



Research Article

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# Stress and Depression Symptomatology between COVID and Non COVID Health Professionals in a Tertiary University Hospital: A Comparative Cross-sectional Study

Singh H<sup>1\*</sup>, Bansal D<sup>2</sup>, Kaur H<sup>3</sup>, Bhasin T<sup>4</sup>, Singh M<sup>5</sup> and Singh<sup>6</sup>

1.MBBS, MD (Psychiatry), 2. MBBS, MS (General Surgery), 3. Ph.D. (Microbiology), 4. MBBS, MD(Pathology), 5. MBBS, FIPC, RVT, 6. MBBS, FIPC, RVT

1.Department of Psychiatry, Dr Harjot Singh Neuropsychiatry Hospital Amritsar, India

2.Department of Surgery, SGRDIMSR Amritsar, India

3.Department of Microbiology, T. Bhasin Path Labs, Amritsar, India

4.Department of Pathology, Bhasin path labs, Amritsar, India

5.Abbotsford Regional Hospital and Cancer centre, BC Canada (Research assistant at Dr Harjot Singh neuropsychiatry hospital Amritsar)

6.ST. Paul's Hospital, Vancouver, Canada (Research assistant at Dr Harjot Singh neuropsychiatry hospital Amritsar)

\*Corresponding author: Singh Harjot SGRDIMSR, drharjot@yahoo.com, Department of Psychiatry, +918146313900, India.

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## Abstract

The novel corona virus pandemic has thrown an unprecedented challenge for mental health across country. The possibility of getting infected with covid-19, an illness with no clearly defined protocols and uncertain outcomes has shaken the world. Facing this large-scale infectious public health event, health care professionals (HCPs) are under immense physical and psychological stress. Evidence suggests that evaluation and mental health interventions targeting HCPs are scarce. The present study aims to evaluate and compare the stress levels amongst COVID and non-COVID HCPs.

### Methods

It was a cross-sectional, online, comparative survey conducted in August 2020 in SGRDIMSR Vallah Amritsar, for assessing depression, anxiety and stress among all HCPs. They were categorized into COVID and non-COVID HCPs. Those who were directly involved in the triage, screening, diagnosing, and treatment of COVID-19 patients and suspects were labeled as COVID HCPs and the others as non-COVID HCPs. Stress, anxiety and depression were assessed and compared between the groups by two validated scales HAM-D and DASS21.

### Results

The cross-sectional survey enrolled all the HCPs of the institute but only 463 healthcare professionals responded. Amongst them 195(42.1%) were COVID and 268(57.9%) were non COVID health professionals. The mean age of the covid HCPs was 31.27yrs and for the non-COVID HCPs, it was 35.92yrs. Our study points out those COVID health professionals were mostly women. The majority of the COVID HCPs had either junior or intermediate titles. All HCPs had variable degrees of depression, stress, and anxiety but a significant high prevalence of mental health symptoms was recorded among HCPs involved in treating covid 19 patients directly. There is a statistically significant difference ( $p=0.000$ ) of scores between COVID and non-COVID HCPs.

### Conclusion

As the COVID-19 epidemic continues to sweep, our findings regarding COVID health professionals being particularly vulnerable to mental stress, will be pertinent for the planning and development of an inclusive psychological support strategy in a developing country like India.

**Keywords :** COVID HCPs; non- COVID HCPs, stress, anxiety, depression

## Introduction

World Health Organization has announced severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), the etiological

agent for coronavirus disease 2019 (COVID-19) as a cause of pneumonia and as a worldwide pandemic on 11th of March



2020 [1]. Amidst the development of this infectious disease in 206 countries throughout the world, health care workers remain the main persons involved in the screening and treatment of this condition throughout. Preparedness and intend to fight this infection with aggressive public health measures by Indian government is praiseworthy but to treat sick COVID patients is a serious matter which requires training, wearing correct PPE and presence of dedicated team of doctors and nurses.

The factors which cause adverse psychological outcomes among HCPs are fear of being infected and transmitting infection to family members, sudden reversal of role from HCW to a patient, helplessness, adjustment issues, stigma, and fear of discrimination in the medical staff [2]. Predictable shortage of supplies and an increasing influx of suspected and actual cases of covid19 contribute to the pressure and concern of health care workers [3]. Doctors and staff in direct contact with these covid patients are additionally stressed out. They need to wear complete PPE as required in ICU, they would not be able to drink, eat or go to toilet for about 6 to 8hrs. Donning and doffing of PPE requires special training and great care, so as not to infect oneself.

The lack of personal protective equipment (PPE) and training on how to use new equipment causes, excessive workload/work hours, over-enthusiastic media news, feeling inadequately supported are the additional stress factors which the frontline health care suffer from [4-7]. Studies done in the past have also reported that HCPs, especially those working in emergency units, intensive care units, and infectious disease wards are at higher risk of developing adverse psychiatric impact [8].

Stress not only puts the individual's health and wellbeing at risk, but also is associated with the frequency of medical errors and quality of the healthcare services. Henceforth, we aim to evaluate the magnitude of stress, anxiety, and depression and especially observe if there are any differences in stress levels amongst COVID and non- COVID HCPs. This would help us plan appropriate interventions such as setting up psychological assistance services over the telephone, internet, and application-based sessions at the early stage to prevent a detrimental outcome for the brave HCPs out there, while improving the quality of services provided to the patients.

## Materials and Methods

### Design

This was a cross-sectional, comparative study assessing the levels of anxiety, depression, and stress in COVID health care professionals and non-COVID health care professionals carried out in a tertiary hospital, equipped with fever wards and ICUs for patients with COVID19, in Amritsar, Punjab.

### Participants

COVID health care professionals are defined in our research as those workers who are dedicated to the assessment, quarantine, isolation, treatment of established COVID 19 cases. All other HCPs were regarded as non-COVID.

### Data collection

An online semi structured questionnaire with validated scales was developed, using Google forms with a consent form attached to it after getting approval from clinical research ethical committee of SGRD, a tertiary university hospital in Amritsar, Punjab. The link of the questionnaire was sent through E-mails, WhatsApp, and other social media to all the HCPs of the institute. On receiving and clicking the link, the participants got auto directed to the information about the study and informed consent. Once they agreed to take the survey, they filled up the demographic details. Then, a set of several questions appeared sequentially, which the participants were to answer. While collecting data, confidentiality and anonymity was maintained. It was assured that the interpretation of this study will not be utilized for commercial purposes. Anyone could opt out from the study if they didn't want to submit the data midway of this survey. Those forms with complete response were finally analyzed.

### Questionnaires

The questionnaire was formed into two sections: the first section was for background data which included age, gender, qualification, designation and whether working as COVID or non-COVID.

In the second section, Hamilton Depression Rating Scale and the Depression, Anxiety, and Stress Scale (DASS 21) was applied. The DASS21 is based on three subscales of depression, stress, and anxiety, and each subscale consists of seven questions each. The rating of DASS sub items such as depression, anxiety, and stress can be rated as normal, mild, moderate, and extremely severe. Each item is scored in a self-rated Likert scale from 0 (didn't apply to me all) to 3 (much or mostly applied to me) in the past 1 week. The scale does not cover several domains of depression such as sleep, appetite, and sexual functions, so it cannot be used as a diagnostic tool but can be applied as an aid to diagnostic tool as well as to measure treatment response.

Both English and non-English versions have high internal consistency (Cronbach's alpha scores >0.7). The DASS scale has shorter version and longer version (comprising of 21 and 42 items, respectively). In DASS21, the final score of each item is multiplied by two to obtain the final score. HAM-D scale can be rated as normal (0-7), mild (8-13), moderate (14-18), severe (19-22) and very severe (23 or more).

## Data analysis

Collected data was checked for completeness and consistency. Data cleaning is done and then data entered in the computer on Excel data sheets (Microsoft Excel, 2013). SPSS version 20 (IBM Corp., Armonk, NY, USA) was used for statistical analysis. For comparisons between the groups, t-test was used for continuous variables and Chi-square tests were used for categorical variables. Statistical significance was determined at  $P < 0.05$ . Significant predictors were further analyzed using logistic regression.

## Results

The cross-sectional survey enrolled all the HCPs of the institute but only 463 healthcare professionals responded. Amongst them 195(42.1%) were COVID and 268(57.9%) were non COVID health professionals. The mean age of the covid HCPs was 31.27yrs and for the non-COVID HCPs, it was 35.92yrs (Table 1,2).

**Table 1:** Mean Age Distribution.

Age	Total (mean SD)	COVID	Non COVID
Total HCP	33.96±7.86	31.27±6.15	35.92±8.37
Male	36.96±10.22	33±7.91	40.02±10.79
Female	33.05±6.74	30.72±5.39	34.71±7.11

**Table 2:** Sex Distribution.

	COVID HCPs	Non COVID HCPs
Female	148(75.9)	207(77.2)
Male	47(24.1)	61(22.8)

Our study points out those COVID health professionals were mostly women. Most participants were nurses aged 26 to 40yrs. Furthermore, they are more exposed to high risk of infection because of close and frequent contact with patients and longer working hours than usual (Table 3). The majority of the COVID HCPs were either junior or intermediate titles, indicating that most had fewer years of work experience. This can add to the increased stress amongst them. All HCPs had variable degrees of depression, stress, and anxiety but a significant high prevalence of mental health symptoms was recorded among HCPs involved in treating covid 19 patients directly. There is a statistically significant difference of scores between COVID and non-COVID HCPs (Table 4&5).

**Table 3:** Designation Wise Distribution.

	Total	COVID HCPs	Non COVID HCPs
Professor	43(100)	6(14)	37(86)
Associate. Prof	45(100)	19(42.2)	26(57.8)
Assistant Prof	28(100)	18(64.3)	10(35.7)
Senior Resident	12(100)	7(58.3)	5(41.7)
Junior Resident	60(100)	35(58.3)	25(41.7)
Nursing sister	37(100)	8(21.6)	29(78.4)
Staff Nurse	210(100)	84(40)	126(60)
Junior Nurse	28(100)	18(64.3)	10(35.7)

**Table 4:** Mean Values of Depression, Anxiety, and Stress Scores.

		Mean±SD	P Value
HAMD	COVID HCPs	16.65±2.71	0
	Non COVID HCPs	11.31±2.3	
DASS21D	COVID HCPs	17.06±3.23	0
	Non COVID HCPs	11.47±2.17	
DASS21A	COVID HCPs	12.61±3.24	0
	Non COVID HCPs	8.26±1.28	
DASS21S	COVID HCPs	22.92±4.04	0
	Non COVID HCPs	16.32±1.92	

**Table 5:** Degree of Severity.

Severity Category	Total	COVID HCPs	Non COVID HCPs	Men	Women
Depression					
Normal	64	-	64	8	56
Mild	190	16	174	52	138
Moderate	164	134	30	39	125
Severe	45	45	-	9	36
Extremely severe				108	355
Anxiety					
Normal	77	1	76	16	61
Mild	205	34	171	56	149
Moderate	129	108	21	25	104
Severe	48	48	4	10	38
Extremely severe	4			1	3
Stress					
Normal	4		4	1	3
Mild	252	6	246	59	193
Moderate	148	130	18	33	115
Severe	55	55		15	40
Extremely severe	4	4			4

## Discussion

The recent pandemic COVID-19 has thrown serious challenges to health care professionals. This situation exposed them to higher stress levels, anxiety, and apprehension. In a developing country like India, the public health care system was underprepared for the pandemic that unfolded in March 2020. Covid 19 like other pandemic has imposed an unprecedented threat to HCPs. When the global focus has been mostly been on testing and finding a cure and preventing transmission of COVID 19, HCPs have been confronted by myriad of psychological problems in adjusting to current lifestyle and fear of disease.

Lack of social support and communication, maladaptive coping, and lack of training are important factors for developing negative psychological outcomes. In addition, increased workload, isolation, and discrimination are common which result in physical exhaustion, fear, emotional disturbance and sleep disorders. In

India situation is critical as HCPs are overworked without adequate protection gears, thus increasing their risk of infection. HCPs are discriminated against as potential infective sources despite their professional commitments. Mass numbers of HCPs catching the disease puts the already tight health care systems under higher pressure.

Lai J et al. 2020 showed women and possessing an intermediate professional title was associated with higher anxiety depression and stress [9]. This is like our study where majority are females, having junior or intermediary titles and exhibiting variable degree of anxiety, depression and stress. Our study clearly showed a statistically significant difference of anxiety, stress, and depression levels between COVID and non-COVID HCPs.

This is in accordance with several other studies. Q Cai et al, analyzed that with respect to non-frontline HCPs, frontline workers have significantly higher level of anxiety, depression [10]. Front line health workers and those who work in Wuhan reported more severe anxiety, depressive symptoms, insomnia, and higher scores on the impact of event scale as per the study done by Lai et al, have to be extra vigilant when working in the fever clinics or infectious wards [9].

HCPs are very often susceptible to stress, with the highest levels of burnout reported among HCPs working in the emergency and ICU environment where they are exposed to an overwhelming amount of job-related stress [11]. Our study also indicated that working in COVID professionals is an independent risk factor for worse mental health outcomes. The constant use of personal protection equipment (PPE) adds to the physical fatigue and mental pressures on the HCPs [12]. In a previous study during acute SARS outbreak, 89% of health care workers who were in high-risk situation reported psychological symptoms [13].

## Conclusion

HCPs across the country are facing a fight like never before. If not treated and recognized effectively such stress can transform into persistent illness even leading to suicidal thoughts and feelings. Psychological difficulties consistently linked to reduced competency at work. Specific screening strategy should be applied for these COVID workers as adverse mental health condition will further affect their service delivery and subsequent patient service. Proper measures should be taken to reduce the longer duty hours so that it does not overburden the doctors. As the COVID-19 epidemic continues to sweep, our findings will be pertinent for the planning and development of an inclusive psychological support strategy in a developing country like India.

## Limitations

Our study has a few limitations. By virtue of its design that it is an online questionnaire without face-to-face interviews, it is

difficult to pin a clinical diagnosis on participants who exhibited symptoms. The actual prevalence rates of clinically diagnosed psychological issues studied may vary, although validated screening tools have been used in this study. Also, self-selection bias is a possibility. Further, not all cadres of HCPs other than nurses and doctors have participated in the study. Yet another limitation is that India being a large country in area, the burden of patients diagnosed with COVID-19 is varied, with metros facing the brunt of the pandemic rather than the interiors. Thus, the findings may not be truly reflective of the entire nation during the time of this study. Having said that, the main strength of this study is that the psychological impact has been assessed, while the trigger event is actually still ongoing, and the threat is still looming.

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