Medeni Med J. 2020;35:310-4
doi:10.5222/MMJ.2020.88614

Original Study

A Study of Depressive Symptoms in Doctors Working at COVID-19 Hospitals: An Online Survey

COVID-19 Hastanelerinde Çalışan Doktorların Depresif Belirtileri Üzerine Bir Çalışma: Çevrimiçi Bir Anket

Musharaf Bashir, Himani Ahluwalia, Sheikh Imran Sayeed, Imran Nazir Salroo

Ethics Committee Approval: This study approved by the Institutional Ethics Committee, GMC Srinagar, India, May 2020, IEC/356-RA/20.
Conflict of interest: The authors declare that they have no conflict of interest.
Funding: None.
Informed Consent: Informed consent was taken from the participants of the study.

Cite as: Bashir M, Ahluwalia H, Sayeed SI, Salroo IN. A study of depressive symptoms in doctors working at COVID-19 hospitals: An online survey. Medeni Med J. 2020;35:310-4.

ABSTRACT

Objective: *COVID19 outbreak has put a tremendous physical and mental burden on frontline doctors. A limited amount of literature is available in this area. The present study was done to assess the depressive symptoms and depression levels in doctors working at COVID-19 Hospitals.*
Method: *This study was based on an online survey that was started on May 2020 and ended on 30th June, 2020. An online questionnaire which included details such as age, gender, and 21 items to assess depressive symptoms was sent through social media to doctors from various countries. Depressive symptoms were measured by Beck's Depression Inventory-II (BDI-II). Items of a total of 220 questionnaires were responded. Out of these, only 200 responses were analyzed using SPSS software.*
Results: *Out of 200 subjects, 110 (55%) had depressive symptoms and 90 (45%) had no symptoms. Males had more depressive symptoms (42.5%) than females (12.5%). Those who worked at COVID-19 centers 75 (37.5%) had higher depressive symptoms. The number of males working at COVID-19 centers was much higher (36%) than females (12%). Depressive symptoms were significantly higher in males than females (35.35±10.25 vs 16.90±7.76; p<0.0001).*
Conclusion: *Doctors, especially males working at COVID-19 centers have higher depressive symptoms than their female colleagues.*
Multicentric studies with larger sample sizes are needed to study the impact of COVID-19 on frontline doctors.

Keywords: *COVID-19, depression, doctors, males*

ÖZ

Amaç: *COVID-19 salgını, ön saflarda çalışan doktorların üzerine muazzam bir fiziksel ve zihinsel yük bindirmiştir. Bu konuda kısıtlı bir alan yazın mevcuttur. Bu çalışma, COVID-19 hastanelerinde çalışan doktorlarda depresif belirtileri ve depresyon düzeylerini değerlendirmek için yapılmıştır.*
Yöntem: *Bu çalışma, Mayıs 2020'de başlayan ve 30 Haziran 2020'de sona eren çevrimiçi bir ankete dayanmaktadır. Depresif belirtileri değerlendirmek için yaş, cinsiyet ve 21 maddelik ölçeği içeren çevrimiçi bir anket çeşitli ülkelerden doktorlara sosyal medya aracılığıyla gönderilmiştir. Depresif belirtiler, Beck Depresyon Envanteri-II (BDI-II) ile ölçülmüştür. Toplam 220 anket yanıtlanmıştır. Bunlardan sadece 200 anket SPSS yazılımı kullanılarak analiz edilmiştir.*
Bulgular: *200 kişiden 110'unda (%55) depresif belirtiler vardır ve 90'ında (%45) belirti yoktur. Erkeklerde (%42,5) kadınlardan (%12,5) daha fazla depresif belirtiler saptanmıştır. COVID-19 merkezlerinde çalışan 75 (%37,5) doktor daha yüksek depresif belirtilere sahiptir. COVID-19 merkezlerinde çalışan erkeklerin sayısı, kadınlardan (%12) daha yüksektir (%36). Depresif belirtiler erkeklerde kadınlara göre anlamlı düzeyde daha yüksektir (35,35±10,25'e karşı 16,90±7,76; p<0.0001).*
Sonuç: *COVID-19 merkezlerinde çalışan doktorlar, özellikle erkek olanlar, kadın meslektaşlarından daha yüksek depresif belirtilere sahiptir. COVID-19'un ön saflarda çalışan doktorlar üzerindeki etkisini incelemek için daha büyük örnekleme sahip çok merkezli bir çalışmalara ihtiyaç vardır.*

Anahtar kelimeler: *COVID-19, depresyon, doktorlar, erkekler*

Received: 1 October 2020
Accepted: 21 November 2020
Online First: 25 December 2020

Corresponding Author:
M. Bashir
ORCID: 0000-0001-7836-3715
Government Medical College,
SMHS hospital,
Department of Physiology,
Srinagar, J&K, India
dr.musharaf.mb@gmail.com

S.I. Sayeed
ORCID: 0000-0002-6639-0828
Government Medical College,
SMHS hospital,
Department of Physiology,
Srinagar, India

H. Ahluwalia
ORCID: 0000-0003-1203-6994
Safdarjung hospital,
Department of Physiology,
New Delhi, India

I.N. Salroo
ORCID: 0000-0002-9934-6380
SKIMS Medical College,
Department of Radiodiagnosis,
Srinagar, India

INTRODUCTION

The pandemic of the coronavirus disease 2019 (COVID-19) that began in Wuhan, Hubei, China has overwhelmed the entire world since December 2019, and been resulting in extensive burden and increasing hospitalizations[1,2]. The rapidity with which this virus has spread and the increased number of deaths have led to stress and depression in people[3,4]. Literature suggests that the onset of an abrupt and a fatal illness could lead to heightened pressure on healthcare workers (HCWs)[5]. The COVID-19 virus has put health care systems to test around the world, which when overcome, can terribly comprise the physical and mental well-being of frontline HCWs[6]. Extensive workload, physical exertion, lack of personal protective equipment, and the burden of making ethically tough decisions on the rationing of patient care may have pronounced effects on their mental health[7]. Their ability to recover from this psychological trauma can be further diminished by losing social support, disturbing changes in working hours, risk of transmitting infection to family members[7]. Therefore, HCWs are especially vulnerable to psychological problems such as depression[7,8]. A study done with doctors during severe acute respiratory syndrome (SARS) outbreak found 26.6% prevalence of depression among doctors[9]. A study from Wuhan, China, showed depression in 50.4% of 1257 healthcare workers[10].

Literature suggests that COVID-19 may cause various psychiatric conditions, including depression. Early assessment of depressive symptoms in doctors who work at COVID-19 hospitals may help to prevent psychiatric morbidities in them.

In this study we hypothesized that doctors who work at COVID-19 hospitals may have developed depressive symptoms due to the nature and workload of this disease. Hence, the purpose of this study was to assess the levels of depressive symptoms in doctors who work at COVID-19 centers and to identify the relationship between various demographic variables and their depressive symptoms.

MATERIAL and METHODS

This was a cross-sectional, observational study carried out on doctors from various countries. Firstly, an online questionnaire along with a consent form was prepared in English. This study started on 15th May, 2020 and ended on 30th June 2020. Different social media platforms such as LinkedIn, WhatsApp, Facebook and emails were used to circulate the link of the questionnaire. The link was specifically sent only to the doctors who were deputed to COVID- 19 hospitals. Once the link was clicked by the subjects, they were automatically directed to the purpose of study and informed consent. After agreeing on submitting the online survey, subjects filled up their demographic details and answered the subsequent questions. Healthcare workers who understood English language participating from different countries such as the USA, the UK, Turkey, Serbia, India, Pakistan, Iran and Saudi Arabia, were included in this study. Participants with comorbidities such as hypertension, diabetes mellitus, and chronic respiratory diseases were also included. Those who were not familiar with the English language and had previous history of psychiatric morbidity were excluded. In this survey, complete responses from 220 subjects were received. Out of these, 20 participants who had previous history of depression were excluded. Finally, responses from 200 participants were assessed.

Questionnaire to assess depressive symptoms

The questionnaire was divided into three parts. The first part was related to demographic data such as age, gender, and duty in COVID-19 centers; the second part consisted of questions related to depression using Beck's Depression Inventory-II (BDI-II)[11]. This scale is endorsed by the National Institute for Health and Clinical Excellence to measure baseline depression severity[11]. BDI-II includes 21 items measuring cogni-

tive, affective, somatic and vegetative symptoms of depression. However, there are no sub-scales. Each item is scored in a self-rated scale from 0 (not at all) to 3 (mostly) in the past 2 weeks[11]. It was made clear to all of the subjects that they answered each item of BDI-II as per the impact of COVID-19 on their lives. BDI-II is interpreted as: minimal range (0-13), mild depression (14-19), moderate depression (20-28), and severe depression (29-63)[11]. The average time taken to fill the online survey was 10 to 15 minutes and the third part consisted of questions related to co-morbidities such as hypertension, diabetes mellitus and chronic obstructive pulmonary disease (COPD). Confidentiality and anonymity of all the participants were maintained. All of the complete responses were eventually analyzed.

Statistical analysis

Data was analyzed using SPSS version 25 (IBM Corp., Armonk, NY, USA). For continuous variables between groups t-test was used and for categorical variables chi-square test was used. Descriptive analysis was reported as frequencies and percentages. The value of $p<0.05$ was considered as statistically significant.

RESULTS

A total of 220 complete responses were received. Out of these, only 200 responses were assessed. The mean age of the participants was 32.15±8.32 years. In this study, the number of males (n=112, 56%) was greater than the number of females (n=88, 44%). In this study, 96 (48%) participants were presently posted at COVID-19 centers. BDI-II was used to access the severity of their depressive symptoms. A total of 110 (55%) participants with a mean age of 33.54±10.60 years had depressive symptoms and 90 participants (45%) with a mean age of 31.60±9.24 years had no symptoms of depression (Table 1). Depressive symptoms were predominant in those who were deputed to COVID-19 hospitals (n=75, 37.5% vs n=21, 10.5%, p<0.0001). Depressive symptoms were significantly higher in males as compared to females (m=85, 77.27% vs f=25, 22.73%; P<0.0001) (Table 1). Those with depressive symptoms had significantly higher scores than those without (24.88±13.57 vs 4.63±4.13; P<0.0001). Patients with depression (n=110, 55%), had mild (n=50, 45.45%), moderate (n=42, 38.18%), and severe (n=18, 16.36%) depressive symptoms (Table 1). Comorbidities such as hypertension (n=6:3%),

Table 1. Characteristics of doctors with "depressive symptoms" vs "no symptoms".

	Total (n=200)	Depressive symptoms (n=110)	No depressive symptoms (n=90)	X^2	P value
Demographic variables					
Age	32.15±8.32	33.54±10.60	31.60±9.24		0.06
Gender	M (112): F (88)	M (85): F (25)	M (27): F (63)	44.89	<0.0001
Duty at COVID-19 center	96 (48%)	75 (37.5%)	21 (10.5%)		<0.0001
BDI-II					
Depression score	13.42±13.79	24.88±13.57	4.63±4.13		<0.0001
Normal	90 (45%)				
Mild symptoms		50 (45.45%)			
Moderate symptoms		42 (38.18%)			
Severe symptoms		18 (16.36%)			
Co-morbidities					
Hypertension	6 (3%)	4 (3.64%)	2 (2.22%)		
Diabetes mellitus	9 (4.5%)	5 (4.55%)	4 (4.44%)		
COPD	3 (1.5%)	2 (1.81%)	1 (1.11%)		

COVID-19; coronavirus disease of 2019, X^2; chi-square, BDI-II; beck's depression inventory-II, COPD; chronic obstructive pulmonary disease.

diabetes mellitus (n=9, 4.5%) and chronic obstructive pulmonary disease (COPD: n=3,1.5%) were also detected (Table 1). In this study, the mean ages of the male, and female subjects were 31.23±7.67 vs 31.86±8.32; P=0.861). The number of males who were posted at COVID-19 hospitals (n=72, 36%) was much higher than females (n=24, 12%) (Table 2). Males had a significantly higher depression score as compared to the females (35.35±10.25 vs 16.90±7.76; P<0.0001) (Table 2). Out of 112 male subjects, 27 (24.12%) had no depressive symptoms, while mild (n=48, 42.86%), moderate (n=22, 19.64%), and severe symptoms (n=15, 13.39%) were noted in respective number of male participants. It was observed that out of 88 female subjects, 63 (71.60%) had no depressive symptoms,while mild (n=13, 14.77%), moderate (n=9, 10.23%) and severe symptoms (n= 4, 4.55%) were noted in respective number of female participants. In males, co-morbidities such as hypertension (n=4, 3.57%), diabetes mellitus (n=5, 4.46%) and COPD (n=2, 1.78%) and in females' hypertension (n= 2, 2.27%), diabetes mellitus (n=4, 4.55%) and COPD (n=1, 1.14%) were observed (Table 2).

Table 2. Gender based characteristics of doctors.

	Males (n=112)	Females (n=88)	P value
Age	31.23±7.67	31.86±8.32	0.861
Duty at COVID-19 center	72 (36%)	24 (12%)	
BDI-II			
Depression score	35.35±10.25	16.90±7.76	<0.0001
No symptoms	27 (24.12%)	63 (71.60%)	
Mild symptoms	48 (42.86%)	13 (14.77%)	
Moderate symptoms	22 (19.64%)	9 (10.23%)	
Severe symptoms	15 (13.39%)	4 (4.55%)	
Comorbidities			
Hypertension	4 (3.57%)	2 (2.27%)	
Diabetes mellitus	5 (4.46%)	4 (4.55%)	
COPD	2 (1.78%)	1 (1.14%)	

COVID 19; coronavirus disease of 2019, BDI-II; beck's depression inventory-II, COPD; chronic obstructive pulmonary disease.

DISCUSSION

Depression is a common psychiatric disorder. Compared to most of other professional groups and general population, doctors are at increased risk of depression[12]. This study revealed that most of the doctors who participated in this survey had depressive symptoms which were more predominant in male doctors (42.5%) than their female colleagues (12.5%) during COVID-19 pandemic. BDI-II was used to assess the depressive symptoms and it was observed that those with depressive symptoms had much higher depression score in comparison to those without symptoms. A study from Korea which was done during Middle East Respiratory Syndrome outbreak by Um DH et al.[9] showed that the prevalence of depression was 26.6% in a cohort of 64 doctors. In another study by Chatterjee SS et al.[10] an online survey was done among doctors that lasted for days to study psychiatric morbidity especially depression by using Depression Anxiety and Stress Scale-21 (DASS-21). They found that 34.9% out of 152 respondents were depressed. It was concluded that doctors who were working during COVID pandemic have a high prevalence of depression[13]. Similar findings were noted in this online survey in which depressive symptoms in doctors were assessed using BDI-II, and the overall prevalence of depressive symptoms was found to be 55 percent. A few number of studies have been done to study the gender-based prevalence of depression in doctors due to COVID-19 outbreak. For example, in the online survey by Elbay RY et al.[14] depressive symptoms in 442 doctors were assessed using DASS-21. They observed that 286 doctors (64.7%) had depressive symptoms. They also observed that female doctors had more depressive symptoms than males. Another cross-sectional study to assess depressive symptoms using Hospital Anxiety and Depressive Scale (HADS) was done by Ozdin S et al.[15]. They observed that females carried a higher risk of depression and they concluded that depression was more predominant in females due to the COVID-19 outbreak. Also, a study conducted in China by Zhang W et al revealed that female HCWs carried a higher risk of depression during COVID-19 pan-

demic[16]. Unlike the previous studies, it was observed in this study that male doctors had more depressive symptoms than females. Most of the doctors who carried their duty at COVID-19 centers are males and it may have caused depression in them. A study by Elbay RY et al.[14] also showed that those who worked at COVID-19 centers were at increased risk of depression. Comorbidities such as hypertension, diabetes mellitus and COPD have suggested that these HCWs will be at a heightened risk when being infected by COVID-19. Similar observation was made by Chatterjee SS et al.[13].

To the best of our knowledge, gender-based categorization of depressive symptoms in doctors due to a pandemic has not been done before. However, this study has some limitations. The small sample size and a greater number of males may have caused variability in comparisons in this study. One of the most important lacunae is the lack of psychiatric evaluation of the participants. Since this is a preliminary study, further studies are needed with larger sample size to assess the gender-based depressive symptoms in doctors who work at COVID-19 hospitals.

CONCLUSION

Based on the observations, it may be concluded that male doctors who work at COVID-19 centers have significantly more severe depressive symptoms than their female colleagues.

REFERENCES

1. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. JAMA. 2020; 323:1239-42. [CrossRef]
2. Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020; 382(8):727-33. [CrossRef]
3. Liu S, Yang L, Zhang C, et al: Online mental health services in china during the COVID-19 outbreak. Lancet Psychiatry 2020; 7:e17-8. [CrossRef]
4. Bao Y, Sun Y, Meng S, Shi J, Lu L. 2019-nCoV epidemic: address mental health care to empower society. Lancet. 2020;395(10224):e37-e8. [CrossRef]
5. Liu Z., Han B, Jiang R, et al. Mental health status of doctors and nurses during COVID-19 epidemic in China. SSRN Electron J. 2020. [CrossRef]
6. Hu D, Kong Y, Li W, et al. Frontline nurses' burnout, anxiety, depression, and fear statuses and their associated factors during the COVID-19 outbreak in Wuhan, China: A large-scale cross-sectional study. E Clinical Medicine. 2020;24:100424. [CrossRef]
7. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. Brain Behav Immun. 2020;88:901-7. [CrossRef]
8. Lung FW, Lu YC, Chang YY, Shu BC. Mental Symptoms in Different Health Professionals During the SARS Attack: A Follow-up Study. Psychiatr Q. 2009;80:107-16. [CrossRef]
9. Um DH, Kim JS, Lee HW, et al. Psychological effects on medical doctors from the Middle East Respiratory Syndrome (MERS) outbreak: A comparison of whether they worked at the MERS occurred hospital or not, and whether they participated in MERS diagnosis and treatment. J Korean Neuropsychiat Assoc. 2017;56:28-34. [CrossRef]
10. Lai J, Ma S, Wang Y, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Netw Open. 2020;3:e203976. [CrossRef]
11. Smarr KL, Keefer AL. Measures of Depression and Depressive Symptoms. Arthritis Care Res (Hoboken). 2020;72 Suppl 10:608-29. [CrossRef]
12. Outhoff K. Depression in doctors: A bitter pill to swallow. South African Family Practice. 2019;61:S11-4. [CrossRef]
13. Chatterjee SS, Bhattacharyya R, Bhattacharyya S, Gupta S, Das S, Banerjee BB. Attitude, practice, behavior, and mental health impact of COVID-19 on doctors. Indian J Psychiatry. 2020;62:257-65. [CrossRef]
14. Elbay RY, Kurtulmuş A, Arpacıoğlu S, Karadere E. Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. Psychiatry Res. 2020;290:113130. [CrossRef]
15. Özdin S, Bayrak Özdin Ş. Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: The importance of gender. Int J Soc Psychiatry. 2020;66:504-11. [CrossRef]
16. Zhang WR, Wang K, Yin L, et al. Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China. Psychother Psychosom. 2020;89:242-50. [CrossRef]