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Psychosocial perception of health-care workers in a COVID-19-designated hospital in eastern India

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Abstract:

BACKGROUND: COVID-19 pandemic has changed the life of people in many facets, economic, social, and psychological. Frontline health-care workers (HCWs) fighting against this pandemic faced some psychological as well as social issues which are of major concern. The objective of the study is to evaluate the magnitude of mental health problems, namely depression, anxiety, and stress among frontline HCWs as well as their perception on ongoing events and surroundings.

MATERIALS AND METHODS: It was a prospective, observational study on *n* = 85 HCWs over a 4-month period. Study participants were sampled purposively in accordance with inclusion and exclusion criteria; data were collected by online survey method. A semi-structured scale was used: Part A of which assessed the demography and perception of HCWs on surrounding along with ongoing social events and Part B consisted of the Depression, Anxiety, and Stress Scale-21 that was used to assess mental health issues. All the associations were tested in percentages and proportions. Statistics was calculated by using SPSS 24th version.

RESULTS: Majority of the participants were female doctors and belonged to 21–30 years' age group. Most of them were marginally worried of contacting infection (73%) but were substantially apprehensive of transmitting infection to their family (56.5%) and hoped positive outcome ultimately in the form of recovery from infection. Majority (96.4%) gathered information from authentic sources and were confident of adequacy of their knowledge. Majority (88.3%) were satisfied about their occupational safety and responded on scientific solution of pandemic. However, we got a mixed result about their professional appreciation. Depression symptom score was higher than anxiety and stress symptom score in our participants.

CONCLUSIONS: Doctors and nurses both were suffering from mental health issues, and provision of adequate information and occupational safety may lessen these burdens.

Keywords:

Anxiety, COVID-19, depression, Depression, Anxiety, and Stress Scale-21, health-care workers, pandemic, stress

Introduction

In early December 2019, a new strain of coronavirus family of viruses was isolated from airway epithelial cells from patients suffering from a group of acute respiratory illnesses at Wuhan in China; it is highly contagious and rapidly transmitted from person to person.[1] The World Health Organization on March 2020 declared it as pandemic situation.[2] The first case of a COVID-19 patient in India was reported on January 27, 2020.[3] Globally, as at 12:07 pm CEST, on April 6, 2021, there have been 131,309,792 confirmed cases of COVID-19, including 2,854,276 deaths, reported to the WHO.[4] As on April 10, 2021, 4:05 pm IST, there are 1,32,20,203 confirmed COVID cases including 1,68,523 deaths reported from India.[5] Up to July 2020, 1313 health-care workers (HCWs) were infected in India, of whom 108 were doctors and 2 nurses

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died of COVID-19.[6] Other sources claim higher death of Indian doctors with more than 400 casualties due to COVID-19.[7] The Government of India announced lockdown on March 24, 2020, to restrict the spread of the COVID-19 pandemic and extended lockdown twice and finally lifted it on May 17, 2020; during lockdown, suicide was the second major cause of death related to noncoronavirus deaths.[8] Apart from anecdotal evidences and newspaper reports of increased suicidal rate, stress, anxiety, and depressive symptoms were major mental health problems during COVID-19 pandemic; frontline HCWs such as doctors and nurses were at the risk of getting infection as well as of developing mental health problems due to scarce resources, working under stress, and also experienced workplace violence, harassment by house owner, stigma of community, and neighborhood leading to social isolation and discrimination.[9] "Mental or psychological well-being is influenced not only by individual characteristics or attributes, but also by the socioeconomic circumstances in which persons find themselves and the broader environment in which they live."[10] In this study, we tried to figure out how frontline health workers were working in a dedicated COVID-19 hospital and how did they perceive their own mental status in the prevailing situation (COVID-19 pandemic), their social situation (Professional acceptance) as well as their mental health burden.

Materials and Methods

Study design and setting

The study was carried out in a designated dedicated COVID-19 hospital of eastern part of India. It is a prospective observational study conducted between May 20, 2020, and September 20, 2020, i.e. 4 months' period.

Study participants and sampling method

HCWs including doctors and nursing staff who only directly worked in isolation ward and were involved in patient care of COVID-19-confirmed patients during the study period were our study participants. Data were collected as online soft copy (i.e. E-mail and Google Forms) or hard copy format. Sampling method was purposive sampling in accordance with exclusion and inclusion criteria. Study participants were those meeting exclusion and inclusion criteria [Figure 1].

Inclusion criteria

The study participants were HCWs, i.e., doctors or nursing professionals, having knowledge of English language, and tech-savvy in filling responses to forms provided through online link.

Exclusion criteria

The individual participants who had a history of psychiatric disease of any variety diagnosed in the last 5 years or denied participation in the absence of consent were excluded from the study. HCWs who were not directly involved in COVID-19 patient management were also excluded from the study.

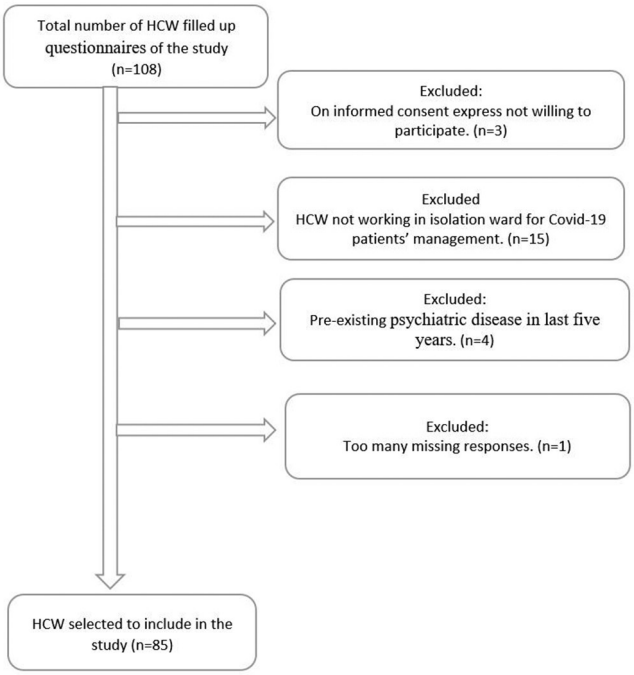

Figure 1: Flowchart of case recruitment

Data collection tool and technique

Data were collected as online soft copy (i.e., E-mail and Google Forms) or hard copy format. The identity of none of the individuals was disclosed. The main instrument for collecting data was an online questionnaire using Google Forms https://forms. gle/mJLT5 × S52W2 hVAnY9. Instruments used in the study were a set of predesigned semi-structured self-reporting questionnaires prepared by expert opinion, targeting various aspects of mental health including psychological state and perception of individual about surrounding social environments that influence mental well-being of the individual HCWs during the time of COVID-19 pandemic. Instrument had two parts, i.e. Part A and Part B.

Sociodemographic questionnaires

Part A consisted of questionnaires about sociodemographic data (age, gender, and profession), perception of infectivity of the disease, knowledge about the disease, perception about occupational safety, possible solution for COVID-19, and attitude toward own profession.

Psychological questionnaires

Part B was Depression, Anxiety, and Stress Scale-21 (DASS-21). DASS-21 consists of self-report statements that were used to assess the psychological state of HCWs in the last 1 week. These statements were

recorded in a 4-point Likert scale. DASS-21 quantifies subjects' psychological state in symptoms dimension rather categorizing them in any strict compartment of diagnosis. DASS-21 is made of three self-report subscales of which each consist of 7 questionnaires/statements to assess depression, anxiety, and stress symptoms. To get a final cumulative score, the reading of DASS-21 is needed to be multiplied by 2 (two) before interpreting.[11-14]

The following 4-point Likert scale was used against the responses by study participants:

- 0 – Did not apply to me at all – NEVER
- 1 – Applied to me to some degree, or some of the time – SOMETIMES
- 2 – Applied to me to a considerable degree, or a good part of time – OFTEN
- 3 – Applied to me very much, or most of the time – ALMOST ALWAYS.

Data *were* computed in the following manners*:*

- S (Stress) score × 2= Stress against the Question no. 1, 6, 8, 11, 12, 14, and 18.
- A (Anxiety) score × 2= Anxiety Question no. 2, 4, 7, 9, 15, 19, and 20
- D (Depression) score × 2= Depression Question no. 3, 5, 10, 13, 16, 17, and 21

Parameters were classified on final scoring, i.e., multiplication by two of DASS-21 score, as shown below: [Table 1]

Regarding psychometric property of our instrument, Part A consisted of socio demographic questionnaires, that was prepared as per suggestion of experts in respective fields, and/or included from questionnaire used in similar studies.[15,16] Part B was DASS-21, which is an widely used scale, and was applied in its original form.

Statistical analysis

Our study variables were age, gender, profession, satisfaction about personal protective gears, adequacy of knowledge to combat pandemic, etc., These data were computed in table format in percentages and proportions. All of the data were calculated in IBM Statistical Package for the Social Sciences version 24.0 (SPSS) (Chicago, USA).

Results

In our study, 60% of the participants were female and 40% were male; 54.1% were doctors and 45.9% were nursing staff; 58.8% of the study participants were from 21–30 years' age group, 29.4% were from 31 to 40 years' age group, and 11.8% were from 41 to 50 years' age group [Table 2].

On questionnaire about worry of getting disease, 27.1% were not at all worried, 21.2% were marginally/slightly worried, 24.7% were mildly worried, 14.1% were moderately worried, and 12.9% were extremely worried. On summing up 73% (27.1%+21.2%+24.7%) of our study population, experienced little to no worry of getting infection whereas the rest were moderately to extremely worried[Table 3].

Table 1: Parameters were classified on final scoring, i.e., multiplication by 2 of Depression, Anxiety, and Stress Scale-21 score

Categories	Normal	Mild	Moderate	Severe	Extremely severe
Stress	0-10	11-18	19-26	27-34	35-42
Anxiety	0-6	7-9	10-14	15-19	20-42
Depression	0-9	10-12	13-20	21-27	28-42

Table 2: Demographic data

Number	Demographic profiles	Categories	Frequency (%)
1	Age groups (years)	21-30	50 (58.8)
		31-40	25 (29.4)
		41–50	10 (11.8)
		Total	85 (100)
2	Profession	Doctor	46 (54.1)
		Nursing staff	39 (45.9)
		Total	85 (100)
3	Gender	Male	34 (40)
		Female	51 (60)
		Total	85 (100)

On questionnaire about bringing the disease to home, 12.9% were not at all worried, 16.5% were slightly worried, 14.1% were mildly worried, 22.4% were moderately worried, 34.1% were extremely worried, on summing up 43.5% (12.9%+16.5%+14.1%) of our study population, experienced little to no worry about infecting family members whereas 56.5% were moderately to extremely worried [Table 3].

On questionnaire about getting information about pandemic, 43.5% relied on own reading, 8.2% got information from social media such as WhatsApp and Facebook, 41.2% gathered information from news media such as newspaper or television news, 1.2% believed in words from mouth, and 5.9% gathered from webinars [Table 3].

On questionnaire about consequence, if tested positive for COVID-19, 23.5% responded he/she would be fine, 72.9% apprehended sickness and eventless recovery, 3.5% feared death, whereas there was no response for serious infection leading to ITU admission [Table 4].

On questionnaire about personal adequacy of knowledge regarding management of COVID-19 test-positive patient, 29.4% were confident of complete knowledge with perfection, 32.9% thought that they were rather sufficient, 27.1% thought that their

knowledge was moderate, 5.9% admitted that they had slight knowledge, whereas 4.7% responded for zero knowledge [Table 4].

On questionnaire about satisfaction levels of HCWs regarding quality and adequacy of personal protective equipment (PPE), N95 masks, and other gears for occupational safety, about 30.6% were fully satisfied, 36.5% expressed their satisfaction level as good, 21.2% expressed their satisfaction of being average, 9.4% expressed poor satisfaction, whereas 2.4% expressed zero satisfaction level [Table 5].

Table 3: Perception about infectivity of disease

Number	Questionnaire	Categories of responses	Frequency (%)
1	Worried about to get the disease yourself	Not at all worried	23 (27.1)
		Slightly worried	18 (21.2)
		Somewhat worried	21 (24.7)
		Moderately worried	12 (14.1)
		Extremely worried	11 (12.9)
		Total	85
2	Bringing the disease home	Not at all worried	11 (12.9)
		Slightly worried	14 (16.5)
		Somewhat worried	12 (14.1)
		Moderately worried	19 (22.4)
		Extremely worried	29 (34.1)
		Total	85
3	Getting most of the information regarding the pandemic	Own reading	37 (43.5)
		WhatsApp messages	7 (8.2)
		Facebook	0
		Newspaper/ news channels of television	35 (41.2)
		Word of mouth	1 (1.2)
		Webinar	5 (5.9)
		Total	85 (100)

On questionnaire about the view of HCWs regarding the possible best way to stop the COVID-19 pandemic, 43.5% responded for vaccination, 35.3% for acquiring herd immunity, 7.1% for invention of new medicine, 7.1% responded for extension of lockdown, 5.9% responded with having no idea, and 1.2% believed in God's blessings [Table 5].

On questionnaire regarding own perception of HCWs toward their profession, 51.8% of the HCWs responded with no change of feeling to their profession, 45.9% responded that they were happy as their profession was now more appreciated, and 2.4% responded that it would have been better if they were in other professions [Table 5].

In our study participants, 68.2% scored normal for stress subscale, 28.2% experienced mild stress, and 3.5% experienced moderate stress; on anxiety subscale, 49.4% were normal, 7.1% had mild anxiety symptoms, 28.2% had moderate anxiety symptoms, 8.2% had severe anxiety symptoms, and 7.1% had extremely severe anxiety symptoms; on depression subscale of DASS-21, 37.6% were normal, 30.6% had mild depressive symptoms, 24.7% had moderate depressive symptoms, 3.5% had severe depressive symptoms, and 3.5% had extremely severe depressive symptoms [Table 6].

Discussion

In our view, the study is unique in the sense that we assessed the psychosocial perception of HCWs including both doctors and nurses, during their COVID-19 duty in the setting of a dedicated COVID-19 hospital in eastern India.

Many of the similar studies had participants ranging from 22 to 200.[15-17] We had selected 85 study samples which met inclusion and exclusion criteria; among them, 60% were female and 40% were male. This finding was possible as out of all HCWs, 54.1% of the doctors included both males and females, but 45.9% of

Table 4: Knowledge about the disease

Number	Questionnaire	Categories of responses	Frequency (%)
1	What did you think would happen to you if you tested positive	Nothing – I would be fine	20 (23.5)
		I would be sick but would get better	62 (72.9)
		I would be very sick and admitted to ICU	0
		I would die	3 (3.5)
		Total	85 (100)
2	Do you feel that you have adequate knowledge to look after COVID-19 patients	Not at all	4 (4.7)
		Slightly I know	5 (5.9)
		Somewhat I know about my work	23 (27.1)
		Moderately I know about my work	28 (32.9)
		Perfectly I know about my work	25 (29.4)
		Total	85 (100)

COVID-19=Coronavirus 2019, ICU=Intensive care unit

Table 5: Perception about protective gears for occupational safety and possible solution

Number	Questionnaire	Categories of responses	Frequency (%)
1	Do you think effective protective gears, i.e., PPE, N95 mask provided by your hospital	Terrible	2 (2.4)
		Poor	8 (9.4)
		Average	18 (21.2)
		Good	31 (36.5)
		Fully satisfied	26 (30.6)
		Total	85 (100)
2	Which of the following in your opinion, to solve the COVID-19 pandemic	By extension of lockdown	6 (7)
		Vaccination	37 (43.5)
		Acquiring inert immunities after person to person infection	30 (35.3)
		Invention of new medicines	6 (7.1)
		By the God's blessings	1 (1.2)
		Don't know	5 (5.9)
		Total	85 (100)
3	What is your feelings about your profession in these days	It would have been better if I was in other professions	2 (2.3)
		I am happy and feel appreciated now	39 (45.9)
		No change of feelings about my profession	44 (51.8)
		Total	85 (100)

PPE=Personal protective equipment, COVID-19=Coronavirus 2019

Table 6: Psychological data derived from Depression, Anxiety, and Stress Scale-21 scoring of health-care workers

Classification according to severity	Frequency (%)		
	Depression	Anxiety	Stress
Normal	32 (37.6)	42 (49.4)	58 (68.2)
Mild	26 (30.6)	6 (7.1)	24 (28.2)
Moderate	21 (24.7)	24 (28.2)	3 (3.5)
Severe	3 (3.5)	7 (8.2)	0
Extremely severe	3 (3.5)	6 (7.1)	0
Total	85 (100.0)	85 (100.0)	85 (100.0)

te nursing staffs were mostly female. Our findings of female majority were similar with the result of a study done in Vietnam in a designated hospital with sample size n = 106.[18]

Majority (58.8%) of our study participants were from younger age group (21–30 years of age) wealth of any health-care team for boosting enthusiasm and dedication to team; 29.4% were from 31 to 40 years' age group, active as well as experienced, thus providing mobility with stability to any health care team; the rest group comprised well-experienced persons, belonging to 41–50 years' age group. Most of the HCWs of above 50 years' age group were exempted from COVID-19 duty by hospital administration due to their comorbidity and the rest were either unwilling to participate in the study or were excluded from the study according to exclusion criteria.

Regarding occupational safety, majority (88.3%) of the HCWs expressed their satisfaction on quality and quantity of PPE, N95 masks, and other gears at optimum ranging from fully satisfied to average satisfaction level. This is in contrast with a study done in Ethiopia, where majority of the study participants reported dissatisfaction regarding occupational safety due to poor supply of PPE kit.[19] This is due to continuous vigilant effort of hospital administration to ensure adequate availability of N95 mask and PPE kit to each and every one recruited in COVID-19 duty as per government guidelines. Majority (89.4%) of the HCWs ranked their knowledge from perfect to the adequate knowledge for management of COVID-19-infected patients. This self-confidence may be indirect reflection of their knowledge as agreed in a study in China on HCWs.[20] Our institution had taken a tremendous effort on its part to conduct training for each and every batch of HCWs before their COVID-19 duty started and regularly updated them on new information related to COVID-19 management through video conferencing/webinars. A multicentric study on Indian HCWs also advocates this type of training sessions for HCWs as precautionary measures.[21]

The anxiety level during the pandemic escalated most likely from the concern for inadequacy of gears for personal protection and lack of right information to HCWs.[22] In our study, HCWs were well trained in COVID management and precautionary practices before their COVID duty posting and time to time updated with new information through webinars during their COVID duty along with adequate supply of protective gears during COVID duty, as a result majority (68.2%) of the HCWs scored within normal range in DASS-21; majority (49.4%) of the HCWs reported normal in anxiety subscale that means no anxiety symptoms elicited among them and 35.3% of them reported mild-to-moderate anxiety symptoms. This is in contrast with a similar study in India performed on doctors using DASS-21, in

which the participants scored relatively high in stress and anxiety subscales; surprisingly, only 24.3% of their study sample had access to PPE kit.[16]

Favorable score in stress and anxiety subscales of DASS-21 among our study samples was manifested as majority (~73%) of them stated little to no worry about their getting infection. This result is consistent with a study where occupational safety is maintained.[15] However, HCWs were highly scared of bringing the infection to home as 56.5% were moderately to extremely worried; such concern might be due to their feeling of care and strong emotional bondage within their close-knit family and family members. This finding was not an exception for any family unit, rather it was usual and consistent with other similar studies.[15,23]

Regarding COVID-19 pandemic, majority (49.4%) of the HCWs gathered their information either by personal reading (43.5%) or by webinar (5.9%), followed by 41.2% from news media, and only very few of them relied on social media (8.2%) or from others mouth (1.2%). A study done on Nigerian HCWs reported in favor of traditional media over social media regarding their source of information on COVID-19.[24] As we know, sharing of fake and distorted news in social media is rampant globally; in the absence of identifiable authentic source, traditional news media is still now a pillar of true information.[25,26] Therefore, it is evident that even searching for information, majority chooses either scientific (i.e., own reading and webinar) or authentic (news media) sources.

As frontline soldiers, HCWs with scientific temperament have pinned their hope on solving the pandemic by vaccination (43.5%) closely followed by acquiring herd immunity after person-to-person infection (35.3%). That means developing herd immunity either by infection or vaccination can break the chain of transmission, can stop or slow the spread of viral disease.[27]

Our 96.4% of the study participants felt that there would be no bad consequences if they report positive for COVID-19. That keeping in line with their scientific mindset and authentic sources of information, it may be indirectly implying awareness of HCWs, for favorable outcome of COVID-19 in India[28] or their positive attitude may be a result of their adequate knowledge.[29]

In DASS-21 depression subscale, 37.6% of the HCWs reported normal score, which means no depressive symptoms, 30.6% reported mild depressive symptoms, 24.7% reported moderate depressive symptoms, and 3.5% reported severe depressive symptoms. Higher proportion of depressive symptoms in our study population is in contrast with a study done in India on 152 doctors using DASS-21, which found 10.5%, 14.5%, 5.9%, and 3.9% of the doctors, having mild, moderate, severe, and very severe depressive symptoms respectively; that study was male predominant (78.3%) with a mean age of 42.5.[16] In comparison, our study was female predominant (60%) and done on both doctors and nursing professionals (45.9%); majority of the study participants were from 21 to 30 years' age group (58.8%). A multicentric study performed in three Metropolitan cities of Pakistan for assessing mental health status of HCWs on COVID-19 duty after using DASS-21 found that depressive symptoms were higher among females and in nursing staffs.[30] In another study, it was reported that more depressive symptoms were found on Chinese HCWs of below 30 years' age group, though different mental health scales were used in that study.[31] These different study findings that were conducted in Pakistan and China might explain the higher depressive symptoms among participants of our study.

On questionnaire about own feeling for their profession, 51.8% responded having no change of feeling, 45.9% responded that their profession is now more appreciated and that they feel happy, and 2.4% responded that it would be better if they were in other professions. These mixed results may be due to both simultaneous ongoing violence against HCWs and felicitation by society as well as government organizations.[32,33]

Limitation and recommendation

There were certain limitations in our study, as it was conducted on HCWs of on tech-savvy population of a single center that was designated for treatment of COVID-19-infected patients only. DASS-21 is never a match for Clinical interview but our inability to take face-to-face interview owing to the fear of contamination of COVID-19 viruses and constraint of quarantine guidelines during the ongoing duties of HCWs should also be considered. To generalize the study findings, a large multicenter study is needed by replicating the study to get more meaningful inferences. Although there have been some limitations, our study established its usefulness to draw some meaningful conclusions.

Conclusions

Both doctors and nursing professionals as frontline HCWs suffer from mental health issues such as anxiety, stress, and depressive symptoms during their duty hours. Female HCWs and young age group (<30 years) suffer more from depressive symptoms. This requires further replication on large sample, preferably in multicentric study. We can say from our study that provision of adequate, authentic information about disease, and satisfactory personal protective gears may lessen mental health burden, especially anxiety and stress

among HCWs. Further studies are needed to examine advanced statistics with correlational analysis.

The appreciation and felicitatory steps to HCWs by government and social organization may encourage devotion to serve further to their profession.

Acknowledgment

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Ethical standards and informed consent

The Institutional Ethics Committee approved the study, and the study was performed in accordance with its recommendations in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975 that was revised in 2013 and informed consent was obtained from all participants for being included in the study.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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