

## A Cross Sectional Study of Psychological Impact of Covid-19 Pandemic Among Healthcare Workers

Rupali V. Shinde<sup>1</sup>, Anup S. Bharati<sup>2</sup>, Nishant Manka<sup>3</sup>, Kinnari N Doshi<sup>4</sup>

<sup>1</sup>3<sup>rd</sup> Year PG Resident, Dept. of Psychiatry, Dr. Vasant Rao Pawar Medical College, Hospital and Research Centre, Nashik-03, Maharashtra, India.

<sup>2</sup>Professor and Head, Dept. of Psychiatry, Dr. Vasant Rao Pawar Medical College, Hospital and Research Centre, Nashik-03, Maharashtra, India.

<sup>3</sup>Ex. PG Resident Dept. of Psychiatry, Dr. Vasant Rao Pawar Medical College, Hospital and Research Centre, Nashik-03, Maharashtra, India.

<sup>4</sup>Pursuing Post-Doctoral fellowship course in Child and Adolescent Psychiatry, Vijayawada Institute of mental health and Neuro Sciences, Vijayawada, 520008, Andhra Pradesh, India

---

Received: 03-12-2021 / Revised: 30-12-2021 / Accepted: 28-01-2022

Corresponding author: Dr Kinnari N Doshi

Conflict of interest: Nil

---

### Abstract

**Introduction:** January 31, 2020, WHO declared the COVID-19 crisis as a “Public Health Emergency of International Concern.” Continuous surge in the number of confirmed cases throughout the world led to a sharp decline in the global health, economic development, and also affected social stability because of requirement of strict quarantine measures. As the cases increased around the globe and also in the country it started creating a psychological impact on healthcare workers.

**Material and Methods:** This was a cross sectional study with sample size 222, which was conducted for the duration of 1 year among healthcare workers (consultant doctors, PG resident doctors, intern doctors, nursing staff, technicians) across Maharashtra through Google Forms and manually through direct contacts. Forms were circulated through digital medium and various social media platforms. Forms consisted of general demographic data along with semi-structured proforma to assess the psychological impact of COVID-19 outbreak on healthcare workers using Depression-Anxiety-Stress Scale (DASS-21).

**Results:** Total 222 participants which comprised of 54% Consultant Doctors, 30% Resident doctors, 8% interns, 6% nursing staff and 2% technicians were included in the study. The mean age of the participants was 30.59 years. Out of 122 participants 32% Consultant Doctors were found to have signs and symptoms related to stress, 33% had symptoms suggesting depression and 37% had symptoms related to anxiety, 31% of Resident Doctors, were found to have signs and symptoms related to stress, 40% had symptoms suggesting depression and 31% of the participants were having symptoms related to anxiety. 56% Interns were found to have signs and symptoms related to stress, 88% had symptoms suggesting depression and 56% of the participants were having symptoms related to anxiety.

16% of Nursing Staff were found to have signs and symptoms related to stress, 41% had symptoms suggesting depression and 50% of participants were found to have symptoms related to anxiety

**Conclusion:** There were symptoms found which was pointing towards presence of various levels of Depression, Stress and Anxiety amongst the COVID-19 Pandemic Healthcare

workers. Further it is the need of the hour to address these psychological impacts at the earliest to ensure a smooth & efficient functioning of the healthcare system.

**Keywords:** COVID-19, DASS-21

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

## Introduction

End of 2019 witnessed a pneumonia outbreak with an unknown aetiology in the city of Wuhan in China. The cases were linked to a meat market selling live wild animals which were consumed by the people living there[1,2]. The transmission of this life-threatening condition was from the pathogens found in these animals, suggesting hauling from animals to humans, further expanding to human-to-human transmission[3,4].

The pathogen was finally identified and termed as 2019 novel coronavirus (2019-nCoV), and the disease was termed as Corona Virus Disease - COVID-19. There was continuous surge in the number of confirmed cases throughout the world, thus a sharp decline was seen in the global health, economic development, and also affected social stability.[5,6] With the increasing number of cases throughout the world, on January 31, 2020, WHO declared the COVID-19 crisis as a “Public Health Emergency of International Concern”.[7]

On 30<sup>th</sup> January 2020, the first case was reported in India. With time, the number of cases kept rising. To control the spread of the disease, lockdown and quarantine was applied in the whole country.[2,3] Social distancing was levied to ensure that that minimum or no contact would reduce the spread of the condition. Due to quarantine, everybody had to stay indoors, with limited resources and witnessed a cut down from the outer world.[8,9] Only to fulfill the basic necessities of daily lives, people were allowed to go out. In the torment of losing the independence to be out in the world, and to stay indoors, work from home as much as they can; the mental status of people

started getting affected including healthcare workers[10].

With the increasing number of cases around the globe and also in our country, it started creating a psychological panic in the minds of healthcare workers[11,12]. The shortage of personal protection equipment, face masks, and other necessary sanitization material lead to rise in fear among the healthcare workers which was further worsened by social distancing and breakdown of their routines.[18] The restlessness further increased with the spread of COVID-19 infection within their colleagues and family members. In the hospitals, the number of ventilators, I.C.U capacities, and life supporting devices could not suffice to the number of patients in need of them. The overall scenario added lot of burden on the healthcare workers.[18,19] To add on, local and residential issues started rising for doctors and medical staff who use to live on rent as the house owners restricted their entry in their houses due to the fear of transmission of the infection. Also around the globe, most of the countries and the super power countries were also hit by CORONA Pandemic too, despite having world class health facilities they were not unable to cope up or control the situation. All this created difficult conditions for the Healthcare workers in the country and a need was felt to address them as soon as possible.[20,21] and thus this study was planned.

**Aim:** To study the psychological impact of COVID-19 outbreak on Healthcare workers.

**Objective:** To assess symptoms of anxiety, depression and stress in healthcare workers due to COVID-19 pandemic outbreak.

**Materials and Methods:**

- **Study Type/Design:** Cross sectional type.
- **Study Duration:** 1 Year.
- **Sample Size:** 222

**Sampling Technique:** The present survey was conducted among the various healthcare workers across Maharashtra through Google forms and manually through direct contacts after taking approval of the Institutional Ethics Committee. Forms were circulated through digital medium and various social media platforms which consisted of information regarding general demographic data along with semi-structured proforma to assess the psychological impact of COVID-19 outbreak on healthcare workers using Depression-Anxiety-Stress Scale (DASS-21).

Participation in the study was voluntary and the participants were requested to submit of the forms digitally and manually after

marking the most appropriate rating on the scale. Data was analyzed using appropriate statistical software.

All privacy and confidentiality safeguard were observed.

**Inclusion Criteria**

- Doctors
- PG Resident doctors in Various institutions
- Interns
- Nursing staff in various institutions
- Technicians/Clerical staff/Lab/Diagnostic staff

**Exclusion Criteria:**

- Undergraduate students
- Non-teaching Staff
- Participants not willing to be a part of study

**Results and Discussion**

- A total of 222 (N) participants were included in the study.
- The mean age of the participants was 30.59 years, with minimum age of 19 years and maximum age of 69 years

**Table 1a: Distribution according to Age.**

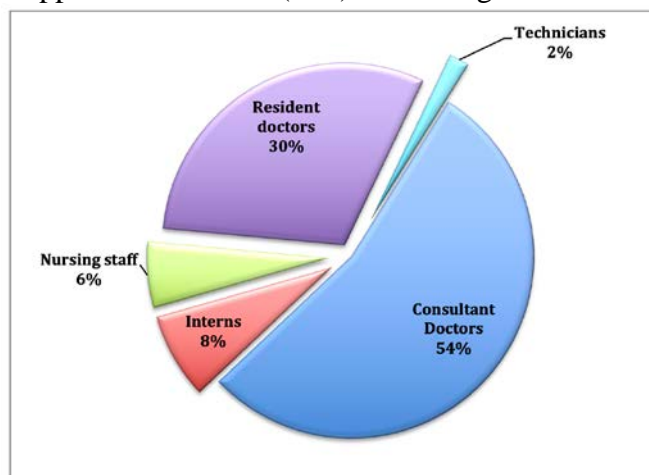
Age Group	Frequency	Percentage
19 - 28	143	64 %
29 - 38	42	19 %
39 - 48	21	10 %
49 - 58	11	5 %
59 - 68	4	2 %
69 - 78	1	0 %

Amongst them 46% (n=101) were male and 54% (n=120) were female and (n=1) prefer not to comment. A study done by Rose S et al found that those aged between 30–39 (27.2%) had the most frequent response. The respondents in the study were mostly female which is similar to our study where we also had female preponderance[22].

**Table 1b: Distribution according to Sex.**

GENDER	(n)
Female	120
Male	101
Prefer not to say	1
Grand Total	222

Study involved 222 participants which comprised of 54% (n=120) Consultant Doctors, 30% (n=68) Resident doctors, 8% (n=17) interns, 6% (n=13) nursing staff and 2% (n=4) technicians. Out of which 64% (n=138) belongs to upper middle class, 22% (n=47) are in lower middle class, 11% (n=25) are upper class and 3% (n=7) are having lower class.



**Figure 1: Distribution according to Qualification**

Out of 120 Consultant Doctors, 32% (n=38) of the study population were found to have stress, 33% (n=40) had depression and 37% (n=44) had Stress on Scale - 21 Items (DASS-21) (Table1)

Out of 68 Resident Doctors, 31% (n=21) of the study population was found to have stress, 40 % (n=27) had depression and 31% (n=24) of people was having anxiety after applying the Depression, Anxiety and Stress Scale - 21 Items (DASS-21). Out of 17 Interns, 56% (n=9) of the study population was found to have stress, 88% (n=14) had depression and 56% (n=9) of people was having anxiety after applying

the Depression, Anxiety and Stress Scale - 21 Items (DASS-21).

Out of 12 Nursing Staff, 16% (n=2) of the study population was found to have stress, 41% (n=5) had depression and 50% (n=7) of participants were having anxiety after applying the Depression, Anxiety and Stress Scale - 21 Items (DASS-21). Technicians were also evaluated by DASS-21 scale but no any significant finding was observed. A study done Rose S et al stated that the nursing staff strongly agreed with the statement “I felt nervous and scared” were than members from physician and other roles[22].

Table 2: Stress, Anxiety and Depression in consultant doctors			Table 3: Stress, Anxiety and Depression in resident doctors		
SEVERITY OF STRESS	COUNTS	PERCENTAGE	SEVERITY OF STRESS	COUNTS	PERCENTAGE
NORMAL	82	68%	NORMAL	46	69%
MILD	15	13%	MILD	10	15%
MODERATE	9	8%	MODERATE	9	13%
SEVERE	10	8%	SEVERE	2	3%
EXT. SEVERE	4	3%	EXT. SEVERE	-	-
SEVERITY OF ANXIETY	COUNTS	PERCENTAGE	SEVERITY OF ANXIETY	COUNTS	PERCENTAGE
NORMAL	80	67%	NORMAL	44	65%

MILD	4	3%	MILD	5	7%
MODERATE	26	22%	MODERATE	13	19%
SEVERE	3	2%	SEVERE	2	3%
EXT. SEVERE	7	6%	EXT. SEVERE	4	6%
<b>SEVERITY OF DEPRESSION</b>	<b>COUNTS</b>	<b>PERCENTAGE</b>	<b>SEVERITY OF DEPRESSION</b>	<b>COUNTS</b>	<b>PERCENTAGE</b>
NORMAL	76	63%	NORMAL	40	60%
MILD	18	15%	MILD	10	15%
MODERATE	9	8%	MODERATE	13	19%
SEVERE	12	10%	SEVERE	4	6%
EXT. SEVERE	5	4%	EXT. SEVERE	-	-

On evaluation with the semi-structured proforma related to the aims and objectives of the study, 60.36% population had been reported that they were significantly worried as a result of Covid-19 with the score more than 7, on the scale of 01-10. Study done by Yan L et al reports that the pooled prevalence of anxiety from 44 studies was 37% and the pooled prevalence

of depression was 36% estimated in 39 studies[23].

De Kock JH et al found out the prevalence of depressive symptoms varied greatly, ranging between 8.9% to 50.4%. These findings suggest marked differences in the prevalence of depressive symptoms across the studies. The prevalence of anxiety in cross-sectional studies ranged between 14.5% to 44.6%[24].

<b>Table 4: Stress, Anxiety and Depression in Intern doctors</b>			<b>Table 5: Stress, Anxiety and Depression in Nursing Staff</b>		
SEVERITY OF STRESS	COUNTS	PERCENTAGE	SEVERITY OF STRESS	COUNTS	PERCENTAGE
NORMAL	11	69%	NORMAL	10	83%
MILD	2	12%	MILD	1	8%
MODERATE	1	6%	MODERATE	1	8%
SEVERE	2	13%	SEVERE	-	-
EXT. SEVERE	-	-	EXT. SEVERE	-	-
SEVERITY OF ANXIETY	COUNTS	PERCENTAGE	SEVERITY OF ANXIETY	COUNTS	PERCENTAGE
NORMAL	7	44%	NORMAL	6	50%
MILD	2	12%	MILD	2	17%
MODERATE	4	25%	MODERATE	4	33%
SEVERE	1	6%	SEVERE	-	-
EXT. SEVERE	2	13%	EXT. SEVERE	-	-
SEVERITY OF DEPRESSION	COUNTS	PERCENTAGE	SEVERITY OF DEPRESSION	COUNTS	PERCENTAGE
NORMAL	2	12%	NORMAL	7	58%
MILD	5	31%	MILD	1	8%
MODERATE	7	44%	MODERATE	3	25%
SEVERE	2	13%	SEVERE	1	8%
EXT. SEVERE	-	-	EXT. SEVERE	-	-

**Table 6: Semi structured Proforma and Question's responses**

<b>QUESTIONS</b>	<b>0 (None)</b>	<b>1 (Occasionally)</b>	<b>2 (Mild)</b>	<b>3 (Moderate)</b>	<b>4 (Severe)</b>
Do you feel stressful after exposure/threatened exposure?	5%	14%	33%	28%	20%
Did you face any avoidance behavior in yourself during the COVID-19 period?(eg. feeling of not attending work)	28%	18%	23%	19%	12%
Did you have anger outbursts during the COVID-19 period?	34%	18%	21%	15%	12%
Do you have fear of infecting yourself?	17%	27%	24%	22%	10%
Do you have the fear that you will infect others?	9%	16%	20%	28%	27%
Do you have the fear of infecting your family members?	13%	12%	13%	26%	36%
Are you experiencing frustration due to loss of usual routine activities?	15%	19%	24%	20%	22%
Do you feel your frustration has increased for being unable to take part in day-to-day activities?	19%	26%	24%	16%	15%
Is inadequate supplies of medical supplies (e.g. masks, sanitizers, PPE kits , etc.) affecting your work life?	25%	18%	13%	22%	22%
Is there feeling of insecurity about different patterns of risk? (eg. Persons coming from Hot Spot Areas/ Asymptomatic carriers/Patients with common cold etc.)	9%	19%	23%	23%	26%
Is there fear of lack of transparency about the pandemic from the health and government officials?	14%	19%	24%	20%	23%

**Conclusion:**

In our study we have applied Depression, Anxiety and Stress Scale - 21 Items (DASS-21) to evaluate symptoms related to stress, depression and anxiety in all the study participants, (n=222) out of which.

32% Consultant Doctors were found to have signs and symptoms related to stress, 33% had symptoms suggesting depression and 37% had symptoms related to anxiety.

31% of Resident Doctors, were found to have signs and symptoms related to stress, 40 % had symptoms suggesting depression and 31% of the participants were having symptoms related to anxiety.

56% Interns were found to have signs and symptoms related to stress, 88% had symptoms suggesting depression and 56% of the participants were having symptoms related to anxiety.

16% of Nursing Staff were found to have signs and symptoms related to stress, 41% had symptoms suggesting depression and 50% of participants were found to have symptoms related to anxiety.

Technicians were also evaluated by DASS-21 scale but no any significant finding was observed.

60% participants were extremely worried about COVID 19, 44% reported feeling stressful after threatened exposure, 62% people had severe fear of infecting their family members.

42% healthcare workers were experiencing frustration due to loss of usual routine activities as well as 49% people had feeling of insecurity about different patterns of risk? (eg. Persons coming from Hot Spot Areas/ Asymptomatic carriers/Patients with common cold etc.)

There were symptoms pointing towards presence of Stress, Depression and Anxiety amongst the COVID-19 Pandemic Healthcare workers. Further it is the need of the hour to address these psychological

impacts at the earliest for a smooth & efficient functioning of the healthcare system.

**Limitations:**

The sample size of the study was less, larger sample size would be required for better interpretation of study.

As the study is cross sectional, the emergence of new psychiatric symptom and/or progression of it were missed. A longitudinal study design is required to understand how the psychiatric morbidity progresses with time.

**References:**

1. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, Ren R, Leung KS, Lau EH, Wong JY, Xing X. Early transmission dynamics in Wuhan, China, of novel coronavirus–infected pneumonia. *New England journal of medicine*. 2020 Jan 29.
2. Government of India, <https://www.covid19india.org/demographics>.
3. Government of India, <https://www.mygov.in/covid-19/>
4. BBC News survey, <https://www.bbc.com/news/world-asia-india-52131338>
5. National Health Commission of China. Updates on the novel coronavirus outbreak up to March 2, 2020. Accessed March 3, 2020 <http://www.nhc.gov.cn/xcs/yqtb/202003/c588ee20113b4136b27f2a07faa7075b.shtml>
6. Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C, Zimmer T, Thiel V, Janke C, Guggemos W, Seilmaier M. Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *New England journal of medicine*. 2020 Mar 5;382(10):970-1.
7. WHO G. Statement on the second meeting of the International Health Regulations (2005) Emergency

- Committee regarding the outbreak of novel coronavirus (2019-nCoV). World Health Organization. 2020 Jan 30.
8. Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, Sadavoy J, Verhaeghe LM, Steinberg R, Mazzulli T. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *Cmaj*. 2003 May 13;168(10):1245-51..
  9. Bai Y, Lin CC, Lin CY, Chen JY, Chue CM, Chou P. Survey of stress reactions among health care workers involved with the SARS outbreak. *Psychiatric services*. 2004 Sep;55(9):1055-7.
  10. Lee AM, Wong JG, McAlonan GM, Cheung V, Cheung C, Sham PC, Chu CM, Wong PC, Tsang KW, Chua SE. Stress and psychological distress among SARS survivors 1 year after the outbreak. *The Canadian Journal of Psychiatry*. 2007 Apr;52(4):233-40.
  11. Chua SE, Cheung V, Cheung C, McAlonan GM, Wong JW, Cheung EP, Chan MT, Wong MM, Tang SW, Choy KM, Wong MK. Psychological effects of the SARS outbreak in Hong Kong on high-risk health care workers. *The Canadian Journal of Psychiatry*. 2004 Jun;49(6):391-3.
  12. The State Council of China. A notification to set up nationwide psychological assistance hotlines against the 2019-nCoV outbreak. Published February 2, 2020. Accessed March 3, 2020. [http://www.gov.cn/xinwen/2020-02/02/content\\_5473937.htm](http://www.gov.cn/xinwen/2020-02/02/content_5473937.htm)
  13. Zhang YL, Liang W, Chen ZM, Zhang HM, Zhang JH, Weng XQ, Yang SC, Zhang L, Shen LJ, Zhang YL. Validity and reliability of Patient Health Questionnaire-9 and Patient Health Questionnaire-2 to screen for depression among college students in China. *Asia-Pacific Psychiatry*. 2013 Dec;5(4):268-75.
  14. He XY, Li CB, Qian J, Cui HS, Wu WY. Reliability and validity of a generalized anxiety disorder scale in general hospital outpatients. *Shanghai Arch Psychiatry*. 2010 Jan;22(4):200-3.
  15. Yu DS. Insomnia Severity Index: psychometric properties with Chinese community-dwelling older people. *Journal of advanced nursing*. 2010 Oct;66(10):2350-9.
  16. Wu KK, Chan SK. Psychometric properties of the Chinese version of the Impact of Event Scale-Revised. *Hong Kong Journal of Psychiatry*. 2004 Dec 1;14(4):2-9.
  17. Tong X, An D, McGonigal A, Park SP, Zhou D. Validation of the Generalized Anxiety Disorder-7 (GAD-7) among Chinese people with epilepsy. *Epilepsy Research*. 2016 Feb 1;120:31-6.
  18. Wong TW, Yau JK, Chan CL, Kwong RS, Ho SM, Lau CC, Lau FL, Lit CH. The psychological impact of severe acute respiratory syndrome outbreak on healthcare workers in emergency departments and how they cope. *European Journal of Emergency Medicine*. 2005 Feb 1;12(1):13-8.
  19. Wang W, Tang J, Wei F. Updated understanding of the outbreak of 2019 novel coronavirus (2019-nCoV) in Wuhan, China. *Journal of medical virology*. 2020 Apr;92(4):441-7.
  20. Chan-Yeung M. Severe acute respiratory syndrome (SARS) and healthcare workers. *International journal of occupational and environmental health*. 2004 Oct 1;10(4):421-7.
  21. Li L, Cheng S, Gu J. SARS infection among health care workers in Beijing, China. *JAMA*. 2003 Nov 26;290(20): 2662-3.
  22. Rose S, Hartnett J, Pillai S. Healthcare worker's emotions, perceived stressors and coping mechanisms during the COVID-19 pandemic. *Plos one*. 2021 Jul 9;16(7):e0254252.
  23. Yan L, Sun P, Wang M, Song T, Wu Y, Luo J, Chen L. The psychological impact of COVID-19 pandemic on health care workers: a systematic review and meta-analysis. *Frontiers in psychology*. 2021;12:2382.
  24. De Kock JH, Latham HA, Leslie SJ, Grindle M, Munoz SA, Ellis L, Polson R, O'Malley CM. A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being. *BMC public health*. 2021 Dec;21(1):1-8.