



# Prevalence of Depression among Oman Medical Specialty Board (OMSB) Residents

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## ABSTRACT

**Objectives:** We sought to estimate the prevalence of depression among Oman Medical Specialty Board (OMSB) residents and determine the relationship between depression and sociodemographic characteristics. **Methods:** We conducted a cross-sectional survey from January to March 2017. A self-administered questionnaire was distributed to all residents enrolled under different OMSB training programs. Information was obtained on the sociodemographic characteristics. The Patient Health Questionnaire-9 (PHQ-9) was used to screen for depressive symptoms. **Results:** A total of 399 residents (158 males and 241 females) participated in the study. Overall, 115 residents had a PHQ-9 score of 5 or more, giving a prevalence of depression of 28.8%. Of those who were depressed, 85 (73.9%) had mild depression, 20 (17.4%) had moderate depression, and 10 (8.7%) had severe depression. There was a significant association between depression and participants' gender ( $p = 0.030$ ), level of residency ( $p = 0.006$ ), sleep duration ( $p = 0.001$ ), and exercise ( $p = 0.019$ ). There was no significant association between depression with the other demographic characteristics such as marital status ( $p = 0.489$ ), specialty ( $p = 0.370$ ), smoking ( $p = 0.953$ ), or drug use ( $p = 0.060$ ). **Conclusions:** Depression is a common issue among medical residents. Health education on the harmful effects of depression needs to be addressed. Further research on the consequences of depression and its effects on quality of life and academic performance is needed.

Depression is a common mental disorder and is one of the main causes of disability worldwide. It is estimated that 300 million people are affected by depression globally.<sup>1</sup> Studies have shown that medical trainees and other personnel in the medical profession are at high risk of psychological disorders, including depression.<sup>2,3</sup> According to some studies, the overall prevalence of depression or depressive symptoms among medical students is 27.2% and 11.1% for suicidal ideation.<sup>4</sup> The prevalence of depression among resident physicians ranges between 20.9% to 43.2% depending on the instrument used.<sup>5</sup> It has been shown that medical students and residents are more prone to depression than the general population. This has been attributed to high rates of stress and anxiety among students in the medical setting.<sup>6</sup>

Multiple personal and academic factors can lead to depression. A large multicenter study among medical schools has shown that several factors are associated

with the increase of medical students' depression and anxiety symptoms (these include female sex, school location, and tuition scholarship).<sup>7</sup> Another cross-sectional study reported that medical students had higher depression rates than the general population, and female students had higher rates than male students.<sup>8</sup> A study on depression in medical students has shown that depression decreases from the first to the second year of medical training and between the preclinical and clinical years.<sup>9</sup> There is a significant difference observed between low, medium, and high exercise groups on the mental health scales, indicating better mental health for those who engage in more exercise.<sup>10</sup> Studies suggest that mental health worsens after joining medical school and remains poor throughout training. On a personal level, this distress can be augmented by several factors such as substance abuse, broken relationships, suicide, and attrition from the profession.<sup>11</sup> Short sleep duration has also been shown to increase the prevalence of depression worldwide with a concurrent increase

in depressive symptoms, mainly among the younger population.<sup>12</sup>

Several studies have been conducted in the Gulf Cooperation Council countries about depression. In Saudi Arabia, studies have shown that depression is prevalent among medical interns, and the prevalence of depression among female medical students was 14.7%.<sup>13,14</sup> The perceived prevalence rate of depressive, anxiety, and stress symptoms among residents in training programs in Dubai, UAE, was 63.3%.<sup>15</sup> In Oman, the prevalence of depressive symptoms among students attending Sultan Qaboos University was 27.7% divided equally between males and females.<sup>16</sup> However, there are no studies addressing depression among medical residents in Oman. Hence, the main objective of this study was to estimate the prevalence of depression among the Oman Medical Specialty Board (OMSB) residents and determine the relationship between depression and sociodemographic characteristics.

## METHODS

A cross-sectional survey was carried out over three months from January to March 2017 among the residents enrolled under the different OMSB training programs. OMSB is the main and only body of postgraduate medical training in Oman. The total number of residents during the study period was 609 distributed between 18 different training programs. Among the 609 residents, 110 were excluded from the study because of being on extended leave, away for completion of their residency training, and/or doing master's degrees and fellowships. A self-administered questionnaire was distributed to all residents of both genders in different specialties at different levels of residency while attending the mandatory residents' release days and various workshops organized by the OMSB. A total of 499 residents accepted to participate in the study and 399 questionnaires were retrieved, giving a response rate of 80.0%. The final sample size was 399 as 89 participants did not return the questionnaire, and 11 were not complete.

Information was gathered on sociodemographic characteristics such as the residents' age, gender, marital status, and place of origin. Additional information included the specialty, residency level, living circumstances, sleeping pattern (normal average sleep duration 7–9 hours), exercise level

(150 minutes/week), smoking, and drug history. Furthermore, all the respondents were asked to complete the nine-item Patient Healthcare Questionnaire (PHQ-9). It is a self-administered version of the Primary Care Evaluation of Mental Disorders diagnostic instrument used for screening of common mental disorders in primary care. The PHQ-9 is a reliable and valid measure of depression severity. PHQ-9 scores of 5, 10, 15, and 20 represents mild, moderate, moderately severe, and severe depression, respectively.<sup>17</sup>

The researchers were available on-site to assist the residents in filling the questionnaires, which took around 20–30 minutes. The respondents were requested not to discuss the questions among one another to maintain privacy and avoid peer influence. Participation was on a voluntary basis, and written informed consent was taken before filling the questionnaire. All participants were informed that they had the right to withdraw at any time. Confidentiality was assured and stressed. Ethical approval for the study was granted by the OMSB Research Ethics Committee in 2017.

Epi-data software was used for data entry. All statistical analysis was carried out using IBM SPSS (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Descriptive statistics were computed for sociodemographic characteristics. For categorical variables, frequencies and percentages were reported. The mean and standard deviation were computed for continuous variables. Association of independent variables with the outcome variables were estimated using independent samples *t*-test and chi-square test.

## RESULTS

This study included a total of 399 residents: 241 females (60.4%) and 158 males (39.6%). Their ages ranged from 25 to 31 years with a mean age of  $29.1 \pm 1.9$  years. Two-hundred and eighty-five (71.4%) of the residents were married, and 110 (27.6%) were single. Over half ( $n = 235$ , 58.9%) were under the medical specialties, 119 (29.8%) were in surgical specialties, and 45 (11.3%) were in diagnostic specialties. Most residents ( $n = 267$ , 66.9%) lived with their families. The rest were either living with their friends ( $n = 73$ , 18.3%) or alone ( $n = 48$ , 12.0%). This study also showed that only

**Table 1:** Association between depression and sociodemographic characteristics.

Demographics	Normal (Score < 5) n (%)	Mild/moderate depression (Score 5–9) n (%)	Moderately severe/ severe depression (Score ≥ 10) n (%)	Total n (%)	<i>p</i> -value
<b>Sex</b>					
Male	123 (77.8)	30 (19.0)	5 (3.2)	158 (39.6)	0.030
Female	161 (66.8)	75 (31.1)	5 (2.1)	241 (60.4)	
<b>Marital status</b>					
Single	75 (68.2)	32 (29.1)	3 (2.7)	110 (27.6)	0.489
Married	206 (72.3)	72 (25.3)	7 (2.5)	285 (71.4)	
Divorced	0 (0.0)	1 (100)	0 (0.0)	1 (0.3)	
<b>Specialty</b>					
Medical	169 (72.0)	59 (25.1)	7 (3.0)	235 (58.9)	0.370
Surgical	79 (66.4)	38 (31.9)	2 (1.7)	119 (29.8)	
Diagnostic	36 (80.0)	8 (17.8)	1 (2.2)	45 (11.3)	
<b>Residency level</b>					
Junior (R1–R2)	153 (76.9)	39 (19.6)	7 (3.5)	199 (49.9)	0.006
Senior (R3–R6)	131 (65.5)	66 (33.0)	3 (1.5)	200 (50.1)	
<b>Smoker</b>					
No	273 (70.7)	103 (26.7)	10 (2.6)	386 (96.7)	0.953
Yes	4 (80.0)	1 (20.0)	0 (0.0)	5 (1.3)	
Ex-smoker	1 (100)	0 (0.0)	0 (0.0)	1 (0.3)	
<b>Drug user</b>					
No	281 (71.5)	102 (26.0)	10 (2.5)	393 (98.5)	0.060
Yes	0 (0.0)	2 (100)	0 (0.0)	2 (0.5)	
<b>Regular exercise</b>					
No	176 (67.7)	74 (28.5)	10 (3.8)	260 (65.2)	0.019
Yes	104 (78.2)	29 (21.8)	0 (0.0)	133 (33.3)	
<b>Sleep duration, hours</b>					
< 7–9	48 (63.2)	28 (36.8)	0 (0.0)	76 (19.0)	0.001
7–9	217 (73.3)	73 (24.6)	6 (2.0)	296 (74.2)	
> 7–9	16 (69.6)	3 (13.0)	4 (17.4)	23 (5.8)	

one-third of the residents ( $n = 133$ , 33.3%) were doing regular exercise, and the average sleep duration per day was  $6.6 \pm 1.4$  hours.

Table 1 presents the prevalence of depression by severity according to the demographic characteristics of the participants using PHQ-9. Overall, 115 (28.8%) participants had a depression score of  $\geq 5$  (95% confidence interval (CI): 24.4–33.2). From this group, 105 (91.3%) had mild to moderate depression, and 10 (8.7%) had severe depression.

Thirty (19.0%) male residents had a depression score of 5–9 (mild to moderate depression), and five (3.2%) had a score  $> 10$  (moderately severe to severe depression). On the other hand, 75 (31.1%) female residents had mild to moderate depression, and five (2.1%) had moderately severe to severe depression. The difference between males and females was statistically significant ( $p = 0.030$ ).

Furthermore, 39 (19.6%) of the junior residents had a depression score of  $> 5$  compared to 66 (33.0%) of senior residents. Among those who had a depression score of  $> 10$ , seven (3.5%) were junior residents, and three (1.5%) were senior residents. The difference between residency level was statistically significant ( $p = 0.006$ ).

Regarding those who were not doing regular exercise, 74 (28.5%) had mild to moderate depression, and 10 (3.8%) had moderately severe to severe depression. In contrast, of those who were doing regular exercise only 29 (21.8%) had mild to moderate depression, and none had severe depression. The association between the regularity of exercise and depression was statistically significant ( $p = 0.019$ ).

In viewing the association between sleep duration and depression, the total number of residents

whose sleep duration was below average (< 7–9 hours) was 76 (19.0%), and 28 (36.8%) had mild to moderate depression. On the other hand, there were 23 (5.8%) participants whose sleep duration was above average (> 7–9); three (13.0%) had mild to moderate depression, and four (17.4%) had severe depression. In summary, there was a significant association between the extremes of sleep duration and depression ( $p = 0.001$ ). With regards to the other sociodemographic characteristics, there was no significant association between depression and marital status ( $p = 0.489$ ), specialty ( $p = 0.370$ ), place of origin ( $p = 0.650$ ), smoking ( $p = 0.953$ ), and drug use ( $p = 0.060$ ).

## DISCUSSION

The results of this study showed that 28.8% of residents had various degrees of depression based on the PHQ-9. A previous study on depression among university students showed that the prevalence of depression was 27.7%, which is similar to our study.<sup>16</sup> These figures are comparable to many other studies done locally and internationally with a similar study population. The prevalence of depression among medical students and residents worldwide ranges from 8% to 45%.<sup>4,5,18,19</sup> This wide range may be attributed to cultural differences, different depression screening scales and tools, and the type and duration of the study.

Multiple personal and academic factors can predispose to depression. In this study, a significant relationship was found between depression and female sex. Similar results were reported in many other studies showing that depression increased in females.<sup>7,20,21</sup> On the other hand, some studies have shown no association between gender and depression.<sup>22</sup> A study among university students revealed that gender is not associated with depression.<sup>16</sup> This disparity could be related to multiple biological, social, and cultural factors.

Moreover, this study shows that junior residents had more severe depression than senior residents. Many studies have shown the same, where depression decreases from the first to the second year of medical training, and between the preclinical and clinical years.<sup>8,9</sup> Additionally, studies on medical students have shown that the level of depression decreased as the year of study progressed.<sup>23</sup> This may be explained by the increased pressure in the junior years, and due

to the stress of the transition from internship or general practice to a specialized field.

Physical exercise has been proposed as a complementary treatment that may help to improve residual symptoms of depression and prevent relapse. The results of this study show that the residents who are engaged in regular exercise have much lower depression scores than those who are not exercising.<sup>24</sup> Many studies reported significant differences between the low, medium, and high exercise groups on the mental health scales, indicating better mental health for those engaged in more exercise.<sup>10</sup> This explains why many countries have introduced a structured exercise program to improve both physical and psychological health. For example, the National Institute for Health and Care Excellence guidelines recommends a well-structured and supervised exercise program three times a week (45 minutes to one hour) over 10–14 weeks, as a low-intensity step two intervention for mild to moderate depression.<sup>25</sup>

Sleep is very important to our psychological health, as it occupies one-third of our life. Our study shows that there is a significant relationship between extremes of sleep duration (sleeping more/less than average) and depression. A study conducted in Oman revealed that short sleep duration is increasing worldwide with a concurrent increase in depressive symptoms, mainly among the younger population.<sup>12</sup> This could be due to increasing stressors in various residency levels. Sleep quality and sleep hygiene are other factors that could contribute to depression and need to be addressed. In addition, addressing the negative impact of sleep deprivation on quality of life is very important.

Finally, there was no significant relationship between depression and other variables, such as marital status, specialty, smoking, or drug use. Other studies have found relationships between depression and these variables (age, marital status, or smoking).<sup>20,26</sup> The difference in our findings could be attributed to the narrow age group of the study and that most were nonsmokers and denied alcohol consumption and drug use.

There are several limitations to this study. The actual prevalence of depression might be overestimated because the self-reporting nature of this study may have resulted in recall bias and over-reporting of the symptoms. Besides, other factors associated with depression need to be addressed as

they could be an important confounder that may affect and lead to depression, such as chronic diseases and major life events. Even though the PHQ-9 is a well-known and validated screening tool, it cannot be used alone for diagnosing and managing depression. It should be followed by proper clinical evaluation and assessment.

## CONCLUSION

Depression is common among medical residents (28.8%), the majority of whom had mild to moderate depression. This finding suggests that health education and promotion is recommended to increase awareness of the benefits of early screening and diagnosis to prevent a major form of depression and to address the progression to harmful effects of depression on the quality of life and academic performance. Further research on the consequences of depression and its effects is needed in this area and to highlight.

### Disclosure

The authors declared no conflicts of interest. No funding was received for this study.

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