



An exploration of psychological distress and stigma in frontline workers amidst COVID-19 from Andhra Pradesh, India

Abstract

Background: Time has evidenced the impact of various pandemics on the human race, and specifically the impact on the healthcare workforce assigned to the forefront. The coronavirus disease 2019 (COVID-19) brought in similar challenges across the globe, and also nationally. Mental health-related distress endured during these trying times in special forces remains an area of interest, but additionally we saw the reports of stigmatisation of healthcare workers working in COVID-19 areas. We aimed to explore the psychological distress and stigma faced by frontline workers in Andhra Pradesh, India. **Materials and methods:** Data was collected via specially designed Google survey forms, with a consent form and valid tools attached, namely the General Health Questionnaire-12 and a semi-structured questionnaire exploring stigma. Total of 321 nurses, interns, postgraduate trainees, and consultants working in COVID-19 were included in the study. Data was analysed using Statistical Package for the Social Sciences (SPSS) version 20 with descriptive (percentage, mean, and standard deviation) and inferential (chi-square and Fisher's exact tests) statistics. **Results:** Young, unmarried males who have done COVID-19 duties for seven days, majority serving in screening areas and having experienced COVID-19-like symptoms formed the larger sample. Younger age, unmarried, females, nursing staff were significantly found to have distress. Prevalence of stigma was noted with significant association of distress with anxiety over testing, discrimination for working in a COVID-19 centre, being afraid to reveal COVID-19-like symptoms, being disliked for living among family and friends post-quarantine. **Conclusion:** Majority were less than 30 years, unmarried, female who had significant association between psychological distress. Stigma was reported with association to psychological distress.

Keywords: Survey. Stress. Discrimination. Pandemic. Corona Virus.

**Keya Das¹, Bhavya Sree R¹,
Madhu Sekhar C²**

¹Department of Psychiatry, PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh, India, ²Department of Psychiatry, Sri Venkateshwara Medical College, Tirupathi, Andhra Pradesh, India

Correspondence: Dr. Keya Das, G 02, Tuscan East Apartments, Lazar Road, Cox Town, Bangalore-560042, India. drkeyadas@gmail.com

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INTRODUCTION

Across the globe, mankind has been battling an existential crisis with the coronavirus disease 2019 (COVID-19) pandemic, the first of its kind in the 21st Century. The last century has borne witness to the Spanish flu, severe acute respiratory syndrome (SARS), Middle East Respiratory Syndrome (MERS), and Ebola which proved equally challenging from healthcare standpoint. Scientific literature notes that the impact of a pandemic is not only among afflicted patients but among frontline workers who face unprecedented circumstances whilst performing their duties.[1]

Reports of a significant prevalence of mental health issues among the frontline workers have abounded amidst the booming literature during this pandemic, namely distress, burnout, insomnia, anxiety, depression, illness anxiety, posttraumatic stress disorder (PTSD) which is mediated by various biopsychosocial factors.[2] India began facing the full force of the pandemic from March 2021, with

medico-socio-economic challenges. Apart from government measures to curtail the spread of the illness with nationwide lockdowns which in itself causes isolation and distress, rapid conversion of general hospitals to COVID-19 care centres occurred. Additionally, frontline workers were faced with reports of shortage of personal protective equipment (PPE) across the world while dealing with a highly contagious nature of illness, diverse clinical presentation, unrecognised asymptomatic and pre-symptomatic carriers, rapid spread, non-availability of specific antiviral treatment, high mortality rate, and possible sequelae.[3] The frontline healthcare workers (FHCWs) who work in active COVID-19 areas, with exposure to the confirmed and suspected COVID-19 cases are vulnerable to both high risks of infection and mental health issues. The most common psychiatric issues experienced by FHCWs include anxiety, posttraumatic stress symptoms, depressive symptoms, sleep disturbances, concern regarding contagion exposure to their friends and family, and stigma was additionally reported.[1]

We aimed to study the psychological distress experienced among frontline workers in active COVID-19 duties in our state of Andhra Pradesh, India and also assess for stigma as a consequence of the job.

MATERIALS AND METHODS

The study is a cross-sectional, observational study designed at the PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh, India. Doctors, interns, and nurses involved in COVID-19 duties across the state of Andhra Pradesh who consented for the study and aged above 18 years were included in the study.

Acquisition of data occurred through online platform, namely a semi-structured questionnaire fashioned on Google forms, having attached to it an informed consent to be given electronically. The consent form explains the study to be anonymous, voluntary, the participant being allowed to drop out at any point, and that the data will not be used commercially and is meant only for scientific publication. Additionally, three other mandatory questions were: Are you a doctor/intern/nurse? Do you work in Andhra Pradesh? Are you involved in active COVID-19 duties? Only if the above along with consent being marked “yes” mandatorily, did the form proceed to subsequent pages or would stop recording, ensuring exclusion criteria. A semi-structured questionnaire with five close-ended questions, with “yes/no” response was used to explore stigma. Questions included were: anxiety/fear to get COVID-19 evaluation, days taken to get tested after onset of symptoms, fear to reveal COVID-19 symptoms, discrimination/shame at working in COVID-19 centre, displeasure faced from family/friends/neighbours when living among them. Tool used to measure psychological distress was the General Health Questionnaire (GHQ)-12. GHQ-12 scale is a free scale used worldwide in different segments of practice and research - clinical, epidemiological, and psychological; [4] GHQ-12 showed high internal reliability (Cronbach's alpha of 0.82) and acceptable criterion validity. GHQ-12 score cut-off was taken as 15 as statistically 15 was the mean and median value obtained.

Sample collection occurred by online means, specifically through Facebook and WhatsApp groups. Outreach to universal groups involving specialist doctors, postgraduates, interns, nursing staff posted in active COVID-19 duties across Andhra Pradesh and their participation formed the data. The data was collected from the Google forms and method of sample collection was purposive. Data collection began on August 15th 2020 and ended on September 15th 2020. The study received clearance by the institutional ethics research board. A total of 321 FHCWs have filled the forms completely; 18 forms were incomplete and excluded.

Statistical analysis

The data was entered into Microsoft Excel 2007 version and further analysed using Statistical Package for the Social Sciences (SPSS) version 20. Descriptive statistics involved the categorical data being analysed using percentages. The continuous data was analysed using mean and standard deviation. Inferential statistics analysed included chi-square

test and Fischer's exact test. A probability value of <0.05 was considered as statistically significant.

RESULTS

Table 1 shows that out of 321 frontline workers, the significant majority of 86% was younger than 30 years, predominantly male (52.3%), and marital status being unmarried for

Table 1: Socio-demographics

Characteristics	Response category	N	Percentage
Age groups (in years)	21-25	131	40.8%
	26-30	145	45.2%
	31-35	26	8.1%
	36-40	11	3.4%
	>41	8	2.5%
Gender	Male	168	52.3%
	Female	153	47.7%
Marital status	Married	82	25.5%
	Unmarried	239	74.5%
Education	MBBS	129	40.2%
	MD/MS (any subject)	138	43.0%
	Diploma (any subject)	28	8.7%
	Diploma+DNB	8	2.5%
	B. Sc. Nursing	10	3.1%
	M. Sc. Nursing	4	1.2%
Occupation	ANM	4	1.2%
	Nursing staff	18	5.6%
	Doctor consultant	40	12.5%
	Senior resident	20	6.2%
	Postgraduate	126	39.3%
COVID-19 duty (total days)	Intern	117	36.4%
	1 to 7	126	39.3%
	8 to 14	82	25.5%
	15 to 30	87	27.1%
	31 to 60 days	26	8.1%
Area of COVID-19 duty	Screening	101	31.5%
	Triage	18	5.6%
	Isolation ward	78	24.3%
	Low-risk ward	35	10.9%
	High-risk ward	58	18.1%
	ICU	14	4.4%
	Community outreach	7	2.2%
	General hospital (involving ER)	10	3.1%
Ever experienced symptoms of COVID-19?	Yes	183	57%
	No	138	43%

MBBS: Bachelor of Medicine, Bachelor of Surgery, MD: Doctor of Medicine, MS: Master of Surgery, DNB: Diplomate of National Board, B. Sc.: Bachelor of Science, M. Sc.: Master of Science, ANM: Auxillary Nurse Midwife, ICU: Intensive Care Unit, ER: Emergency Room/casualty

most (74.5%). Education profile revealed the sample to be mostly having completed Doctor of Medicine (MD)/Master of Surgery (MS) (43%) followed closely by those having completed Bachelor of Medicine, Bachelor of Surgery (MBBS) (40%). Most of the sample (39.3%) did COVID-19 duty for a duration of one to seven days, and majority were posted to screening areas (31.5%) and isolation wards (24.3%). Interestingly, the majority of the sample frontline workers revealed having suffered COVID-19-like symptoms following their COVID-19 duties (57.3%).

GHQ-12 scores measuring psychological distress were statistically significantly associated with age in our study at $p=0.028$ (Table 2). Interestingly, 87% of the respondents (148 out of 170) were found in younger age group of 21 to 30 years to have higher levels of distress (GHQ scores ≥ 15).

GHQ-12 scores measuring psychological distress were very significantly associated with marital status in this study at $p=0.008$ (Table 3). Here, elevated distress was found more in the unmarried (68% [115 out of 170]).

GHQ-12 scores were found significantly associated with development of COVID-19-like symptoms in this study at

$p=0.017$ (Table 4). Majority of respondents (63.5% [108 out of 170]) who had experienced COVID-19-like symptoms also reported higher distress levels.

Table 5 shows that among 321 frontline workers, majority (53%) reported being anxious about getting a COVID-19 evaluation done. 68.8% of the workers did not go for the COVID-19 test despite suffering COVID-19-like symptoms, followed by 15.5% presenting for testing only after seven days of symptoms. Interestingly, 82.6% reported no shame in having worked in a COVID-19 centre, 72.3% reported never having felt afraid to report upper respiratory tract infection (URTI) symptoms in fear of negative reaction of others, and 82.2% reported no experience of family/friends/neighbours disliking them living among them post-completion of self-quarantine.

GHQ-12 scores were found highly significantly associated with the fear/anxiety about going for COVID-19 evaluation at $p=0.0001$ (Table 6). 68.8% of the respondents (117 out of 170) revealed elevated distress and reported positively for being anxious/fearful about going for COVID-19 evaluation.

Table 2: Association between GHQ-12 and age

Age groups (in years)	GHQ-12			Chi-square test value (df)	p value
	<15	≥ 15	Total		
21-25	65 49.6%	66 50.4%	131 100%	10.886 (4)	0.028*
26-30	63 43.4%	82 56.6%	145 100%		
31-35	10 38.5%	16 61.5%	26 100%		
36-40	5 45.5%	6 54.5%	11 100%		
>40	8 100.0%	0 0.0%	8 100%		
Total	151 47%	170 53%	321 100%		

GHQ-12: General Health Questionnaire-12, df: Degree of freedom, * $p<0.05$ (significant)

Table 3: Association between GHQ-12 scores and marital status

Marital status	GHQ-12			Chi-square test value (df)	p value
	<15	≥ 15	Total		
Married	27 32.9%	55 67.1%	82 100%	9.739 (1)	0.008*
Unmarried	124 51.9%	115 48.1%	239 100%		
Total	151 47%	170 53%	321 100%		

GHQ 12: General Health Questionnaire-12, df: Degree of freedom, * $p<0.01$ (very significant)

Table 4: Association between GHQ-12 scores and development of COVID-19 symptoms

Experienced COVID-19-like symptoms	GHQ-12			Chi-square test value- Yate's correction (df)	p value
	<15	≥ 15	Total		
Yes	75 41%	108 59%	183 100%	5.716 (1)	0.017*
No	76 55.1%	62 44.9%	138 100%		
Total	151 47%	170 53%	321 100%		

GHQ-12: General Health Questionnaire-12, COVID-19: Coronavirus disease 2019, df: degree of freedom, * $p<0.05$ (significant)

Table 5: Questions evaluating stigma

Were you anxious/fearful about going for COVID-19 evaluation?	Yes	170	53%
	No	151	47%
How many days after developing symptoms did you present for evaluation?	Did not go for test	221	68.8%
	1 day	7	2.2%
	2 to 7 days	43	13.4%
	>7 days	50	15.5%
Have you ever felt shame/discriminated for working in a COVID-19 center?	Yes	56	17.4%
	No	265	82.6%
Have you ever felt afraid to reveal URTI symptoms fearing a negative reaction of others?	Yes	89	27.7%
	No	232	72.3%
Have your family/friends/neighbours disliked you living among them after you have finished self-quarantine period?	Yes	57	17.8%
	No	264	82.2%

COVID-19: Coronavirus disease 2019, URTI: Upper respiratory tract infection

Our study found GHQ-12 scores to be highly significantly associated with feeling discriminated/shameful while working in a COVID-19 centre at $p=0.0001$ (Table 7). The majority of the sample, 82.5% (265 out of 321) of the total respondents did not feel shameful/discriminated for working in a COVID-19 centre but among those reporting discrimination, majority 76.8% (43 out of 56) had higher distress levels.

Our study found GHQ-12 scores to be highly significantly associated with feeling afraid to reveal URTI symptoms fearing a negative reaction of others at $p=0.0001$ (Table 8). 27.7% ($n=89$) of 321 frontline workers felt afraid to reveal URTI symptoms fearing a negative reaction of others. Majority of those having elevated psychological distress were 53% (170 out of 321), of which 36.4% ($n=62$) felt afraid to reveal URTI symptoms fearing a negative reaction of others.

Our study found GHQ-12 scores to be very significantly associated with being disliked by family/friends/neighbours

for living among them after having completed self-quarantine period at $p=0.001$ (Table 9). 24.7% (42 out of 170) of respondents with higher GHQ-12 scores were disliked by the family/friends/neighbours for living among them although they have finished self-quarantine period post-COVID-19 duties.

DISCUSSION

This cross-sectional survey enrolled 321 respondents and our sample when compared to a study by Bennaoui *et al.*[5] had a similar profile of having more residents and interns than nurses and specialists, a similar age spectrum with our study including age less than 30 years predominantly and their study having average age of 29 years, but differed in terms of most being females and married as against our study having majority males and most being unmarried.

Our study revealed a high prevalence of psychological distress among healthcare workers exposed to COVID-19.

Table 6: Association between GHQ-12 scores and fear/anxiety about going for COVID-19 evaluation

Were you anxious/fearful about going for COVID-19 evaluation?	GHQ-12			Chi-square test value –Yate's correction (df)	p value
	<15	≥15	Total		
Yes	53 31.2%	117 68.8%	170 100%	35.167 (1)	0.0001*
No	98 64.9%	53 35.1%	151 100%		
Total	151 47%	170 53%	321 100%		

GHQ-12: General Health Questionnaire-12, COVID-19: Coronavirus disease 2019, df: Degree of freedom, * $p<0.01$ (very significant)

Table 7: Association between GHQ-12 scores and feeling discriminated/shameful for working in a COVID-19 centre

Have you ever felt shame/discriminated for working in a COVID-19 centre?	GHQ-12			Chi-square test value - Yate's correction (df)	p value
	<15	≥15	Total		
Yes	13 23.2%	43 76.8%	56 100%	14.321 (1)	0.0001*
No	138 52.1%	127 47.9%	265 100%		
Total	151 47%	170 53%	321 100%		

GHQ-12: General Health Questionnaire-12, COVID-19: Coronavirus disease 2019, df: Degree of freedom, * $p<0.01$ (very significant)

Table 8: Association GHQ-12 scores and feeling afraid to reveal URTI symptoms fearing a negative reaction of others

Have you ever felt afraid to reveal URTI symptoms fearing a negative reaction of others?	GHQ-12			Chi-square test value - Yate's correction (df)	p value
	<15	≥15	Total		
Yes	27 30.3%	62 69.7%	89 100%	12.879 (1)	0.0001*
No	124 53.4%	108 46.6%	232 100%		
Total	151 47%	170 53%	321 100%		

GHQ-12: General Health Questionnaire-12, URTI: Upper respiratory tract infection, df: Degree of freedom, * $p<0.01$ (very significant)

Table 9: Association between GHQ-12 scores and being disliked by family/friends/neighbours for living among them

Have your family/friends/neighbours disliked you living among them although you have finished self-quarantine period?	GHQ-12			Chi-square test value - Yate's correction (df)	p value
	<15	≥15	Total		
Yes	15 26.3%	42 73.7%	57 100%	10.959 (1)	0.001*
No	136 51.5%	128 48.5%	264 100%		
Total	151 47%	170 53%	321 100%		

GHQ-12: General Health Questionnaire-12, df: Degree of freedom, *p<0.01 (very significant)

We found psychological distress was higher in 53% of the respondents in which 51.2% were females. This could be attributed to females being more susceptible to psychological distress when compared to males. Similarly, recent studies in China and Italy that assessed psychological distress post-COVID-19 outbreak found that females were more likely to develop psychological distress when compared to males.[6,7] This could be attributed to the gender differences in the hormonal response to stress. Young and Korszun[8] substantiated this evidence that female hormones amplify the magnitude of stress responses. This was in concordance with earlier study by Lai *et al.*[1] in China, on factors associated with mental health outcomes among healthcare workers exposed to coronavirus disease.

Working in the frontline was found to be an independent risk factor for poor mental health outcomes across spectrums of interest. The perceived stress levels were higher in nursing staff recording 77.7%, as compared to 70.6% of the postgraduates, 70.1% of the interns, 60% of the senior residents, and 65% of the consultants showing higher stress levels. Frontline nurses treating patients with COVID-19 are likely exposed to the highest risk of infection because of their close, frequent contact with patients and working longer hours than usual which lead to increased stress levels. Our results are in concordance with the study done by Khanam *et al.*[3] in India showing that when compared to doctors, the nurses experienced more stress in terms of feeling sad and pessimistic, the burden of change in the quality of work, stress due to colleagues testing positive, and worrying whether the family will be cared for in case anything untoward happens to them.

Bennaoui *et al.*[5] reported healthcare workers perceived lack of support from the hospital in 42%, fear of contaminating near and dear ones in 80%, being isolated, feelings of uncertainty and social stigmatisation in 43%. Bhattacharjee *et al.*[9] pointed out that in the Indian context, stigma was experienced by not just COVID-19 recoverees, nor only those afflicted by it, or presumptive cases or who have succumbed to it or their families. The brunt of social stigma was additionally faced by frontline workers, medical practitioners, nurses, police personnel, etc. Reports of being forced to leave the neighbourhood and denied access to their houses and the families were seen. These aspects of societal backlash against the serving warriors amidst the war against the virus is often ignored. Instead, social stigma has overpowered the goodwill of those for whom they are fighting.[10]

Mostafa *et al.*[11] found in their study on physicians in Egypt, significant stigma. Among 509 physician participants, 138 (27.1%) participants had direct involvement in the care of COVID-19 patients. One hundred and fifty nine (31.2%) participants reported severe level of COVID-19-related stigma. Participants' mean overall COVID-19-related stigma score was 40.6±8.0.

The variety of stigma encountered by healthcare personnel was further elucidated in viewpoints by Singh and Subedi.[12] Several frontline healthcare providers serving in laboratories and hospitals were discriminated by staffs at hotels and encountered difficulty finding food and shelter.[13] Additionally, discrimination within healthcare workers fraternity was also reported wherein those involved in non-COVID-19 responses were reported to exhibit discrimination towards the frontline healthcare providers via behaviours such as refusal to talk to them and depicting disapproval to eat in the same cafeterias. Among residential areas, community members showed a kind of displeasure to allow the frontline healthcare providers reside in their home despite the fact that healthcare workers were working with all necessary precautions.[14]

Some of the above findings resonated with the findings of our study. Similarities included significant association of psychological distress with those reporting discrimination for working in a COVID-19 centre and discomfort from family/friends/neighbours when frontline workers lived among them.

Limitations

This study was a cross-sectional, online survey type with a purposive sampling method; hence, the results may not be generalisable. Being an online survey, we were unable to delineate the attrition rate in sample owing to those who dropped out in the midst of completing survey, or refused consent. Additionally, the survey being online could not account for those frontline workers without internet facilities. A longitudinal study, with detailed in-person psychiatric evaluation would be more conclusive measure of distress in the healthcare workforce.

Conclusion

Our study found high prevalence of psychological distress among frontline workers working in COVID-19 centres

across Andhra Pradesh. Younger age, unmarried status, females, and suffering COVID-like symptoms among frontline workers was associated with psychological distress. Stigma was revealed in the form that majority were anxious about going for COVID-19 evaluation after duty, majority did not get tested despite suffering COVID-19-like symptoms and around 15% presented for COVID-19 testing only after seven days of symptom onset. High significant association was found between psychological distress and feeling discriminated for working in COVID-19 centres, being afraid to reveal URTI symptoms for fear of negative reaction of others, and family/friends and neighbours disliking frontline workers living among them after having completed quarantine period.

AUTHOR CONTRIBUTIONS

KD: Primary conception and design of study, acquisition of data, analysis, drafting, final approval; **BSR:** Assisted design, acquisition of data, analysis, interpretation of data, revision work, final approval; **MSC:** Assisted design, acquisition of data, interpretation of data, drafting, revision work, final approval.

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