

Original Research Article

Fear and depression among health care professionals: a cross-sectional study during COVID-19 pandemic in Bangladesh

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ABSTRACT

Background: COVID-19 pandemic is a public health emergency of international concern that can result in severe mental health conditions like depression and fear in health-care professionals (HCPs).

Methods: A cross-sectional study was conducted, where 834 HCPs were self-recruited via social media. Multiple linear regression analyses were performed to identify predicting factors.

Results: Approximately one-third of the total participants were depressed (27.3%) and those with depressive symptoms had significant fear of COVID-19. Significant risk factors for depressive symptoms were being female, being married, having no children, having high risk elderly persons at home, being afraid of death due to COVID-19 and having comorbid diseases. Fear of death due to COVID-19 was the most common significant contributing factor the scales for depression model, $\beta=0.397$, for fear of COVID-19 model and $\beta=0.478$ respectively. Quality of PPE played a vital role for depression as majority of HCPs. About 65.3% of HCPs who were restless while examining a patient with flu symptoms and majority of HCPs who felt insecure about their family members.

Conclusions: Most of the HCPs faced several challenges during COVID-19 and psychological impacts of frontline HCPs were associated with interventions and rehabilitations to improve the mental health.

Keywords: COVID-19, Depression, Fear, Health-care professionals

INTRODUCTION

Many countries including Bangladesh are undergoing an unprecedented health emergency: the coronavirus SARS-CoV-2 (previously known as novel coronavirus 2019) epidemic causing the disease COVID-19 which has fumed since December 2019 and quickly became a pandemic. The disease was first detected and emerged on a seafood market in Wuhan city, Hubei province of China at the end of December, which has currently affected almost all the

global territories and 3,588,773 confirmed cases around the world with 247,503.^{1,2} On 18 March 2020, the first confirmed COVID-19 death was reported in Bangladesh (10 days after the first confirmed case).³ It has now spread all over the country and the government of Bangladesh has already declared the entire country at risk of COVID-19 pandemic.⁴ In March, the percentage of new infections was steeping low in Bangladesh, but from April it has continuously risen with the confirmed cases of 11,719 and total death tolls of 186.⁵ Besides, the first death case of a

front-line health care professional on 15 April 2020 has added a nail into the situation.⁶

Experiencing this critical state in Bangladesh, the health care workers on the front line who are directly involved in the diagnosis, treatment, and care of patients with COVID-19 are at risk of developing mental health sufferings and psychological challenges.⁷ The panic resulting in price hike was noticed while the people rushed to the supermall and drugstore to buy facemasks and sanitizers after the first detected case in Bangladesh.⁸ The situation is worsening in health sectors as many of the patients get admitted into the private hospitals concealing their contact history, travel history or flu like symptoms.⁹ Therefore, many hospitals had to send their staffs in quarantine and more and more hospital staffs are infected with the virus which may collapse the health system of Bangladesh.

METHODS

Study design

A contextual information sheet was used to obtain demographic and other information of the participants. The questions were related to (i) age, (ii) gender (male or female), (iii) marital status (unmarried, married or divorced), (iv) having children, (v) having COVID-19 high risk elderly at home, (vi) fear of death due to COVID-19 and (vii) having fatal diseases (i.e., asthma, diabetics, heart diseases, chronic kidney disease and thyroid disorder). To examine out if health-care related factors had any influence on participant's depression and fear, participants were asked: 'do you purchase safety equipment by yourself?', 'Do you receive personal protective equipment (PPE) from your authority?', 'Do you need to reuse PPE?' and 'are you satisfied over PPE quality?' all these questions were responded by utilizing a dichotomous response (i.e., yes/no). Besides, one of three responses (i.e., 'less than a week', 'a week' or 'more than a week') was required for the question related to the duration of using a single PPE. Additionally, patient-care related questions were asked to inquire the attitude towards patient having cold symptoms or returned from abroad, the feeling of insecurity for himself and family members or the behavior towards family members due to fear of spreading the disease to others (see Table 3 for list of exact statements asked). Lastly, inquiry was made through a binary response (i.e., yes/no) to see the opinion about necessity of psychological support and preparedness to tackle the crisis even after getting enough time.

Participants' health was measured using the nine-item Bangla patient health questionnaire (Bangla PHQ-9) original version.¹¹ The assessment tool was used widely in both non-psychiatric and clinical settings. Symptoms of depression such as depressed mood, sleeping problems, feeling of tiredness, changes of appetite, concentration problems, and suicidal thoughts were assessed based on the past two weeks. Items are responded to on a four-point Likert scale (0=not at all, 1=several days, 2=more

than half of the days, and 3=nearly every day) and scores range from 0 to 27.¹²

Higher scores indicate higher levels of depression, whereas a total ≥ 10 was typically used to denote the presence of depression.¹³ Cronbach's alpha in the present study was 0.73. The Bangla fear of COVID-19 scale assesses fear towards COVID-19 and was adapted from the English version of the scale published in the original paper by Ahorsu et al, in 2020.^{14,15} The screening tool consists of seven items (e.g., "I cannot sleep because I am worried about getting coronavirus-19") with a five-item Likert-point response from 1 (strongly disagree) to 5 (strongly agree) and its score range is 7 to 35. The higher the score indicates the greater the fear of coronavirus-19.

Target population and sample population

A total of 1,000 participants were approached purposively, whereas 834 respondents who were directly involved in the treatment of COVID-19 patients took part in the survey (response rate 83.4%, mean age 30.11 ± 6.44).

Study site and area

The whole study was conducted online all over the country.

Study period

The present cross-sectional study was carried out within April 8 to April 25, 2020 among the health-care professionals (HCPs) of Bangladesh.

Sample size

A total respondent of 834 partook in the study.

Inclusion criteria

HCPs who were directly involved in treating COVID-19 affected patients.

Exclusion criteria

HCPs who were not directly involved in treating COVID-19 affected patients.

Sampling technique

An online-based survey was developed, and participants were recruited via social media (e.g., Facebook, WhatsApp, Twitter etc.).

Data collection tools

Data collection tools were mainly a questionnaire, which was distributed in the social media platforms using Google form.

Data management and analysis plan

The data were analyzed using Statistical Package for Social Science (SPSS) version 25.0 for Windows (SPSS Inc, Chicago, IL, USA). Microsoft Excel 2016 was used for early data cleaning and grounding for SPSS format. The descriptive statistics (i.e., mean, frequencies, percentage, frequencies) were used to make a distribution of the variables across HCPs. Inferential statistics (e.g., chi-square tests) were performed to identify significant relationships between outcome variables (fear and depression) and the independent variables. Besides, multiple linear regressions for predicting score of depression and fear of COVID-19 were performed. Both forward and hierarchical selection methods were utilized to cross-check the predictors (e.g., gender, marital status, having children, having COVID-19 high risk elderly at home, fear of death due to COVID-19, reusable PPE etc.) best fit to the models. The assumptions (i.e., linearity, normality, and homoscedasticity) with the data were checked for both the models before performing the regression analysis. In this study, the regression models were interpreted with 95% confidence intervals and a p value of <0.05 was considered as the significant.

Quality control and quality assurance

After collection, data was checked, verified, edited and entered into the computer. Microsoft Excel and online bar chat making software were used, according to objectives of study.

RESULTS

The total sample of the study was (N=834), more than half were females (n=467, 56%), majority of the participants were married (67.3%), had not any children (53.8%), had high risk elderly person at home (73.5%), had no fatal disease (60.8%) and majority of them had felt sometimes fear of death due to COVID-19 (507, n=56.4%) (Table 1). 444 (53.2%) of the HCPs were medical officers, 83 (10%) were nurses, 57 (6.8%) were interns, 83 (10%) had affiliations with medical colleges (e.g., lecturer, assistant or associate professor, registrar) and the rest were holding other positions not listed (not shown in the table).

Represented the depression across the HCPs. Nearly one-third of the participant were depressed (27.3%). Female HCPs (71.9% versus 28.1%; $\chi^2=32.334$; df=1, p<0.001) experienced more depressive symptoms compared to males. Within the marital status, person who were married had reported more depression followed by unmarried and divorced ones in HCPs (62.7%, 33.3%, 3.9% respectively; $\chi^2=9.603$, p=0.008). Respondents with no children were more prone to depression although, it was not significantly associated. Additionally, depression was significantly associated (p<0.001) with having COVID-19 high risk elderly persons at home, fear of death due to COVID-19 and having fatal diseases within the HCPs (Table 2).

Table 1: Distribution of the variables across health-care professionals.

Variables	Health-care professionals (N=834)
Gender	
Male	367 (44%)
Female	467 (56%)
Marital status	
Unmarried	258 (30.9%)
Married	561 (67.3%)
Divorce	15 (1.8%)
Having children	
Yes	385 (46.2%)
No	449 (53.8%)
Having COVID-19 high-risk elderly at home	
Yes	613 (73.5%)
No	221 (26.5%)
Fear of death due to COVID-19	
All times	157 (18.8%)
Never	207 (24.8%)
Sometimes	470 (56.4%)
Having fatal diseases	
Yes	327 (39.2%)
No	507 (60.8%)

Table 2: Distribution of the 'depression' across health-care professionals.

Variables	Health-care professionals (228, 27.3%)		
	Yes (%)	χ^2 test value (df)	P value
Gender			
Male	64 (28.1)	32.334 (1)	<0.001
Female	164 (71.9)		
Marital status			
Unmarried	76 (33.3)	9.603 (2)	0.008
Married	143 (62.7)		
Divorced	9 (3.9)		
Having children			
Yes	98 (43.0)	1.277 (1)	0.258
No	130 (57.0)		
Having COVID-19 high-risk elderly at home			
Yes	187 (82.0)	11.685 (1)	<0.001
No	41 (18.0)		
Fear of death due to COVID-19			
All times	86 (37.7)	82.784 (2)	<0.001
Never	27 (11.8)		
Sometimes	115 (50.4)		
Having fatal diseases			
Yes	113 (49.6)	14.110	<0.001
No	115 (50.4)		

Particularly represented depression among the HCPs regarding personal protective equipment they were using and their patient care related information. About 63.2% of the HCPs purchased their own safety equipment, fifty percent of them got PPE from the hospital authorities,

only 15.9% were satisfied with the provided PPE quality and majority of the unsatisfied persons were highly depressed (88.3% versus 11.7 %; $\chi^2=7.964$, $p=0.005$). Besides, 65.3% of the HCPs were restless in observing patients with cold symptoms (accounted for 78.9% depression, $\chi^2=25.628$, $p<0.001$), 91.0% felt insecure for him or herself and family infection due to caring COVID-19 patients (caused 96.1% depression, $\chi^2=9.760$, $p=0.002$), most of them (89.0%) believed that they were

not ready for battling the crisis (accounted for 90.8% depression, $\chi^2=5.150$, $p<0.05$), and about 91.6% of the HCPs asserted the necessity of psychological advocating for their mental well-being. Although a big portion (45.0%) were practicing keeping distance of 1 meter from the patients who recently returned from abroad, 43.0% of them felt restless towards them ($\chi^2=18.072$, $p<0.001$) (Table 3).

Table 3: Distribution of the ‘health-care facility’ and ‘patient-care’ related information with depression among health-care professionals (n=834).

Variables	Total n (%)	Depression n (%)	χ^2 test value	P value
Purchased own safety equipment				
Yes	527 (63.2)	150 (65.8)	0.912	0.340
No	307 (36.8)	78 (34.2)		
Received PPE from the authorities				
Yes	409 (49)	111 (48.7)	0.016	0.899
No	425 (51.0)	117 (51.3)		
Reusable PPE				
Yes	360, (43.2)	82 (37.6)	7.346	0.007
No	433, (51.9)	136 (62.4)		
Duration of using a single PPE				
Less than a week	316 (37.9)	80 (40.8)	3.540	0.170
A week	136 (16.3)	46 (23.5)		
More than a week	239 (28.7)	70 (35.7)		
Satisfaction over PPE quality				
Yes	133 (15.9)	24, (11.7)	7.964	0.005
No	603 (72.3)	182, (88.3)		
Restless during examining a patient with cold problem				
Yes	545 (65.3)	180 (78.9)	25.628	<0.001
No	289 (34.7)	48 (21.1)		
Insecure feeling for himself/herself and family members due to COVID-19				
Yes	759 (91)	219 (96.1)	9.760	0.002
No	75 (9.0)	9 (3.9)		
Attitude towards a patient returned from abroad				
No difference	136 (16.3)	26 (11.4)	18.072	<0.001
Feel restless	273 (32.7)	98 (43.0)		
Maintain a distance of at least 1 meter	375 (45.0)	88 (38.6)		
Disagree to examine the patient	50 (6.0)	16 (7.0)		
Maintain distance from family members due to fear of spreading the COVID-19 disease				
Put him/herself in complete isolation	186 (22.3)	48 (21.1)	13.869	0.003
Use masks at home	33 (4.0)	0 (0.0)		
Maintain a distance of one meter	200 (24.0)	60 (26.3)		
Do not follow any of the above	415 (49.8)	120 (52.6)		
Psychological sessions can improve mental health of HCPs				
Yes	764 (91.6)	207 (90.8)	0.273	0.602
No	70 (8.4)	21 (9.2)		
Preparedness to tackle the COVID-19 disease crisis even after getting enough time				
Yes	742 (89.0)	212 (93.0)	5.150	0.023
No	92 (11.0)	16 (7.0)		

Table 4: Multiple linear regression analysis predicted factors with depression and the fear of COVID-19 among the health-care professionals (HCPs) (n=834).

Variables	Depression*				Fear of COVID-19**			
	β	95% CI		P value	β	95% CI		P value
		Lower bound	Upper bound			Lower bound	Upper bound	
Constant	-	1.224	3.251	<0.001	-	7.431	10.111	<0.001
Gender								
Female	0.182	1.158	2.411	<0.001	0.161	1.232	2.392	<0.001
Male	Reference		Reference					
Marital status								
Married	-0.109	-1.790	-0.484	0.001	-	-	-	-
Unmarried	Reference							
Having COVID-19 high-risk elderly at home								
Yes	0.072	0.090	1.498	0.027	-	-	-	-
No	Reference							
Fear of death due to COVID-19								
All time	0.397	3.985	5.915	<0.001	0.478	5.914	7.777	<0.001
Sometimes	0.171	0.914	2.445	<0.001	0.350	3.230	4.664	<0.001
Never	Reference		Reference					
Reusable PPE								
Yes	0.081	0.166	1.422	0.013	-	-	-	-
No	Reference							
Duration of using a single PPE								
A week	0.105	0.521	2.251	0.002	-	-	-	-
More than a week	0.087	0.219	1.654	0.011	-	-	-	-
Less than a week	Reference							
Restless during examining a patient with cold problem								
Yes	0.107	0.412	1.777	0.002	0.151	1.143	2.406	<0.001
No	Reference		Reference					
Fear of spread of COVID-19 from himself/herself to others								
Yes	-	-	-	-	0.114	1.068	3.003	<0.001
No			Reference					
Insecure feeling for himself/herself and family members due to COVID-19								
Yes	-	-	-	-	0.095	0.829	2.877	<0.001
No			Reference					
Attitude towards a patient returned from abroad								
Feel restless	0.102	0.390	1.730	0.002	-	-	-	-
Maintain a distance of at least 1 meter	-	-	-	-	-0.090	-1.578	-0.454	<0.001
No difference	Reference	Reference						
Having fatal diseases								
Yes	0.112	0.480	1.753	0.001	0.053	0.029	1.182	0.039
No	Reference	Reference						
Depressive symptoms								
Yes	-	-	-	-	0.195	1.768	3.125	<0.001
No					Reference			

*R=0.526, R²= 0.277, F (11, 717) =24.939 and p<0.001; **R= 0.707, R²= 0.503, F (9, 776) =97.320 and p<0.001

In Table 4, multiple linear regression analyses were performed to show the significant predictors affecting the depression and fear of COVID-19 scores. Gender, fear of death due to COVID-19, restless during examining a patient with cold problem, attitude towards a patient

returned from abroad, having fatal diseases were identified as significant predictors (p<0.05) contributed mutually to both depression and fear scale (Table 4). Besides, the scores from marital status, having COVID-19 high risk elderly at home, reusable PPE, duration of

using a single PPE added significantly ($p < 0.05$) to the depression model whereas fear of spread of COVID-19 from own to others, insecure feeling for own and family members due to COVID-19 and depressive symptoms had significant role ($p < 0.001$) to the fear model for HCPs. The models' (depression and fear of COVID-19) degree of explaining the variance were $R^2 = 0.277$ and $R^2 = 0.503$ respectively that predicted the dependent variables well [$F(11, 717) = 24.939$, $p < 0.001$ and $F(9, 776) = 97.320$, $p < 0.001$]. Looking at the models for HCPs, fear of death was found to make the biggest contribution (for depression model, $\beta = 0.397$ and for fear of COVID-19 model, $\beta = 0.478$).

DISCUSSION

In Bangladesh, discussing mental health issues is still considered as a taboo.¹⁶ So, in this crisis moment of COVID-19 epidemic, people may suffer more as they cannot open for help. Since the mental health issues among the health-care professionals (HCPs) have barely been explored in Bangladesh, the present study aimed at addressing the gaps in potential links between depressive symptoms and fear due to COVID-19 in this study group.⁷

In the current study, approximately half of the participants were female; the larger portion was married and most of them did not have any children. 27.3% of the participants showed high prevalence of depressive symptoms where females were the leading sufferers and this finding was consistent to the previous reports published.¹⁷ Female HCPs tend to have work-family conflicts as they are thought to be more responsible towards their family, children, and patients; additionally, they may feel undecided between career and family demands. This dilemma can make them feel they're failing to implicate their roles which may increase their vulnerability to depression.¹⁸ In addition, unlike a previous study by Chan and Chan in 2004 our findings showed that married persons were in severe depression compared to unmarried.¹⁹ It has previously been hypothesized that the lockdown situation, exacerbation of domestic violence may have role behind this distressful marital situation. Moreover, parenthood status can act as a protective factor for anxiety, depression, and suicide ideation.²⁰ That was observed in the present study as well where around 51% HCPs were found with depressive symptoms who did not have any children (although not mentioned in the result section).

The participants with depressive symptoms had significant fear of COVID-19. This may be due to the unpredictability, uncertainty, seriousness of the disease, fear of being infected, information gaps and social isolation that have been created because of the epidemic.²¹ Besides, another study from Japan highlighted the role of economic factors on high levels of fear among the patients and health-care workers.²² In the present study, having one or more underlying medical

conditions contributed significantly to depression and fear of COVID-19 among the population as they are considered more exposed to severe illness. Fear of dying alone, tearful hopelessness and chaos at home, loneliness, anger, and the belief of pandemic not to be controlled may be the causes of fear of death due to COVID-19. This phenomenon was the most common significant predictor to the depression and fear of COVID-19 scales in the present study. Previous studies substantiated that death anxiety plays a significant role in depression.²³ Furthermore, excessive fear of death due to COVID-19 contributed in frustration, acute stress, self-harm and suicide in some cases.²⁴

During this COVID-19 pandemic, many of HCPs will have to face complex psychological scar due to fear of getting infected with this deadly virus as there is a limitation of resources like personal protective equipment (PPE).²⁵ Another study found that among 1,257 healthcare workers working with COVID-19 patients in China, 50.4% had symptoms of depression.²⁶ Our study revealed that the HCPs who got reusable PPEs and using the PPEs for a week were in greater fear of COVID-19 than the HCPs using the PPE less than a week. Likewise, in Bangladesh, approximately 25 percent of doctors and nurses and 60 percent of supporting staffs involved in treating COVID-19 patients are yet to receive PPE.¹⁰ Moreover, nurses are more discriminated during distribution of PPE not only in Bangladesh but also in other parts of the world.^{27,28} Additionally, the quality of PPE was found questionable in some health-care facilities of Bangladesh, hence, the increase mental sufferings in HCPs.²⁹

Also, our findings suggest that HCPs who felt restless while examining a patient with normal flu symptoms were highly depressed and in greater fear of COVID-19 because both diseases have common symptoms like fever, cough, cold, runny nose.³⁰ Besides, they did not get proper protective gear which may worsen the situation. In some cases, HCPs refused to provide treatment to the patients, this may be the reflection of their extreme fear. All of these may result in a drastic situation over the health care system. Also, some patients were found concealing their medical symptoms and travel history while seeking treatment to avoid stigma, social isolation or quarantine but these attitudes forced the HCPs to go into mandatory quarantine later.¹⁰ The cases of infected patients were evident in the families of HCPs in Bangladesh.³¹ This terrified them to take drastic steps like isolating themselves to reduce the risk of exposure.³²

Overall, this study intensely reveals the gap between planned services at a given hospital and the actual needs of healthcare workers in Bangladesh. Also, there is a lack of COVID-19 related therapeutic interventions strategies for the HCPs. Previous works pointed out the need of mental health-care professionals in critical care units to minimize stress levels and reduce depression while another work showed the positive impact of telephone

helplines for HCPs to address mental health problems.^{33,34} Most of the HCPs in the current study similarly believed that they were unprepared to tackle this scary and unknown pandemic and needed psychological sessions. A paper from India has discussed the importance of assigning psychiatrist during the COVID-19 pandemic and included strategies like educating the public about the effects of a pandemic, motivating them to implement disease prevention policies, integrating the services with the existing health care settings, empowering patients with COVID-19, improvising mental health care to HCPs etc. Bangladesh should be properly equipped with necessary health care facilities and support along with intensive care unit (ICU) beds with facilities with ventilators, high-graded personal protective equipment (PPE) for HCPs, sufficient testing kits and other resources, proper training for HCPs who are assigned in COVID dedicated hospital and raising fund to fight the war against COVID-19 pandemic.

This study had its own limitations due to the cross-sectional nature as well as other methodological issues like convenience sampling, self-reported data etc. Owing to the lockdown situation in Bangladesh, it was not possible to collect the data in person. Considering this, an online platform was used to get respondents to fill in the questionnaire; hence, only respondents who were able to use the internet were most likely to respond. This study had left many people who were uneducated and had a low socioeconomic status because of their inaccessibility to use internet service. Their opinions and levels of depression could not be addressed in this study.

CONCLUSION

One of the major causes of stress and depression in people is the unpredictability of the COVID-19 situation and the ambiguity of how serious the risks are and when the disease will be controlled. It is apparent that the front-line health-care professionals are highly exposed to higher level of depression. This may aggravate the normal functional activities of the health-care system of Bangladesh. From this work it is evident that mental health issues should be addressed properly, especially for the health-care workers. Conducting a screening program to find HCPs with mental health problems and then seeking help from psychiatrists and psychologists to provide counselling sessions can help tackle the issue.

Recommendations

Raise awareness about the importance of mental health and destigmatize seeking help for fear and depression among healthcare professionals. Encourage open discussions and provide resources for mental health support. Create a supportive work environment that encourages teamwork, communication, and mutual support among healthcare professionals. Promote a culture of empathy and understanding. Encourage healthcare professionals to prioritize self-care and ensure

they have sufficient rest and breaks. Provide resources for self-care practices, such as exercise, healthy eating, and sufficient sleep. Provide training and education on mental health awareness, stress management, and coping strategies specifically tailored to the challenges faced by healthcare professionals during the pandemic. Regularly assess and manage the workload of healthcare professionals to prevent burnout and excessive stress. Ensure adequate staffing levels and consider redistributing tasks when necessary. Improve communication channels to keep healthcare professionals informed about the latest updates, guidelines, and safety measures. Clear and timely communication can help alleviate fear and anxiety.

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