

The Impact of COVID-19 Pandemic on the Mental Health of Working Nurses at a Tertiary Care Hospital in Bangladesh

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Abstract

Original Research Article

The psychological consequences of corona virus disease (COVID- 19) pandemic on health care professionals specially working nurses were serious due to their higher exposure. The aim of this study was to assess the impact of covid-19 pandemic on the mental health among working nurses. This institutional based cross sectional study was conducted at Bangabandhu Sheik Mujib Medical University (BSMMU) Hospital, Dhaka, Bangladesh, from July 2020 to June 2021. A total of 120 nurses, working in different units of BSMMU Hospital were included. Data were collected by face-to-face interview. The depression, anxiety and stress scale- 21 (DASS- 21) was used to assess the psychological impact of COVID- 19 on nurses. The prevalence of depression, anxiety and stress among working nurses were 25.8%, 44.2% and 64.1% respectively. Nurses working in the day shift duties, having no infection prevention training, lack of family support and excess work load were the factors significantly associated with depression ($p < 0.05$). While contact with confirmed cases and unavailability of infection prevention training were the factors that significantly increase the risk of developing anxiety ($p < 0.05$). On the other hand; lack of infection prevention training, excess work load and worries about bringing the virus at home were the factors significantly associated with developing stress among the nurses ($p < 0.05$). This study concluded that the prevalence of depression, anxiety and stress among nurses working in COVID-19 pandemic was high. Severity of stress was higher than anxiety and depression. Different risk factors were significantly associated with developing these mental disorders.

Keywords: Corona Virus Disease (COVID- 19); Psychological Impact; Mental Health; Working nurses.

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1. INTRODUCTION

Corona virus disease 2019 (COVID-19) is an infectious disease, which is caused by severe acute respiratory syndrome corona virus-2 (SARS-CoV-2) [1]. The virus was first identified in Wuhan, China in December 2019, and then spread rapidly globally, resulting in a pandemic disease [1]. The outbreak of corona virus disease (COVID-19) has been substantially influencing the life and living of people across the

world, especially after the declaration of a global pandemic by the World Health Organization in the second week of March 2020 [2]. The COVID-19 pandemic causes not only morbidity and mortality but also cause psychological as well as social problems [3]. Globally the viral outbreak was suspected to create an occupational risk primarily for the health workers, public service providers and community workers [4]. The physicians, nurses, respiratory physiotherapists,

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paramedics, ambulance personnel and hospital workers with higher chance of exposure were at high risk of being infected [4]. The COVID-19 pandemic was creating a psycho-emotional chaotic situation as countries have been reporting a sharp rise of mental health problems among its citizens including; anxiety, depression, stress, sleep disorder as well as fear and sometimes suicidal behavior [5, 6]. Psychological reactions of healthcare professionals towards COVID-19 pandemic was increasing as pandemic progresses these were; fear, anxiety, sleeping disturbances, depression and suicidal thought [7, 8]. The healthcare worker especially nurses were vulnerable to developing psychological trauma or stress-related disorders in addition to other mental health conditions during large-scale disease outbreaks [7, 8]. Nurses plays very important role in each healthcare setup; as continuous monitoring of the patients and because of their close contract with patients, they were at highest occupational risks to providing care during the COVID-19 pandemic [9]. Working in high risk environment, intense workload, physical tiredness, fear of being infected in the pandemic field and also worried about putting their families at risk predisposed them to be anxious and depressed [8, 10]. A higher level of anxiety and depression was reported among the working nurses due to their close interaction with the patients and the nature of their job [11-13]. Study reports; during COVID-19 pandemic half of the healthcare workers had depression, anxiety and poorer sleeping quality in china than any other profession or general people [14]. A recent study shows, a twenty percent increase in mental illnesses among health workers since the corona virus outbreak in India [15]. It was reported that, deprived mental health of working nurses not only damaging them but also affect their professional routine and quality of services they provide [16]. In Bangladesh, the psychological impact of COVID-19 pandemic seems to affect significantly to the health care professionals [17]. The psychological impact of a disease outbreak is often neglected during pandemic management although the consequences are costly [18]. Therefore, it is important to estimate psychological impact of COVID-19 pandemic on working nurses to develop necessary preventive measures and appropriate treatment modalities. In this background this study was aimed to assess the impact of covid-19 pandemic on the mental health of working nurses at a tertiary care hospital in Bangladesh.

2. METHODOLOGY

2.1. Study design

This cross-sectional study was conducted to assess the impact of covid-19 pandemic on the mental health of working nurses at Bangabandhu Sheik Mujib Medical University (BSMMU) Hospital, Dhaka, Bangladesh. The study was conducted from July 2020 to June 2021.

2.2. Study participants

The study were carried out among 120 nurses who were working at BSMMU Hospital, Dhaka, Bangladesh. The participants were selected purposively. All the participants were willingly agreed to participate in this study. All registered nurses working in different unit of BSMMU Hospital (hospital indoor/ward, COVID ward, intensive care unit (ICU) hospital emergency/COVID triage or fever outpatient department/fever clinic), who have been exposed to the pandemic for more than one month were included in this study. Nursing students, other medical workers, participants having previous history of any mental disorder were excluded.

2.3. Study procedure

It was a cross-sectional study using data obtained by self-administered questionnaires, which consisted of a general questionnaire for socio-demographic, work/organization related information and a twenty one item scale [the Depression, Anxiety and Stress Scale- 21 (DASS- 21)] for psychological assessment [19]. The researcher was approached to working nurses for participate in this study. Before collecting data, the research objectives were explained to each participant and asked them to sign the consent form. Data were collected by face-to-face interview using these questionnaires. The participants were requested to read the points of questionnaire and response each item. Researcher then carefully screened for the completeness of each point of the questionnaire immediately. If there were any missing data, the participants were asked again and complete them before entering the data to computer for analysis. Confidentiality and anonymity were strictly maintained in each step.

2.4. Data collection instruments

To identify the impact of COVID-19 pandemic on the mental health of working nurses' all data were collected by using self-administered questionnaire. There were two parts of the data collection questionnaire including:

- a. Part I: Demographic Questionnaire (DQ)
- b. Part II: Depression, Anxiety and Stress Scale - 21 Items (DASS-21) [19]

a. Demographic Questionnaire (DQ)

The demographic questionnaire consisted of twenty-one different questions that were arranged in four sub-sections; the first section contains six questions regarding the socio-demographic characteristics of the study participants, the second section contains four questions regarding work-related conditions of the nurses, the third section contains two organization related questions and the fourth section contains nine personal related questions of the participating nurses. The general information; including their age, gender, technical title, education level, marital status, family type, total family member, working experience, salary grade/monthly salary, rest time in

each week, number of duty shifts in the last month, faced any work load, pre-existing medical conditions [like- bronchial asthma/chronic obstructive pulmonary disease (COPD), other respiratory illness, diabetes mellitus, cardiovascular disease, any neurological/psychiatric disorders or immune-compromised for any reasons], family history of psychiatric disorder, family member with any chronic disease, confirmed/suspected case in family, opportunity to attended infection prevention training recently, contact with confirmed patients, family support, and any worry about bringing the virus at home.

b. Depression, Anxiety and Stress Scale - 21 Items (DASS- 21) [19]

This is a set of three self- reported scales designed to measure the emotional states of a person like- depression, anxiety and stress. Each part of the three DASS- 21 scales contains seven different items, divided into sub- scales with similar contents. Each individual item scores from 0 (strongly disagree) to 3 (strongly agree), where in between scores 1 and score 2 indicate as applied to some time and good part of the time respectively. The validity and reliability of the questionnaires were tested by professional experts.

2.5. Operational definition

Depression

The participants who scored below 10 on DASS-21 scale were considered as having no depression, but those who scored 10 and above were considered as having depression. Scores 10-13, scores 14-20 and scores 21-27 were considered as mild, moderate and severe depression respectively [19].

Anxiety

According to DASS-21 scale the participants who scored above 8 were considered as having anxiety

and those who had scored below 8 were referring to having no anxiety. Scores 8-9, scores 10-14 and scores 15-19 were considered as mild, moderate and severe anxiety respectively [19].

Stress

On DASS- 21 scale; the participants who scored below 15 were defined as having no stress, on the other hand participants who scored 15 or above were considered as having stress. Scores 15-18, scores 19-25 and scores 26-33 were considered as mild, moderate and severe stress respectively [19].

2.6. Data analysis

After collection all data were rechecked cleaned and validations were done accordingly to minimize error. Then data analysis was performed using Statistical Package for Social Science (SPSS) software version 26. Categorical data were presented as frequency with percentage and continuous variable was expressed as mean with standard deviation (Mean±SD). Chi-squared (χ^2) test was performed to analyze the data. A p value <0.05 was considered statistically significant.

3. RESULTS

This study was intended to assess the psychological impact of COVID- 19 pandemic on nurses, working at BSMMU, Dhaka, Bangladesh. A total of 120 nurses were participated in this study. Among them 45(37.5%) were male and rest 75(62.5%) were female. Mean(±SD) age of the participants was 26.8(±3.20) years and majority of them was in the age group of 20 to 25 year. Maximum participants [72(60%)] were married and half of them [60(50%)] was graduate nurse, A good percentage (90%) of participants having monthly salary of 10th grade scale (BDT= 16,000 – 38,640). Maximum (96) participants belonged to a nuclear family (Table- 1).

Table 1: Socio-demographic characteristics of the study population (N= 120)

Socio-demographic variables	Frequency (n)	Percentage (%)
Gender		
Male	45	37.5
Female	75	62.5
Age group		
20-25 year	60	50.0
26-30 year	24	20.0
31-35 year	36	30.0
Mean±SD	26.8±3.20	
Range (minimum-maximum)	23 – 32	
Marital status		
Married	72	60.0
Unmarried	48	40.0
Others*	0	00.00
Educational status		
Diploma Nurse	48	40.0
B. Sc Nurse/graduate nurse	60	50.0
M. Sc Nurse/post-graduate nurse	12	10.0

Socio-demographic variables	Frequency (n)	Percentage (%)
Salary grade (Monthly salary)		
9 th grade (BDT**= 22,000 – 53,060)	12	10.0
10 th grade (BDT**= 16,000 – 38,640)	108	90.0
Family type		
Nuclear family	96	80.0
Extended family	24	20.0

*Others= Divorced/Widow; **BDT= Bangladesh Taka (Bangladeshi currency)

It was observed that majority of the study participants was- less experienced, working in hospital

wards, doing more day shift duties and faced work load (Table-2).

Table-2: Work related variables of the study participants (N = 120)

Work related variables	Frequency (n)	Percentage (%)
Working experience (years)		
1-5 years	84	70.0
6-10 years	24	20.0
>10 years	12	10.0
Working units		
Hospital wards	60	50.0
Emergency	24	20.0
Fever clinic	12	10.0
Intensive care unit (ICU)	24	20.0
Duty shift		
Day shift	72	60.0
Night shift	48	40.0
Faced work load		
Yes	84	70.0
No	36	30.0

In this study organization related data revealed that, a large percentage of the participants had to take care more than 10 patients per shift and 70% of the

participants had an opportunity to attend training on infection prevention (Table-3).

Table-3 Organization related data of the study subjects (N = 120)

Organization related variables	Frequency (n)	Percentage (%)
Number of patients a nurse take care per shift		
1-10	36	30.0
11-20	48	40.0
>20	36	30.0
Availability of infection prevention training		
Yes	84	70.0
No	36	30.0

Regarding personal data analysis; it was found that almost half [59(49.2%)] of the participants had rest time 51-60 hours per week, 80% of the participants had family member less than 5 person, 71.7% of the participants having their family support, 60% of the participants were worried about bringing the virus at home, 92.5% of the participants did not had any

positive family history of psychiatric disorder, 86.7% of the participants was free from any pre-existing medical disease, 70% of the participants had confirmed/suspected cases in their family, 60% of the participants had family members with chronic disease and 70% of the participants had history of contact with confirmed COVID-19 cases (Table-4).

Table-4: Data related to personal characteristics of the working nurses (N = 120)

Variables	Frequency (n)	Percentage (%)
Total rest time each week		
20-30 hours	32	26.7
31-40 hours	17	14.2

Variables	Frequency (n)	Percentage (%)
41-50 hours	12	10.0
51-60 hours	59	49.2
Family members		
<5	96	80.0
>5	24	20.0
Family support		
Yes	86	71.7
No	34	28.3
Any worry about bringing the virus at home		
Yes	72	60.0
No	48	40.0
Family history of psychiatric disorder		
Yes	9	7.5
No	111	92.5
Pre-existing medical condition		
Yes	16	13.3
No	104	86.7
Confirmed/suspected case in family		
Yes	36	30.0
No	84	70.0
Family member with any chronic disease		
Yes	72	60.0
No	48	40.0
Contact history with confirmed cases		
Yes	84	70.0
No	36	30.0

The data analysis suggested that; prevalence of depression, anxiety and stress among nurses working at

BSMMU hospital during COVID-19 pandemic was- 25.8%, 44.2% and 64.1% respectively (Figure- 1).

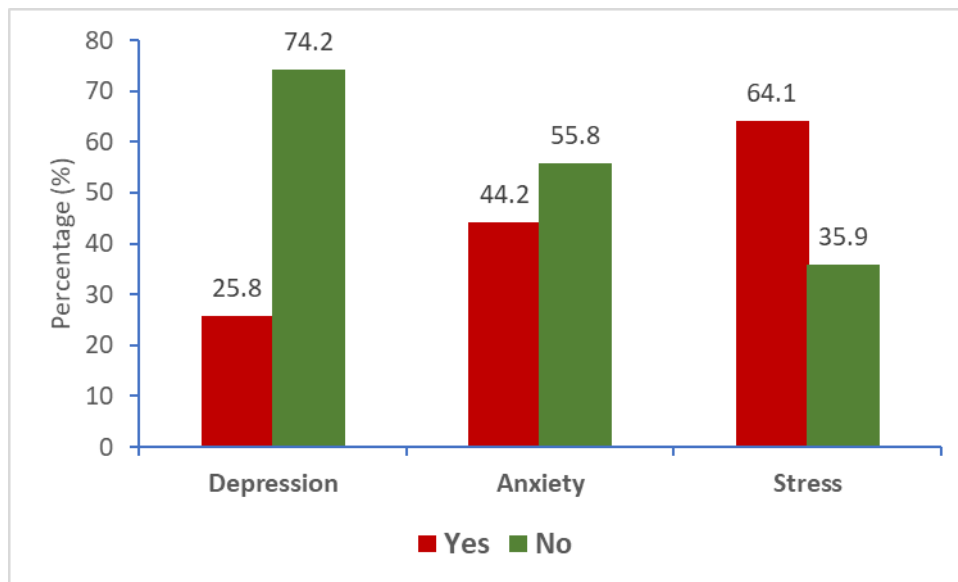


Figure-1: The prevalence of depression, anxiety and stress among working nurses (N=120)

According to the DASS- 21 scale [19] total 25.8% of the participants experienced depression; of them 18.3% had mild depression and 7.5% was moderately depressed. While 44.2% of the participants experienced anxiety; among them 30% had mild anxiety, 10% had moderate anxiety and 4.2% had

severe anxiety. On the other hand, 64.1% of the participants experienced stress; of them 30.8% experienced mild stress, 22.5% experienced moderate stress and 10.8% experienced severe stress during working in COVID- 19 pandemic at BSMMU hospital (Figure- 2).

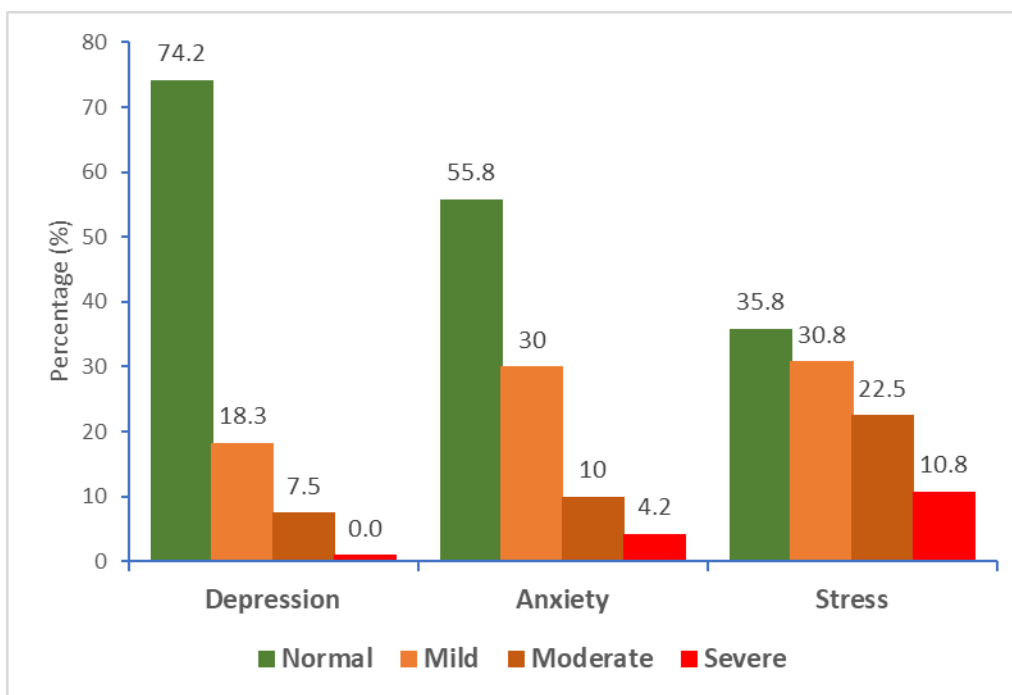


Figure-2: The severity of depression, anxiety and stress among working nurses (N=120)

Data analysis revealed that; nurses working in the day shift duties, having no infection prevention training, lack of family support and excess workload

were the risk factors significantly associated with depression ($p < 0.05$) (Table-5).

Table-5: Different factors associated with depression among the working nurses (N= 120)

Variables		Depression		p-value	OR	95%CI	
		Yes (n=31)	No (n=89)			Lower	Upper
Gender	Male	15 (48.4)	30 (33.7)	0.145	1.844	0.804	4.229
	Female	16 (51.6)	59 (66.3)				
Marital status	Married	11 (35.5)	17 (19.1)	0.107	2.329	0.942	5.763
	Unmarried	20 (65.5)	72 (80.9)				
Family type	Nuclear	25 (80.7)	66 (74.2)	0.467	1.452	0.529	3.985
	Extended	6 (19.3)	23 (25.8)				
Duty shift	Day	24 (77.4)	48 (53.9)	0.022*	2.929	1.145	7.493
	Night	7 (22.6)	41 (46.1)				
Contact with confirmed cases	Yes	19 (62.3)	53 (59.6)	0.864	1.076	0.465	2.485
	No	12 (38.7)	36 (40.4)				
Infection prevention training	Yes	10 (32.3)	74 (83.2)	0.001*	10.36	4.065	26.402
	No	21 (67.7)	15 (16.8)				
Family support	Yes	7 (22.6)	77 (86.5)	0.001*	22.0	7.786	62.16
	No	24 (77.4)	12 (13.5)				
Faced excess workload	Yes	28 (90.3)	56 (62.9)	0.004*	5.500	1.551	19.506
	No	3 (9.7)	33 (37.1)				
Any worry about bringing the virus at home	Yes	24 (77.4)	65 (73.0)	0.631	0.789	0.304	2.07
	No	7 (22.6)	24 (27.0)				

Figures in the parenthesis indicate corresponding percentage; Chi-squared (χ^2) test was performed; *significant

It was observed that, close contact with confirmed cases and lack of infection prevention

training were the factors which significantly increase the risk of developing anxiety ($p < 0.05$) (Table- 6).

Table-6: Different factors associated with anxiety among the working nurses (N= 120)

Variables		Anxiety		p-value	OR	95%CI	
		Yes (n=53)	No (n=67)			Lower	Upper
Gender	Male	20 (37.7)	25 (37.3)	0.962	1.018	0.484	2.142
	Female	33 (62.3)	42 (62.7)				
Marital status	Married	27 (50.9)	45 (67.2)	0.072	0.508	0.242	1.066
	Unmarried	26 (49.1)	22 (32.8)				
Family type	Nuclear	41 (77.4)	54 (80.6)	0.664	0.823	0.340	1.990
	Extended	12 (22.6)	13 (19.4)				
Duty shift	Day	36 (67.9)	36 (53.7)	0.115	1.824	0.861	3.862
	Night	17 (32.1)	31 (46.3)				
Contact with confirmed cases	Yes	44 (83.0)	41 (61.2)	0.009*	3.100	1.300	7.394
	No	9 (17.0)	26 (38.8)				
Infection prevention training	Yes	25 (47.2)	59 (88.1)	0.001*	0.121	0.048	0.302
	No	28 (52.8)	8 (11.9)				
Family support	Yes	34 (64.2)	52 (77.6)	0.104	0.516	0.231	1.152
	No	19 (35.8)	15 (22.4)				
Faced workload	Yes	39 (73.6)	45 (67.2)	0.446	1.362	0.615	3.017
	No	14 (26.4)	22 (32.8)				
Any worry about bringing the virus at home	Yes	30 (56.6)	42 (62.7)	0.499	0.776	0.372	1.619
	No	23 (43.4)	25 (37.3)				

Figures in the parenthesis indicate corresponding percentage; Chi-squared (χ^2) test was performed; *significant

On the other hand; having no infection prevention training, excess work load and worries about bringing the virus at home were the factors with

significant risk associated with developing stress among the working nurses ($p < 0.05$) (Table- 7).

Table-7: Different factors associated with stress among the working nurses (N= 120)

Variables		Stress		p-value	OR	95%CI	
		Yes (n=77)	No (n=43)			Lower	Upper
Gender	Male	33 (42.9)	12 (27.9)	0.105	1.938	0.866	4.333
	Female	44 (57.1)	31 (72.1)				
Marital status	Married	42 (54.6)	30 (69.8)	0.103	0.520	0.236	1.146
	Unmarried	35 (45.5)	13 (30.2)				
Family type	Nuclear	58 (75.3)	37 (86.0)	0.166	0.495	0.181	1.354
	Extended	19 (24.7)	6 (14.0)				
Duty shift	Day	48 (62.3)	24 (55.8)	0.484	1.310	0.614	2.797
	Night	29 (37.7)	19 (44.2)				
Contact with confirmed cases	Yes	59 (76.6)	26 (60.5)	0.062	2.143	0.956	4.806
	No	18 (23.4)	17 (39.5)				
Infection prevention training	Yes	45 (58.4)	39 (90.7)	0.001*	0.144	0.047	0.444
	No	32 (41.6)	4 (9.3)				
Family support	Yes	56 (72.7)	30 (69.8)	0.730	1.156	0.508	2.628
	No	21 (27.3)	13 (30.2)				
Faced workload	Yes	67 (87.0)	17 (39.5)	0.001*	10.250	4.150	25.28
	No	10 (13.0)	26 (60.4)				
Any worry about bringing the virus at home	Yes	41 (53.2)	12 (27.9)	0.007*	2.942	1.318	6.566
	No	36 (46.8)	31 (72.1)				

Figures in the parenthesis indicate corresponding percentage; Chi-squared (χ^2) test was performed; *significant

4. DISCUSSION

The corona virus disease (COVID- 19) is highly infectious and rapidly transmitted from human to human [1]. This pandemic disease poses a great challenge to the overall global health system [2]. Health professionals specially working nurses are more likely

to become infected than others [3]. Nurses play an important role in the pandemic situation and they are under the highest pressure among all medical workers [7, 8]. Close contact with suspected/confirmed cases, fear of being infected, inadequate infection protection training and fear for the safety of their family etc can

affect their mental health [7]. This study was aimed to assess the impact of covid-19 pandemic on the mental health of working nurses. A total of 120 nurses working at BSMMU hospital, Dhaka Bangladesh were enrolled in this study. Among them 45 were male and 75 were female. The mean age of the study participants was 26.8(±3.20) years and majority of them was in the 20 to 25 year age group. Most of them were married and half of them were graduate nurse. It was observed that prevalence of depression, anxiety and stress among nurses working at BSMMU Hospital were; 25.8%, 44.2% and 64.1% respectively in response to COVID-19 pandemic. The prevalence of depression [25.8%] was almost similar with a previous study [20], but that was much higher than other studies [21, 22], although it was lower than another study [18]; the possible explanation for this difference could be the ethnic diversity. The prevalence of anxiety of this study [44.2%] was consistent with related previous studies [18, 23], however which was quite different from other studies [21, 22]; that might be due to the difference in socio-economic, cultural and environmental factors. The prevalence of stress of our study [64.1%] was comparable with a similar previous study [21], although our finding was not matched with others [22, 23]; the plausible justification of this variation may be due to inadequate resources necessary to coping with pandemic situation.

The data analysis revealed that, 25.8% of the study participants experienced depression; of them 18.3% had mild depression and 7.5% had moderate depression respectively. While 44.2% of the participants experienced anxiety; among them 30% had mild anxiety, 10% had moderate anxiety and 4.2% had severe anxiety. On the other hand 64.1% of the participants experienced stress; of them 30.8% experienced mild stress, 22.5% experienced moderate stress and 10.8% experienced severe stress during working in COVID- 19 pandemic at BSMMU hospital. These findings were supported by a recent study [24].

In this study it was found that; working in the day shift duties, having no infection prevention training, lack of family support and excess workload were the risk factors significantly associated with depression among the working nurses ($p < 0.05$). These findings were supported by couple of previous studies [20-23]. In Chi-squared (χ^2) test analysis it was observed that; contact with confirmed cases and unavailability of infection prevention training were the factors significantly increase the risk of developing anxiety among the working nurses. These results were an agreement of similar previous studies [21-23]. It was revealed that; lack of infection prevention training, excess workload and worries about bringing the virus at home were the high risk factors significantly associated with developing stress among the nurses working at BSMMU hospital during the COVID- 19 pandemic.

These observations were in line of related other studies [21-23].

This current study demonstrated that COVID-19 pandemic affects the mental health of a good percentage of working nurses. The prevalence of depression, anxiety and stress in response to COVID-19 pandemic among working nurses at BSMMU hospital, Dhaka, Bangladesh is much higher compare to pre-pandemic general population as reported in recent national mental health survey in Bangladesh [25]. This high prevalence suggests mental health interventions like- psychological counseling, group discussion etc. Providing adequate necessary resources to coping with pandemic, reducing workload, ensuring adequate infection prevention training and active family support could minimize the psychological impact of COVID-19 pandemic on working nurses.

CONCLUSION

This study concluded that, prevalence of depression, anxiety and stress among working nurses in response to COVID- 19 pandemic were 25.8%, 44.2% and 64.1% respectively. Severity of stress was higher than that of anxiety and depression. Working in the day shift duties, lack of family support, excess workload, inadequate infection prevention training and worries about bringing the virus at home were the risk factors significantly associated with developing these mental disorders. Special attention needed to minimize the psychological impact of the COVID- 19 pandemic on working nurses that might protect their mental health.

Limitations of the study

This current study has several limitations. First, it was a single center study. Second, the sample size was relatively small. Third, the self-reported survey mode may introduce response bias. Besides, several confounding factors like- domestic violence, familial disharmony etc were not addressed in this study.

Conflicts of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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