



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2022; 8(9): 38-43
www.allresearchjournal.com
Received: 05-07-2022
Accepted: 09-08-2022

Ishita
M.Sc Nursing, University
college of Nursing, Faridkot,
Punjab, India

Dr. Sushil Kumar Maheshwari
Associate Professor, Baba
Farid University of Health
sciences, Faridkot, Punjab,
India

Dr. Hardeep Kaur
Professor, University College of
Nursing, Faridkot, Punjab,
India

Ramandeep Kaur
Nursing Tutor, University
college of Nursing, Faridkot,
Punjab, India

Corresponding Author:
Ishita
M.Sc Nursing, University
college of Nursing, Faridkot,
Punjab, India

A study to assess the stress, anxiety and depression among health care professionals working in COVID-19 isolation wards of selected COVID hospitals of Punjab

Ishita, Dr. Sushil Kumar Maheshwari, Dr. Hardeep Kaur and Ramandeep Kaur

Abstract

Introduction: COVID-19 pandemic have had a profound impact on the psychological and mental well-being of individuals across society including health care professionals. Many of the measures taken to curb COVID 19 are themselves key risk factors for mental health issues including suicide, self-harm, substance misuse and domestic and child abuse.

Aim: The study aims to assess the stress, anxiety and depression among health care professionals working in COVID-19 isolation wards.

Methods: The cross sectional survey design was used to collect the data from 200 purposively selected health care professional working in tertiary level hospital of Punjab by using socio-demographic profile, COVID related questioner and DASS-21 item scale.

Results: Study found that 46% of the healthcare professionals had mild to very severe anxiety symptoms, 42% of the healthcare professionals had mild to very severe depressive symptoms and 26.5% of healthcare professionals had mild to very severe stress symptoms.

Conclusion: This study concluded the high level of depressive symptoms, anxiety symptoms and stress symptoms among healthcare professionals. The government and health care agencies should take responsibility for protecting the psychological wellbeing of health care communities all over the world and ensuring a healthy work environment.

Keywords: COVID-19, stress, anxiety, depression, health care professionals

Introduction

In January 30, 2020, the WHO declared the COVID-19 outbreak a global health emergency. On March 11, 2020 the WHO declared COVID-19 a global pandemic, its first such as designation since declaring H1N1 influenza a pandemic in 2009.

The Coronavirus Cases in INDIA has risen to 506,972 with death toll at 15,662. According to data from World meter. As many as 9,796,064 people are infected worldwide by the Novel Coronavirus (COVID-19) as on June 26, 2021. USA has highly affected country in term of registered cases and death ^[1].

The COVID-19 virus spreads primarily through droplet of saliva or discharge from the nose when an infected person cough or sneezes ^[2].

The incubation period of COVID-19, which is the 2 time period from exposure to the virus to symptoms onset, 5-6 days, but can be up to 14 days. The patients of COVID-19 commonly present with fever, body aches, breathlessness, malaise and dry cough, although patients may present with asymptomatic, mild to moderate or severe disease. Some patient may also present with gastrointestinal symptoms such as abdominal pain, vomiting and loose stools ^[3]. COVID-19 pandemic and lockdown has brought about a sense of fear and anxiety around the globe. This in exorable circumstances which are beyond normal experience, lead to stress, anxiety and a feeling of helplessness in all. Unfortunately, the nationwide closures of school and colleges have negatively impacted over 91% of the world student population ^[4].

Health care professionals are more anxious and depressed than their peers, and the prevalence of various mental health problems is on the rise, while the factors such as heavy workload and concerns about the examinations may even be essential for all round development, they result in burnout, lack of sleep, and have an adverse effect on academic performance ^[5].

Quarantine also effect on life by loss of freedom, separation from the loved ones and the uncertainty over the disease status, may pose immense psychological turbulence. Social isolation and loneliness are recognized risk factors for suicidal attempts [6].

Many psychological problems and important consequences in terms of mental health including stress, anxiety, depression, frustration, uncertainty during COVID-19 outbreak emerged progressively [7].

The second wave of the pandemic is turning out to be extremely fatal for all and especially for the healthcare workers who are at the forefront [8].

The situation post COVID-19 is thus likely to be defined not by classic pandemic drivers, but by the significant economic downturn which was stimulated by the public health response-loss of employment and home, and anxiety and fear for the future are likely to frame the outlook of many young people today [9].

A survey from china nearly 1,300 healthcare workers treating people with COVID-19 in hospitals in China showed high rates of depression, distress, anxiety and insomnia. This pandemic has exposed the poor health system worldwide and impact healthcare workers badly in all aspects [10].

The Personal experience of Researcher was also the same. COVID-19 is affecting a lot both mentally and physically. Isolation time is very tough to stay strong mentally and physically. In my opinion family support is most important but as I was in hostel and in isolation room I was not able to reside with family to prevent infection and to follow the guidelines and SOP of COVID-19. That was the worst time for me as I had different symptoms of COVID-19 and in my suffering period; loss of taste was the main symptoms which indicated that I had become the sufferer of COVID-19. It brought drastic change in my physical and mental state that's why I was frustrated so many times during that particular period. Being alone in isolation it was very tough time, sometime to stay mentally, physically healthy. I was also posted in COVID-19 isolation wards for 15 days in 2021. That's was the very hard time for me to do the duty in stressful situation. During my posting time there were so many COVID-19 cases in our hospital GGSMC&H and when I was on night duty on that time death rate was on peak. It was very hard to see the patient in trouble because of lack of medicine and insufficient oxygen supply and I felt helplessness and hopeless on that time. In COVID-19 time families of patients in intensive care units (ICUs) are at increased risk for developing psychological symptoms that can last for months after the patient is discharged. These symptoms can have significant impact on both the patients and family member's quality of life [11].

During SARS-CoV-2 outbreak, the healthcare workers faced aggravated psychological pressure and even mental illness [12].

Methodology

Research Approach

Descriptive research approach was used to assess the stress, anxiety and depression among healthcare professionals working in COVID-19 isolation wards of selected COVID hospitals of Punjab.

Research Design

Cross sectional research design was used.

Research Setting

Following is the list of COVID hospitals included in the study

1. GGSMC&H, Faridkot, Punjab
2. Civil Hospital, Faridkot this is one of the government hospital in the Faridkot.
3. Civil Hospital, Jalalabad, Fazilka, Punjab.

Population

The target population of the study was all the health care professionals working in isolation wards.

Sample and Sampling Techniques

Purposive sampling technique was used to draw sample from target population. Total 200 healthcare professionals who were posted in isolation wards the inclusion and exclusion criteria were selected as study subjects at GGSMC&H, COVID-19 Hospital, and Punjab.

Sample Size

Sample size calculation

$$N = p(1-p)z^2/E^2$$

- P denotes to prevalence of depression.
- Z confidence level 95%.
- E denotes to margin of Error (5%).

Calculation

$$N = 11.6\% (1-11.6\%), (1.96)^2/(0.05)^2$$

$$N = 0.391/0.0025$$

$$N = 156$$

The sample Size for the study was 200 Health professionals working in Isolation ward in selected COVID Hospitals of Punjab.

Variables under study

Research variables: In the present study, stress, Anxiety and Depression were the research variables.

Socio-demographic variables: Age, Gender, marital status, type of family, qualification, designation, type of services, type of hospitals, experience.

COVID-19 Related Information: Duration of posting in COVID-19 Isolation wards, have you ever positive for COVID-19, If yes whether you were hospitalized or home quarantine, any presence of post COVID-19 symptoms, have you attended in-service education on COVID-19, are you vaccinated, if not then what is reason.

Inclusion and Exclusion Criteria

Inclusion Criteria

1. Health professionals who were working in COVID-19 isolation wards.
2. Health professionals who were available at the time of data collection.
3. Health professionals who were willing to participate in research study.

Exclusion Criteria

Nurses who were not posted in isolation wards of COVID-19 Hospitals.

Description of Tool

The tool was divided into following parts.

Tool-1: Socio-demographic profile

Socio-demographic profile sheet was developed under the guidance of guide and co-guide and used in the present study to measure socio-demographic characteristics of the healthcare professionals working in COVID-19 isolation wards. It had seven items to measure socio-demographic data of the subject. Total administration time was 2 minutes. Validity and reliability was established and tool was found to be valid.

Tool-2: COVID-19 related profile

COVID-19 related profile sheet was developed under the guidance of guide and co-guide and used in the present study to measure socio-demographic characteristics of the healthcare professionals working in COVID-19 isolation wards. It has seven items which is used to collect the information from subjects. Total administration time was 2 minutes. Validity and reliability was established and tool was found to be valid. 29.

Tool-2: DASS21- Depression, Anxiety and Stress Scale

The DASS is a 21-items questionnaire which includes three self-report liker scales designed to measure the negative emotional states of depression, anxiety and stress. Each of three scales contains 7 items. Respondent were asked to use 4-point severity /frequency scales to rate the extent to which they had experienced each state, four points include 0-3 in which zero denotes not apply to me at all, whereas 3 denotes very much apply to me at all. Reliability of tool in study setting was determined by test retest method. Questions no. 1, 6, 8, 11, 12, 14, 18 are related to stress, questions no. 2, 4, 7, 9, 15, 19, 20 related to anxiety and questions no. 3, 5, 10, 13, 16, 17, 21 are related to depression. Final score was multiply by 2 to get the final score. The scoring criterion is based on the responses by subjects.

According to DASS Scale the Depression range is 10-13 denotes Mild depression whereas 14-20 denotes Moderate depression, 21-27 denotes severe depression and when range is above 28 denotes extremely severe depression. Anxiety range 8-9 denotes Mild anxiety whereas 10-14 denotes Moderate Anxiety 15-19 denotes severe anxiety and when range is above 20 denotes extremely severe anxiety. Stress range 15-18 denotes Mild stress whereas 19-25 denotes Moderate stress 26-33 denotes severe stress and when range is above 34 denotes extremely severe stress.

Validity of Tool

Content validity of Tool I (PART A and PART B) was determined by six experts from the field of nursing. Try out of the tools was done on ten healthcare professionals to ensure the content validity and understanding of the tool. Research supervisor and co-supervisor were consulted regarding the content and language of the research tool. As per expert's suggestions and guidance, appropriate modification was made after consultation with guide.

Tool II was a standardized tool, validity was determined by six experts from the field of nursing. Try out of the tools was done on ten healthcare professionals to ensure the content reliability, validity and understanding of the tool. Research supervisor and co-supervisor were consulted regarding the content and language of the research tool.

Reliability of Tool

The reliability of an instrument is a major criterion for assessing its quality and adequacy. It is the ability of instrument to obtain consistent results.

Many of the respondent replied on the support whereas few of them returned questionnaire within 2-3 days.

The reliability of the tool was predetermined by split half method.

Tool try out

Try of the tool was done on ten subjects of GGSMC & H, Faridkot who were posted in COVID-19 isolation wards.

Pilot Study

To assess the feasibility of the study, a pilot study was conducted on the sample of 20 health professionals which included doctors, nurses, lab technician, pharmacist and others working in isolation wards of COVID-19 Hospitals.

Pilot study was done in the month of February 2021. Formal permission was obtained from S.M.O. Civil Hospital Faridkot. On 1st Day of data collection, written informed consent was obtained and the investigator explained the purpose of the study. Then health care professionals were interviewed for their socio-demographic, COVID related information and their level of depression, anxiety and stress was assessed by using DASS -21 (Depression, Anxiety and Stress Scale-21). The study was found to be feasible.

Data Collection Procedure

The data collection was carried out in the month of March to May 2021. The researcher visited the selected setting GGSMC&H, Faridkot. Sample was selected by 32 purposive sampling technique. The researcher introduced herself to the subjects and then explained about the purpose of gathering information, importance and the nature of the study. A written informed consent was taken and confidentiality of data was assured. Both the tool was given to the healthcare professionals to assess their sociodemographic variables, COVID-19 related information and also assess the level of depression, anxiety and stress among health care professionals working in isolation wards of COVID-19 hospitals with the help of DASS-21 Item scale.

Duration of data collection on average basis researcher collected data from 10- 12 healthcare professionals. Data were collected from healthcare professionals once they had Complete their duty and had the 15 days gap after duty.

Ethical Considerations Permission for conducting the study was obtained from ethical committee of University College of Nursing, BFUHS Faridkot before starting study (UCN/2021/1130) and GGSMC & H Faridkot (vide letter no MS/GA(02)/2021/9108) and Civil Hospital Faridkot. A written informed consent was taken from the Healthcare professionals.

Data Analysis

The data was analyzed by using descriptive statistics (frequency, percentage) and inferential statistics (Chi square test) with statistical package SPSS 21. Results of the study were presented in the form of tables and figures.

Table 1: Frequency and percentage distribution of health care professionals as per their sociodemographic characteristics

N = 200

| Sociodemographic characteristics | | F | % |
|----------------------------------|-----------------------|-----|------|
| Gender | Male | 58 | 29 |
| | Female | 142 | 71 |
| Marital status | Married | 104 | 52 |
| | Unmarried | 96 | 48 |
| Type of family | Nuclear | 125 | 62.5 |
| | Joint | 75 | 37.5 |
| Qualification | Postgraduate | 80 | 40 |
| | Graduate in nursing | 38 | 19 |
| | Diploma in nursing | 66 | 33 |
| | Pharmacy | 5 | 2.5 |
| | Laboratory technician | 6 | 3 |
| | Others | 5 | 2.5 |
| Designation | Doctor | 60 | 30 |
| | Nurses | 118 | 59 |
| | Lab technician | 3 | 1.5 |
| | Pharmacist | 5 | 2.5 |
| | Others | 14 | 7 |
| Type of services | Regular | 119 | 59.5 |
| | Contract based | 36 | 18 |
| | outsourc | 45 | 22.5 |
| Type of hospital | Civil | 3 | 1.5 |
| | Medical college | 188 | 94 |
| | Any other | 9 | 4.5 |
| Experience | Less than 1 year | 43 | 21.5 |
| | 1-5 year | 75 | 37.5 |
| | 6-10 year | 33 | 16.5 |
| | More than 10 years | 49 | 24.5 |

Table 2: Frequency and percentage distribution of health care professionals as per their COVID-19 related information

N = 200

| COVID related information | | F | % | |
|--|-------------------------------|--------------------------|------|-----|
| Duration of posting in COVID ward | Less than or equal to 1 month | 80 | 40 | |
| | 1-3 months | 38 | 19 | |
| | 3-6 months | 13 | 6.5 | |
| | More than 6 months | 69 | 34.5 | |
| Have you ever tested positive for COVID19 | Yes | 71 | 35.5 | |
| | No | 129 | 64.5 | |
| Any presence of post COVID symptoms | Yes | 43 | 21.5 | |
| | No | 28 | 14 | |
| | Post COVID symptoms detail | | - | - |
| | Body ache | 2 | 1 | |
| | Breathing difficulty | 2 | 1 | |
| | Cough | 4 | 2 | |
| | Depression | 1 | 0.5 | |
| | Fever | 1 | 0.5 | |
| | Hypoxia | 1 | 0.5 | |
| | Insomnia | 1 | 0.5 | |
| Have you attend in-service education on COVID 19 | Yes | 140 | 70 | |
| | No | 60 | 30 | |
| | Are you vaccinated | Yes | 184 | 92 |
| | | No | 16 | 8 |
| | If not then what is reason | Pregnant | 2 | 1.0 |
| | | Lactating mother | 1 | 0.5 |
| | | Medical problem | 6 | 3.0 |
| | | Have no trust on vaccine | 0 | 0 |
| Other issues | | 7 | 3.5 | |

Table 3: Frequency and percentage distribution of stress, anxiety and depression

Table 3: Distribution of subject as per as their level of stress

N=200

| Level of stress | F | % |
|------------------|-----|------|
| Normal | 147 | 73.5 |
| Mild | 18 | 9 |
| Moderate | 16 | 8 |
| Severe | 16 | 8 |
| Extremely severe | 3 | 1.5 |

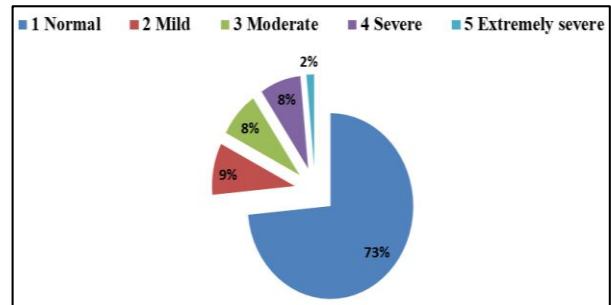


Fig 1: To assess the anxiety among health care professionals working in COVID-19 isolation

Out of the 200 healthcare professionals, 147(73.5%) were normal, 18(9%) healthcare professionals have mild stress symptoms, 16(8%) healthcare professionals have moderate stress symptoms, 16(8%) have shown severe stress and very less 3(1.5%) have shown extremely severe stress symptoms. Hence, it can be concluded that majority of healthcare professionals had no stress where as 26.5% of healthcare professionals had mild to very severe stress symptoms.

Table 4: To assess the anxiety among health care professionals working in COVID-19 isolation

| Level of anxiety | F | % |
|------------------|-----|-----|
| Normal | 108 | 54 |
| Mild | 13 | 6.5 |
| Moderate | 42 | 21 |
| Severe | 13 | 6.5 |
| Extremely severe | 24 | 12 |

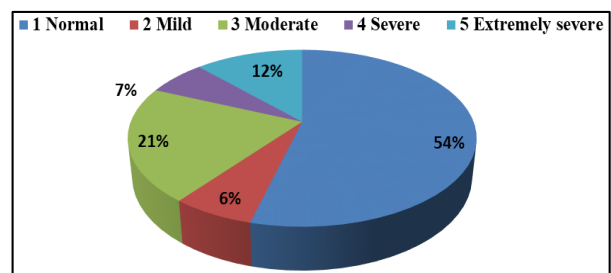


Fig 2: Frequency and percentage of health care professionals as per their level of anxiety

Table 4 and figure 2 reveals the distribution of healthcare professionals working in COVID-19 isolation wards as per their level of anxiety symptoms. Out of the 200 healthcare professionals, 108 (54%) were normal, 13(6.5%) healthcare professionals have mild anxiety symptoms, 42(21%) healthcare professionals show moderate anxiety symptoms, 13(6.5%) had severe anxiety symptoms and very less 24(12%) had extremely severe anxiety symptoms.

Table 5: To assess the depression among health care professionals working in COVID-19 isolation

| Level of Depression | F | % |
|---------------------|-----|----|
| Normal | 130 | 65 |
| Mild | 20 | 10 |
| Moderate | 28 | 14 |
| Severe | 14 | 7 |
| Extremely severe | 8 | 4 |

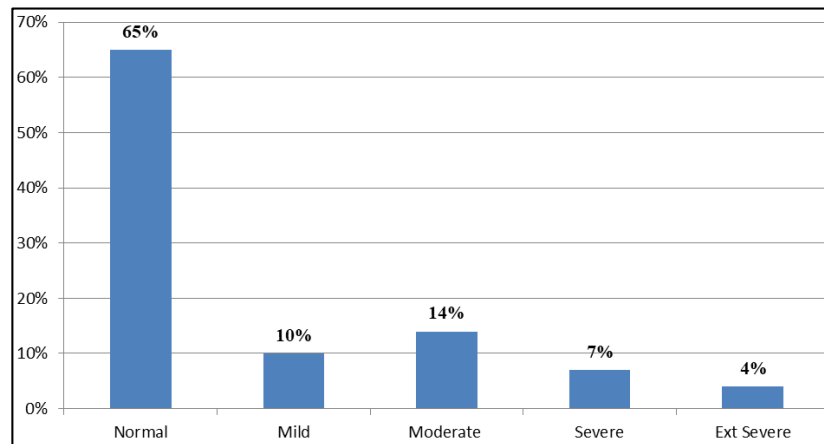
**Fig 3:** Frequency and percentage of health care professionals as per their level of depression

Table 5 and figure 3 reveals the distribution of healthcare professionals working in COVID-19 isolation wards as per their level of depressive symptoms. Out of the 200 healthcare professionals, 130 (65%) were normal, 20(10%) healthcare professionals have mild depressive symptoms, 28(14%) healthcare professionals had moderate depressive symptoms, 14(7%) had severe depressive symptoms and very less i.e. 8(4%) had extremely severe depressive symptoms.

Hence, it can be concluded that majority of healthcare professionals had no depression whereas 35% of the healthcare professionals had mild to very severe depressive symptoms.

Discussion

Study on psychological impact of COVID-19 lockdown reported by Grover, Sandeep *et al.* (2020) [13] that during online survey a total of 1871 responses were collected, of which 1685(90.05%) responses were analyzed. About (38.2%) had anxiety and depression (10.5%. overall (40.5%) of the participants had either anxiety or depression. Moderate level of stress was reported about (74%) and (71.7%) reported poor well-being.

Pappa S, *et al.* (2020) [14] reported in a meta-analysis that anxiety was assessed in 12 studies, with a pooled prevalence of 23.2% and depression in 10 studies, with a prevalence rate of 22.8%. A subgroup analysis revealed gender and occupational differences with female healthcare professionals and nurses exhibiting higher rates of affective symptoms compared to male and medical staff respectively. Sahebi A, *et al.* (2021) [15] reported that the prevalence of anxiety among healthcare workers during the COVID-19 pandemic was 24.94% and depression was 24.83%.

Jemal K, *et al.* (2021) [16] reported that the percentage of healthcare workers who had moderate to extremely severe symptoms of depression were 60.3%, anxiety 78%, and stress were 33.8%, respectively.

William B, *et al.* (2020) [17] reported that the healthcare professionals with highlevel stress was 3.7%, while the

prevalence rates of healthcare professionals with depressive symptoms 11.4% and anxiety symptoms were 17.7% respectively. Women had approximately two times the increased odds of developing moderate- or high level stress, depressive symptoms requiring treatment, and anxiety symptoms requiring further evaluation. On the contrary, present study shows no impact of gender on stress among healthcare professionals.

Rachna K, *et al.* (2020) [18] conducted a study 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. Study found that depression, insomnia, and anxiety between healthcare and non-healthcare professional workers, demonstrated significant P values of 0.05, 0.03, and 0.02, respectively. Study shown a significant psychological impact arising from COVID crisis.

Similar trends in depression, anxiety and stress were reported by Aly HM, *et al.* (2021) [19] 51 that 98.5% showed moderate to severe stress and 94% of health professionals showed mild to severe depression.

Maheshwari, *et al.* (2015) [20] 52 reported consistent result 17% nursing students had mild depression, 14% had moderate depression, 18% had severe depression and 6% had extremely severe depression, whereas 34% students had mild anxiety, 18% had moderate anxiety, 22% had severe anxiety and 15% had extremely severe anxiety. About 15% students had mild stress, 26% had moderate stress, 6% had severe stress and 3% had extremely severe stress.

Similar results was reported by Lai CC, *et al.* (2020) [21] 53 that the prevalence of depression is 85 24.3%, the prevalence of anxiety is 25.8%, and the prevalence of stress is 45% among the hospitals staff caring for the COVID-19 patients.

Conclusion

This study concluded that 42% of healthcare professionals had depressive symptoms, 46% healthcare professionals had anxiety symptoms and 26.5% healthcare professionals had

stress symptoms which shows that healthcare professional are stressed and had depressive symptoms and anxiety because of multiple reason, mainly 88 due to their nature of job. COVID -19 infections put additional burden on health care system and thus on health care professional who are working there to take care of the There is a need for up gradation of all psychiatric departments and National Mental Health Programmed at district level need to step up to set up counseling centers in hospitals dedicated to healthcare professionals undertaking COVID-19 care. The government and health care agencies should take responsibility for protecting the psychological well-being of health care communities all over the world and ensuring a healthy work environment.

Limitations

Depression, anxiety and stress measure by self-report method. Thus, it might be not possible to show exact picture.

References

1. Issa B, Cennimo DJ, Windle ML, *et al.* Coronavirus disease (COVID-19) Medscape May 2020; c2019. <https://emedicine.medscape.com/article/2500114>
2. Zu ZY, Jiang MD, Xu PP, Chen W, NIQQ, Lu GM, *et al.* Coronavirus disease 2019 (COVID-19): A perspective from China, RSNA; c2020 Feb. <https://pubs.rsna.org/doi/full/110.1145/radio.202020049>
3. Parasher A. COVID-19: Current understanding of its Pathophysiology, Clinical presentation and Treatment. *Postgraduate Medical Journal.* 2021;97:312-320.
4. Singh S, Roy D, Sinha K, Parveen S, Sharma G, Joshi G. Impact of COVID-19 and lockdown on mental health of children and adolescents: A narrative review with Recommendations. *Psychiatry Res.* 2020 Nov 1;293:113429. DOI: 10.1016/j.psychres.2020.113429
5. Mangalesh S, Dudani S, Dave ND. Assessment of mental health in Indian medical students during the coronavirus disease-2019 pandemic. *Indian J Soc. Psychiatry.* 2021 Jan 1;37:105-10.
6. Pandey D, Bansal S, Goyal S, *et al.* Psychological impact of mass quarantine on population during pandemics-The COVID-19 Lock-Down (Cold) study. *PLoS One.* 2020 Oct 22;15(10):e0240501. Published 2020 Oct 22., DOI: 10.1371/journal.pone.0240501
7. Sim K, Chua HC. The psychological impact of SARS: A matter of heart and mind. *CMAJ.* 2004 Mar 2;170(5):811-812., DOI:10.1503/cmaj.1032003
8. Sharma N. Nearly 300 Indian doctors have lost their lives in the second wave of COVID-19. Published; c2021 May 18.
9. Harper S. The Impact of the COVID-19 Pandemic on Global Population Ageing. *J ournal of Population Ageing.* 2021 Jun;14(2):137-42, DOI: 10.1007/s12062-021-09330-w. EPUB ahead of print. PMID: 34055101; PMCID: PMC8140566.
10. Tsamakis K, Rizos E, Manolis AJ, Chaidou S, Kypouropoulos S, Spartalis E, *et al.* COVID-19 pandemic and its impact on mental health of healthcare professionals. *Experimental and Therapeutic Medicine.* 2020 Jun 1;19(6):3451-3453. <https://doi.org/10.3892/etm.2020.8646>.
11. Psychological symptoms and families of COVID-19 patients. US National library of Medicine. *Clinical Trials.* Gov. Identifier: NCT04501445; c2021 May.
12. Vizheh M, Qorbani M, Arzaghi SM, Muhidin S, Javanmard Z, Esmaeili M. The mental health of healthcare workers in the COVID-19 pandemic: A systematic review. *J Diabetes Metab Disord.* 2020 Oct 26;19(2):1-12. DOI: 10.1007/s40200-020-00643-9. EPUB ahead of print. PMID: 33134211; PMCID: PMC7586202.
13. Anantha Kumar K, Sugunamma V, Sandeep N. Effect of thermal radiation on MHD Casson fluid flow over an exponentially stretching curved sheet. *Journal of Thermal Analysis and Calorimetry.* 2020 Jun;140(5):2377-85.
14. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsis E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain, behavior, and immunity.* 2020 Aug 1;88:901-7.
15. Sahebi A, Nejati-Zarnaqi B, Moayedi S, Yousefi K, Torres M, Golitaleb M. The prevalence of anxiety and depression among healthcare workers during the COVID-19 pandemic: An umbrella review of meta-analyses. *Progress in Neuro-Psychopharmacology and Biological Psychiatry.* 2021 Apr 20;107:110247.
16. Jemal K, Deriba BS, Geleta TA, Tesema M, Awol M, Mengistu E, *et al.* Self-reported symptoms of depression, anxiety, and stress among healthcare workers in Ethiopia during the COVID-19 pandemic: a cross-sectional study. *Neuropsychiatric Disease and Treatment.* 2021;17:1363.
17. Barlass U, Wiliams B, Dhana K, Adnan D, Khan SR, Mahdavinia M, Bishehsari F. Marked elevation of lipase in COVID-19 disease: a cohort study. *Clinical and translational gastroenterology.* 2020 Jul;11(7).
18. Singh NB, Rachna K. Copper ferrite-Polyaniline nanocomposite and its application for Cr (VI) ion removal from aqueous solution. *Environmental nanotechnology, monitoring & management.* 2020 Dec 1;14:100301.
19. Aly HM, Nemr NA, Kishk RM, bakr Elsaid NM. Stress, anxiety and depression among healthcare workers facing COVID-19 pandemic in Egypt: a cross-sectional online-based study. *BMJ open.* 2021 Apr 1;11(4):e045281.
20. Maheshwari S, Vohra V. Identifying critical HR practices impacting employee perception and commitment during organizational change. *Journal of Organizational Change Management.* 2015 Aug 10.
21. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *International journal of antimicrobial agents.* 2020 Mar 1;55(3):105924.