

Research Paper

## Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital

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### ABSTRACT

**Background:** Large scale natural disasters in the past have caused widespread disruptions and have been associated with affecting the mental health. Depression, anxiety and other behavioral and psychological disturbances are frequently associated. Anxiety among health care workers in this novel situation could be triggered by various factors including lack of clarity on treatment guidelines and policies in the context of an evolving picture and increasing patient load. **Aims:** To study the levels of Anxiety and fear of COVID 19 in health care workers **Materials and Methods:** Using a cross-sectional online survey design, 225 health care workers in a medical college hospital designated to admit and treat COVID cases were included and assessed using questionnaires to measure levels of anxiety and fear to COVID 19 **Results:** Majority of the health care workers were worried about the current COVID 19 situation and those involved in active COVID duties reported moderate levels of anxiety, health related anxiety and fear of COVID 19. Education, income and urban background significantly affected the anxiety in health care workers. **Conclusion:** The COVID 19 pandemic is not just a medical phenomenon but it also playing with minds of health care providers. The balance of professional duties and demands with taking care of themselves needs special emphasis. Considering the impact of COVID 19 on psychological well-being and mental health of health care providers adequate measures at government, institutional and individual levels are required.

**Keywords:** Coronavirus, health care workers, anxiety, fear, COVID 19

The Beta coronavirus SARS-CoV-2 also popularly known as COVID 19 was identified for the first time in humans in December 2019 in Wuhan, China <sup>[1]</sup>. This local outbreak soon became global pandemic as declared by WHO <sup>[2]</sup> spreading across most of the countries rapidly and growing exponentially due to its contagion potential <sup>[3]</sup>. Past few months have shown increases in both mortality and morbidity. But the ever-changing picture of the current pandemic signifies that the impact is far beyond mortality and morbidity. Due the rapidly evolving global crisis the full impact of economic, psycho-social consequences is yet to be known. Unprecedented measures are being implemented

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## **Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital**

worldwide to contain the viral infection. These include lockdown, social distancing, quarantine, closing of schools and colleges, public places, places of entertainment, avoiding social gatherings, restrictions to travel <sup>[4]</sup>.

Fear and misinformation being circulated through various platforms further heightens discrimination, stigmatization, scape-goating of specific populations and prejudices which has started in China is now evident globally. Overwhelming nature of current scenario fostered further by rumours triggered fear of the unknown, Panic and anxiety leading to negative societal behaviours like hoarding of toilet paper and other food essentials not only in healthy individuals but also in those with pre-existing psychiatric conditions <sup>[5]</sup>. Loss of control, sense of being trapped, fear of death, absence of clear messages and desire for facts can also precipitate anxiety in individuals who tend to catastrophize symptoms and seek help which would otherwise be of minimal concern <sup>[6]</sup>.

Health care professionals are in a unique predicament owing to shortage of personal protective equipment, ventilators, intensive care beds and other paraphernalia necessary for treating patients coupled by inadequacy in health care work force <sup>[7]</sup>. Greater risk of exposure, lack of access to rapid testing, fear of propagating infection at work and to immediate family, extreme workloads, fear of lack of organization support are some of the sources of anxiety in health care professionals <sup>[8]</sup>. The uncertainty of the situation and feelings of vulnerability prompted reluctance to work or contemplating resignation in few health care workers in SARS outbreak of 2003<sup>[9,10]</sup>. Fear of having infected others resulted in the suicide death of health care worker in Italy when she was tested positive for COVID 19, such being the gravity of this pandemic <sup>[11]</sup>.

Further the distress in the medical personnel can stem from reasons like direct care of COVID 19 cases, knowing of someone who have contracted or died due to infection or requirement of quarantine or social isolation <sup>[12]</sup>. Being quarantined in itself resulted in fear and anxiety among health care workers <sup>[13]</sup>. A study done in Toronto during SARS outbreak of 2003 in Medicine residents reported of decline in educational experiences due to disruption of educational programs and clinical rotation postings. All residents attributed the paucity of knowledge regarding the disease as a major contributor to anxiety <sup>[14]</sup>. Nearly 40% of health care workers expressed anxiety amidst COVID 19 surge in a multi centric study in Iran <sup>[15]</sup>. Online survey study conducted in India with nearly half of the study population being health care professionals observed that 72% reported of worry and half of the participants felt panic over viewing reports of COVID 19 on electronic and print media <sup>[16]</sup>.

Fear, Panic and anxiety in medical personnel largely influence efficiency of the duties performed and their mental health concerns are of utmost importance as they are in frontline of medical care to COVID 19 patients. Though studies done in similar outbreaks in the past like SARS and Ebola have addressed the psychological concerns of health care professionals yet there is paucity of research in the emerging COVID 19 pandemic scare particularly in Indian scenario. Considering these factors, it is aimed to study the fear and anxiety to COVID 19 in health care professionals in a teaching hospital designated to admit COVID 19 patients.

### **MATERIALS AND METHODS**

This was an observational, cross sectional online survey carried out in a Tertiary Teaching hospital in the state of Andhra Pradesh, India. The State Government where the teaching

## Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital

hospital is located has designated the concerned teaching hospital as COVID hospital to admit and treat suspect and positive COVID cases. As per hospital policy doctors and nurses were posted on rotation to the ward admitting the COVID cases. Interns had additional duties of being posted in community surveillance of COVID 19 in the surrounding areas of the hospital under the directions of state government. Semi structured questionnaire was developed using Google forms to collect socio demographic and relevant details pertaining to COVID 19. Rating tools used to measure anxiety and consent form was also appended to it. The link to questionnaire was sent via WhatsApp, e- mail to all the health care workers in tertiary care teaching hospital. The voluntary nature of the study, maintenance of confidentiality was also explained while forwarding the link. On receiving and clicking on the link the participants are directed to the nature of the study and the consent form. Once the participants have consented, they are directed to series of questions regarding socio demographic details followed by questionnaire on anxiety scales.

Health care workers willing to participate in the study, aged 18 years and above, who understood the content of the survey, were included in the study. Those with preexisting psychiatric conditions were excluded. Approval from Institutional Ethics committee was taken prior to conducting the study. Data was collected from 11th June 2020 to 18th July 2020.

Demographic details included age, gender, occupation, education, area of residence, income and marital status.

**Fear of COVID 19 Scale** <sup>[17]</sup> - Emergence and rapid spread of the novel viral infection resulted in fear, anxiety and worries worldwide. Much research is in place to address transmission rates, infection control and effective vaccines. This scale was developed to focus on fears due to COVID 19 so as to have a holistic approach. Fear of COVID-19 Scale is a seven-item unidimensional scale with robust psychometric properties. It has reliability values such as internal consistency ( $\alpha = .82$ ), and test-retest reliability (ICC = .72). Concurrent validity was supported by the Hospital Anxiety and Depression Scale (with depression,  $r = 0.425$  and anxiety,  $r = 0.511$ ) and the Perceived Vulnerability to Disease Scale (with perceived infectability,  $r = 0.483$  and germ aversion,  $r = 0.459$ ).

**SHAI (Short Health Anxiety Inventory)** <sup>[18]</sup>: The SHAI is a self-report measure that contains 18 items assessing health anxiety independently of physical health status. Items measure worry about health, awareness of bodily sensations or changes, and feared consequences of having an illness using a multiple-choice format. The SHAI has demonstrated good reliability and validity in clinical and nonclinical samples. The SHAI demonstrated excellent internal consistency ( $\alpha = .96$ ). Each of the 18 items evidenced acceptable corrected item-total correlations (range = .61 to .87).

**Beck's Anxiety Inventory (BAI)** <sup>[19]</sup>: BAI is a 21 item self-report questionnaire to measure anxiety. The internal consistency was high (Cronbach's  $\alpha = .92$ ). The test-retest reliability of BAI is found to be 0.75.

## RESULTS

Total of 226 health care workers responded to the online survey, of which one participant did not consent to the study and was excluded. Total of 225 health care workers consented and completed the questionnaires. Among the respondents, majority 92 % ( $n = 207$ ) are

**Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital**

doctors, 7.55% (n=17) are nurses and 0.44% (n=1) is an administrator. Among the doctors 42.51% (n=88) are postgraduate residents, 32.85% (n=68) are interns, 11.59% (n=24) are assistant or associate professors, 6.28% (n=13) are professors and 6.76% (n=14) are senior residents.

Males comprised of 52.44% (n=118) of the sample and 47.56% (n=107) were female. Majority of the participants belonged to the age group of 26-30 yrs (38.22%) closely followed by less than 25 yrs group (36%). Among the respondents 47.11% belonged to urban background, 26.67% (n=60) belonged to semi urban and 26.22% (n=59) rural background. Unmarried participants were 141 (62.67%) whereas 36.89% (n=83) were married. Monthly income of the respondents earning less than Rs. 10000 is 47.11% (n=106) as is portrayed in Table 1.

**Table-1 socio demographic profile of health care workers**

Demographic variable		Frequency	Percentage
Gender	Female	107	47.56
	Male	118	52.44
	Total	225	100.00
Age	<25 yrs	81	36.00
	26-30 yrs	86	38.22
	31-40 yrs	36	16.00
	41-50 yrs	11	4.89
	51+ yrs	11	4.89
	Total	225	100.00
Background	Rural	59	26.22
	Semi urban	60	26.67
	Urban	106	47.11
	Total	225	100.00
Education	Graduate	113	50.22
	Postgraduate	112	49.78
	Total	225	100.00
Occupation	Doctor	207	92.00
	Nurse	17	7.55
	Administrator	1	0.44
	Total	225	100.00
Position	Intern	68	32.85
	Postgraduate	88	42.51
	Asst or Associate Professor	24	11.59
	Senior resident	14	6.76
	Professor	13	6.28
	Total	207	100.00
Marital status	Married	83	36.89
	Unmarried	141	62.67
	Divorced/widow/widower	1	0.44
	Total	225	100.00

**Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital**

Demographic variable		Frequency	Percentage
Monthly income	<10000	106	47.11
	10000-20000	26	11.56
	20000-50000	35	15.56
	>50000	58	25.78
	Total	225	100.00

Among the respondents 57.78% (n=130) are posted to active COVID 19 duties and 42.2% (n=95) were not yet posted. 81.33% (n=183) were worried about the COVID 19 situation. Among the participants 78.22% (n=176) have responded that they want to talk to someone about their fears out of which 33.52% (n=59) wanted to talk to a psychiatrist about their fears, 29.55% (n=52) wanted to talk to family, 27.27% (n=48) wanted to talk to friends as shown in Table-2

**Table-2 COVID related profile of health care workers**

Demographic variable		Frequency	Percentage
Posting to active COVID duties	Yes	130	57.78
	No	95	42.22
	Total	225	100.00
Worried regarding COVID 19	Yes	183	81.33
	No	42	18.67
	Total	225	100.00
Would you like to talk to anyone regarding the fears	Yes	176	78.22
	No	49	21.77
	Total	225	100.00
Who would you like to talk to	Family	52	29.55
	Friends	48	27.27
	Colleague	16	9.09
	Psychiatrist	59	33.52
	None	1	0.57
	Total	176	100.00
BAI scores	Mild	128	56.89
	Moderate	86	38.22
	Severe	11	4.89
	Total	225	100.00

The mean scores of the Beck's anxiety inventory (BAI) is 16.62 (SD = 13.57), Fear of Corona virus (FCV) scale is 19.76 (SD=6.92) and Short Health Anxiety Inventory (SHAI) is 17.96 (SD=11.22). Majority of the health care workers (49.23%) posted in active COVID duties reported of moderate levels of anxiety on Beck's anxiety inventory which is statistically significant (Table-3).

**Table-3 Relation of socio demographic profile with Anxiety levels of health care workers**

Demographic variable		BAI Score			Chi square	P value
		Low	Mod	Severe		
Background	Rural	27 (21.09%)	31 (36.05%)	1 (9.09%)	16.4255	0.002
	Semi Urban	30 (23.44%)	23 (26.74%)	7 (63.64%)		

**Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital**

Demographic variable		BAI Score			Chi square	P value
		Low	Mod	Severe		
Education	Urban	71 (55.47%)	32 (37.21%)	3 (27.27%)	46.4051	0.000
	Graduate	39 (30.47%)	66 (76.74%)	8 (72.73%)		
	Postgraduate	89 (69.53%)	20 (23.26%)	3 (27.27%)		
Monthly income	< 10000	50 (39.06%)	48 (55.81%)	8 (72.73%)	24.9664	0.000
	10000-20000	10 (7.81%)	16 (18.60%)	0 (0.00%)		
	20000-50000	30 (23.44%)	4 (4.65%)	1 (9.09%)		
	>50000	38 (29.69%)	18 (20.93%)	2 (18.18%)		

Similarly, those posted in active COVID duties (n=90, 75.63%) also showed high fear on Fear of COVID 19 scale which is statistically significant (Table-4)

**Table-4 Relation of socio demographic profile and COVID duties with FCV scores**

Demographic variable		FCV Score		Chi square	P value
		Less fear	More fear		
Background	Rural	18 (16.98%)	41 (34.45%)	10.3653	0.006
	Semi Urban	28 (26.42%)	32 (26.89%)		
	Urban	60 (56.60%)	46 (38.66%)		
Active COVID duties	No	66 (62.26%)	29 (24.37%)	33.0003	0.000
	Yes	40 (37.74%)	90 (75.63%)		
Monthly income	< 10000	49 (46.23%)	57 (47.90%)	17.1952	0.001
	10000- 20000	10 (9.43%)	16 (13.45%)		
	20000- 50000	27 (25.47%)	8 (6.72%)		
	>50000	20 (18.87%)	38 (31.93%)		

As per the Short Health Anxiety Inventory (SHAI), 86 (66.15%) scored high on illness likelihood subscale and 74 (56.92%) scored high on negative consequences subscale in those posted for COVID duties which is also statistically significant (Table-5). Majority of the participants who scored high on Fear of COVID 19 Scale also showed moderate levels of anxiety on Beck's anxiety inventory 84 (70.58%) which was statistically significant (Table-6)

**Table-5 Relation of COVID duties with BAI and SHAI total and subscale scores**

Scale scores		Active COVID duties		Chi square	P value
		Yes	No		
BAI Scores	Mild	57 (43.84%)	71 (74.73%)	21.5750	0.000
	Moderate	64 (49.23%)	22 (23.15%)		
	Severe	9 (6.92%)	2 (2.10%)		
SHAI total	Less	44 (33.84%)	65 (68.42%)	26.2716	0.000
	More	86 (66.15%)	30 (31.57%)		
SHAI illness likelihood	Less	44 (33.84%)	65 (68.42%)	26.2716	0.000
	More	86 (66.15%)	30 (31.57%)		
SHAI negative consequences	Less	56 (43.07%)	74 (77.89%)	27.2763	0.000
	More	74 (56.92%)	21 (22.10%)		

**Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital**

**Table-6 Relation of BAI scores with FCV and SHAI scores**

Scale		BAI Scores			Chi square	P value
		Low	Moderate	Severe		
FCV scale	Less	104 (98.11%)	2 (1.88%)	0 (0.00%)	138.8986	0.000
	More	24 (20.16%)	84 (70.58%)	11 (9.24%)		
SHAI scale	Less	100 (91.74%)	8 (67.24%)	1 (0.91%)	104.7240	0.000
	More	28 (24.13%)	78 (67.24%)	10 (8.62%)		

Respondents who scored high on total score of Short Health Anxiety Inventory (SHAI) also scored high on Fear of COVID 19 scale (n=106, 89.08%) which was again statistically significant (Table-7). Among the health care workers who reported of high fear as per fear of COVID 19 scale belonged to urban background and had an income of less than 10000/month which was statistically significant. Participants who were graduates with income less than 10000/month and belonging to urban background showed moderate anxiety on Beck's anxiety inventory and high total Short Health Anxiety Inventory (SHAI) score which is statistically significant (Table-8).

**Table-7 Relation of FCV scores with SHAI total and subscale scores**

Scale scores		FCV scores		Chi square	P value
		Less	More		
SHAI total	Less	96 (90.57%)	13 (10.92%)	142.3743	0.000
	More	10 (9.43%)	106 (89.08%)		
SHAI Illness likelihood	Less	95 (89.62%)	14 (11.76%)	136.0682	0.000
	More	11 (10.38%)	105 (88.24%)		
SHAI negative consequences	Less	102 (96.23%)	28 (23.53%)	121.4511	0.000
	More	4 (3.77%)	91 (76.47%)		

**Table-8 Relation of socio demographic profile with total SHAI Score**

Demographic variable		SHAI Score		Chi square	P value
		Less	More		
Background	Rural	17 (15.60%)	42 (36.21%)	13.4451	0.001
	Semi Urban	30 (27.52%)	30 (25.86%)		
	Urban	62 (56.88%)	44(37.93%)		
Education	Graduate	40 (36.70%)	73 (62.93%)	15.4701	0.000
	Postgraduate	69 (63.30%)	43 (37.07%)		
Monthly income	< 10000	50 (45.87%)	56 (48.28%)	15.3953	0.002
	10000- 20000	9 (8.26%)	17 (14.66%)		
	20000- 50000	27 (24.77%)	8 (6.90%)		
	>50000	23 (21.10%)	35 (30.17%)		

**DISCUSSION**

The current study was conducted at a tertiary care teaching hospital in South India which was designated as a COVID hospital for admitting and treating suspect and confirmed cases of COVID 19 patients. In this context this study attempted to evaluate fear and anxiety in health care workers in this hospital. Total of 225 health care workers participated in the study, comprising mainly of doctors and nurses. Those who reported of moderate levels of

## Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital

anxiety as per Beck's anxiety inventory were 85 out of which 49.23 % (n= 64) were those involved in active COVID duties. High fear reported by health care workers on Fear of COVID 19 scale was seen in 119 out of which 75.63% (n= 90) had COVID duties.

Multi centric study done in Mainland China <sup>[20]</sup> in health care workers of doctors and nurses showed prevalence of anxiety of 16%. This study also observed that mild anxiety was more prevalent than moderate to high levels of anxiety which is similar to the current study whereas majority of the participants involved in COVID duties reported of moderate levels of anxiety. So, it can be concluded that COVID duties has some effect on increase of anxiety in health care workers. Another cross-sectional survey-based study from Hubei province of China <sup>[21]</sup> observed anxiety levels of health care workers as 44.6% and being involved in active COVID duties attributed to more severe anxiety symptoms which further substantiated the findings in our study.

Study in china evaluating mental health status of medical staff <sup>[22]</sup> in active COVID duties reported incidence of anxiety as 23.04%. This study also concluded that female medical staff had more anxiety as compared to their male counterparts. This is in contrast to the current study where no significant gender differences were found in anxiety. Online survey-based study done in China <sup>[23]</sup> concluded that anxiety levels were more in medical professionals in the context of Covid outbreak as compared to non-medical health workers. This study also stated that living in rural area increased the risk of anxiety in medical health workers whereas our study observed that health care workers from urban areas reported of moderate anxiety.

Multi centric cross-sectional study in Iran <sup>[15]</sup> during the Covid pandemic surge in that country in health care personnel observed that 39.6% of the respondents had moderate to severe anxiety with lower ages associated with higher levels of anxiety. Similar trend was also found in the current study with moderate to severe anxiety reported in 43.11% of health care personnel. Though age had no association with the levels of anxiety education played a role with more graduates reporting of moderate to severe anxiety. Lower education with fewer years of clinical experience might have contributed to higher levels of anxiety <sup>[24]</sup>.

The study was conducted during the lock down in the country when the surge of COVID cases was emerging and a drastic rise of confirmed COVID cases was evidenced post lockdown. This may have influenced the fear and anxiety in health care workers depending on different phases of spread of the current pandemic in the country. Owing to cross sectional nature of our study we couldn't account for the anxiety levels over a period of time in the background of increase in confirmed cases of COVID 19 which is a limitation of our study. Also, the focus of the current study was on fear and anxiety in health care providers and didn't address other psychological disturbances like depression and stress. Future research can be directed on analysing over all psychiatric disturbances in health care providers to provide better understanding.

## CONCLUSION

As the COVID surge continues across the world much focus and research is being done to discover an effective anti-viral and vaccine for COVID 19 <sup>[25]</sup>. Impact on mental health and the consequences there of is being overlooked especially so in health care workers whose role in the current COVID battle cannot be undermined and their mental health needs should be of utmost importance. Fear of COVID and anxiety levels are significantly elevated in

## Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital

health care workers more so in those involved in active COVID duties. Preventive measures and interventions need to be in place for optimal functioning and wellbeing of the health care providers.

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## Fear and anxiety of COVID-19 in health care workers in a tertiary teaching hospital designated as COVID-19 hospital

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### **Conflict of Interest**

The author declared no conflict of interest.

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