

Psychological impact of the COVID-19 pandemic on healthcare workers in India: An observational study

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ABSTRACT

Background: The World Health Organization (WHO) in January 2020 declared outbreak of novel coronavirus disease, COVID-19, an international public health emergency. It was stated that there was high COVID-19 spread risk to various other countries across world. According to WHO in March 2020, COVID-19 was characterized as pandemic. However, this sudden crisis is generating great deal of stress, anxiety, and depression throughout the world. **Aim:** The aim of this study was to assess the psychological impact and various associated factors during the developing COVID-19 situation among both the healthcare and non-healthcare working professionals in India. **Materials and Methods:** This was an observation-based cross-sectional study conducted during the lockdown period and following the lifting of the lockdown for a total of 3 months duration. A structured questionnaire was sent via the (email) electronic mail system to a target population of 350 people. Out of which 300 responded. The questionnaire was comprised of study variables: (a) Gender; (b) age-group range which was categorized into- (i) Between 30 and 50 years and (ii) More than 50 years; (c) Presence of any comorbid medical condition; psychological symptoms of- (d) insomnia; (e) anxiety; and (f) depression. Statistical analysis was performed using the Chi-square test for determining significance. **Results:** Mean \pm SD values for age were found to be 35.54 ± 6.09 ; 33.84 ± 7.87 ; 32.16 ± 5.89 and 55.76 ± 8.98 for physicians, nurses, technical staff, and non-healthcare professionals while the percentages of male study participants was found to be 37.2%, 15%, 57%, and 65% and female study participants was 62.8%, 85%, 43%, and 35% for the physicians, nursing staff, technicians, and non-healthcare professionals. Depression, insomnia, and anxiety between healthcare and non-healthcare professional workers, demonstrated significant *P* values of 0.05, 0.03, and 0.02, respectively. **Conclusion:** The present study has shown a significant psychological impact arising from this crisis.

Keywords: Anxiety, depression, healthcare, non-healthcare, stress

Introduction

The novel coronavirus-19 (COVID-19) started from Wuhan in mainland China. Since then it has affected most of the nations and continents because of its rapid spread. This disease was

declared a public health-related emergency situation by the World Health Organization followed by declaration of a pandemic status in March, 2020. Most commonly affected are the healthcare professionals who are working on the frontline. They suffer from severe psychological side-effects which may be attributed to extremely long working hours, heavy work load, and inadequate supply of personal protective equipments (PPE) supplies, over-reporting by audiovisual and social media, and various news channels and high rate of infection among the handling staff.^[1]

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As per WHO, mental health disorders constitute one of the main cause of disability around the world. Stress is a process wherein external or environmental demands exceed the adaptation capability of any organism which results in biological along with psychological alterations which at large may place those people at risk of disease. Anxiety can be defined as “a physiological and psychological state which is characterized by various somatic, cognitive, behavioral, as well as emotional components.” All of these components when combined together may lead to the creation of an unpleasant feeling which has been associated with fear, worry, and feeling of uneasiness. It is a generalized mental condition occurring without any trigger or stimulus. Various symptoms of depression are: anxious, sad and empty feelings, hopelessness, guilt and may be sense of helplessness, restless attitude, irritation, and lack of interest in various hobbies and activities and were once considered relaxable and which are used to provide pleasure.^[2]

The continuing coronavirus (COVID-19) pandemic has massive impact on psychological health of healthcare as well non-healthcare professionals. There is an increasingly pressing requirement to address these impacts on an individual's mental state by protection as well as promotion of overall well-being during as well as after the outbreak is over.^[3]

The onset of this large scale infection across the globe has placed people under an increased state of psychological stress. Previous epidemics such as- the H1N1 influenza in 2009 and the SARS (Severe Acute Respiratory Syndrome in 2003) has clearly demonstrated that there is considerable panic and fear following such mass scale disease spread. The affected individuals, that is, those suffering from depression and anxiety have reported relapse in mental state which may manifest as panic attack or resurfacing of symptoms of these psychosomatic disorders. Specially, the individuals who have medical comorbid conditions such as cardiovascular abnormalities have reported with worsening of clinical symptoms in form of angina and even cardiac arrest. Similarly, effects have been observed in children as well because of closure of schools and restrictions in outdoor activities mainly because of closing of playgrounds. The main manifestations of these psychological problems are in form of a variety of psychosomatic presentations which include onset of panic attack along with depression.^[4] The negative symptoms of psychological nature are- confusion, anger, and post-traumatic stress. There are numerous stressors such as fear of contacting the infectious virus, inadequate information, boredom, and frustration.^[5]

Sahuakat *et al.* (2020) in their systematic review ear-marked common symptoms such as pyrexia (85%), cough (70%) along with weakness (70%). Higher levels of anxiety, depression, stress, fear, anger, and insomnia were seen among healthcare workers.^[6]

Thus, bearing in mind the above facts, the aim of the study was to determine psychological impact and associated factors during the ongoing COVID-19 pandemic among the healthcare and non-healthcare professionals belonging to India.

Materials and Methods

This observational cross-section study was conducted during the lockdown and post-lockdown period for a complete duration of 3 months. For this purpose, a structured questionnaire was distributed via electronic mail system to 350 people of which 300 responded and formed part of this analysis. The questionnaire comprised of following study variables- (a) Gender; (b) Age-range, categorized into- (i) Between 30 and 50 years and (ii) Above 50 years; (c) Presence of any comorbid physical condition; (d) Depression; (e) Anxiety; and (f) Insomnia.

The study was conducted in compliance with the protocol; ethical approval was obtained from the institutional ethical committee dated 16/04/2020. The subjects participating in the present study provided their informed written consent before taking the survey by signing the consent form. Participation was on a voluntary basis, and there were no incentives. Data protection and anonymity were guaranteed.

Statistical analysis

The collected data was analyzed using the software tool, STATA (Software for Statistical and Data Science) 14.0. Chi-square test was used for correlating the association of a particular variable with anxiety, depression, and insomnia. *P* value which was lesser than 0.05 was set as significant by statistics.

Results

On analyzing the demographic characteristics, the mean \pm SD values were found to be 35.54 ± 6.09 ; 33.84 ± 7.87 ; 32.16 ± 5.89 , and 55.76 ± 8.98 for physicians, nurses, technical staff, and non-healthcare professionals. On comparing the gender distribution, the percentages of male study participants was found to be- 37.2%, 15%, 57%, and 65% while percentages of female study participants was- 62.8%, 85%, 43%, and 35% for the physicians, nursing staff, technicians, and non-healthcare professionals. 25%, 65%, 72%, and 89% of medical practitioners, nursing staff, technicians and non-healthcare professionals were educated up to undergraduate level while 75%, 35%, 28%, and 11% of these were with postgraduate educational qualification. 60.2%, 42%, 39.1%, and 58% worked in the private sector while 39.8%, 58%, 60.9%, and 42% of respondents who were physicians, nursing staff, technicians, and non-healthcare professionals were employed in the public sector [Table 1].

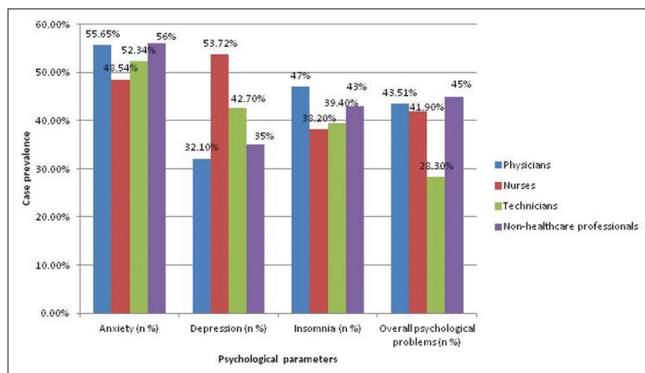
On analyzing the psychological parameters in the study, anxiety was seen in 55.65%, 48.54%, 52.34%, and 56% of physicians, nursing staff, technicians, and non-healthcare study population while depression was evidently reported from 32.1%, 53.72%, 42.7%, and 35% of the above-mentioned categories, respectively. Insomnia was found to afflict 47%, 38.2%, 39.4%, and 43% and overall psychological issues were found to affect 43.51%, 41.9%, 28.3%, and 45% of the physicians, nurses, technical persons, and non-healthcare associated or general population [Table 2 and Graph 1].

Table 1: Demographic characteristics of study participants

Characteristics studied	Physicians (n=100)	Nurses (n=80)	Technical staff (n=20)	Non-healthcare associated study sample (n=100)
Age (Mean±SD)	35.54±6.09	33.84±7.87	32.16±5.89	55.76±8.98
Gender (n %)				
Males	37.2%	15%	57%	65%
Females	62.8%	85%	43%	35%
Educational level				
Undergraduate	25%	65%	72%	89%
Postgraduate	75%	35%	28%	11%
Work place				
Private sector	60.2%	42%	39.1%	58%
Public sector	39.8%	58%	60.9%	42%

Table 2: Table demonstrating psychological parameters studied

Groups studied	Anxiety (n %)	Depression (n %)	Insomnia (n %)	Overall psychological problems (n %)
Physicians	55.65%	32.1%	47%	43.51%
Nurses	48.54%	53.72%	38.2%	41.9%
Technicians	52.34%	42.7%	39.4%	28.3%
Non-healthcare professionals	56%	35%	43%	45%

**Graph 1: Graph demonstrating all studied parameters**

On applying the Chi-square test for statistical analysis for comparing the healthcare with non-healthcare study participants, *P* value of 0.05 was found in gender comparison which was statistically significant. On comparing the age-groups, an extremely significant *P* value of 0.002 was obtained. Similarly, statistical significance was obtained on comparing comorbid conditions in healthcare and non-healthcare workers (*P* = 0.002). On analyzing the psychological parameters of depression, insomnia, and anxiety between healthcare and non-healthcare professional workers, significance was obtained (*P* = 0.05, 0.03, and 0.02, respectively) [Table 3].

Discussion

One of the main reasons for development of anxious behavior during this isolation period is unfamiliarity with this type of restriction of a personal and social freedom. This coupled with massive financial losses and conflicted guidelines from various health agencies and governmental resources.^[7]

In current study, the presence of anxiety was observed in 55.65%, 48.54%, 52.34%, and 56%, whereas depression was reported from

32.1%, 53.72%, 42.7%, and 35% of physicians, nursing staff, technicians, and non-healthcare study population, respectively. The studied sample reported insomnia in 47%, 38.2%, 39.4%, and 43% of doctors, nurses, technical staff, and non-healthcare people, whereas overall psychological issues were found to affect 43.51%, 41.9%, 28.3%, and 45% of the physicians, nurses, technical persons, and non-healthcare general population. Our study is supported by a number of investigators as described below-

Que *et al.* (2020) conducted a cross-sectional online survey among healthcare professionals during COVID-19 pandemic (which included- medical practitioners, residents, nursing staff, technical staff, and public health workers). The parameters used for assessing psychological stressors which were tested using following scales- (1) the Generalized Anxiety Disorder scale; (2) the Questionnaire for public health and index for assessment of severity of insomnia. According to this study, the symptom prevalence of anxiety, depression, insomnia, and other psychological problems was found to be 46.04%, 44.37%, 28.75%, and 56.87%, respectively among the healthcare professionals, whereas the prevalence of psychological problems was observed to be- 60.35%, 50.82%, 62.02%, 57.54%, and 62.4%, respectively. The frontline workers were found to demonstrate high risk of developing anxiety, insomnia along with various other psychological problems. It was found that when compared to the general public, workers in the healthcare field who are at constant risk of COVID-19 infection are particularly stressed because of their relatively direct exposure, inadequate protective facilities, excessive work, perceived opinions in form of stigmatization, necessary quarantine, and sometimes inadequate support of the family.^[8] During the SARS epidemic, approximately 25–30% healthcare professionals were found to suffer from high levels of emotional distress.^[2]

Also, Lai *et al.* (2020) and Liu *et al.* (2020) in their respective studies reported prevalence of 44.7%, 50.7%, and 36.1% and

Table 3: Comparisons between healthcare and non-healthcare workers

Variables	Health Care professionals (n=200)	Non-health care professionals (n=100)	P
Gender			
Male	104 (52%)	83 (83%)	0.05
Female	96 (48%)	17 (17%)	
Age group studied:			
30-50 years	57 (28.5%)	70 (70%)	0.002
Above 50 years	93 (46.5%)	30 (30%)	
Co-morbid condition	49 (24.5%)	30 (30%)	0.002
Depression	149 (74.5%)	56 (56%)	0.05
Insomnia	130 (65%)	40 (40%)	0.03
Anxiety	163 (81.5%)	59 (59%)	0.02

44.6%, 50.4%, and 34% in respective manner among healthcare subjects.^[9,10] Similarly, Barzelay *et al.* (2020) in their study pointed out that the healthcare people worried more than the non-healthcare workers regarding contracting the COVID-19 infection. They reported greater levels of anxiety (22.7%) and depression (16%) among healthcare related professionals. In this study, there was a gender predilection toward female subjects mostly because of convenient sampling. The most common reason for development of anxiety-related state was related to subjective worries on stressors regarding getting their family members infected from them.^[11]

Likewise, Luo *et al.* (2020) in their systematic review and meta-analysis reported similar prevalence of anxiety and depression as 56% (39–73%) and 55% (48–62%), respectively, in both healthcare workers and general population.^[13] Huang and Zhao (2020) had reported the presence of psychological symptoms of anxiety, insomnia, and depression.^[13] Lai *et al.* (2020) also reported incidence of stress in addition to anxiety, depression, and insomnia.^[10]

Tan *et al.* (2020) performed a study for examining psychological stress, anxiety, and depression during COVID-19 outbreak on both medical and non-medical professionals using a questionnaire. This questionnaire comprised of the depression, anxiety, and stress scale and impact of event scale revised (IESR) tool. The study presented with primary result outcome based on stress, anxiety, depression along with post-traumatic stress disorder. In this study, 14.5% study participants showed anxiety, 8/9% demonstrated depression, 6.6% showed signs of stress, and 7.7% suffered from post-traumatic stress disorder. The COVID-19 pandemic is continuing abated. In this scenario, there is requirement of both political and clinical strategies which can help healthcare workers, specially medical professionals while educational support systems should be made available to non-medical professionals.^[14]

Roy *et al.* (2020) in their assessment of knowledge, attitude, and perception of mental health on 662 respondents demonstrated moderate knowledge level regarding preventive strategies during

COVID-19 pandemic. There was evident willingness among study subjects toward following government issued guidelines on social or physical distancing and quarantine. This study revealed that 80% of study participants required psychological counseling to tackle stress and anxiety developing out of this situation.^[15] Similar findings have been reported by El-Hage *et al.* (2020).^[16]

Lee *et al.* (2020) performed a web-based survey on 795 adults. Subject selection was performed after obtaining their consent and ability to follow instructions. For this purpose, a coronavirus anxiety scale which includes cognitive behavior such as worry, planning; processing biases, repetitive thinking, dreaming, behavioral changes such as compulsive disorder, avoidance, and dysfunctional activities; emotional changes such as anxiety, fear, and anger and physiological changes like disturbances in sleep patterns, tonic immobilization, and somatic distress was observed. Each of these parameters was then rated on a five point scale to validate frequencies of all the above-mentioned symptoms. Since this survey was based upon anxiety levels related to COVID-19 pandemic, all study participants had to spend at least 1 h daily for 2 weeks either thinking or watched television media on infection related to COVID-19. 36.5% of student participants reported elevations in anxiety levels after 2 weeks; while 27.0% were feeling anxious after over a week or 7 days of isolation period while isolation for less than 1 day demonstrated these symptoms in 22.8% of subjects.^[17]

Similarly, Cai *et al.* (2020) showed presence of emotional stress during corona outbreak among doctors. They reported that the medical fraternity was highly worried about passing the infection to their family members while the staff aged between 41 and 50 years suffered from greater stress and still older staff attributed an increase in stress because of exhaustion as a result of extended working hours. The commonest determinant of stress in all subjects was the fact that there is no treatment of COVID-19 infection.^[18]

Leng *et al.* (2020) in their cross-sectional analysis done on 59 doctors and nursing staff posted on COVID-19 duty in Guangdong province in China using self-rating anxiety and depression scales reported that most of the staff suffered from clinical symptoms of depression. This study presented with findings that medical doctors aged less than 30 years suffered from higher depression scores when compared to doctors who are aged more than 30 years.^[19]

Wang *et al.* (2020) in their study analyzed psychological impact of COVID-19 on general population. They reported that 53.8%, 16.5%, 28.8%, and 8.1% study participants reported with either moderate or severe; moderate to severe depression related; moderate to severe anxiety related, and stress related problems. 75.2% of study participants had worries related to their family members. To summarize, over 50% of population reported with moderate to severe psychological symptoms while one third of the study population suffered from moderate to severe anxiety levels.^[20]

Hawryluck (2009) reported high degree of post-traumatic stress disorder (PTSD) prevalence (28.9%) and a 31.2% prevalence of depression. Also, a significant correlation was observed between prevalent-based analysis symptoms of PTSD and duration of quarantine or self-isolation.^[21] Limcaoco *et al.* (2020) in their study observed that there was no statistically significant difference in psychological distress among general population and healthcare professionals or those under quarantine or without quarantine.^[22]

Zhang *et al.* (2020) conducted a survey using online platform based on which demographics, marital status, locality (whether urban or rural), and level of education were segregated. Insomnia was quantified using the “Insomnia Severity Index” wherein a score of more than eight indicates presence of insomnia. Anxiety and depression were assessed using the patient Health Questionnaire-4 while symptoms related to obsessive compulsive disorder and phobia were assessed by symptom Check list-90-revised. All the score rates were found to be significantly higher in medical based subjects when compared to non-medical health care workers. Insomnia was seen in 38.4% medical staff when compared to 30.5% non-medical staff ($P < 0.01$). Similarly, higher percentages of medical fraternity (13%) was observed to suffer from anxiety when compared to non-medical staff (8.5%) ($P < 0.01$). Also, percentages of depression afflicted individuals was higher in medical when compared to non-medical staff (12.2 in comparison with 9.5%, $P = 0.04$) while obsessive compulsive disorders were found to be higher among medical (15.3%) when compared to non-medical health care professionals (2.2%) with a P value of less than 0.01.^[23]

The above findings are in similarity to symptoms reported previously in various epidemic as well as pandemics that have spread across populations, for example, the MERS, Ebola virus, H1N1 epidemic.

Al-Najjar (2016) in their study during the Middle-Eastern Respiratory syndrome novel coronavirus (MERS-CoV) in Jeddah (Saudi Arabia) reported moderate anxiety levels in 57.7% of subjects, 13.8% suffered from mild depression, 12.2% showed moderate levels of depression, and 4.3% reported with severe form of depression.^[24]

However, there have been inconsistencies in the type of psychological impact that the COVID-19 or similar infectious situations have presented with. Sheraton *et al.* (2020) reported variations in the meta-analysis of five cross-sectional studies and did not find any statistical significant difference between the psychosomatic manifestations of PTSD, depression, anxiety, and stress related to occupation.^[25]

Due to these consistent findings, Ornell *et al.* (2020) in their study suggested that psychological and psychiatric care should be provided to healthcare professionals after identifying the emotional aspects including exhaustion and burning out.^[26]

The WHO Department of Mental Health and Substance Use has prepared messages and documents that can help in supporting mental along with psychosocial wellness in various target groups during COVID-19 outbreak. This pandemic has affected both physical as well as mental health. Thus, it has been presumed that there is a need to increase psychiatric counseling to those suffering from the psychosocial impact of the pandemic.^[27]

Thus, there is a requirement for addressing various psychosocial disorders by means of various suggested means such as- telepsychiatric consultations, online patient counseling, availability of mental health education by means of online available reading material.^[28]

Conclusion

The control of COVID-19 disease is also largely impacted by intervention of psychological problem faced by medical and non-medical individuals. The coronavirus-19 pandemic (COVID-19) has affected India in a large manner. The associated uncertainty has been increasingly testing the psychological resilience of general public as well as of the healthcare related professionals. While the main focus is concentrated on laboratory testing, finding the disease cure and prevention of transmission, all individuals are undergoing a plethora of psychological problems while adjusting to current lifestyles and disease fear. In current study, an attempt has been made to find out the impact of this pandemic situation on psychological well-being of healthcare and non-healthcare workers. Our study has reported identical findings to those reported by numerous investigators working across the globe.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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