Original Research Article

Snapshot of stress and anxiety related to COVID-19 among health care professionals of central India

Ujwala Ukey, Sarita Sharma*, Pragati Rathod, Sonali Patil, Uday Narlawar, Suresh Morey

Department of Community Medicine, Government Medical College, Nagpur, Maharashtra, India

*Correspondence:
Dr. Sarita Sharma,
E-mail: saritawadhva@yahoo.com

ABSTRACT

Background: Health care professionals are particularly vulnerable to emotional distress in the COVID-19 pandemic, due to risk of exposure to the virus, concern about infecting and caring for their loved ones, longer work hours, and involvement in emotionally and ethically fraught resource allocation decisions. The sudden role reversal from healthcare provider to the confirmed or suspected patient potentially leads to a sense of frustration. During the COVID-19 battle the doctors and nurses in India are handling increased infection risk, paucity of protective gear, and assault.
Methods: An online questionnaire based cross sectional study was conducted among health care professionals in a tertiary health care setting in central India. Proforma had questions on impact of COVID 19, mental well being, stress and anxiety.
Results: Of the 237 study participants, 182 had moderate and 25 had high stress. Anxiety was present in 46%. There was a significant difference in stress (χ^2=11.22, p<0.001) and anxiety (χ^2=6.6712, p=0.009) in study participants <40 years and ≥40 years age. Multivariate logistic regression showed significant role of sleep and appetite disturbances. Positive correlation was established between perceived stress and anxiety (R=0.713).
Conclusions: A state of good mental well-being despite the presence of stress and anxiety simultaneously indicates.

Keywords: Anxiety, COVID-19, Doctors, Health care professionals, India, Stress, Survey

INTRODUCTION

Pneumonia of unknown cause, identified later due to severe acute respiratory syndrome coronavirus 2 (SARS CoV 2) was detected in Wuhan, China. It was first reported to the World Health organisation (WHO) country office in China on 31 December 2019.[1,2] The outbreak was declared a public health emergency of international concern-novel coronavirus disease (COVID-19) on 30 January 2020.[1] Since then the cases have continued to escalate exponentially to involve more than 25 lakh of the population worldwide and affecting 210 countries and territories thus turning into a pandemic.[1,3] Extraordinary situation of public health emergency may eventually affect the health, safety, and well-being of people and make them prone to various psychological and mental problems.[4] Mass tragedies, particularly those involving infectious diseases, often result in fear and anxiety waves that are known to cause massive disruptions to the behaviour and psychological well-being of huge populations including health care professionals.[5]

Prognoses that are uncertain, scarcities of resources for testing and treatment and for protecting health care professionals from infection, imposition of unfamiliar public health measures that in-fringe on personal freedoms, large and growing financial losses, and conflicting messages from authorities are among the major stressors that undoubtedly will contribute to widespread emotional distress and increased risk for psychiatric illness associated with COVID-19.[6] This situation gives rise to the worst possible work

environment for health care staff.[4] The overall unremitting stress medical health-care professionals come across can trigger psychological issues of anxiety, fear, panic attacks, post-traumatic stress symptoms, psychological distress, stigma and avoidance of contact, depressive tendencies, sleep disturbances, helplessness, interpersonal social isolation from family social support and concern regarding contagion exposure to their friends and family.[7] Health care professionals are also particularly vulnerable to emotional distress in the current pandemic, due to risk of exposure to the virus, concern about infecting and caring for their loved ones, longer work hours, and involvement in emotionally and ethically fraught resource allocation decisions.[6] The sudden role reversal from a healthcare provider to the COVID-19 confirmed or suspected patient potentially lead to sense of frustration in healthcare professionals.[7] Despite the common mental health problems and psychosocial issues among healthcare professionals in such settings, most health professionals do not often seek or receive a systematic mental health care.[8] The mental health issues arising out of the COVID-19 pandemic specifically in health care professionals demand an urgent attention to prevent the untoward situations like suicide. Literature review revealed no articles from India on anxiety and stress pertaining to COVID-19 among health care professionals more so from the current study setting.

With this background the present study was planned with the objectives to study mental well being of the health care professionals, impact of COVID-19 on their mental health and anxiety and stress associated to this pandemic.

METHODS

Present study was a descriptive cross-sectional study conducted at a tertiary health care facility in central India. The study setting being identified as a dedicated COVID hospital by the local administration, all the health care professionals were given a rigorous 2 days training on prevention and management of COVID 19. The trainings were conducted for the entire medical faculty from all the departments over a span of 7 days from 12 April 2020 to 19 April 2020. The study was carried out during these trainings. Of the total 344 health care professionals who were the trainees 237 responders gave consent and participated in the survey with a response rate of 68.89%.

Ethical clearance was obtained from the Institutional ethics committee regarding conducting the study. Participation in study was entirely on voluntary basis. The questionnaire did not include any information which can reveal the participants' identity sufficient care was taken to maintain the data anonymous.

An online semi-structured questionnaire was designed, with a consent form appended to it. The link of the self-administered questionnaire was shared through whatsApp in the groups formed for training purpose. The survey proforma consisted of 4 sections as follows: section 1-

general information, section 2- The Warwick-Edinburgh Mental Well-being Scale, section 3- on impact of COVID-19, section 4- Perceived stress scale (PSS) and section 5- Generalised Anxiety Disorder (GAD) scale-7.

The participants were apprised of the nature and the purpose of the study and assured of anonymity and full confidentiality. On receiving and clicking the link the participants got auto directed to the information about the study and informed consent. After they accepted to take the survey they filled up the demographic details. Then a set of several questions appeared sequentially, which the participants were to answer. The section on general information included questions on age, gender, designation, department and years of experience.

Statistical analysis was done using online epi info software. Descriptive statistics have been used in the study to analyse the findings. Mean and standard deviation and proportions have been used to estimate the results of the study. Test of significance applied was chi square test to determine the role of factors causing the outcome as anxiety, stress and sleep or appetite disturbances. Pearson correlation coefficient was used to find out relation between perceived stress and anxiety. Multivariate logistic regression analysis was done to identify the interplay of various factors together.

RESULTS

Of the total 237 health care professionals, female respondents were 120 (50.6%) and male respondents were 117 (49.4%). Mean age of the participants was 34.8±10.76 years with a range of 21 to 62 years. The age of 94 (39.66%) was between 20 to 30 years, 71 (29.96%) study participants were in 30 to 40 years age group, 51 (21.52%) were in the age group of 40 to 50 years 14 (5.91%) were of 50 to 60 years age and remaining 7 (2.95%) were above 60 years of age. Experience in years of 66 (27.85%) was less than 1 year, 39 (16.46%) was 2 to 3 years, 84 (35.44%) was 4 to 7 years and remaining 48 (20.25%) was more than or equal to 7. Of the total study participants, 129 (54.4%) were married, 106 (44.7%) were unmarried and 2 (0.8%) were others. Study participants had a representation from the non clinical, para-clinical and clinical departments of the college.

Mental well being of the study participants was studied with the aid of 14 questions Warwick-Edinburgh mental well being scale. Findings of it are depicted in Figure 1. As obvious from the graph, well being was perceived most of the times as is visible from 30-70 % subjects responding as often.

COVID-19 has changed the thinking, behavior patterns of the health care professionals and to some extent their surrounding people. Few such statements were presented and responses were marked as yes, no or not applicable. Table 1 ahead gives the details about general impact of COVID-19 on health and behavior.
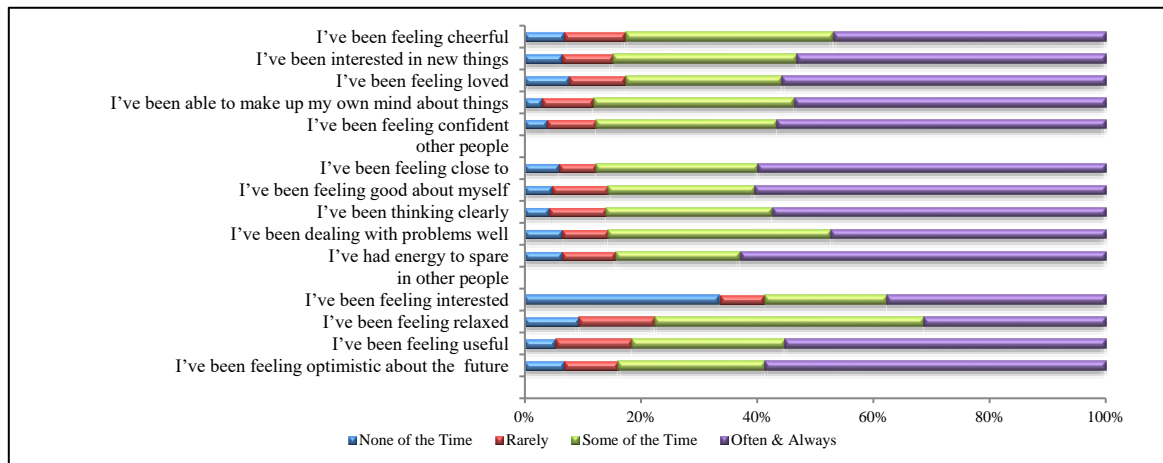
Figure 1: Mental well-being of health care professionals.

Table 1: General impact of COVID-19 on health and behavior.

Statements	Yes Number (%)*	No Number (%)*	Not applicable Number (%)*
Feeling pessimistic or hopeless	37 (15.61)	185 (78.05)	15 (6.33)
Afraid of getting infected more with corona virus	132 (55.70)	94 (39.66)	11 (4.64)
Absence of emotional response- feeling numb/ no happiness or sadness	39 (16.46)	168 (70.89)	30 (12.65)
Feeling exhausted	81 (34.18)	146 (61.60)	10 (4.22)
Reduced awareness or being in a daze/feeling confused/ unable to think clearly	51 (21.52)	168 (70.89)	18 (7.59)
Feeling detached from others	53 (22.37)	172 (72.57)	12 (5.06)
Always wore mask and protective equipment even in open spaces	131 (55.27)	95 (40.08)	11 (4.64)
Spend majority of free time reading or watching corona virus related information	77 (32.48)	152 (64.13)	8 (7.59)
Anxiety when dealing with febrile patients/family members	100 (42.19)	110 (46.42)	27 (11.39)
Avoided corona virus related information	33 (13.93)	192 (81.01)	12 (5.06)
Had anxiety/palpitations	54 (22.79)	176 (74.26)	7 (2.95)
Felt irritated/angry on self or others	75 (31.65)	147 (32.02)	15 (6.33)
Had trouble falling asleep/ frequent awakening	55 (23.21)	172 (72.57)	10 (4.22)
Uncertainity about frequent modification of infection control procedures	102 (43.04)	114 (48.10)	21 (8.86)
Poor concentration and felt indecisive	67 (28.27)	157 (66.25)	13 (5.48)
Afraid to go to home because of fear of infecting family members	114 (48.10)	107 (45.15)	16 (6.75)
Deteriorating work performance	46 (19.41)	179 (75.53)	12 (5.06)
Reluctance to work or considering resignation	35 (10.55)	186 (78.18)	16 (6.75)
Depressed mood- feeling low most part of the day	50 (21.09)	175 (73.83)	12 (5.06)
Stigmatization and rejection in neighbourhood because of hospital work/being kept in quarantined facility	51 (21.51)	166 (70.05)	20 (8.44)

*Indicates group-wise percentages

Disturbances in sleep in the form of troubles falling asleep, insomnia or somnolence in relation to the current COVID-19 situation was reported by 117 study participants whereas 120 did not have any change or disturbance of their sleep. Similarly disturbed appetite either as decreased appetite or overeating was reported by 95 and remaining 142 did not have any change or disturbance of appetite.

Stress in the study participants was studied by Perceived stress scale (PSS). It has total 10 questions each with 5 options to be marked as never representing 0 score, almost never as score 1, sometimes as a score of 2, fairly

often as a score of 3 and very often as a score of 4. Thus the score was in a range of 0 to 40. The perceived stress was considered as low for scores of 0 to 13, moderate for scores of 14 to 26 and high for scores of 27 to 40. In the present study, 30 (12.66%) health care professionals had low stress, 182 (76.795) had moderate stress and the remainder 25 (10.55%) experienced high stress.

GAD-7 was applied to determine anxiety in the study participants. It was a 7 item scale with 4 options for each wherein score of 0 was given for occurrence not at all, 1 for occurrence on several days, score 2 for over half the days and score of 3 for nearly every day. Score obtained were in range of 0 to 21. A total score of 0 to 5 meant no anxiety, score of 6 to 10 meant mild degrees of anxiety, scores of 11 to 15 meant moderate and those of 16 to 21 meant severe anxiety. Details of anxiety are shown in Figure 2.

The role of various predictors or the possible causative factors was studied with the help of chi square test. The

influence of gender on GAD, stress, sleep and appetite disturbances was studied. There was no significant difference in occurrence of these outcomes in male and female study participants with all having p value of >0.05. This is tabulated in Table 2.
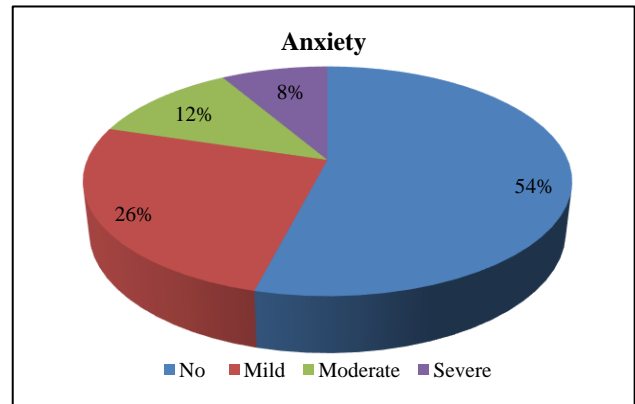

Figure 2: Anxiety in health care professionals.

Table 2: Influence of gender on GAD, stress, sleep/appetite disturbances during COVID 19 pandemic.

Variables		Male number (%)*	Female number (%)*	Total number (%)*	χ^2	P value
GAD@	Yes	48 (44.04)	61 (55.96)	109 (45.99)	2.2941	0.129
	No	69 (53.90)	59 (46.10)	128(54.01)		
Stress#	Yes	101 (48.80)	106 (51.20)	207 (87.34)	0.2162	0.641
	No	16 (53.33)	14 (46.67)	30 (12.65)		
Disturbed sleep	Yes	52 (44.44)	65 (55.56)	117 (49.37)	2.2402	0.134
	No	65 (54.16)	55 (45.84)	120 (50.63)		
Disturbed appetite	Yes	45 (47.36)	50 (52.64)	95 (40.08)	0.2534	0.614
	No	72 (50.70)	70 (49.30)	142 (59.92)		

*Indicates group-wise percentages, @ Scores more than 5 were considered having GAD, #Scores more than 13 were considered having moderate or severe stress

Table 3: Influence of age on GAD, stress, sleep and appetite disturbances during COVID 19 pandemic.

Variables		<40 years number (%)*	≥ 40 years number (%)*	Total number (%)*	χ^2	P value
GAD@	Yes	85 (77.98)	24 (22.02)	109 (45.99)	6.6712	0.009
	No	80 (62.50)	48 (37.50)	128(54.01)		
Stress#	Yes	152 (73.43)	55 (26.57)	207 (87.34)	11.2217	<0.001
	No	13 (43.33)	17 (56.67)	30 (12.65)		
Disturbed sleep	Yes	95 (81.20)	22 (18.80)	117 (49.37)	14.6411	<0.001
	No	70 (58.33)	50 (41.67)	120 (50.63)		
Disturbed appetite	Yes	82 (86.32)	13 (13.68)	95 (40.08)	20.8961	<0.001
	No	83 (58.45)	59 (41.55)	142 (59.92)		

*Indicates group-wise percentages, @ Scores more than 5 were considered having GAD, # Scores more than 13 were considered having moderate or severe stress

Similarly an attempt was made to study if age has any role in GAD, stress, sleep and appetite disturbances. For the sake of comparison and feasibility age was grouped in 2 main groups as <40 years and ≥40 years. Age seemed to have an influence on the outcomes. Elder age group study participants had significantly less GAD, stress and other outcomes as seen from p values <0.05. The findings are represented in Table 3.

Experience plays a vital role in determining the work out and the performance. Experienced individuals get adjusted to the work place and show less chances of work related stress. Table 4 represents the influence of experience on GAD, stress perceived, sleep and appetite disturbances. For comparison sake the experience was divided in two groups of less than seven years and more than or equal to seven years. The chi square test gave p values of <0.05 proving experience as a significant factor.

Table 4: Influence of experience in job on GAD, stress, sleep and appetite disturbances during COVID 19 pandemic.

Variables		<7 years number (%)*	≥7 years number (%)*	Total number (%)*	χ^2	P value
GAD@	Yes	93 (85.32)	16 (14.68)	109 (45.99)	4.2592	0.039
	No	96 (75.00)	32(25.00)	128(54.01)		
Stress#	Yes	173 (83.57)	34 (16.43)	207 (87.34)	14.837	<0.001
	No	16 (53.33)	14 (46.67)	30 (12.65)		
Disturbed sleep	Yes	103 (88.03)	14 (11.97)	117 (49.37)	9.826	0.002
	No	86 (71.67)	34 (28.33)	120 (50.63)		
Disturbed appetite	Yes	85 (89.47)	10 (10.53)	95 (40.08)	9.288	0.002
	No	104 (73.23)	38 (26.77)	142 (59.92)		

*Indicates group-wise percentages, @ Scores more than 5 were considered having GAD, # Scores more than 13 were considered having moderate or severe stress

Thus there was a significant difference in the occurrence of outcomes with age and experience individually though gender did not seem to play a role in it. Disturbances in sleep and appetite can be the predictor and at times the result of anxiety. The combined effect of all the variables was studied with the help of multivariate logistic regression was studied and is represented in Table 5. The individual role of age or experience seems masked on multivariate logistic regression analysis with p values >0.05. However sleep and appetite maintained highly significant role for GAD occurrence.

Table 5: Multivariate logistic regression analyses for generalized anxiety disorder (N= 237).

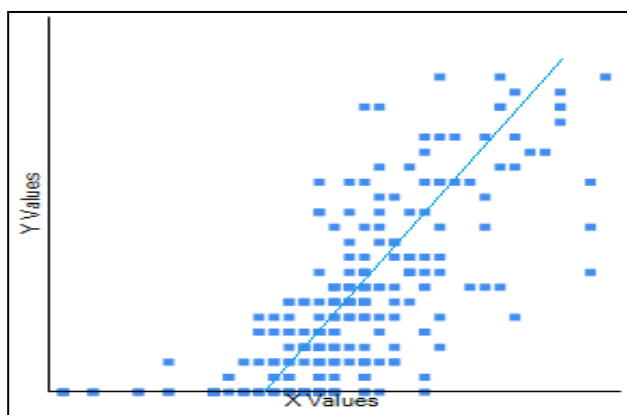| Factor	AOR	95% CI	P value
Gender (male, female)	1.42	0.77-2.65	0.259
Age (<40/ ≥40 years)	0.96	0.38 - 2.45	0.940
Experience (< 7/ ≥7 years)	1.12	0.39 - 3.15	0.828
Sleep (disturbed/ undisturbed)	3.63	1.76 - 7.48	<0.0001
Appetite (disturbed/ undisturbed)	4.57	2.15 - 9.17	<0.0001

Figure 3: Correlation between perceived stress and anxiety.

Correlation if any between perceived stress and anxiety was analysed by applying Pearson correlation coefficient. This is depicted in Figure 3 with PSS values on X-axis and GAD scores are on Y-axis. The value of R was 0.713. Thus moderate positive correlation was established between perceived stress and anxiety. The value of R^2, the coefficient of determination, was 0.5084.

DISCUSSION

The findings of the present online Google form based survey revealed varying degree of anxiety among the health care professionals. This observation is of vital importance in India which braces for the COVID-19 pandemic with healthcare professionals on the frontlines are particularly vulnerable to this infection and physical stress and psychological problems related to it.[9] In a meagre resource country like India where Government health care facilities and the health care professionals are always at the blame of general public during the COVID-19 battle the doctors and nurses are handling increased infection risk, paucity of protective gear, and even assault eventually putting at risk medical faculty to undergo stress resulting in fear, anxiety and other mental health problems.[10]

Such fear, stigmatization and at times discrimination potentially affect healthcare professionals to the extent that at times it results in their increased suicidal tendency.[7]

Healthcare professionals working under high stress environment also develop emotional and behavioural responses that are naturally adaptive in the face of extreme stress due to which the existing as well as resulting health problem either physical or mental goes unnoticed. This statement is very well supported by the present study finding of good mental well being status. Hence during the current COVID-19 pandemic and havoc scenario there is an urgent need to address the issue of mental health and anxiety among the health care professionals which is done through the present study. More than half of the study participants were afraid of catching corona virus infection. Similarly more than half

admitted that they always wore mask and protective equipment even in open spaces. Almost half of these felt anxiety while dealing with febrile patients. All these findings point towards the stress in the health care professionals. Considering resignation or discontinuing work by one-tenth is self-explanatory. The possible reason could be because the current study setting is from Nagpur which is amongst the districts that are in red zone from Maharashtra which is the state that has reported maximum number of cases.[11]

In the present study there was a significant difference in GAD and PSS scores among <40 years and ≥40 years study participants. This finding is similar to another study in which symptoms of anxiety were reported to be commoner in people less than 35 years of age.[12] Su et al also reported the protective role of elder age during SARS outbreak.[13] The reason could be that with increasing age the maturity to handle such situation as a doctor might be improving. Probably age was going hand in hand with higher years of experience which also were detected to have a similar role in GAD and PSS.

Sleep disturbances and appetite changes were found to have a statistically significant impact collectively in GAD. These findings are similar to other studies from China.[12] It can be postulated that a vicious cycle exists between anxiety and sleep. Disturbed sleep can result in anxiety and vice versa. In other words, disturbances in sleep can be an early warning sign in anxiety causation resulting initially in perceived stress and finally in generalized anxiety disorder. This is supported by the moderate positive correlation between stress and anxiety.

One of the limitations of this study is that it included participants from a single Government set up from an urban area and thus the results may not generalized to all the healthcare professionals. Further studies in health care professionals from multiple centers on a larger sample need to be carried out at a later time after control of pandemic.

CONCLUSION

The pandemic of COVID -19 has affected all dimensions of health; mental being the hidden one. The present study arrived at the conclusion that nearly half of the health care professionals were detected to have generalised anxiety disorder of varying severity. Younger and less experienced participants were affected more. Various counselling and support sessions can help the younger health care professionals stay at mental ease. Perceived stress being an early alarm for generalised anxiety disorder should not be ignored. This also demands attention to realise the impact of COVID-19 on psychological area. So that corrective measures are taken at the initial level and a healthier work force stands out to fight the COVID-19 battle.

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