

Study of correlates of depression among health care workers during COVID-19 epidemic

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Summary

Aims: Study aimed to find out the prevalence and risk factors of depression among the health care workers during COVID-19 outbreak.

Methods and Material: This was a four month, cross-sectional, observational, single center study of health care workers of a notified COVID-19 hospital. Study objectives were explained to health care workers, and written consent was obtained. Patient health questionnaire-9 (PHQ-9), DSM-5 criterion of major depressive disorder and Structured Clinical Interview for DSM-5 were used to diagnose the depression. Descriptive statistics, chi-square test, and Binary logistic regression were used for analysis of variables

Results: Overall 18.78% health workers reported major depressive disorder. Nearly three fourth of the old age participants had moderate to severe depression. 20.69% of married subjects had major depression. Medical health workers reported more depression. One third of the front line workers had major depression. 51% of the participants with medical co-morbidities reported major depression as compared to only 12% in those without any medical co-morbidity. 33% of subjects watching COVID-19 news very frequently in a day had major depression

Discussion: The prevalence of depression ranges from 9 to 35% in various studies. Among them living in joint family, married, elderly, presence of medical illness, frontline work, frequently watching COVID-19 news, excessive fear of COVID-19, and medical health worker emerged as statistically significant variables associated with major depression

Conclusions: The prevalence of depression is high among health care workers while performing duties during COVID-19 outbreak. Early diagnosis and treatment of depression would be crucial during this difficult time.

COVID-19, depression, health care worker

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INTRODUCTION

Novel corona virus was first reported in November-2019 in Wuhan, a city in the Hubei Province of China [1]. On 11th February, International Committee on Taxonomy named it as “Severe acute respiratory syndrome corona virus 2 (SARS-CoV-2)” and WHO named the disease caused by it as COVID-19 and declared it

as a 'pandemic' [2,3]. Since then, the world has come to a standstill due to the virus and lockdown due to increasing number of cases. During this pandemic, health care workers especially those involved in the management of patients with COVID-19, called as frontline workers are suffering from a range of psychological issues like depression, anxiety, stress and insomnia [4].

Severe Acute Respiratory Syndrome (SARS)-2003 epidemic was also associated with high levels of depression, anxiety, insomnia and stress among health care workers [5,6,7,8]. Recent studies during this pandemic has also found various psychiatric disorders among the health care workers especially those who are working as frontline workers [4,9,10].

Managing the current pandemic has taken a toll on the health care system. Health care workers who are the backbone of the health care system are facing the major burden. They are vulnerable to both high risk of infection and mental health issues. Lack of preparedness, tough working conditions, fear of transmission of infection to family members, isolation, social stigma, uncertainty, etc. are some of the crucial issues [10].

Globally, few published studies have reported significant psychological issues among health care workers during COVID-19 pandemic [1,4,9,10]. At a time like this, addressing the mental health issues of the health care workers is of paramount importance. Hence this study aims to evaluate the correlates of depression among health of health care workers of a designated COVID-19 hospital.

SUBJECTS AND METHODS

Study Design

This was a four month, observational, cross sectional and single center study of health care workers. It was conducted from April 2020 to July 2020 to find the prevalence and risk factors of depression due to COVID-19 pandemic among health care workers. This study was conducted in a tertiary care hospital. This hospital had a staff of 407 healthcare workers. During April to June 2020, around 250-400 new cases of COVID-19 emerged every day in the city while an average of 100-200

patients were present every day in the ward/High dependency unit/Intensive care unit of the hospital. Participants were explained about the objectives as per the study protocol and their written informed consent was obtained.

Subjects

A total of 407 healthcare workers of the hospital were recruited as study participants. Health care workers included doctors, nursing staff, technicians, pharmacists, receptionists, attendants and cleaning staff of the hospital. Among those who were directly involved in the diagnosis, treatment and care of the patients with COVID-19 were called as "frontline health workers". As per COVID-19 guidelines, duties of the doctors and other staff were distributed and rotated for treating patients with COVID-19. Doctors and nurses were considered as 'medical health workers' and rest of others as 'non-medical health workers'. Participants with regular daily substance use (tobacco, alcohol, cannabis, etc.), those who had symptoms of depression before March 2020, those who didn't perform regular duty, and those who refused to participate in the study were excluded. Study was approved by Institutional Ethics Committee.

Screening tools

- Semi-structure proforma: It included demographic details and other parameters like, performing duties as frontline worker or not, watching and listening to COVID-19 news in a day (never/occasionally/half the time/most of time/all the time), excessive fear of contracting COVID-19 infection and fear of death(never/occasionally/half the time/most of time/all the time), presence of medical problems (diabetes, hypertension, heart disease, any other), presence of symptoms of depression before March 2020, and regular daily substance (tobacco, alcohol, cannabis, etc.) use since last 12 months.
- Modified BG Prasad Socio-economic classification: Updated version (2020) was used to

know the socio-economic status of the participants [11].

- Patient Health Questionnaire (PHQ-9): It has nine questions; among them each question is rated with a 4-point Likert scale (0-Not at all, to 3-Nearly every day). Total score interpreted as one to four is minimal depression, five to nine is mild depression, 10-14 is moderate depression, 15-19 is moderately severe depression, and 20-27 is severe depression. A PHQ-9 score ≥ 10 has a sensitivity of 88% and a specificity of 88% for major depression [12]. This survey tool is also validated in different Indian languages including Gujarati [13].
- The Structured Clinical Interview of DSM-5-Clinician version and Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) diagnostic criteria were used for the diagnosis of major depressive disorder. SCID-5-CV showed satisfactory psychometric property (>0.70 sensitivity and specificity) [14,15,16].

PROCEDURE

We visited each OPD, ward, and department to approach the health care workers as per their convenience. We explained the study objectives and requested them to fill the semi-structured proforma that included demographic details, questions related to COVID-19 outbreak, Modified BG Prasad Socio-economic classification

and Patients Health Questionnaire-9 (PHQ-9). Later on consultant psychiatrists approached the participants with depression for further clinical assessment using SCID-5-CV and provided the appropriate treatment to participants with major depression.

Statistical analysis

Data collected was subjected to appropriate descriptive statistics using frequencies, percentages, mean and standard deviation of different variables. Chi square test was used for analysis of qualitative data. The p value of <0.05 was considered statistically significant. Binary logistic regression analysis was used to calculate adjusted Odds ratio. Statistical Package for the Social Sciences (SPSS) version 20 was applied to analyze the data.

RESULTS

Out of 407 participants, 394 healthcare workers were included in the study, rest of 13 was excluded from the final analysis as 6 participants didn't complete their proforma, and 7 had symptoms of depression before March 2020. Out of 394 participants, 74 fulfilled the criteria of major depressive disorder. 18.78% of health care workers had major depressive disorder.

Figure 1 shows the flow chart of screening and assessment of depression among the participants

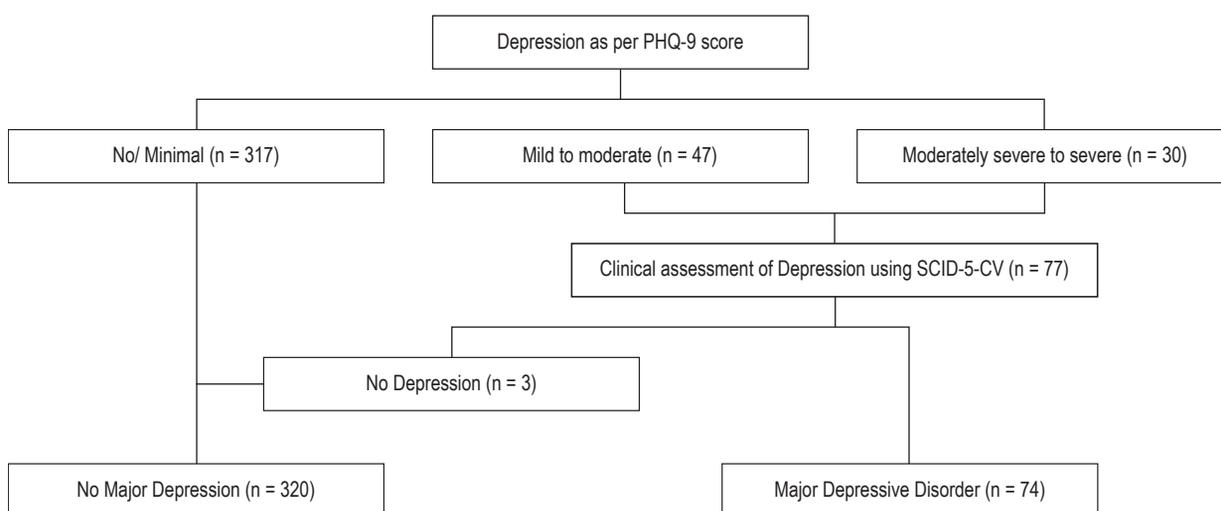


Figure 1. Flow chart of screening and assessment of Depression among the participants

Socio-demographic detail

Mean age of the healthcare worker was 34.63 + 11.54. Among them 85.28% were adults and 14.72% were old age (60 years and above) participants. 57.4% were females and 42.6% were males. 66% were married and 34% were single/separated/divorced/widow. 61.16% were living in joint family and 38.84% were living in nucle-

ar family. 72.34% belonged to urban domicile and 27.66% belonged to rural domicile. 66% belonged to upper middle/ upper class, 15% belonged to middle and 19% belonged to lower/ lower middle. 66.49% were medical health workers (doctors, nurses) and 33.5% were non-medical health workers. 42.13% were front line health care workers.

Table 1. Distribution of socio – demographic and other variables with major depressive disorder (MDD)

Variables		MDD absent n=320 (%)	MDD present n=74 (%)	X ²	p value
Gender	Female	185(57.81)	41(55.40)	0.142	0.706
	Male	135(42.19)	33(44.59)		
Age	Adult	307(95.93)	29(39.19)	154.176	< 0.001
	Old	13(4.06)	45(60.81)		
Marital status	Married	207(64.68)	54(72.97)	1.845	0.174
	Single	113(35.31)	20(27.02)		
Domicile	Rural	95(29.68)	14(18.92)	3.483	0.062
	Urban	225(70.31)	60(81.08)		
Family type	Joint	182(56.87)	59(79.73)	13.217	< 0.001
	Nuclear	138(43.13)	15(20.27)		
Front line work	No	210(65.63)	18(24.32)	42.048	< 0.001
	Yes	110(34.38)	56(75.68)		
Frequency of watching COVID-19 news	Minimal/Average	219(68.44)	24(32.43)	32.963	< 0.001
	High/excessive	101(31.56)	50(67.56)		
Fear of COVID-19	Minimal/Average	254(79.37)	33(44.59)	36.752	< 0.001
	High/excessive	66(20.62)	41(55.40)		
Medical co-morbidity	Absent	289(90.31)	41(55.40)	53.828	< 0.001
	Present	31(9.68)	33(44.59)		
Type of Health worker	Medical	205(64.06)	57(77.02)	4.534	0.033
	Nonmedical	115(35.94)	17(22.97)		

Table 1 shows distribution of socio – demographic and other variables with depression. Distribution of age, family type, frontline work, frequency of watching COVID-19 news, fear of COVID-19, type of health worker, and medical illness with the major depression was statistically significant

Nearly three fourth of the old age participants had moderate to severe depression. In married participants, 20.69% had major depression. Med-

ical health workers reported more depression as compared to non – medical health workers. Among the frontline health workers, one third had major depression.

38% of the participants who perceived excessive fear of contracting COVID-19 infection had major depression as compared to only 11% who perceived minimal or average fear. 51% of the participants with medical co-morbidities reported major depression as compared to only 12%

in those without any medical co-morbidities. 33% of health care workers watching COVID-19 news very frequently in a day had major depres-

sion as compared to 9.9% health care workers who watched news less frequently.

Table 2. Binary logistic regression analysis for the factors related to major depressive disorder (MDD)

Variables		Participants with MDD n=74 (%)	Adjusted OR	p value	95% CI
Family type	Nuclear	15(20.27)	1	0.050	0.967-5.396
	Joint	59(79.73)	2.284		
Age	Adult	29(39.19)	1	0.000	1.850-13.684
	Old age	45(60.81)	3.112		
Type of Health workers	Medical	57(77.02)	1	0.094	0.887-4.608
	Non-medical	17(22.97)	2.021		
Frontline workers	NO	18(24.32)	1	<0.001	3.537-18.97
	YES	56(75.68)	8.192		
Fear of Covid-19	Minimal/average	33(44.59)	1	0.047	1.011-5.337
	High/excessive	41(55.40)	2.323		
Medical comorbidity	Absent	33(44.59)	1	0.010	0.133-3.765
	Present	41(55.40)	1.143		

OR – Odds Ratio, CI – Confidence Interval, R²=0.593

Table 2 shows binary logistic regression analysis of independent variables showing statistically significant association using Chi-square test. Age, family type, frontline work, type of health worker, fear of COVID-19, and medical co-morbidity emerged as a statistically significant factors associated with major depression.

DISCUSSION

In the present study, 18.78% of health care workers reported major depression. An Indian study found 35% prevalence of depressive symptoms in doctors during COVID-19 outbreak.[10] Another study recorded 8.9% of health care workers suffered from depression during this epidemic [17]. Variations in the rates of mental health issues among the health care workers might have been due to differences in the amount of work, duty hours, availability of resources, level of preparedness, etc.

Female health care workers reported higher anxiety as compared to male participants. This finding corroborates with Zhang et al and Lai et

al, who studied the mental health problems in health care workers during COVID-19 epidemic in China.[18,19] Rossi et al also reported similar findings during novel corona virus disease outbreak.[20] This may be either due to increase in responsibilities of home during COVID-19 or as anxiety disorders are more common in female.

In our study, a greater number of old age participants (60 years and above) and those with medical co-morbidities had major depression as compared to younger ones and those without any medical co-morbidities. These findings corroborate with other studies conducted during COVID-19 epidemic among the health care workers [10,19]. These findings might be due to presence of medical co-morbidities in old age and the fact that mortality due to COVID-19 is higher in old age and people with co-morbidities as the infection is more severe in such cases [21,22].

A high rate of depression was reported by married participants compared to single participants in this study. This finding is in line with study from China during novel corona virus outbreak [19]. This may be attributed to days of

staying away from family members while performing duties in isolation ward and quarantine place, home responsibilities, and fear of transmission of infection to family members.

In this study, significant number of frontline health care workers reported major depression compared to participants with low risk of contact with COVID-19 patients in hospital. This finding corroborates with Chatterjee et al, which states that health care providers involved in high risk procedures during COVID-19 outbreak had significant depression.[10] Few other studies also had similar findings [19,20,21]. This could be because of fear of contracting the disease, difficult working conditions, seeing many deaths, etc.

In the present study, significant number of participants with excessive fear of COVID-19 reported major depression compared to their counterparts. Watching news about patients suffering from COVID-19 and deaths due to it may cause fear among them.

Further clinical evaluation of symptoms of depression was done using SCID-5-CV. Large scale studies at multiple designated COVID centers, and follow up studies will be required to evaluate the mental health issues among the health care providers.

CONCLUSION

Health care workers reported high prevalence rate of depression during COVID-19 outbreak. Among them, being frontline worker, living in joint family, old age (60 years and above), presence of medical illness, and excessive fear of COVID were significant correlates associated with major depression. Although the prevalence of depression is high among health care workers, it is less commonly addressed to. Spreading awareness and routine screening for psychological issues among health care workers could be carried out for earlier detection and treatment.

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