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ASSESSMENT OF DEPRESSION AND ANXIETY AMONG HEALTHCARE WORKERS AND NON-HEALTHCARE WORKERS DURING COVID 19 PANDEMIC LOCKDOWN: ONLINE CROSS SECTIONAL SURVEY

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ABSTRACT

Background: The COVID 19 pandemic has caused a widespread impact on the mental health of people worldwide. This study brings out the prevalence of depression and anxiety among the health care workers (HCW) and non-health care workers (NHW) during the COVID 19 pandemic lockdown.

Methods & Materials: This is a cross sectional survey conducted during the lockdown 3.0 in India. Data was collected online via google forms using a self-administered questionnaire designed to assess the impact of COVID 19 on our psychology and life style.

RESULTS: The study comprised of 966 participants of which 296 were health care workers (HCW). 46.9% of all the participants were suffering from symptoms of depression, 38.1% had disturbed sleep, 53.5% of participants experienced anxiety during the lockdown. The prevalence of depression, anxiety and disturbed sleep was higher in the healthcare workers.

DISCUSSION: Females, presence of any comorbidity, age group 31 to 60 years, healthcare workers, were found to be independent associated risk factors for anxiety. Only the former two factors were found to be associated risk factors for depression. Presence of these factors led to sleep disturbances among all. Social stigma prevails in the society for getting tested for COVID19. Lack of universal health insurance coverage has led to anxiety.

CONCLUSION: Majority are at risk for psychological distress during the COVID-19 outbreak and are likely to have after effects from it for a long time. Early interventions are required for reducing the negative impact of the epidemic especially the HCW.

KEYWORDS :

INTRODUCTION-

In this twenty first century, coronavirus disease (COVID19) is the third novel corona virus which has caused a large scale pandemic after the Severe Acute Respiratory Syndrome Corona Virus (SARS CoV) in 2003 and Middle East Respiratory Syndrome Coronavirus (MERS CoV)[1]. The COVID 19 was first identified in Wuhan, China and was first detected in patients suffering from Severe Acute Respiratory Syndrome[2].

This pandemic outbreak has caused a widespread impact on the mental health of people worldwide. It has caused an immense psychological pressure on them. People are on verge of suffering from considerable mental health disorders such as anxiety disorders and depression resulting in significant psychological impact[3]. Preventive measures like isolation and home quarantine can have a negative effect on their psychological status and can tend to increase their mental problems[4].

The studies that have been done so far have shown that increased amount of stress is being faced by the healthcare workers which has been associated with significant psychological morbidities. A very recent study shows that during the initial outbreak of the pandemic infection in China, approximately one third of the participants suffered from moderate to severe anxiety[5].

To understand the current scenario better, it's important to understand the psychology of healthcare workers (HCW) and non-healthcare workers (NHW) and the impact COVID 19 lockdown is having on their lifestyle. This will help us to prepare them better for the next phase of management of this epidemic as well as for future pandemics. In this study, we investigated the prevalence of depression and anxiety among HCW and NHW as the primary outcome. Secondary outcome were comparison between the two groups and identification of independent associated factors which increased the chances of having depression and anxiety among all the participants.

MATERIALS AND METHODS-

This is a cross sectional exploratory survey conducted from 7th May to 10th May 2020, during Lockdown 3.0 in India. This study was conducted in the middle stage of COVID 19 after the beginning of Lockdown 3.0 just when conditional relaxations had started to come. By this time people had already endured 6 weeks of lockdown. Because it was not feasible to do a community-based national sampling survey during this special period, we decided to collect the data online via 'google forms'. Relying on the authors' networks with local people living in Uttrakhand, a one-page online link was posted/reposted in groups of 'WhatsApp' and emails. Those who agreed to participate in the study were instructed to complete the questionnaire via clicking the link. Although the questionnaire was distributed to local residents, we did not constrict our sample to Uttrakhand residents only. Residents of other states were also eligible for this survey if they were willing to participate. All participants were guaranteed anonymity and they provided informed consent to participate voluntarily.

Data was collected from Healthcare workers and non HCW using a self-administered questionnaire designed to assess the impact of COVID 19 on our psychology and life style. During the study period, we received the filled form from 966 participants.

The questionnaire consisted of questions which assessed general demographic variables of participants, their comorbidities, their state of mind and its causes, their views on COVID 19 and its management strategy and how they were coping with it.

STATISTICAL ANALYSIS

Data was analysed by using statistical software Stata (Software for statistics and Data Science) 14.0. Categorical variable were expressed as frequency and percentage. Age of people has been expressed as mean and SD. Chi square was used to check the association of selected variable with depression and anxiety. Univariate logistic regression was used to estimate Odd's ratio. Step wise multivariate logistic regression was used to find independent associated risk factors for depression and anxiety. $P < 0.05$ was considered as statistically significant.

RESULTS-
The study comprised of 966 participants, 296 (30.6%) were health care workers (doctors and nurses) while the rest were non healthcare workers 670 (69.4%). A comparison of demographics and different psychological factors between the two groups is shown in table I.

46.9% of all the participants were suffering from symptoms of depression, 38.1% had disturbed sleep while 53.5% of participants experienced anxiety during the lockdown period of 6 weeks. The prevalence of depression, anxiety and disturbed sleep was higher in the healthcare workers. 62.8% of healthcare workers were found to be suffering from anxiety during lockdown. In comparison to non-healthcare workers, HCW had 50% higher odds for having anxiety (Table II).

Age also shows significant association with anxiety; however, only the middle age group (30-60years) showed statistically significant relationship with anxiety. This age group had 50% higher odds for having anxiety as compared to the younger age group. However, the participants in >60 years age group had 40 % higher odd s to suffer from anxiety as compared to the youngest age group (15-30 years), it was not statistically significant. (Table II) It was seen that the middle age group (30-60years) participants were most anxious (61.4%) among all 3 age groups.(P=0.001).

Female participants (60.7%) were found to be significantly more anxious than male participants (P=0.00) On multivariate regression analysis females were found to be having 70% higher Odds for suffering from anxiety (Table II). In our study females (53.3%) were found to be significantly more depressed as compared to males (42.8%) (P=0.01) On multivariate analysis, gender (male versus female) & comorbidity (presence versus absence) showed significant association with depression. Females had 50 % higher odds to be suffering from depression (Table III).

Presence of any comorbidity like Diabetes mellitus, hypertension, hypothyroidism, heart disease, autoimmune disease or any other chronic disease increased odds by 40% to have depression (Table III) Participants having one or more comorbid (54.4%) conditions were found to be more depressed. 66.3% of the anxious people were found to be suffering from one or the other comorbidity. Comorbidity had statistically significant association with anxiety and its presence increased participants' odds of having anxiety by 50 %.(Table 2)

Participants not involved in any kind of activity during lockdown had 90% higher odds of being anxious than those involved in any kind of activity. But this was not found to be statistically significant. (Table II)

The most common form of self-medication by healthcare workers was found to be with Hydroxychloroquine (19.3%) while NHWs used Vitamin C(17.2%). 9.8% HCWs took more sleeping pills and were more involved in substance abuse than NHWs during lockdown period (Table I). Males (13.5%) were twice as more prone (P=0.00) to indulge in substance abuse during the lockdown than females (6.2%).

HCW found it difficult to concentrate (21.3%) on their work while NHW (16%) struggled to complete their task. HCW (30.1%) attended the webinars in order to increase their knowledge on their subject while the NHW (25.8%) attended it mostly to get aware on COVID 19.

The highest number of telephonic/online consultations with doctors were done by the elderly (>60 years) (23.8%)(P=0.035). But this age group was least involved (71.4% did not attend) (P=0.01) in watching Webinars to increase their knowledge of their subject or awareness regarding COVID 19.

Similar findings between HCW & NWH -
'Social distancing' was considered to be the most effective way of prevention of spread of COVID 19. (HCW-41.2%, NHW- 48.2%). Most of the respondents in both the groups (HCW-51.7%, NHW 37.3%) felt that people were hesitant to get tested for COVID 19 because of 'Social Stigma'. The most common positive effect of COVID 19 lockdown felt by majority was 'increased family time' (HCW- 33.4%, NHW-35.2%). Majority participants (HCW37.5%, NHW 48.2%) experienced that lockdown caused 'Delay in Elective procedures/surgeries'. Anxiety and depression induced similar kind of physical ailments in both the groups, 'Muscle cramps & body ache' (HCW- 26.7%, NHW- 23.3%) and Gastric issues (HCW- 17.9%, NHW- 15.4%) were experienced commonly.

Majority of the participants in both groups relied on paying from their savings/ free treatment at government hospitals for their treatment if they got infected with COVID 19 during the lockdown (HCW-63.2%, NHW-65.1%).

DISCUSSION:
This study brings out the extent and underlying causes of depression and anxiety among the health care workers (HCW) and non-health care workers (NHW) during the lockdown period of the ongoing COVID 19 pandemic. The psychological impact of the covid-19 pandemic has been profound and multipronged. No event in recent history has affected such a large portion of global population. The main reason for the fear and uncertainty surrounding this pandemic is the lack of a definite cure or vaccine and the highly infectious nature of the disease. Previous research been done so far, has revealed a profound and broad spectrum of psychological impact that outbreaks can inflict on people. An outbreak can induce psychiatric symptoms, can aggravate previously existing psychiatric symptoms and can cause distress in carrying out activities of daily life (ADL)[6]. 21.3% HCW participants in the present study reported to have difficulty in concentration at their work while 16% of NHW struggled to complete their tasks. This reduces our efficiency and judgement in carrying out routine activities. Several participants reported having increased symptoms of depression and anxiety, but it was found to be significantly higher among women. Wang et al.[7] also reported that female gender and poor health perseverance were associated with higher rates of anxiety and depression in China during the early stages of COVID 19 epidemic. Thus it can be seen that females are more predisposed to psychological symptoms indifferent of their race and country. Studies have reported that risk of psychiatric disorders persist beyond 2 to 3 years beyond the pandemic and was present roughly in 20 to 30 % of the population survivors and was higher in healthcare workers and individuals who were quarantined. 1 year after the SARS epidemic, a study reported that moderate to severe symptoms of anxiety and depression was prevalent more in females as compared to males. In a study done on hospital employees after being exposed to SARS infection, 23% of them were having moderate to severe symptoms of depression[8].

Due to the lockdown imposed, all people involved in non-essential services were supposed to stay at home which caused significant changes in their sleep cycle and could be a contributing factor to increased incidence of insomnia. Depression and anxiety itself can cause difficulty in sleeping. Anxiety was associated with impaired sleep in most of the studies being done so far[9]. A longitudinal study showed that during the SARS outbreak, the sleep quality among medical staff was worst during the crisis and gradually improved after 2 weeks, suggesting that insomnia was related to contagion outbreak-induced stress[10]. In our study, HCWs experienced significantly higher sleep disturbance during the epidemic.(Table 1)

A survey in China, found that 53.8% of respondents rated the psychological impact of the outbreak as moderate or severe, 16.5% reported moderate to severe depressive symptoms, 28.8% reported moderate to severe anxiety symptoms, and 8.1% reported moderate to severe stress levels[11]. In present study, the profession of healthcare worker was found to have independent significant association with anxiety, which in turn made HCWs 50% more prone to anxiety. Even though almost half (48.7%) the HCW were found to be suffering from symptoms of depression, there was no statistically significant association of being a healthcare worker with depression. This could be because of increased risk of infection to healthcare workers, apprehension of passing on the infection to family members, changes in working hours along with the numerous precautions to be taken at work. Health care workers were also found to be involved in substance abuse more than NHW, probably due to increased anxiety and stress levels.

In a study in Singapore[12], prevalence of depression and anxiety was examined in Health care workers including "medical" (physicians, nurses) and "nonmedical" personnel (allied health professionals, pharmacists, technicians, administrators, clerical staff, and maintenance workers). Their study found 8.1% depression and 10.8% anxiety in the former group while 10.3% depression and 20.7% anxiety in the latter group. The reason for higher prevalence in those non-medically trained hospital personal was less accessibility to formal psychological support, less knowledge on medical information on outbreak, less training on infection control measures. The prevalence of depression and anxiety in our Indian society among both these

groups of people was much higher, probably because the above study was done in the early part of COVID 19 epidemic in Singapore while present study is done in middle stage of epidemic in India when it had been 6 weeks of lockdown.

Health anxiety, which arises from the misinterpretations of perceived bodily sensations, has been seen as a major mental health impact of COVID 19[13]. The psychosomatic effects of anxiety and depression were seen to manifest similarly in both HCW and NHWs. These include muscle cramps, body ache and gastrointestinal issues. This in turn leads to decreased efficiency of work and poor quality of life. It can be a vicious cycle as physical problems can in turn cause increased psychological distress. Being involved in some form of physical activity like yoga, meditation, aerobics, cardio- weight training was found to have a positive impact on mental health in all age groups. Those participants who were not involved in any of these activities in this study had 90% higher odds of anxiety. Presence of comorbidities and chronic disease was found to increase the odds of having depression and anxiety. This could be because of inability to access healthcare services during lockdown and also due to fear of having a poor prognosis in case of coronavirus infection. Similar finding were found in study conducted in northern Spain during the early phase of COVID19 epidemic[14]. Anxiety was reported to be highest among middle aged group (30 to 60 years) likely because they mostly comprise the employed workforce, having the responsibility of earning for the family. This group also reported highest incidence of substance abuse during lockdown.

The Indian Council of Medical Research (ICMR) had laid down certain guidelines[15] in recommendation to the use of Hydroxychloroquine. The use of this drug was advised specially in asymptomatic health care workers who are involved in managing suspected as well as confirmed positive patients and in household contacts of confirmed patients with the viral infection. But unfortunately, its wrong use resulted in accidents in some cases to due to adverse reactions from the drug or over dosage. Some studies had reported that there had been a significant clinical improvement in core symptoms of COVID19 patients when being treated with this drug[17]. But there has been a lot of controversy on using this drug for prophylaxis[18]. There has not been any definite pre-clinical or clinical evidence demonstrating the efficacy of hydroxychloroquine as a prophylactic agent for Covid-19. Sixteen to twenty percent of patients with the infection may be asymptomatic[19]. Special population like children, elderly and pregnant female are at greater risk of adverse effects to this use of the drug. They are at higher risk of developing the infection; this drug may be least applicable when it is most required in this section of population[20]. HCW (19.3%) in this study were found to have used hydroxychloroquine more commonly compared to non-healthcare workers (3.3%), likely because of easy accessibility of the drug and higher apprehension about getting infected.

Vitamin C has antioxidant property and protects the body cells from oxidative stress due to rapid release of free radicals and cytokines in Acute respiratory distress syndrome (ARDS). Early use of large doses of vitamin C has been reported to be effective in treatment and offers protection against viral infection. It has been recommended to be used in treatment of COVID 19 and also as prophylactic measure for at risk populations such as healthcare workers[21]. In this study, 16.6% HCW reported to have used it while even the NHW (17.2%) used it.

Number of people involved in watching webinars decreased from younger to elderly. This probably was due to limited access to internet and online health information resources. Educational interventions should be significantly increased in the elderly age group in order to increase awareness about the infection control measures. These would in return decrease their anxiety. The age group> 60 years used the telephonic consultation most number of times, this again reflects their anxiety about their health and lack of information about the pandemic. Counselling services and availability of good support systems could help save time of doctors in attending to telephonic calls made out of apprehension during the epidemic.

Majority of study subjects considered 'Social distancing' to be the most effective way to control the spread of infection. In a study[22] published in *The Lancet Infectious Diseases,* the potential effects of social distancing measures have been discussed in relation to the SARS-CoV 2 and Covid 19 spread in Singapore. They found that a combined approach (incorporating quarantine, school closures, and workplace distancing) could prevent a national outbreak at low levels of infectivity and reduce the number of total infections considerably at higher levels of infectivity. The effectiveness of Social Distancing depends on how well it is being implemented by the health authorities and institutions. Social distancing policies should not have bias against any population group[23]. (WHO lancet)

Most participants of the study have reported social stigma to be the most important cause for hesitating to get tested for Covid-19. This is quite understandable because of the extensive media coverage of COVID positive cases with no regard to their privacy or confidentiality of information regarding their whereabouts. Even though this approach was taken considering the infectious communicable nature of the disease and to prevent its further spread, it created a sense of fear among people to be publically prosecuted and socially discriminated if they test positive. This has caused an even greater problem of under detection of cases. Hence measures should be taken to reduce the social stigma associated with testing. WHO has already advised against referring to people with disease as "COVID 19 families", 'COVID 19 cases". They stressed that the patients identity should not be defined by COVID 19 in order to reduce stigma[24].

The impact of delay in elective procedures and surgeries has been felt by most of the study subjects. The uncertainty surrounding this has added to the anxiety of people as no one knows when things will come back to normal. The indefinite delay in planned procedures and surgeries has also affected the healthcare workers as this has led to reduced revenue generation in hospitals and nursing homes and has even led to salary cuts in some cases. A study based on expert response has projected that during 12 week lockdown for COVID 19; about 580000 elective surgeries would get postponed in India. They concluded that special recovery plans and strategies would be required to restore normalcy[25].

The impact of financial burden caused by this pandemic is multidimensional. On one hand the financial loss incurred by people in all walks of life due to the lockdown has contributed to the anxiety and feeling of helplessness in the face of this emergency. On the other hand there is apprehension regarding the cost of treatment in case of possible infection. In the year 2019, the National Statistical Office (NSO) released the report "Household social consumption in India: health" based on its 75th round of National sample survey. The survey was carried out from July 2017 to June 2018. They found that more than 80% of Indians are not covered under any health insurance plan, and only 19% (government funded/ PSU as employer 15%) of the urban population and 14% (government funded 13%) of the rural population was covered under any form of health insurance[26]. Two third of study subjects (64.5%) relied on paying from their savings or depended on free treatment at government hospitals. While only 16.9% had personal insurance while 18.6% had coverage arranged by PSU as employer. This probably was because the 1st author is working in a hospital run by PSU and so the participants in the study had PSU as employer providing health insurance. This brings out the lack of universal health insurance coverage in spite of the fact that health insurance business has reported significant growth in last few years in India.

Limitations of the study- The survey was conducted in only northern states of India, the results may not be generalizable to other states HCWs. The study did not assess socioeconomic status, which could have helped to establish more associations of outcome and in developing better protocols. Our sample was over representative of service class section of the society as seen from the greater insurance coverage than the rest of the urban population. So, the study questionnaire might have not reached the rural population. Additionally, the measurement of impact may be imprecise due to the limited number of items. Further study is needed to expand upon and resolve these issues.

In conclusion, our study highlights that healthcare workers and non-healthcare workers are both at risk for psychological distress during the COVID-19 outbreak. The HCW are having greater prevalence of depression and anxiety. Early psychological interventions are required in order to prevent the collapse of healthcare system in future to manage such epidemics.

Table I : Comparison between Healthcare worker and Non Health Care worker-

Variable	Healthcare worker f(%)(n=296)	Non-healthcare worker f(%)(n=670)	p-value
Gender Male Female	106 (35.8) 190 (64.2)	283 (42.2) 287 (57.8)	0.067
Age groups 15-30 years 30-60 years >60 years	177(59.8) 116(39.2) 3(1)	358(53.4) 273(40.7) 39(5.9)	0.002
Comorbidity	50(16.9)	118(17.6)	
Felt Depressed	144 (48.7)	310 (46.3)	0.613
Disturbed sleep	137 (46.3)	231 (34.5)	0.001
Took Sleeping pills	29 (9.8)	44 (6.6)	0.087
Felt anxious	183 (62.9)	334 (49.8)	0.001
Self-medication	57(19.3) HCQS	115(17.2) Vitamin C	0.00
Substance abuse	50(16.9)	52(7.8)	0.00

Table II - Results of multiple linear regression on factors associated with anxiety

Variable	Anxiety No f(%) N= 446	Yes f(%) N=520	p-value	Univariate odd's (95 % CI)	Multivariable odd's (95 % CI)
Gender Male Female	293(50.8) 153(39.3)	284(49.2) 236(60.7)	0.00	1 1.6 (1.2-2.0)	1 1.7(1.3-2.3)
Age (years) <=30 31 To 60 61 To 90	278(52) 150(38.6) 18(42.9)	257(48) 239(61.4) 24(57.1)	0.00	1 1.7(1.3-2.2) 1.4(.7-2.7)	1 1.5(1.1-2.0)
Profession Non healthcare worker(NHW) Healthacre worker(HCW)	336(50.1) 110(37.2)	334(49.9) 186(62.8)	0.00	1 1.7 (1.2-2.2)	1 1.5(1.1-2.1)
Comorbidity Absent Present	392(48.6) 54(33.7)	414(51.4) 106(66.3)	0.001	1 1.8 (1.3-2.6)	1 1.5(1-2.2)
Mode of Payment for Rx of COVID Personal Insurance/Corporate facility Self/Free Rx at Govt Hospital	142(41.4) 304(48.8)	201(58.6) 319(51.2)	0.027	1 .74 (.56-.96)	NA
Activity level during Lockdown Mediation/yoga Aerobics/weights/indoorsports No new activity	211(45.7) 179(48.5) 56(41.2)	250(54.3) 190(51.5) 80(58.8)	0.332	1 .9(.6-1.17) 1.2(.9-1.4)	1 1.9(1.2-2.9)
Substance abuse No Yes	405(46.9) 41(40.2)	459(53.1) 61(59.8)	.201	1.3(.8-1.9)	NA

Table III–Results of multiple linear regression on factors associated with Depression.

Variable	Depression No f(%) N=512	Yes f(%) N=454	p-value	Univariate odd's (95 % CI)	Multivariable odd's (95 % CI)
Gender Male Female	330 (57.2) 182 (46.7)	247 (42.8) 207 (53.3)	0.001	1 1.5 (1.1-1.9)	1 1.5 (1.1-2.1)
Age (years) <=30 31 To 60 61 To 90	281(52.5) 205(52.7) 26(61.9)	254(47.5) 184(47.3) 16(38.1)	0.497	1 .99(.7-1.2) .68(.3-1.2)	na
Profession Non healthcare worker(NHW) Healthacre worker(HCW)	360(53.7) 152(51.3)	310(46.3) 144(48.7)	0.494	1 1.1 (.83-1.4)	na
Comorbidity Absent Present	439(54.5) 73(45.6)	367(45.5) 87(54.4)	0.041	1 1.4(1-2)	1 1.4(.9-1.9)
Mode of Payment for Rx of COVID Personal Insurance/Corporate facility Self/Free Rx at Govt Hospital	168(48.9) 344(55.2)	175(51.1) 279(44.8)	.063	1 .77(.59-1.01)	na
Activity level during Lockdown Mediation/yoga Aerobics/weights/indoorsports No new activity	244(52.9) 199(53.9) 69(50.7)	217(47.1) 170(46.1) 67 (49.3)	0.815	1 .9(.7-1.2) 1.1(.7-1.6)	na
Substance abuse No Yes	463(53.6) 49(48.1)	401(46.4) 53(51.9)	0.288	1 1.2(.8-1.8)	na

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