MENTAL HEALTH PROBLEMS AMONG HEALTHCARE PROFESSIONALS DURING COVID-19 PANDEMIC IN BANGLADESH: A CROSS-SECTIONAL STUDY

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Abstract: Healthcare professionals (HCPs) have gone through the most critical period of their professional lives during the COVID-19 pandemic. This condition required diligent management, and they had to protect themselves without showing any disregard for their responsibilities. A comprehensive understanding of the mental health problems among HCPs is essential since they are at higher risk of developing psychological distress. This cross-sectional study attempts to identify the mental health impact among HCPs amid the pandemic of COVID-19 in Bangladesh. A convenience sampling technique was adopted to recruit the target participants. Data were collected using self-administered questionnaire. A total of 483 HCPs from 10 public and 2 private hospitals participated in this study with a mean age of 30.89 (± 5.647) years. Percentage of depression (60.5 %), fear of being COVID-19 infected (76.0 %), and fear of infecting family members (86.3 %) were interpreted. Among them, 29.6% reported low stress, 63.6% presented moderate stress, and 6.8% reported high perceived stress. Adequate mental health support should be implemented to tackle the mental health problems among HCPs and ensure better healthcare services during health emergencies.

Keywords: Mental Health Problems, Healthcare Professionals, COVID-19, Pandemic, Bangladesh

Introduction

The twenty-first century came across the most horrific event in history, the COVID-19 pandemic[1]. Healthcare professionals (HCPs) were at the frontline to deal with the unprecedented situation. Such a new condition required diligent management[2]. By confronting the sudden challenges, HCPs fell into dilemmas. They had to protect themselves without showing any disregard for their responsibilities[3]. So, they have gone through the most critical period of their professional lives[4]. On 31 December 2019, the World Health Organization (WHO) was informed of cases of pneumonia with unknown etiology in Wuhan,

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China. This novel coronavirus was temporarily named "2019-nCoV". On 11 March 2020, the rapid increase in cases outside China led WHO to announce this outbreak as a pandemic[5]. Since the beginning of the outbreak, healthcare providers have shown more support, solidarity, and gratitude than they ever have[6]. High risk of infection, extreme pressure to perform at work, shortages of necessary equipment, and lack of ability to spend time with family and friends, all these factors negatively impacted the mental health of those saving lives amidst this crisis[7].

On March 8, 2020, the first confirmed cases of COVID-19 were reported in Bangladesh[8]. Following that, the country faced numerous challenges due to the pandemic. HCPs who provided care to COVID-19 patients were at a higher risk of experiencing psychological distress and more likely to develop post-traumatic stress symptoms (PTSS)[9]. A study conducted in Bangladesh revealed that the prevalence of anxiety and depression among physicians was 32.5% and 34.2%, respectively. The study findings stated that marital status, work per day, and current job location were the main risk factors for anxiety, while sex, age, and marital status were the main risk factors for depression[10]. A study in India shows that 25.4% HCPs had COVID-19 infection-specific anxiety, 17.9% of HCPs had depression, and 26.5% reported exhaustion during this outbreak of COVID-19[11]. A study in Italy showed that approximately 33.5% of HCPs meet the threshold for psychiatric morbidity. Participants perceived their current psychological health to be worse during the COVID-19 emergency outbreak than before, especially women[12]. HCPs were afraid of their families since they could possibly spread the disease to them. On the other hand, they were harassed by the society because they were deemed as the source of contagion[13,14].

A comprehensive understanding of the mental health problems among HCPs is essential to find out related solutions for effective support, which will ultimately strengthen the healthcare outcomes. Although previous studies in Bangladesh have highlighted the mental health problems during COVID-19, this study attempts to identify the mental health impact of COVID-19 and its associated variables among the HCPs in Dhaka, Bangladesh.

Materials   and   methods

Study design and Sampling

This cross-sectional survey was conducted to assess the mental health problems among HCPs during the COVID-19 pandemic in Dhaka, Bangladesh. Data were collected from ten public and two private COVID-19 dedicated hospitals in Dhaka City from June to September 2021. A convenience sampling technique was adopted to recruit the target participants. The researchers reached the study participants at a time which was convenient both for the researchers and participants. Data were collected physically by self-administering questionnaires. The questionnaire was pre-tested first and then finalized. The Bengali version of the questionnaire was pre-tested in a non-sampling area to get feedback on the questions' suitability, appropriateness, and sequencing. The mental health of participants was identified by seven to eight questions that asked about the participants' feelings of isolation, depression, fear, and anxiousness about different things related to their involvement in managing COVID-19. Perceived stress scale (PSS), which is a classical stress assessment tool, was also used to discern the level of their stress. Participants were explained about the study and were assisted individually if they faced any difficulties in understanding the questions. Informed written consent was obtained from the participants before initiating data collection procedure. The eligible participants for this study were the HCPs such as doctors (ranging from consultants to newly appointed medical officers), nurses with various education and experience levels, different health technologists (both

male and female) working with COVID-19 patients in different departments ranging from wards, intensive care units, emergency departments, etc. HCPs working outside the COVID-19-specific areas were excluded. Medical and nursing students were excluded from this survey as majority did not enter the stage of clinical practice. Supporting staff were also excluded as they had no professional qualification in the field, and it was not feasible to collect data using this self-administering tool.

Sample Size

The sample was calculated by the following formula -
$n = z^2pq/d^2$, Where, n= desired sample size, z = 1.96 (95% confidence interval)
p = prevalence of depressive disorders (72%)[15] = 0.72
q = 1-p = 1-0.72= 0.28, and d = 4 %
 So, n = (1.96)2 (0.72 x 0.28)/ (0.04) = 484.0416 ~ 485 = 485
Therefore, sample size, n = 485
However, data were collected from more than 500 people, but due to practical constraints (duplication, incompleteness, etc.), data were accepted from 483 respondents.

Exposure variables

Age (18-40 and 40-60), Gender (male and female), Religion, Marital status (married, unmarried, and divorced/widowed), Age of Last Child ($\leq$ 5 years, and > 5 years), Education, Family Monthly Income ($\leq$ 50,000, and > 50,000), Type of family (single, extended), Number of family members more than 50 years of age (present, or absent), Number of family members less than 5 years of age (present, or absent), Type of residence (housing area/flat, dormitory/hostel, others), Eating habit (vegetarian or mixed diet), Special eating habits to avoid COVID-19, Daily hours of sleep, Physical Exercise, Extra care at home to avoid COVID-19, Category of medical professionals, Safety of working environment, Type of protection taken while working with COVID-19 patients, Received any training for infection control & management of COVID-19 patient, Receiving adequate health support, encouragement from family, extra care from family members, appreciation from society, negligence/torture/blaming/bullying/threat from the people of your society.

Outcome variables

In the study, variables related to psychological problems were feeling of isolation, feelings of depression, fear of COVID-19 infection, fear of not getting treatment, anxiety to become infected due to misfit of mask or other parts of Personal protective equipment (PPE), fear of infecting family members, and fear of death. The study also used a PSS to assess the stress of healthcare professionals during the COVID-19 pandemic. Individual scores on the PSS ranged from 0 to 40, with higher scores indicating higher perceived stress. Scores ranging from 0-13 are considered low stress. Scores ranging from 14-26 are considered moderate stress. Scores ranging from 27-40 are considered high perceived stress.

Statistical analysis

All the collected data were rechecked, coded, and entered into a database using Statistical Package for Social Science (SPSS)- version 22. Statistical tests like descriptive statistics and chi-square were used. A p-value

level of <0.05 was considered to test statistical significance.

Ethical Concerns

To meet the standards of ethical issues, the study protocol was submitted to the Research Ethics Committee (REC) of the Faculty of Allied Health Science (FAHS), Daffodil International University (DIU) for review and approval of the study. Reference no- REC/FAHS/DIU/2021/1017. Before the commencement of any interviews, participants were briefed about the background and objectives of the study. Written consent was taken from them separately. Anonymity and confidentiality were strictly maintained. Before collecting data, approval was taken from the concerned authorities of the hospitals.

Results

A total of 483 participants' data was analyzed for this study. The socio-demographic characteristics of the participants is shown in Table 1. Majority of the participants belonged to the age group of 18-40 years (95.2 %) and a smaller portion was for the range of 41 and above, (4.8%), with a mean age of 30.89 (SD ± 5.647). Males made up one-quarter (24.6%) of the population, while females made up one-third (75.6%). Among the participants, 82.4% were Muslims, 13.5% were Hindus and 4.1% were Christians. The marital status of study respondents was married 76.4%, unmarried 22.6 %, and divorced or widowed 1.0 %. About 47.2% of the participants had no child, and 38.9 % of participants had children of five years or less than five years old. Family monthly income of 50000 or less 50000 was 44.9%, and more than 50000 was 55.1 %. Their family type was divided into two categories: single 65.8% and extended 34.2%, 66.9% participants had family members more than 50 years of age, and 48.2% participants had family members less than 5 years old. The majority of the study sample lived in housing areas 78.1%, and 9.7 % of the participants live in a dormitory or a hostel, while 12.2% participants lived in other than housing areas or dormitories.

Table 1: Socio-demographic characteristics of the healthcar

Variables	Category	Number	Percentage
Age Group (Years)	Between 18-40	460	95.2
	Between 41-60	23	4.8
Mean (± SD)	30.89 (± 5.647)		
Sex	Male	119	24.6
	Female	364	75.4
Religion	Islam	398	82.4
	Hinduism	65	13.5
	Christianity	20	4.1
Marital Status	Married	369	76.4
	Unmarried	109	22.6
	Divorced/Widowed	5	1.0
Age of Last-child (n=255)	No child	228	47.2
	≤ 5years	188	38.9
	> 5 years	68	14.1
Mean (± SD)	7.14 (±1.19)		
Family Monthly Income (in Taka)	≤ 50,000	217	44.9
	> 50,000	266	55.1
Mean (± SD)	75445, ± 88636		
Type of family	Single	318	65.8
	Extended	165	34.2
Family members >50 years old	Present	323	66.9
	Absent	160	33.1
Family members <05 years old	Present	233	48.2
	Absent	250	51.8
Types of residence	Housing Area/Flat	377	78.1
	Dormitory/Hostel	47	9.7
	Others	59	12.2

Among the participants (Table 2), special eating habits among the participants were not at all 19.7 %, sometimes 48.7 %, and regularly 31.7 %. More than half of the participant's (56.7 %) sleeping pattern was they slept 5-7 hours and 43.3 % participants slept above 7 but below 11 hours. Participants pursued daily physical exercise categorized as not at all 18.6 %, occasionally 74.3 %, and regularly 7.0. Nurses formed the biggest bulk 76.6%, doctors 19.9%, and Medical Technologists 3.5%. Participants thought the working environment, was not safe 12.5 %, moderately safe 37.5 %, and highly safe 49.0 %. Protection taken while working with COVID-19 patients was categorized as wearing full PPE (Coverall, mask, gloves, goggles, etc.) 62.3%, and 37.7% wear only masks. Participants received training for infection prevention control (IPC) 42.9 %, and 57.1 % did not receive IPC training. Adequate health support was provided not at all 15.7%, sometimes 48.7%, and regularly 35.6%. Family members encouraged to work for COVID-19 patients were categorized as never 6.4%, sometimes 29.8%, and all the times 63.8%. Family members took special care the people of their society 57.1% had no such experience, 39.5% of them experienced these sometimes, and 3.3% of them always got these types of behavior from society.

Table 2. Other sociodemographic characteristics of the healthcare professionals (n = 483)

Variables	Category	Number	Percentage
Eating habit	Vegetarian	5	1.0
	Mixed Diet	478	99.0
Special eating habits to avoid COVID-19	Not at all	95	19.7
	Sometimes	235	48.7
	Regularly	153	31.7
Daily Hours of Sleep	Between 5-7 hours	274	56.7
	Above 7 but below 11 hours	210	43.3
Pursue Physical exercise	Not at all	90	18.6
	Sometimes	359	74.3
	Regularly	34	7.0
Category of Medical professionals	Nurse	370	76.6
	Doctor	96	19.9
	Medical Technologists	17	3.5
Safety of the Working environment	Not safe	60	12.5
	Moderately safe	181	37.5
	highly safe	242	49.0
Protection has been taken while working with COVID-19 patients	Wear full PPE (Coverall, mask, gloves, goggles, etc.)	301	62.3
	Wear only masks	182	37.7
Received any training for infection control & management of COVID-19 patient	No	276	57.1
	Yes	207	42.9
Receiving adequate health support	Not at all	76	15.7
	Sometimes	235	48.7
	Regularly	172	35.6
Encouragement from family	Never	31	6.4
	Sometimes	144	29.8
	All the times	308	63.8
Special care from family members	Never	31	6.4
	Sometimes	158	32.7
	All the times	294	60.9
Extra care at home to avoid COVID-19	Not at all	37	7.7
	Sometimes	224	46.4
	Regularly	222	46.0
Appreciation from society	Never	101	20.9
	Sometimes	273	56.5
	All the times	109	22.6
Experience of any negligence/torture/blaming/bullying/threat by HCPs from the people of their society.	No experience	276	57.1
	Sometimes	191	39.5
	Always	16	3.3

Experiencing mental health problems during COVID-19 responsibility

Figure 1 shows the mental health problems faced by HCPs during COVID-19 responsibility. The proportion of individuals feeling isolated was 70.0%, depressed 60.5 %, fear of being COVID-19 infected was 76.0 %, anxious to become infected due to misfit of mask or other parts of PPE was 49.5 %, fear of infecting family members 86.3 %, fear of not getting treatment 28.2 %, and fear of death 36.4 % were observed.
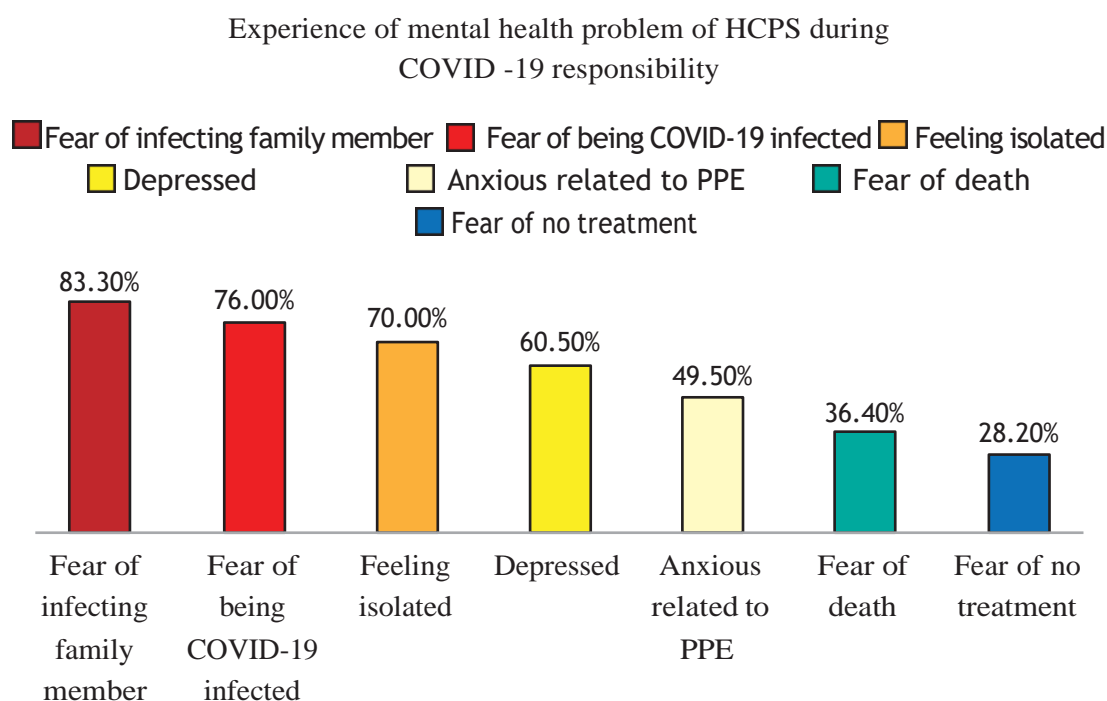
Experience of mental health problem of HCPS during
COVID -19 responsibility

Figure 1: Experience of mental health problems of HCPs during COVID-19 duty

Footnote: Among "other mental health problems" were stress 1, panic attack 1, mentally tired consulting a lot of and numerous patients 1, mental problems due to financial causes 1, pressure 1, financial problems 1, fear of death of family members due to COVID-19 1, rejection while wanting to get married, 1.

Mental health difficulties measured by the PSS

After reversing answers to some questions, the calculation was done to get the sum of the PSS. Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scores ranging from 0-13 are considered low stress. Scores ranging from 14-26 are considered moderate stress. Scores ranging from 27-40 are considered high perceived stress.
According to PSS, in figure 2, 29.6% reported low stress, 63.6% presented moderate stress, and 6.8% reported high perceived stress.
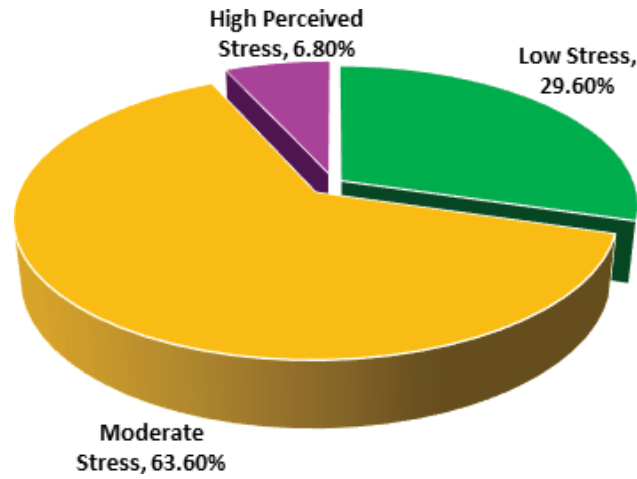
Figure 2. Stress level according to the PSS

Table 3 below shows the association between 'safety of the working environment' and 'fear of not getting treatment'. It shows that the HCPs were in fear of not getting treatment where the working environment was not safe (71.7%), and the p-value is 0.027 (<0.05) which is statistically significant. Association between the 'experience of negative attitudes from society' and 'feeling of isolation' shows that the feeling of isolation is higher among the participants who experience negative attitudes from society all the time (37.5%), and the p-value was 0.029 (< 0.05) which was statistically significant. Again, we can find an association between 'family taking special care as HCPs work for COVID-19 patients' and 'fear of getting COVID-19 infection'. Those who never received special care from the family had less fear of getting COVID-19 infection (65.5%), than those who received special care from the family (80.6%), and p-value was 0.024 (< 0.05) which was statistically significant. Association between 'the marital status of the participants' and 'fear of infecting family members' was also observed. 'Fear of infecting family members' is higher among the married participants (89.1%) than unmarried (80.7%) and Divorced/Widowed (60.0%) participants, p-value was 0.016 (< 0.05) which was statistically significant. Again, association between 'the gender of the participants' and 'fear of infecting family members' is statistically insignificant, p-value was 0.699 (>0.05).

Table 3: Associations of different organizational, familial and social variables with experience of different mental health problems

		Fear of not getting treatment		Chi-square value (x^2)	p-value
		Yes (%)	No (%)		
Safety of the working environment	Not safe	43 (71.7)	17 (28.3)	7.234	.027
	Moderately safe	116 (64.8)	63 (35.2)		
	Highly safe	185 (76.8)	56 (23.2)		
	Total	344 (71.7)	136 (28.3)		
		Feeling of isolation			
		Yes (%)	No (%)		
Experience of negative attitudes from society	Never	93 (33.8)	182 (66.2)	7.084	.029
	Sometimes	43 (22.8)	146 (77.2)		
	All the time	6 (37.5)	10 (62.5)		
	Total	142 (29.6)	338 (70.4)		
		Fear of getting COVID-19 infection			
Family taking special care as HCP work for Covid 19 patients		Yes%	No (%)		
	Never	11 (35.5)	20 (65.5)	7.443	.024
	Sometimes	45 (28)	113 (71.5)		
	All the time	57 (19.4)	237 (80.6)		
	Total	113 (23.4)	370 (76.6)		
		Fear of Infecting family members			
		Yes%	No%		
Marital Status of the participants	Married	326 (89.1)	40 (10.9)	8.320	.016
	Unmarried	88 (80.7)	21 (19.33)		
	Divorced/ Widowed	3 (60.0)	2 (40.0)		
	Total	417 (86.9)	63 (13.1)		
		Fear of Infecting family members			
		Yes%	No%		
Gender of the participants	Male	102 (87.9)	14 (12.1)	.150	.699
	Female	315 (86.5)	49 (13.5)		
	Total	417 (86.9)	63 (13.1)		

Discussion

The study's main purpose was to investigate the prevalence of mental health problems among HCPs dealing with COVID-19 patients. This study found that almost all the participants (99.4%) faced mental health problems. In our study, the percentage of depression amid HCPs is 60.5 %. A similar study conducted in India shows that the prevalence of moderate to severe depression among HCPs was 22%, and 47% reported symptoms of depression[16]. Differences in various factors among the HCPs contributed differently to the different results of depression.

Among all the participants, 86.3% were in fear of infecting their family members, and 76% were in fear of getting COVID-19 infected. A similar study is found in China, where less than 60.0% of participants demonstrated moderate or severe stress on all stressors, indicating a low-stress level among healthcare workers. The main source of stress among frontline healthcare workers caring for COVID-19 patients came from the fear of being infected, the fear of family members being infected, and the discomfort caused by protective equipment[17]. Another study done in China shows the prevalence of anxiety 53%, insomnia 79%, depression 56%, and PTSD 11%[18]. A similar cross-sectional study was done in Southern Ethiopia where depression, anxiety, and stress prevalence were shown to be 50.1%, 55.0%, and 38.5% respectively[19]. In comparison to other studies, the percentage of mental health problems is much higher here. Here in this study, almost all the HCPs faced mental health problems to some extent.

In this study, 1.7% of participants were suffering from high levels of stress. 27.3% were suffering from a moderate level of stress, and 56.5% had a low level of stress. A similar study is found in Saudi Arabia where the PSS revealed that 15.8% of the respondents were suffering from high-stress levels, 77.2% were suffering from moderate stress levels, and 7% with low-stress levels[20].

The study shows the experience of any kind of negligence/torture/blaming/bullying/threat from the people of their society. 57.0% had no such experience, 40.0% experienced these sometimes, and 3.0% always got these types of behavior from society. A qualitative study conducted in Bangladesh can correspond with it. The social stigma was another challenge for HCPs during the COVID-19 pandemic. The neighbors perceived them as a nuisance and usually avoided communication for fear of infection. In some cases, landlords raised monthly house rents of the medical workers, and evicted them from their properties if they tested COVID-positive. Sometimes, their maintenance of social distancing became rather cruel, and this disturbed the HCPs psychologically[21]. Another study conducted in Japan also conforms. It has also led to the perception that healthcare providers have been polluted and their children should not be welcomed in schools[22]. Unfortunately, social torture and stigmatization were universal during the COVID-19 pandemic and linked to serious mental health problems among healthcare professionals.

Limitations

The study had several limitations. Data were taken by convenience sampling technique. So, it did not result in a statistically balanced selection of the population. As a result, the sample was not necessarily a good representation of the whole population and the generalizability of the finding was limited21. Besides, it was tough to collect data during the COVID-19 situation. When there were influxes of patients,

all the staffs of the hospitals were so busy and the mental tension was so high among them that they could not give time to fill up the questionnaires. It was convenient to collect data when the number of patients subsided. But at that time the data provided by the participants might not show the actual mental pressure that they went through during the pick hours. So, it had been a big limitation to find out the real and actual conditions of the HCPs during this pandemic. Data collection was conducted at hospitals during the working periods of the study population. So there may be some inconsistencies in results due to the respondents' lack of attention while filling up the questionnaires since they were more dedicated to fulfilling their job responsibilities at the hospitals.

Conclusion and Recommendations

The study revealed that almost all of the HCPs suffered from mental health problems while working with COVID-19 patients. More than half of the participants (60.5%) were depressed. Four-fifths of the participants had fear of being COVID-19 infected (76.0 %), and fear of infecting family members (86.3%). Though they suffered from various mental health issues, their contribution during the pandemic was priceless, and could not be measured by money. As the HCPs continue working in the frontline, adequate mental health support should be implemented to ensure the positivity in healthcare services. Safety and support (psychological, financial, and medical) from the organization, family encouragement and care, and societal appreciation can make the HCPs confident in providing care.

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