ideation. However, the prevalence estimates of these disorders vary between studies. The aim of this study is to estimate the prevalence of depression and anxiety in Umm Al-Qura medical students during covid outbreaks. **Methods:** Across-sectional study during Covid-19 outbreaks through an online questionnaire to estimate the prevalence of depression and anxiety at Umm Al-Qura medical colleges, medical intern and postgraduate. Patient Health Questionnaire-9 (PHQ-9) was used for evaluation of the score of depression, it was constructed from 11 questions. Also, we use General Anxiety Disorder-7 (GAD-7), for assessment of score of anxiety. **Results:** A 503 students from Umm Al-Q universities who studied at different colleges, they participate in this study. A 263 (52.3%) of the participants are male and 240 (47.70%) were female. A 221 (43.94%) were from college of medicine and they are the higher participants, while 115 (22.68%) was from College of Applied Medical Sciences, and 71 (14.12%) from college of dentistry, also 63 students (12.52%) from college of pharmacy, last college which is College of nursing they participate in 33 (6.56%) students only. 169 (33.60%) of all participants suffered from moderate anxiety and 129 (25.60%) of them from moderate depression. 31 (32.6%) of female students of college of medicine have a severe depression, where's, 31 (24.60%) of male students has moderately severe depression. 42 (33.3%), 41 (43.20%) of male and female students of college of medicine represented with moderate anxiety score.

## **Introduction**

Prevalence of anxiety and depression has increased all over the world. A previous studies reported that 4.4% (over 300 million) and 3.6% (264 million) of the populations suffers from anxiety and depression in the time from 2005 to 2015. Also, these studies showed that depression one of the contributors of personal disabilities, and anxiety one of the causes of health loss [1,2]. Medical students exposed to considerable amount of psychological pressure which led to some mental illness like depression and anxiety. Previous work carried on medical student graduate and reported the association between their psychological stress and suboptimal patient care [3,4]. There are many risk factors for depression disorder such as, older age, family history of chronic disease, loss of relatives, gender, and psychiatric illness history [5]. Risk factor in medical students including sleep deprivation [6], abuse and hazing [7,8], and academic workload and stress [9,10]. Some of researches assessing the problem of anxiety and depression between university student [11]. A lot of documents have been reported a psychological morbidity due to anxiety and depression between students all over the world [12].

The American Psychological Association (APA) characterizes stress and anxiety by worried thoughts, emotional state of tension, and fluctuation of physical activities. Anxiety usually related to rigidity of skeletal muscles, stimulation of autonomic nervous system, and complication in facing of situations [13]. Anxiety was considered of the common emotional disorders (APA) documented that female more anxious than males [14]. University students were at a high risk of

anxiety disorders due to their exposure to high grades of stress during their learning process, a lot of studies reported that depression, stress and anxiety disorders more in medical than non-medical students and general populations.

Medical students as our future doctors their mental health is very serious to be considered. Medical education improvement, services of mental health was reorganized according to their needs, as well as, follow up to the students who are in a high risk of psychological problems helping them for improvement of their mental health [15]. A previous study done in Wah Cantt, Pakistan from 2007-2008 showed that female with median age 21.4 years considered the majority of study sample with  $n=202$ . These females suffered from anxiety with percentage of 133 (47.7%) and depression with a percentage of 98 (35.1%) and female suffered from both anxiety and depression with a percentage of 68 (24.3%) of the total participants in the study [16].

A previous study done on the medical students of Imam Mohammed bin Saud Islamic University to evaluate the depression between medical students in Saudi Arabi. The results of the study have shown that the prevalence of the depression is very high. Most of medical students (83.4%) suffering from severe depression, while (55.9%) suffering from mild to moderate depression [17]. This study didn't document in difference between male and female medical students it showed a little difference not exceeding 2% [17]

In our study we focused on assessing the prevalence of anxiety and depression and their relationship between students of medical field and medical postgraduate in Umm Al-Qura university, Makka, Kingdom of Saudi Arabia (KSA).

**Material and methods:**

Our study was a cross sectional descriptive study was conducted at Faculty of medicine, College of Dentistry, College of Pharmacy, College of nursing, College of Applied Medical sciences, medical interns and postgraduates of Umm-Al-Qura university, Makka, Saudi Arabia during the period from October 2020 to December 2020 at the time of Covid-19 outbreaks. 503 participants (Male and Female) were involved in our study. All the participant students in the medical field were informed about the study purpose and explained the instruction of the performed psychological tests. A performed consent about the study was assigned by the participant students. The student free to participates in the study or not. Online questionnaire designed in google drive consisted of 18 questions delivered to the participants through social media and WhatsApp. This online questionnaire constructed of two psychological questionnaires were established for screening depression and anxiety, Patient Health Questionnaire-9 (PHQ-9) was used for depression screening, it was contained 11 questions, the questions are arranged as Likert items and graded from 0 to 3 (not at all, several days, more than half the days, and nearly every day, and every participant have a score, where a score of 5–9 is considered mild, 10–14 moderate, 15–19 moderately severe and  $\geq 20$  is severe depression. Also, we use General Anxiety Disorder-7 (GAD-7), which is calculated by assigning of 0,1,2 and 3 to the response categories of "not at all", "several days", "more than half the days", "nearly every day". Respectively of GAD-7 total score for the seven items ranges from 0 to 21. Score represent: 0-5 mild, 6-10 mild, 11-15

moderately severe anxiety, 15-21 severe anxiety. This performed diagnostic tests allowed us to scale depression and anxiety scores among medical students this scale ranged in anxiety mild, moderate, severe, and depression minimal, mild, moderate, moderately severe, severe. Our work data were tabled in excel sheet then extracted to be analyzed by SPSS 20, statistical analyses was performed mean, S.D percentages and frequencies) were attained, a significant p-value means that equal less than 0.05.

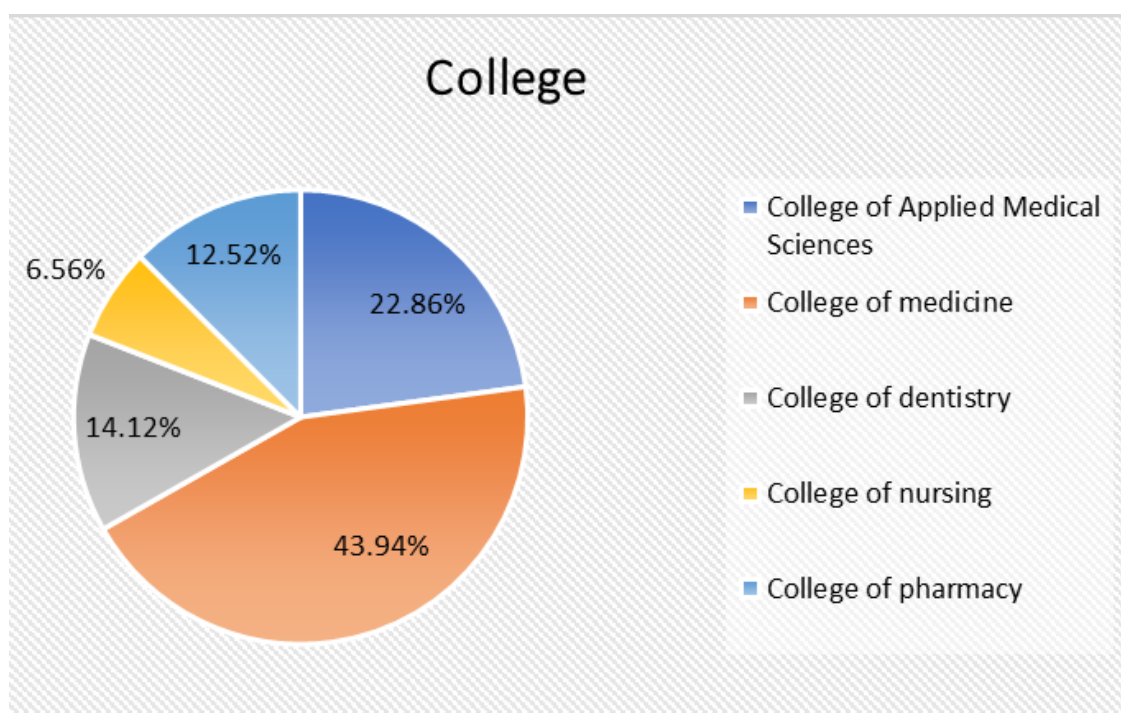
**Results:**

Demographic distribution of the participant students:

A total of 503 medical students from Umm Al-Qura university participants accepted to share in our study 263 (52.3%) of them males and 240 (47.70%) females. Medical students from five different colleges, College of Medicine 221 (43.94%), College of applied Medical Sciences 115 (22.68%), College of Dentistry 71 (14.12%), College of Pharmacy 63 (12.52%), and College of nursing 33 (6.56%). The academic levels of participants, first of all (Level 1) they participate in (10.43%) they are 52 students, while (Level 2) they are the biggest percentage of this study (26.64%) a 134 from level 2, then (level 3) which is near from the percentage of level 2 they are 134 students (26.04%), and 77 students (15.31%) from level 4, while the percentage of level 5 (9.94%) a 50 students, and the number of students who participate in this study from level 6 was 27 (5.37%), and the intern was 13 (2.58%), also who is graduate from the college participate in this study, only 19 person (3.78%) (Table 1, Figure 1).

**Table 1:** Demographic distribution of participant students:

| Parameter               | Category                            | N (%)        |
|-------------------------|-------------------------------------|--------------|
| Gender of the students  | Male                                | 263 (52.3%)  |
|                         | Female                              | 240 (47.70%) |
| Faculty of participants | College of Medicine                 | 221 (43.94%) |
|                         | College of Dentistry                | 71 (14.12%)  |
|                         | College of Pharmacy                 | 63 (12.52%)  |
|                         | College of applied Medical Sciences | 115(22.68%)  |
|                         | College of nursing                  | 33 (6.56%)   |
| Academic level          | Level 1                             | 52 (10.43%)  |
|                         | Level 2                             | 134 (26.64%) |
|                         | Level 3                             | 134 (26.64%) |
|                         | Level 4                             | 77 (15.31%)  |
|                         | Level 5                             | 50 (9.94%)   |
|                         | Level 6                             | 27 (5.37%)   |
|                         | Intern                              | 13(2.58%)    |
|                         | Postgraduate                        | 19 (3.78%)   |
|                         | Total                               | 503 (100%)   |



**Figure 1:** The percentage of each faculty students.

A total of 503 medical students from 5 colleges of Umm Al-Qura universities were recruited into this study. And 169(33.60%) of participants are complained of moderate anxiety, and 147(29.20%) are mild anxiety, while 121(24.10%) complained of moderately severe anxiety, at the end the lower

percentage (13.10%) of 66 students are in severe anxiety.503 of medical students from 5 colleges in Umm Al-Qura universities participated in this study. There are 129 (25.60%) of participants were in moderate depression, and 119 (23.70%) were in severe depression, and 111(22.10%) were in mild

depression, and 84(16.70%) were in moderately minimal depression. severe depression, and 60(11.90%) were in

**Table 2:** Anxiety and depression score among all participant students

| Parameter        | Category               | N (%)        |
|------------------|------------------------|--------------|
| Anxiety score    | Mild anxiety           | 147(29.20%)  |
|                  | Moderate anxiety       | 169 (33.60%) |
|                  | Moderate sever anxiety | 121(24.10%)  |
|                  | Sever anxiety          | 66 (13.10%)  |
| Depression score | Minimaldepression      | 60(11.90%)   |
|                  | Milddepression         | 111(22.10%)  |
|                  | Moderate depression    | 129 (25.60%) |
|                  | Severe depression      | 119 (23.70%) |
|                  | Total                  | 503(100%)    |

Anxiety and depression score between male medical students

At the time of Covid-19 outbreak 126 male medical students from colleges of medicine participated in this study. There are 46 (36.5%) of participants were in Mild anxiety, and 42 (33.3%) were in Moderate anxiety, and 24 (19%) were in Moderately sever anxiety, and 14 (11.1%) were in

server anxiety.21 (16.70%) of student’s male have complained of minimal depression, and 16 (12.7%) are mild depression, while 30 (23.80%)complained of moderate depression, however, 31(24.60%)complained of moderately severe depression. at the end 28(22.20%) complained of severe depression.

**Table 3:** Anxiety and depression score between male medical students

| Parameter                                   | Category                   | N (%)       |
|---|----------------------------|-------------|
| Anxiety score between male medical students | Mild anxiety               | 46 (36.5%)  |
|   | Moderate anxiety           | 42 (33.3%)  |
|   | Moderate sever anxiety     | 24 (19%)    |
|   | Sever anxiety              | 14 (11.1%)  |
| Depression score between male students      | Minimaldepression          | 21(16.70%)  |
|   | Milddepression             | 16 (12.7%)  |
|   | Moderate depression        | 30(23.80%)  |
|   | Moderately severdepression | 31(24.60%)  |
|   | Severe depression          | 28 (22.20%) |
|   | Total                      | 126 (100%)  |

Anxiety and depression score between female medical students

During Covid-19 online questionnaire resulted that95 of female medical students from colleges of medicine participated in this study. 20 (21.10%) were mild anxiety while 41 (43.20%) were moderately anxiety, and 22 (23.20%) were

moderately severe anxiety and 12 (12.60%) have a severe anxiety.31 (32.6%) of student’s female were severe depressed, and 11 (11.6%)were moderate depressed. Other scores: 24 (25.3%)moderately severe, 22 (23.2%) mild depressed, and 7 (7.4%) minimal depressed.

**Table 4: Anxiety and depression score between female medical students**

| Parameter                                     | Category                     | N (%)       |
|---|------------------------------|-------------|
| Anxiety score between female medical students | Mild anxiety                 | 20 (21.10%) |
|   | Moderate anxiety             | 41 (43.20%) |
|   | Moderate sever anxiety       | 22 (23.20%) |
|   | Sever anxiety                | 12 (12.60%) |
| Depression score between female students      | Minimaldepression            | 7 (7.4%)    |
|   | Milddepression               | 22 (23.20%) |
|   | Moderate depression          | 11 (11.6%)  |
|   | Moderately severedeppression | 24 (25.3%)  |
|   | Severe depression            | 31 (32.6%)  |
|   | Total                        | 95 (100%)   |

**Discussion:**

The prevalence of anxiety and depression between trainees in medical field ranged from 27.5% to 35.2%, this range may be higher in populations of middle east 41.1%-42.4% according to suicidal reports [18]. According to comparison in unmet mental health needs to medical students in middle east region which resembles 50.8%, it is very high in comparison to their colleagues in USA and China which accounts 32.8% and 34.8% respectively [19]. Medical training was considered the highly stressful source for medical students [20]. Almost the stress in situations give a source for anxiety, retardation in the treatment of anxiety brings more negative feedbacks on their carriers [21]. There is a study done during Covid-19 outbreak documented that female student suffered from a high level of anxiety [22].

The results of our study that performed on medical students during Covid-19 outbreaks revealed that majority of students are male 263 (52.3%), most of them from college of medicine 221 (43.94%), most of them that participant from level 2 and level 3 134 (26.64%). According to General Anxiety Disorder-7, we founded that majority of students suffered from moderate anxiety 169 (33.60%), male students of college of medicine have mild

anxiety 46 (36.5%), while female medical students have a moderate anxiety 41 (43.20%). In line with our study, another work done in Saudi Arabia reported that 21.5% of the participants have minimal to moderate anxiety while 13% of them have a severe anxiety level. Another study done in Asian and Middle Eastern students documented that anxiety score 29.2%-38.7% between medical students [23]. Another previous works reported a severe stress score between medical, nursing, and dental students [24]. Several studies evaluated anxiety during COVID-19 pandemic in Saudi Arabia universities, for example in Almaarefa University, anxiety score mild in 32.2%, moderate in 36.2%, and severe in 22.8%. In Jazan university undergraduate students 31% of them suffered from psychological stress [25]. Also, another study done in King Abdulaziz University, documented that 33.3% of female medical students suffered from severe anxiety [26]. In Majmaah University according to GAD-7 test the results reported that 40% of medical students have moderate and severe anxiety score [27].

In our study the majority of participants in level 2 and level three who suffered from mild anxiety in males and moderate anxiety in females. Our study differs from other study done by al Saadi et al. [28] who documented that fourth students more stressed

than students in fifth years or students of final years, this may be regarded to adaptation of students of high levels to studying methods.

Medical students exposed to more and more emotional behaviors during their academic levels because they need to accommodate to English languish to be involved to different modalities of teaching between class teaching, practical teaching, clinical, and PBL which shifted from attending in the university to totally online teaching across blackboard especially in the new University college of medicine (UCL) program that recently applied in Faculty of medicine how make a new pressure on the students other than Covid-19 outbreaks.

Our study results according to Patient Health Questionnaire-9 (PHQ-9) revealed that majority of participants students 31 (32.6%) suffered from moderate to severe depression (Table 2). In students of college of medicine, we observed that majority of female students 31 (32.6%) have severe depression (Table 4), while the large numbers of male students of college of medicine 31 (24.60%) suffered from symptoms of moderate to severe depression (Table 3).

The results of our study similar to the previous study done by Alkhamees et al. [29] how discussed the prevalence of depression between medical students with a percent 50.2%. Also, another study reported that 9.3-55.9% of medical students showed symptoms of depression [30], another study done in Oman and documented that 24.5% of medical students have a depressive symptom [31]. Furthermore, a recent study done in Bisha university, Saudi Arabia, documented depression prevalence between medical students 26.8% [32]. The study done Oman also reported that score of

anxiety and depression in preclinical phase exceeding the score of clinical phase students. Moreover, another study done by Bano et al. [33] revealed that male students have mild to severe depression, and female students have a severe depression. Absence of motivation and initiation greatly affects the learning outcomes and academic performance of students [34]. There are many supporting programs helping in reduction in the symptoms of depression among medical students [35].

#### Limitations of the study

Our study has some limitations, Firstly, our study exhibited in a single university Umm Al-Qura university, leading to poorness in the generalization of the study. Secondly, the small number of intern students and postgraduate students that share in the study. Third, the questionnaire was online may be difficult to some participant in understanding of its all items especially student in low levels that forms the main responders.

#### Conclusion

In conclusion the prevalence of anxiety and depression symptoms were high levels among Umm Al-Qura medical student during covid outbreaks. It was obvious that the level of depression and anxiety in female medical students were higher than the male medical students in college of medicine at Umm-Al-Qura university. There were about 31 (32.6%) of female medical students were suffering from severe depression, while about 31 (24.60%) of male medical students were in moderately severe depression. The majority of both female and male had Moderate to severe depression. Medical

students strongly affected during covid outbreaks moderately stressed and severely depressed.

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