International Journal of Community Medicine and Public Health
*Ramteke G et al. Int J Community Med Public Health. 2022 Jan;9(1):229-234*
http://www.ijcmph.com
pISSN2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20215002

**Original Research Article**

# Psychological impact of COVID-19 pandemic on medical and paramedical staff at a tertiary care center: an observational, cross sectional, survey-based study

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**Received:** 28 October 2021
**Accepted:** 03 December 2021

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## ABSTRACT

**Background:** The health-care workers experienced various adverse psychological reactions due to COVID-19 pandemic. We aim to assess the anxiety and stress faced by the medical and paramedical staff while dealing with the pandemic.
**Methods:** Analysis of 190 respondents of the survey was performed. Medical and paramedical staff included those of Bhaktivedanta hospital and research institute, Mumbai only. Data based on two questionnaires GAD-7 and "stress and anxiety assessment scale (SAAS)" was collected in the form of a survey from 15 August 2020 till 31 May 2021 to assess the individual's mental health.
**Results:** Analysis of responses from GAD-7, a 7-item assessment scale and SAAS, a 14-item assessment scale were obtained. From the GAD-7 scale, 3.53% and from the SAAS scale, 9.09%, of the total health-care workers were found to have high anxiety and stress due to the Covid-19 pandemic.
**Conclusions:** Although mediocre levels of stress and anxiety were found to be prevalent among the medical health-care workers, proper and timely mental health support and care must be provided to them even in normal conditions. This ensures safe and efficient execution of one's duties even during crisis.

**Keywords:** Corona virus, Paramedical staff, Mental health, Stress, Covid-19, Pandemic

## INTRODUCTION

COVID-19 is an infectious disease caused by Severe Acute Respiratory Corona virus-2 (SARS-CoV-2). This disease was initially identified in December 2019, in Wuhan, China; since then, it has spread globally and has taken millions of lives worldwide.[1]The pathogen involved in disease COVID-19 is the corona virus, which belongs to the family Coronaviridae has a positive-sense RNA that possess an outer viral coat. The COVID-19 virus is transmitted between people through respiratory droplets.[2] Its symptoms include fever, dry cough, tiredness (which are the most common ones); others include diarrhea, sore throat, headache, loss of smell or taste and much more. As the whole world is battling the pandemic even the health care services affected due to unavailability of health care workers.[3] Our front-line workers have played a major role in handling the situation and providing timely treatment with quick response. Our front-line workers mainly include the medical and paramedical staff. Medical staff comprises of mainly doctors and nurses; while paramedical personnel, additionally referred to as Paramedics are health-care staff who supplies clinical services to patients beneath the direction of a Clinician. This class includes emergency medical technicians, nurse practitioners and physician' assistants.

The medical team of workers and affiliated medical staff members are beneath tremendous physical and mental pressure. For many nations, this may add on to a current baseline of mental pathology and low morale in the health-care sector.

Supporting the mental health of these individuals is an essential part of the community health response. Challenges for the work force encompass not only the expanded workload caused by such outbreaks however additionally fear of contagion for themselves and their families, running with new and often changing protocols and personal protective equipment (PPE), worrying for sufferers who are very sick and fast deteriorating and worrying for colleagues who have fallen ill. Concerns have already risen round bad mental results during the pandemic which includes fatigue, burnout, depression, post traumatic stress disorder, anxiety, and morale injury. Not all of those will occur, nor will they always remaining lengthy past the cease of the pandemic.[4] But in such a worldwide emergency situation it becomes imperative to understand and assess the impact of the pandemic on health-care workers as these workers are further responsible for patient care and safety. The objective of the study conducted was to evaluate the psychological impact of the current pandemic COVID-19 on medical and paramedical staff of Bhaktivedanta hospital and research institute, Mira Road, Mumbai, India.

## METHODS

### *Study design*

An observational, single center cohort study of medical and paramedical staff of Bhaktivedanta hospital and research institute was carried out with a sample size of 190 participants. Consent was sought from the study participants followed by asking them to fill two questionnaires, which were designed to assess the individual's mental health. GAD-7 (general anxiety disorder-7) and stress and anxiety assessment scale were used. Data was collected during the COVID-19 era from 15 August 2020 till 31 May 2021.

### *Study eligibility criterion*

Inclusion criteria were: age ≥18; ability to read and understand text in English; and consent to share personal data. Exclusion criterion was: participants who have a pre covid-19 pandemic periodhistory of stress, anxiety, depression, post traumatic stress disorder or any other mental disorder, incomplete data in any section of the questionnaire. On the basis of the aforementioned criterion, 190 participants were enrolled in the study out of 200, from which 10 participants were screen failed as they did not fulfill the eligibility criterion.

### *Assessment tools*

The first assessment tool used was GAD-7; also known as general anxiety disorder-7. *It is a* 7-item, self-rated scale that was developed by Spitzer and colleagues in the year 2006 as a screening tool and severity indicator for general anxiety disorder. Every item here is scored on a 4-point Likert scale (0-3) with total scores starting from zero to twenty one with higher scores reflective anxiety in increasing order. The second assessment tool was developed by the investigators of the study known as thestress and anxietyassessment scale (SAAS).It is a 14-item, self-rated scale in which each item is scored on a 4-point Likert scale (0-3) with total scores starting from zero to forty two with higher scores reflective of greater stress and anxiety. Stress and anxiety assessment scale was validated for its reliability in an initial cohort of 10 participants who were not included in the main study (kappa value of 0.85 was observed).

### *Individual characteristics*

From the 190 study participants, 34.73% (66 out of 190) were males and 65.26% (124 out of 190) were females. Profession-wise, 21.05% (40 out of 190) were doctors, 43.15% (82 out of 190) were nurses, 4.21% (8 out of 190) were pharmacists and 31.57% (60 out of 190) were found to be other health-care workers such as lab technicians, hospital cleaners and helpers, administration staff members etc. Mean age of the participants was 36.8±11.4.

### *Ethical consideration*

The study completely adheres to the principles laid by national and international regulations, including the Declaration of Helsinki and the Code of Ethics.

### *Statistical analysis*

With a power of 80% and type 1 error rate of 5%, a clinically significant difference of 10% and 10% lost to follow-up, 190 participants were estimated per each group. Response rate, survey completion rate and total percentages were calculated.

## RESULTS

### *Survey response*

A total of 190 medical and paramedical workers participated in the survey-based study (Figure 1). The response rate and survey-participation rate was found to be 100%. The psychological impact of COVID-19 pandemic on medical and paramedical staff was assessed using two questionnaires, one being GAD-7 and the other, stress and anxietyassessment scale (SAAS), an investigator made 14-item questionnaire. Results of both the assessment tools are tabulated.

**Table 1: Results of stress and anxiety assessment scale.**

| Questions | Score | | | | |
|---|---|---|---|---|---|
| **Over the last 2 weeks, how often have you been bothered by any of the following problems?** | **0** | **1** | **2** | **3** | **Total** |
| **Fear of going to hospital for duty** | 147 (77.36) | 27 (14.21 ) | 8 (4.21) | 8 (4.21 ) | 190 (100 ) |
| **Worry of being infected during communicating with the patients & colleagues while on duty** | 104 (54.73 ) | 57 (30 ) | 9 (4.73 ) | 20 (10.52 ) | 190 (100 ) |
| **Fear & hesitation to work** | 154 (81.05 ) | 26 (13.68 ) | 5 (2.63 ) | 5 (2.63 ) | 190 (100 ) |
| **Worry about being infected while working in hospital** | 91 (47.89 ) | 58 (30.52 ) | 15 (7.89 ) | 26 (13.68 ) | 190 (100 ) |
| **Worry about infecting family members** | 44 (23.15 ) | 71 (37.36 ) | 17 (8.94 ) | 58 (30.52 ) | 190 (100 ) |
| **Wants to change profession due to fear of being infected** | 177 (93.15 ) | 9 (4.73 ) | 1 (0.52 ) | 3 (1.57 ) | 190 (100 ) |
| **Feeling of being avoided by others** | 123 (64.73 ) | 42 (22.10 ) | 12 (6.31 ) | 13 (6.84 ) | 190 (100 ) |
| **Mental Exhaustion** | 110 (57.89 ) | 47 (24.73 ) | 13 (6.84 ) | 20 (10.52 ) | 190 (100 ) |
| **I eat less or more compare to regular diet** | 129(67.89 ) | 39 (20.52 ) | 13 (6.84 ) | 9 (4.73 ) | 190 (100 ) |
| **Sleeplessness** | 130 (68.42 ) | 43 (22.63 ) | 9 (4.73 ) | 8 (4.21 ) | 190 (100 ) |
| **Feeling of being isolated** | 144 (75.78 ) | 38 (20 ) | 4 (2.10 ) | 4 (2.10 ) | 190 (100 ) |
| **I feel as if I have slowed down** | 147 (77.36 ) | 31 (16.31 ) | 8 (4.21 ) | 4 (2.10 ) | 190 (100 ) |
| **Do you find difficult to enjoy your daily activities** | 107 (56.31 ) | 45 (23.68 ) | 19 (10 ) | 19(10 ) | 190 (100 ) |
| **Are you following any kind of meditation techniques on daily basis** | 97 (51.05 ) | 37 (19.47 ) | 11 (5.78 ) | 45 (23.68 ) | 190 (100 ) |
| **Total** | 1704 (64.06 ) | 570 (21.42 ) | 144 (5.41 ) | 242 (9.09 ) | 2660 (100 ) |

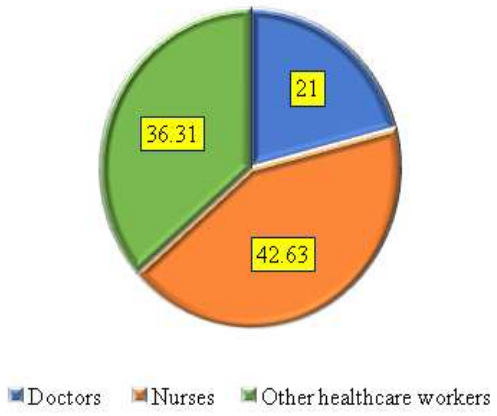


**Figure 1: Categories of healthcare workers in percentage.**

***Results of stress and anxiety assessment scale (investigator-made scale)***

Results of the stress and anxiety assessment scale (SAAS), a 14-item questionnaire made by the investigators of the study are depicted in (Table 1, Figure 2-3).

***Results of generalized anxiety disorder-7 assessment scale***

Results of the GAD-7 assessment scale, a 7-item questionnaire are depicted in (Figure 2-3).

## DISCUSSION

Our study analysed the various parameters of health-care workers' psychological response to the pandemic. With the newly designed validated questionnaire SAAS we could elicit integral score of psychological stress, which is translation of severity of emotional, cognitive, and somatised reactions. Heavier workload in life-threatening situations due to increasing number of COVID-19 patients disturbed psychological health of hospitals' workforces.[5] We carried out the present study in 190 healthcare workers in which 40 were doctors, 81 were nurses and 69 were other healthcare workers. With respect to socio-demographic variables, 65.27% of participants in our study were females and 34.73% males. Our study results showed that comparatively more females got affected which could be due to additional responsibilities of children and family which requires multitasking and which brings in additional stress, further

taking a toll on their mental well-being. Other studies have also reported mental well-being higher in the female population.[6]

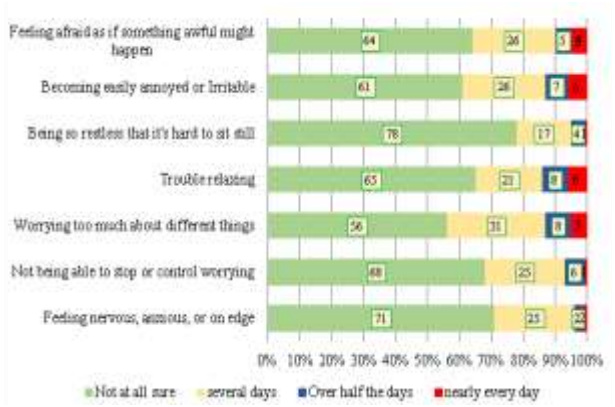


**Figure 2: Generalized anxiety and depression scale in percentage.**

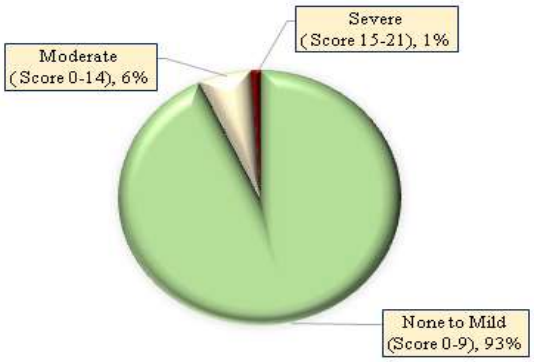


**Figure 3: Severity grading for GAD-7.**

Multiple studies confirm that the impact of COVID-19 on the psychology of health care employees is considerable, with vast ranges of tension, depression, insomnia, and distress. Various research studies found out an incidence of depressive signs among 8.9-50.4% and tension rates among 14.5-44.6%.[7]Whereas in our study it was found out to be as high as 3.53% as assessed by GAD-7 scale and 9.09% as assessed by SAAS. Further around 66.09% (by GAD-7 scale assessment) and 64.06% (by SAAS) individuals were assessed to have no or very minimal level of stress, anxiety or depression. The study also aimed to identify the presence of any groups that are particularly vulnerable to poor mental health outcomes during COVID-19.Even previous studies have reported that there is higher prevalence in healthcare workers compared to general population.[8-10]

Participants in our study had fear of contracting COVID-19 infection while executing duties (53%) and transmitting infection home to family members (77%). The results were quite similar to other studies published[11, 12], yet another study published that 73% were concerned about their families or themselves getting affected.[13] The results of our study reflect similar trends observed in surveys conducted in China which also reported relatively fewer health care workers with severe anxiety levels.[14,15] Also pertaining to negative professional symptoms as stopping with the present job, our results didn't matched which is probably due to organizational support provided by the Institute which helped health care workers to better cope up with stress.[16] Overburdened with increased duty hours, more number of patients to attend and violence at the hands of the patient's families caused chronic stress which itself a risk factor for mental and physical health issues. The duration and intensity of the pandemic also contributed to depression.[17-19] Post-traumatic stress, suicide burnout in the workplace.[20,21] Increased stress increased errors or malpractice.[22]Another contributing factor noticed was constant change in guidelines about wearing personal protective equipment recommend-ations. At our institute as part of the psychological intervention, counselling was done in small groups with personal attention, education about hygienic protocol before leaving home while executing duties and returning home was very helpful. Hospital administration formed "rapid action force team", to ensure complete family members are taken care in an event healthcare workers get contracted with the disease. This increased confidence of the staff and hence at Bhaktivedanta hospital and research institute of Thane, Maharashtra never had a lack of staff. This explains reason for only few HCW suffering from severe form of anxieties. In addition, precautionary measures with facial masks, hand washing was adequately stressed.[23]

These interventions in our Institute were in similar lines with Institutional support provided at other Institutes which included 'emotional first aid'.[24] If this didn't worked then person to person tailor made support other useful methods mentioned were resilience in stressful events concept.[26]Support system need to ensure that it is beyond the cultural and structural barriers so that there is optimal benefits of such programs.[25,27] Our study review provides vital information of various psychological issues faced by healthcare workers (HCW) during this pandemic period , which can certainly utilized as a tool for policymakers to develop necessary guidelines to address this grave concern of psychological impact of COVID-19.

### *Limitations*

The results of the study were based on self-reports. Data on the contact of medical workers with patients with COVID-19 and self-infection were not considered.

## CONCLUSION

Taking into consideration our study limitations, the results still indicates a mediocre occurrence of mental strain and issues faced by the HCW throughout the 1st and 2nd waves of the COVID-19 pandemic. There are, however, possibilities at each stage to make a distinction to the mental health aid of workforce and to perceive and inspire possibilities to find boom in this situation. It is our

responsibility to offer proper guidance to all medical workers. Mental fitness periods and mental counselling are vital in all situations, regardless of the presence of a pandemic and during a pandemic situation; it becomes imperative to take utmost care of the health of the medical and paramedical staff. Thus, post these results; Bhaktivedanta hospital has initiated seminars on mental health care, spiritual care and counselling for all HCW. The investigators of the study too suggest and advise that every medical centre must have provisions that aid in proper physical and especially mental well-being of all HCW.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Ramteke G, Britto N, Gawali V. Psychological impact of COVID-19 pandemic on medical and paramedical staff at a tertiary care center: an observational cross sectional, survey-based study. Int J Community Med Public Health 2022;9:229-34.