International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2019): 7.583

Frequency of Self-Reported Depressive Symptoms among Omani and Non-Omani adults Diagnosed with COVID-19 in Primary Health Care Facilities in Muscat Governorate, Oman

Anwaar Al Lawati[1], Thamra Al Ghafri[2], Said Al Hasani[3], Huda Anwar[4], Fatma Al Ajmi[5]

Abstract: ***Background & Aim: Coronavirus disease 2019 (COVID-19) is a global public health concern that can have a significant impact on mental health. The aim of this study was to estimate the rate of and factors associated with self-reported depressive symptoms among adults diagnosed with COVID-19 at primary care facilities in Muscat Governorate. Methods: This descriptive cross-sectional study was conducted between 15th May and 10th July 2020 in Muscat Governorate. All confirmed cases of COVID-19 undergoing mandatory isolation during this period either at home (in the case of Omani nationals) or at institutions (for non-Omani patients) were invited to participate in the study. The 9-item Patient Health Questionnaire (PHQ-9) screening tool was used to assess the frequency of self-reported depressive symptoms. Results: Out of 600 Omani and 350 non-Omani patients with COVID-19, 232 Omani (38.7 %) and 240 non-Omani (68.6 %) subjects participated in the study. Based on their PHQ-9 scores, 47.4 % and 26.2 % of Omani and non-Omani participants, respectively, reported depressive symptoms (P ≤0.001), with the severity of these symptoms appearing milder among non-Omani participants. Moreover, the likelihood of reporting depressive symptoms was greater among Omani participants (odds ratio: 2.53, 95 % confidence interval: 1.72–3.73). Being female, having severe COVID-19 symptoms and perceiving isolation to be a possible cause for mental illness were factors significantly associated with higher PHQ-9 scores in Omani participants (P ≤0.05). Conclusions: The frequency of self-reported depressive symptoms was high among patients with COVID-19, with Omani participants significantly more likely to report depressive symptoms compared to non-Omanis. Further investigation of the psychosocial determinants of mental health in COVID-19 patients should be incorporated into future studies.***

Keywords: depression, COVID-19, Oman, primary care settings, mental health

1. Introduction

In January 2020, the World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) pandemic to be a public health emergency of international concern.[1] Initially, the outbreak originated in Wuhan, China, in December 2019 and has since rapidly spread around the world.[2] As of August 2020, a total of 10,393,851 laboratory-confirmed cases had been reported globally, with 509,224 deaths.[1] The disease is caused by a novel enveloped RNA beta-coronavirus; however, while symptoms of COVID-19 infections are similar to those of the severe acute respiratory syndrome-associated coronavirus, the presentation of COVID-19 is still not fully understood.[3] Nevertheless, it is well documented that mortality from the disease is greater in certain high-risk groups, including elderly and immunocompromised individuals.[1]

Research from China indicates that COVID-19 affects an individual's mental as well as physical health, with an increased risk of stress, anxiety and depression.[4] Indeed, concerns regarding the rapid transmissibility of the virus, its non-specific incubation period and the possibility of asymptomatic transmission have created a unique atmosphere of fear which has adversely affected the mental health of members of the public.[5] Previous studies have shown that any epidemic crisis carries a high risk of mental health problems, including post-traumatic stress disorder (PTSD) and depressive disorders.[6,7] Another study reported similar results confirming the psychological effects of COVID-19.[8] Moreover, both loneliness and a lack of family support—which will undoubtedly continue to grow more common given the need for social distancing and isolation measures—are associated with high levels of depression.[9] As such, it is essential to assess factors associated with depression among COVID-19 cases across different sociodemographic groups.

In Oman, the estimated total population at the beginning of 2018 was 4,660,153, of which ~45% were non-Omani expatriates and 32% resided in Muscat, the capital city.[10] In response to the COVID-19 pandemic, the national authorities undertook several interventions, including strict surveillance measures at ports of entry and health promotion and education activities for health workers and both Omani and non-Omani members of the public at private and governmental institutes. However, the mental health status of patients with COVID-19 in Oman remains unknown. Therefore, the aim of this study was to estimate the rate of self-reported depressive symptoms among both Omani and non-Omani adults diagnosed with COVID-19 at primary care facilities in Muscat Governorate and to identify factors associated with these symptoms.

2. Methods

This descriptive cross-sectional study took place between 15th May and 10th July 2020 in Muscat Governorate and included all confirmed cases of COVID-19 diagnosed during this period at primary healthcare centres in the region (n = 30). As per governmental regulations, all Omani patients were placed under mandatory home isolation whereas non-Omanis were quarantined in designated institutional isolation facilities. Both groups reported to primary healthcare facilities for the diagnosis of COVID-19.

A bespoke questionnaire was developed to collect sociodemographic data from the participants, including age,

gender, income, employment status and education level. In addition, the 9-item Patient Health Questionnaire (PHQ-9) was incorporated to assess the presence of self-reported depressive symptoms. The PHQ-9 scale is a validated screening tool used to assist clinicians in diagnosing depression by quantifying and monitoring the severity of depressive symptoms, including loss of interest or pleasure, low mood/hopelessness, difficulty sleeping, increased tiredness or loss of energy, changes in appetite, feelings of guilt or worthlessness, difficulty concentrating, feelings of lethargy or restlessness and suicidal ideation.[11] Each item is scored based on the perceived frequency of the symptom in question from 0 (indicating "not at all") to 3 (indicating "nearly every day"), resulting in a total score ranging from 0–27. Higher scores are associated with decreased functional status and increased symptom-related difficulties, sick days and healthcare utilisation.[11] For the purposes of this study, scores of 5–9, 10–14 and >14 were considered to indicate mild, moderate and moderate-to-severe depression, respectively.[11] The final version of the questionnaire tool was piloted on 10 individuals to ensure understanding and resolve any language discrepancies.

Subsequently, all non-Omani COVID-19 cases were contacted by telephone and interviewed by an English-speaking person to prevent language barriers and to allow for further explanation if necessary. Omani patients were asked to respond to an online questionnaire using a link sent by text message, along with a helpline to contact if they should require any further explanation. These remote approaches to data collection were undertaken in order to adhere to physical and social distancing guidelines.

Statistical analysis of the data was conducted using the Statistical Package for the Social Sciences (SPSS), version 20 (IBM Corp., Armonk, NY, USA). Continuous variables were described using frequency tables, including means and percentages. Proportions of categorical data were compared using a Chi-squared test to a confidence level of 95%. Associations were considered statistically significant at $P \leq 0.05$. Ethical approval for this study was obtained from the regional research committee of the Ministry of Health (#MH/DGHS/DPT/661/2020).

3. Results

Overall, there were 600 Omani and 350 non-Omani cases of COVID-19 diagnosed during the study period; of these, 232 Omani subjects and 240 non-Omani participants participated in the study (response rates: 38.7% and 68.6%, respectively).

The characteristics of the Omani participants are shown in Table 1. According to their PHQ-9 scores, 34.1% had mild depressive symptoms and only 13.3% had moderate-to-severe depressive symptoms. More than half were male (64.2%), ≤32 years of age (56.5%), married (60.3%) and educated to the secondary school level or higher (59.5%). Just under a quarter (24.6%) were unemployed. Most Omani participants did not report a history of chronic disease (84.5%) or psychiatric disease (99.1%). However, half reported a positive family history of COVID-19 (50.4%). The majority had mild COVID-19 symptoms (73.3%), for which most were not hospitalised (97.4%). Less than a third (30.6%) believed that isolation could lead to psychiatric illness. Among the Omani participants, gender ($P = 0.018$), the severity of COVID-19 symptoms ($P \leq 0.001$) and the belief that isolation could lead to psychological illnesses ($P \leq 0.001$) were significantly associated with depression severity according to PHQ-9 scores.

Table 1: Selected characteristics of Omani participants according to depression category

Characteristic	Depression category, n (%)				*P* value*
	Total	None	Mild	Moderate-to-severe	
Overall	232 (100)	122 (52.6)	79 (34.1)	31 (13.3)	
Gender					**0.018**
Male	149 (64.2)	87 (58.4)	48 (32.2)	14 (9.4)	
Female	83 (35.8)	35 (42.2)	31 (37.3)	17 (20.5)	
Age (years)					0.154
≤32†	131 (56.5)	69 (52.7)	40 (30.5)	22 (16.8)	
>32	101 (43.5)	53 (52.5)	39 (38.6)	9 (8.9)	
Marital status					0.161
Not married	92 (39.7)	44 (47.8)	31 (33.7)	17 (18.5)	
Married	140 (60.3)	78 (55.7)	48 (34.3)	14 (10.0)	
Education level					0.521
Less thansecondary school	94 (40.5)	53 (56.4)	28 (29.8)	13 (13.8)	
Secondary school or higher	138 (59.5)	69 (50.0)	51 (37.0)	18 (13.0)	
Employment status					0.313
Unemployed	57 (24.6)	24 (42.1)	26 (45.6)	7 (12.3)	
Employed in the private sector	116 (50.0)	66 (56.9)	34 (29.3)	16 (13.8)	
Employed in the governmental sector	59 (25.4)	32 (54.2)	19 (32.2)	8 (13.6)	
Hx of CD					0.44
No	196 (84.5)	101 (51.5)	70 (35.7)	25 (12.8)	
Yes	36 (15.5)	21 (58.3)	9 (25.0)	6 (16.7)	
Hx of psychiatric illness					0.715
No	230 (99.1)	121 (52.6)	78 (33.9)	31 (13.5)	
Yes	2 (0.9)	1 (50.0)	1 (50.0)	0 (0)	
Family Hx of COVID-19					0.986

No	115 (49.6)	61 (53.0)	39 (33.9)	15 (13.0)	
Yes	117 (50.4)	61 (52.1)	40 (34.2)	16 (13.7)	
Severity of COVID-19 symptoms					**≤0.001**
Very mild or mild	170 (73.3)	108 (63.5)	47 (27.6)	15 (8.8)	
Moderate or severe	62 (26.7)	14 (22.6)	32 (51.6)	16 (25.8)	
Can isolation lead to psychological illnesses?					**≤0.001**
No	161 (69.4)	100 (62.1)	47 (29.2)	14 (8.7)	
Yes	71 (30.6)	22 (31.0)	32 (45.1)	17 (23.9)	

*CD = chronic diseases; Hx = history; COVID-19 = coronavirus disease 2019. *According to a Chi-squared test.†Mean.*

Table 2 shows the characteristics of the non-Omani participants. All of the non-Omani participants were male. Only 26.2% had mild or moderate depressive symptoms, with none reporting moderate-to-severe symptoms. The majority were Bangladeshi (62.0%), employed (98.7%), had no medical risk factors (79.2%), had not been hospitalised for COVID-19 (95.0%) and had resided in Oman for less than 8 years (65.4%). None of the studied factors were found to be significantly associated with depression severity according to PHQ-9 scores in this group.

Table 2: Selected characteristics of non-Omani participants according to depression category

Characteristic	Depression category, n (%)			*P* value*
	Total	None	Mild/ moderate	
Overall	240 (100)	177 (73.8)	63 (26.2)	
Gender				-
Male	240 (100)	177 (73.8)	63 (26.2)	
Female	0 (0)	0 (0)	0 (0)	
Age (years)				0.782
≤36†	135 (56.3)	101 (74.8)	34 (25.2)	
>36	105 (43.7)	76 (72.4)	29 (27.6)	
Nationality				0.217
Bangladeshi	149 (62.0)	108 (72.5)	41 (27.5)	
Indian	60 (25.0)	48 (80.0)	12 (20.0)	
Pakistani	28 (11.7)	18 (64.3)	10 (35.7)	
Other	3 (1.3)	3 (100)	0 (0)	
Employment status				0.347
Unemployed	3 (1.3)	1 (33.3)	2 (66.6)	
Employed	237 (98.7)	176 (74.3)	61 (25.7)	
Presence of risk factors				0.114
No	190 (79.2)	145 (76.3)	45 (23.7)	
Yes	50 (20.8)	32 (64.0)	18 (36.0)	
Hx of psychiatric illness				
No	240 (100)	177 (73.8)	63 (26.2)	
Yes	0 (0)	0 (0)	0 (0)	
Years resided in Oman				0.907
≤8.7†	156 (65.4)	114 (73.1)	42 (26.9)	
>8.7	83 (34.6)	62 (74.7)	21 (25.3)	

*Hx = history. *According to a Chi-squared test.†Mean*

In general, the severity of self-reported depressive symptoms appeared to be milder among non-Omani compared to Omani participants. Table 3 shows the distribution of Omani and non-Omani participants according to the presence or absence of depression based on PHQ-9 scores. Overall, 47.4% of Omani participants reported depressive symptoms compared to 26.2% of non-Omani participants ($P \leq 0.001$). Furthermore, Omani participants had a greater likelihood of reporting depressive symptoms compared to non-Omani subjects (odds ratio [OR]: 2.53, 95% confidence interval [CI]: 1.72–3.73).

Table 3: Rate of self-reported depressive symptoms according to the nationality of the participants

Nationality	n (%)		
	Depression*	No depression	Total
Omani	110 (47.4)	122 (52.6)	232 (49.2)
Non-Omani	63 (26.2)	177 (73.8)	240 (50.8)
Total	173 (36.7)	299 (63.3)	472 (100)

**Including mild, moderate or moderate-to-severe depression based on PHQ-9 scores.*

4. Discussion

The current study aimed to investigate the rate of and factors associated with self-reported depressive symptoms according to PHQ-9 scores among adult patients diagnosed with COVID-19 at primary care facilities in Muscat Governorate. The results indicated that 36.7% of the total cohort reported depressive symptoms of varying degrees of severity. Previous empirical research has confirmed that patients diagnosed with COVID-19 experience adverse mental health outcomes compared to controls, including higher levels of depression (P<0.001), anxiety (P<0.001) and post-traumatic stress symptoms (P<0.001).[8,12,13] Additionally, meta-analyses of studies from across the globe have noted that common symptoms during the acute phase of the illness include confusion (27.9%), depressed mood (32.6%), anxiety (35.7%), impaired memory (34.1%) and insomnia (41.9%).[14,15] In addition, depressed mood (10.5%), insomnia (12.1%), anxiety (12.3%), irritability (12.8%), memory impairment (18.9%), fatigue (19.3%), traumatic memories (30.4%) and sleep disorders (100%) are frequently reported during the post-illness stage.[14,15]

In the current study, Omani participants were over twice as likely to report depressive symptoms compared to non-Omanis (OR: 2.53, 95% CI: 1.72–3.73). It is possible that Omanis who were isolated at home in a separate room were exposed to a greater amount of COVID-19-related news and social media while also being isolated from other members of their family. At the same time, non-Omani patients who were institutionally isolated shared rooms with their peers and had access to free medical and social services, including psychosocial support, during the course of their mandatory 14-day isolation period as per national protocols. Notably, most of the non-Omani participants were also of low socioeconomic status; it is therefore possible that such individuals may have found that staying in the healthcare institutions during the isolation period represented a better quality of life compared to their normal living conditions. However, this finding should be interpreted with caution as the timing and methods used in the study may have contributed to these results.

Recently, a study conducted in the USA to assess the impact of the COVID-19 pandemic and social isolation measures on loneliness and mental health found that not only was loneliness significantly more prevalent, lonely individuals had significantly higher rates of depression and suicidal ideation compared to those who did not report feeling lonely (P<0.0001).[16] Similarly, another study conducted in China showed that high levels of loneliness during the COVID-19 pandemic were significantly associated with clinical depression, anxiety and PTSD.[9] Further research is therefore recommended to assess rates of loneliness among both COVID-19 patients and members of the general public in Oman, as well as to determine whether depression is linked with loneliness in this population and potentially develop initiatives to counteract this important public health issue.

In Oman, local data show that rates of COVID-19 are higher among expatriates compared to nationals, thus indicating that non-Omanis may represent a vulnerable subgroup.[17] While the Ministry of Health currently offers free universal health care to all Omani nationals, there is growing acknowledgment of the need to solidify coverage in the country in order to ensure equitable access to healthcare for all residents, regardless of nationality.[17,18] In April 2020, Sultan Haitham bin Tariq, the ruler of Oman, decreed that all COVID-19-related medical services would be offered free of charge to expatriates. However, it is unclear if mental health services during both the acute and post-illness stages of the disease are incorporated. Several social determinants of mental health have been reported to influence psychosocial stressors and overall mental health outcomes among affected subpopulations.[12,19] Thus, addressing inequities in the social determinants of mental health should be a long-term goal of future policymaking and mental health practice in Oman. Among Omani participants in the current study, female patients, those who reported severe COVID-19 symptoms and those who perceived that isolation could cause psychological illness reported significantly higher rates of moderate-to-severe depressive symptoms based on their PHQ-9 scores. In contrast, no significant differences in the proportion or severity of self-reported depressive symptoms were observed among non-Omani participants across the studied variables. Future epidemiological studies should consider investigating other possible aspects and determinants of depression among different populations in Oman. In the meantime, effective mental health interventions should be adopted within the overall national pandemic management strategy in order to mitigate the potential adverse psychological impact of the disease and its related containment measures. There are several limitations to this study. The self-reported nature of the data collected may have introduced bias. In addition, the PHQ-9 is designed for screening and is not a diagnostic tool; moreover, the study did not focus on many correlates of depression, including psychosocial determinants and chronic diseases. Further studies should therefore be conducted to confirm the actual prevalence and correlates of depression among COVID-19 patients in Oman. Furthermore, the potential language barrier may have affected results from the non-Omani participants. There was also a considerable difference in response rates between the two groups. Finally, during data analysis, it was observed that the groups had different characteristics, with some of the explanatory categories having zero datapoints. This led to a regrouping of the variables in order to increase the numbers of the participants in each category. However, this hindered comparisons between the two groups. Despite these limitations, the current study emphasises the importance of mental health advocacy during epidemiological crises.

5. Conclusions

The current study found that the frequency of self-reported depressive symptoms was high among patients with COVID-19 in Oman. Moreover, Omani participants were significantly more likely to report depressive symptoms compared to non-Omanis. Further research is recommended to investigate additional psychosocial determinants of mental health among COVID-19 patients, both during and post-pandemic. In the meantime, mental health interventions should be incorporated into the national pandemic management strategy so as to minimise any potential psychological morbidity and mortality arising both from the disease itself as well as the loneliness and lack of social support caused by physical distancing and isolation measures.

References

[1] Coronavirus disease (COVID-19) pandemic. Who.int. https://www.who.int/emergencies/diseases/novel-coronavirus-2019. Accessed October 3, 2020.
[2] Guan WJ, Ni ZY, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med*. 2020; 382(18): 1708-1720.
[3] Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020; 395(10223): 497-506.
[4] Kong X, Zheng K, Tang M, et al. Prevalence and factors associated with depression and anxiety of hospitalized patients with COVID-19. *medRxiv*. 2020. https://doi.org/10.1101/2020.03.24.20043075.
[5] Dong L, Bouey J. Public mental health crisis during COVID-19 pandemic, China. *Emerg Infect Dis*. 2020; 26(7): 1616-1618.
[6] Lee AM, Wong JGWS, McAlonan GM, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. *Can J Psychiatry*. 2007; 52(4): 233-240.
[7] Mak IWC, Chu CM, Pan PC, Yiu MGC, Chan VL. Long-term psychiatric morbidities among SARS survivors. *Gen Hosp Psychiatry*. 2009; 31(4): 318-326.
[8] Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 epidemic in China: A web-based cross-sectional survey. *Psychiatry Res*. 2020; 288: 112954.
[9] Liu CH, Zhang E, Wong GTF, Hyun S, Hahm HC. Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: Clinical implications for U.S. young adult mental health. *Psychiatry Res*. 2020; 290: 113172.
[10] National Center for Statistics and Information. ncsi.gov.om. http://ncsi.gov.om/pages/NCSI.aspx. Accessed October 3, 2020.

[11] Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. *J Gen Intern Med*. 2001; 16: 606-13.
[12] Hossain MM, Tasnim S, Sultana A, et al. Epidemiology of mental health problems in COVID-19: A review. *F1000Res*. 2020; 9: 636.
[13] Guo Q, Zheng Y, Shi J, et al. Immediate psychological distress in quarantined patients with COVID-19 and its association with peripheral inflammation: A mixed-method study. *Brain Behav Immun*. 2020; 88: 17-27.
[14] Rogers JP, Chesney E, Oliver D, et al. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: A systematic review and meta-analysis with comparison to the COVID-19 pandemic. *Lancet Psychiatry*. 2020; 7(7): 611-627.
[15] Salari N, Hosseinian-Far A, Jalali R, et al. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Global Health*. 2020; 16(1): 57.
[16] Killgore WDS, Cloonan SA, Taylor EC, Dailey NS. Loneliness: A signature mental health concern in the era of COVID-19. *Psychiatry Res*. 2020; 290: 113117.
[17] COVID-19 statistical report. Ministry of Health. 2020.
[18] Al Ghafri T, Al Ajmi F, Al Balushi L, et al. Responses to the pandemic COVID-19 in primary health care in Oman: Muscat experience. *Oman Med J*. 2020. https://doi.org/10.5001/omj.2020.70.
[19] Hossain MM, Purohit N, Sultana A, Ma P, McKyer ELJ, Ahmed HU. Prevalence of mental disorders in South Asia: An umbrella review of systematic reviews and meta-analyses. *Asian J Psychiatr*. 2020; 51: 102041.