Mental health condition among female workers during COVID-19 pandemic: insights from Dhaka city, Bangladesh

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Article Info

ABSTRACT

The coronavirus illness 2019 (COVID-19) created previously unheard-of vulnerabilities in people's physical and mental health situations worldwide. The study aims to evaluate the mental health conditions among a representative sample of female workers in Dhaka city, Bangladesh during the COVID-19 pandemic and its effect on their state of sleep and its patterns as well as their professional lives. A cross-sectional quantitative method along with structural questionnaires was designed. Data collection was conducted through an online survey, and responses were received from 112 respondents. The Depression Anxiety Stress Scales 21 (DASS-21) was used to assess the depression, anxiety, and stress levels of the respondents. The result shows that the respondents had depression, anxiety and, stress, respectively. Also, 52.50% of the respondents were dissatisfied with their sleeping patterns during the pandemic. After conducting a Chi-square test, the study also revealed that the respondents who had issues with depression, anxiety, and stress also had difficulties with the longer duration of staying at home (p<0.05), concentrating on their work (p<0.05), and working from home (p<0.05). The test also showed a significant relationship between the respondents' socio-demographic features and deteriorated mental health conditions. The study identifies that COVID-19 pandemic has clear impact on female worker's mental health and their professional life.

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1. INTRODUCTION

During the COVID-19 pandemic, the women workers had to perform both in their workplace and domestic duties which put a heavy toll on their emotional labor [1]. In the pre-COVID situation, the women workers could balance their office and home duties. However, office work, taking care of family members, rearing children, cooking, house chores, and other activities were expected to be done simultaneously, which gradually led them to face psychological and physical problems [2]. Other than being physically stressed, the women workers around the globe had to deal with deep emotional stress which led to anxiety, depression, and deterioration of their mental health [3]. A study conducted in China asserted that a significant portion of women healthcare workers underwent symptoms of stress, anxiety, depression, and insomnia during the COVID-19 crisis [4]. The female employees in Brazil, India, and China were suffering from negative mental

health issues two to three times more than their counterparts in Europe and the United States [5]. Christoph *et al.* [6] showed that the unemployed adult women under 35 having low income faced the highest mental health problems in Austria during the COVID-19 pandemic. Beri [7] reported that during the pandemic, the women jobholders, who worked from home, perceived more stress which led them to depression propensity, and the unmarried female jobholders experienced less depression than the married. Lasalvia *et al.* [8] found that women healthcare workers directly involved with COVID-19 patients were at a larger risk of the psychopathological repercussions of the pandemic in north-south Italy. Kirwin and Ettinger [9] showed that in (the United States of America) USA, 21.8% and 53.4% of working mothers had severe and moderate mental illness respectively; also, a 50% increase in severe mental illness was related to not receiving employee benefits during the COVID-19 lockdown.

The pandemic worsened the mental health problems of Bangladeshis of all classes [10]. It is reported that most of the female employees were troubled with worries, anxiety, sleeplessness, depression, lack of concentration, emotional vulnerability, exhaustion, financial insecurity, and appetite disruption during the COVID-19 crisis [11]. The reason might be that the women have to work as the frontline workers in specific key and productive sectors such as readymade garments, healthcare, and services which were also bested by the pandemic. Therefore, the women workers could experience anxiety, depression, and stress [12]. Haque *et al.* [13] uncovered that the female waste workers received psychological distress, social dysfunction, and lower confidence during the COVID-19 pandemic. Woodruff *et al.* [14] found that during the COVID-19 pandemic, the Bangladeshi female ready-made garments (RMG) workers suffered from a significantly higher stress level. So, the women workers in Dhaka city, Bangladesh experienced a new situation along with a working pattern during the COVID-19 pandemic.

This study aimed to evaluate the female workers' mental health conditions during the COVID-19 pandemic in Dhaka City, Bangladesh and its effect on their sleeping patterns and their daily and professional lives. The specific objectives of this study are to investigate the mental health problems, e.g., depression, anxiety, and stress faced by the respondents in the study area during the COVID-19 pandemic and to ascertain the mental health-related changes (e.g., sleeping patterns, sleep satisfaction) that occurred to the respondent's regular and professional lives during COVID-19 pandemic and also to assess the impact of deteriorating mental health on the respondents' daily and professional lives.

Another purpose of this study is to inquire into the behavior theory of depression. The theory asserts that depression results from a low or inadequate contingent of positive reinforcement, which means insufficient positive reinforcement results in a depletion of positive behaviors and dysphoria, which depicts the key symptoms of depression [15]. There are three assumptions about how scarce reinforcement arises: Firstly, the environment does not bestow sufficient support; secondly, the individual does not attain the essential social skills to obtain reinforcement in an environment in which it is available; and thirdly, the individual is unable to enjoy support despite achieving it [16]. The environment that the female workers of Dhaka city went through during COVID-19 might have reduced their positive reinforcement and skills, which were transformed into depression, anxiety stress, and other negative behaviors that deteriorate individuals' mental health. This study might reveal a new behavior pattern by assessing their mental health situation.

2. METHOD
2.1. Conceptual framework
The study investigated its objectives by constructing the framework as shown in Figure 1. By engaging the related socio-demographic factors particularly, age, marital status, educational status, occupation, working designation, number of family members, religion, monthly income, and child bearers, the framework illustrates how the COVID-19 pandemic affected the female workers in Dhaka city which includes their mental health condition, sleeping patterns, and regular and professional life.

2.2. Nature of the study and participants
A cross-sectional quantitative study was conducted as the context was during the COVID-19 pandemic. A structured and closed-ended questionnaire was designed to achieve the study's objectives. Reliability and vailidity of the questionnaire is carried out using a pilot test. A self-operated questionnaire through Google Forms was constructed. The questionnaire was predesigned and structured under the Depression Anxiety Stress Scales 21 (DASS-21) scale, which covered socio-demographic characteristics, mental health assessment scale, and other issues. To produce precise results, the target respondents were the female workers of both formal and informal sectors under the Dhaka North and Dhaka South City Corporations of Dhaka City, Bangladesh. A purposive sampling technique was chosen for this study and the estimated sample size for the target population was 150. The majority of statisticians agree that a sample size of 100 is necessary

to obtain any kind of significant results. Due to the shortage of time and corona infection risk, the study relied entirely on online and was circulated to the respondents through various online platforms (e.g. email, Facebook, Messenger, WhatsApp, Instagram, Telegram, and LinkedIn). However, 112 responded to this survey. The responses were collected from June 20, 2022 to July 10, 2022.
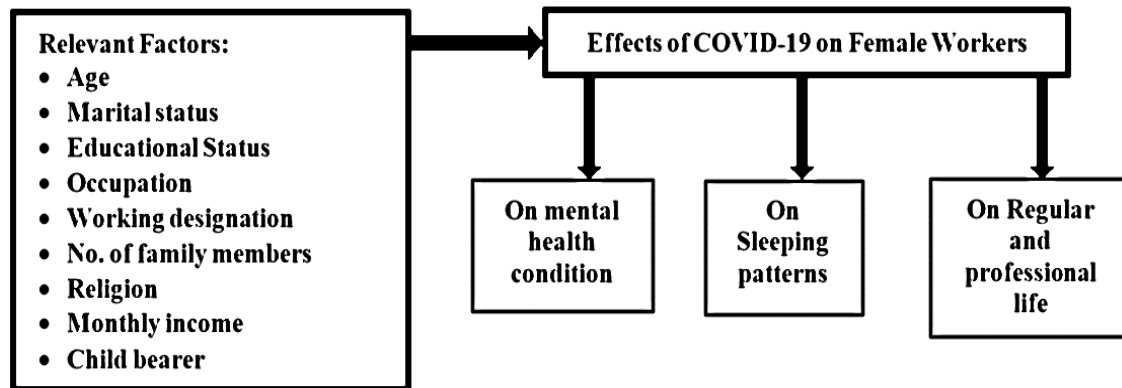

Figure 1. Conceptual framework

2.3. Variables

Only the female gender had been selected from the gender category. Other chosen socio-demographic variables are age, marital status, education level, and occupation, working designation, number of family members, religion, monthly income, child bearer. The survey also comprised homestay duration, sleep duration, and sleeping complacency. Furthermore, the survey considered five variables that affect professional life include workload, workplace, concentration during work, security, and mental stability to assess the corona effect.

2.4. DASS 21 scale

DASS 21 Scale measures the intensity of depression, anxiety, and stress. Each subscale has seven items. Furthermore, each item consists of a four Likert scale from 0 (never) to 3 (almost always) range. Scores from each item are summed up based on each subscale which are depression, anxiety, and stress, and after that, each is multiplied by two. In this study, cut-off scores are categorized by normal, mild, moderate, severe, to extremely severe to reckon the severity of depression, anxiety, and stress. The categories of these subscales are based on these recommended cut-off scores: depression ≥ 10, anxiety ≥ 8, and stress ≥ 15 [17]. In general, the DASS-21 scale is better suited for research purposes [18]. So, this scale has been used in similar studies and is considered suitable and practical to apply to the Bangladeshi participants to analyze their mental health conditions [19]–[22].

2.5. Statistical tools

This study analyzed data using STATA version 14, and Microsoft Excel. To analyze socio-demographic data, descriptive statistics were applied. Inferential statistics were used to check the relation between dependent and independent variables using cross-tabulation and Chi-square tests ($\chi 2$). p-value <0.05 was taken into account as the level of significance. During the survey, a voluntary agreement was taken from the participants, and the participants' data will be kept confidential and used only for academic purposes.

3. RESULT AND DISCUSSION

3.1. Results of socio-demographic features of the respondents

Among 112 female participants, 57.14% of them were married. The 62.50% of the respondents were within the range of 20-30 years. The Master's degree holders and above graduates and private jobholders were the major respondents at 79.46% and 57.14% respectively. Furthermore, most of the respondents had 2-4 family members making up 46.43%. The maximum number of respondents were Muslims (92.9%). The majority of the respondents (40.18%) earn less or equal to 30,000 BDT (Bangladeshi taka) per month. However, only 33.04% of the respondents had bears children as shown in Table 1.

3.2. Mental health status of the respondents (depression, anxiety, and stress)

The DASS-21 scale was applied to evaluate mental health. Figures 2-4 shows the intensity of depression, anxiety, and stress of the respondents. Figure 2 pictures that, out of 112 participants, 32.14% reported suffering from moderate depression which was the highest, and the severe level was reported lowest at 8.93%. Figure 3 displays that the majority of respondents reported having normal anxiety (40.18%) while only 9.82% showed undergoing extremely severe distress. Figure 4 shows that a significant proportion of respondents faced a normal degree of stress at 67.8% compared to other levels.

Table 1. Socio-demographic features of the participants (n=112)

|	Characteristics	n%		Characteristics	n%
Age	≤ 20 Years	2.68%	No. of family	2-4 person	46.43%
	20-<30 Years	62.50%	members	4-6 Person	44.64%
	30-<40 Years	29.46%		>6 person	8.93%
	40 Years and Above	5.36%			
Marital status	Unmarried	41.07%	Religion	Muslims	92.9%
	Married	57.14%		Hindus	7.1%
	Divorced/Widow	1.79%		Others	0
	Others	0			
Living condition	Own	37.50%	Income	≤ 30,000 BDT	40.18%
	Rented	58.93%		30,000-<50,000 BDT	33.93%
	Others	3.57%		>50,000 BDT	25.89%
Education status	Completed primary	0.89%	Child bearer	Yes	33.04%
	Completed secondary	0.89%		No	66.96%
	Completed higher secondary	0			
	Undergraduate	18.75%			
	Master's and above	79.46%			
Occupation	Govt. job holders	0			
	Private job holders	57.14%			
	Non-governmental organization (*NGO) workers	23.21%			
	Businesswomen	3.57%			
	Healthcare workers	3.57%			
	Others	12.50%			
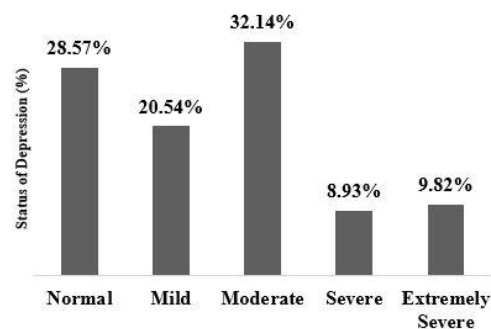
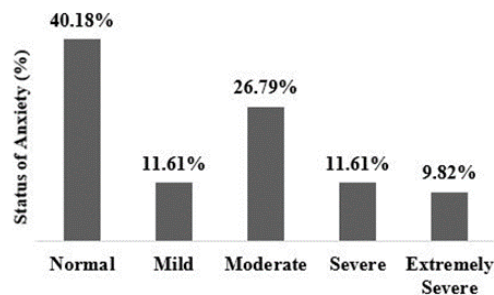Figure 2. Status of depression of the total participants, n=112

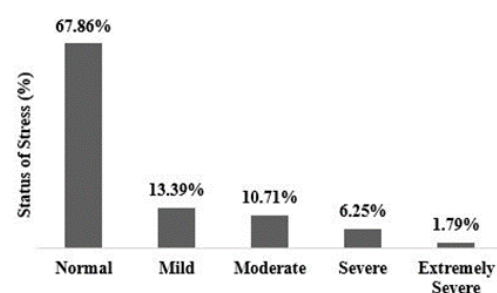Figure 3. Status of anxiety of the total participants, n=112

Figure 4. Status of the stress of the total participants, n=112

3.3.   Mental health intensities among respondents

The mental health of the female workers was more deeply analyzed by measuring the intensity of depression, anxiety, and stress of the total respondents. The result was that 71.43% of the respondents had depression positive, 59.82% had anxiety-positive, and 32.14% had stress-positive during the COVID-19 rampage.

3.4.   Distribution of normal and professional days during COVID-19

Table 2 illustrates that during the COVID-19, nearly half of the respondents remained home for more than 60 days (47.32%). The 73.21% of the respondents did the home office. Furthermore, more than half of the respondents felt pressure at work (62.50%) and lay off (55.36%). However, 44.64% couldn't concentrate on their job, and 67.86% felt insecure in their workplaces. The 52.68% were mentally unstable, and the majority feared coronavirus infection (89.29%). In addition, 43.75% of the respondents could sleep 7-9 hours, and less than half of the respondents were unsatisfied with their sleep (41.96%).

Table 2. Distribution of homestay, sleep satisfaction, and working situation during COVID-19 days, n=112

Variable (s)		n (%)	Variable (s)		n (%)
Staying home	<20 days	23.21%	Sleep patterns	<7 Hours	42.86%
	20-60 days	29.46%		7-9 Hours	43.75%
	>60 days	47.32%		>9 hours	13.39%
Job maintenance	Work from home	73.21%	Sleep satisfaction	Yes	58.04%
	Roster duty	26.79%		No	41.96%
Workload pressure	Yes	62.50%	Concentration on work	Yes	35.71%
	No	37.50%		No	44.64%
				Maybe	19.64%
Mental stability	Yes	28.57%	Feeling safety at the workplace	Yes	18.75%
	No	52.68%		No	67.86%
	Maybe	18.75%		Don't want to mention	13.39%
Feeling of losing the job	Yes	55.36%	Fear of infection	Yes	89.29%
	No	44.64%		No	8.04%
				It didn't concern me	2.68%

3.5.   Association between demographic information and participant's sleep satisfaction

Table 3 shows that the age group between 20 to 30 years (30.36%) was most dissatisfied with their sleep. It also states that Muslims had the highest (36.61%) sleep issues. The respondents whose income was below 30,000 BDT, had suffered more (23.21%) than the other income group on sleep issues. Moreover, the child-bearer respondents had a high incidence (33.04%) of not sleeping well during the COVID-19 pandemic. Furthermore, most sleep-based problems were also familiar (27.68%) among the respondents who achieved Master's and above.

Table 3. Relationship between respondents' demographic and sleep satisfaction

Variables	Sleeping Satisfaction		
	Yes n (%)	No n (%)	p-value
Age			
≤ 20 Years	2 (1.79%)	1 (0.89%)	0*
20-<30 Years	36 (32.14%)	34 (30.36%)	
30-<40 Years	21 (18.75%)	12 (10.71%)	
40 Years and Above	6 (5.36%)		
Education status			
Completed primary		1 (0.89%)	0.033*
Completed secondary		1 (0.89%)	
Undergraduate	7 (6.25%)	14 (12.50%)	
Masters and above	58 (51.79%)	31 (27.68%)	
Religion			0.049*
Muslims	63 (56.25%)	41 (36.61%)	
Hindus	2 (1.79%)	6 (5.36%)	
Others			
Income			
≤30,000 BDT	19 (16.96%)	26 (23.21%)	0.012*
30,000-<50,000 BDT	24 (21.43%)	14 (12.50%)	
>50,000 BDT	22 (19.64%)	7 (6.25%)	
Child bearers			
Yes	27 (24.11%)	10 (8.93%)	0.024*
No	38 (33.93%)	37 (33.04%)	

*p<0.05

3.6. Association between socio-demographic information and mental health

In Table 4, the respondents' religion significantly correlates with anxiety ($\chi2=4.172$, $p<0.05$). Muslim respondents were the major sufferers of anxiety symptoms (92.54%). A significant correlation between the child bearers and anxiety symptoms was also observed ($\chi2=6.846$, $p<0.05$) where 74.63% of the child bearers had anxiety issues.

Table 4. Relationships of socio-demographic features with depression, anxiety, and stress

Variables	Depression Positive ($n_1=80$, 71.43%)			Anxiety Positive ($n_2=67$, 59.82%)			Stress Positive ($n_3=36$, 32.14%)		
	n_1 (%)	χ^2	p-value	n_2 (%)	χ^2	p-value	n_3 (%)	χ^2	p-value
Age									
≤ 20 Years	3 (3.75)	8.598	0.990	2 (2.99)	3.927	0.772	2 (5.56)	2.998	0.643
20 - <30 Years	53 (66.25)			46 (68.66)			25 (69.44)		
30 - <40 Years	22 (27.50)			16 (23.88)			8 (22.22)		
40 Years and Above	2 (2.50)			3 (4.48)			1 (2.78)		
Education status									
Completed primary	1 (1.25)	0.654	0.553	1 (1.49)	2.129	0.371	1 (2.78)	0.783	0.623
Completed secondary	1 (1.25)			3 (2.99)			2 (5.56)		
Undergraduate	15 (18.75)			16 (23.88)			7 (19.44)		
Masters and above	63 (78.75)			49 (73.13)			27 (75.00)		
Income									
≤ 30,000 BDT	35 (43.75)	3.084	0.361	28 (41.79)	1.700	0.438	15 (41.67)	1.427	0.835
30,000-<50,000 BDT	27 (33.75)			24 (35.82)			13 (36.11)		
>50,000 BDT	18 (22.50)			15 (22.39)			8 (22.22)		
Religion									
Muslims	72 (90)	5.886	0.131	62 (92.54)	4.172	0.070*	32 (88.89)	7.651	0.856
Hindus	8 (10)			5 (7.46)			4 (11.11)		
Others	0								
Child bearers									
Yes	23 (28.75)	4.331	0.099	17 (25.37)	6.846	0.059*	6 (16.67)	6.987	0.272
No	57 (71.25)			50 (74.63)			30 (83.33)		

*$p<0.05$

3.7. Relationship between sleep satisfaction, sleeping patterns, and mental health

Table 5 depicts a significant relationship between sleep patterns ($\chi2=1.373$, $p<0.05$) and stress, and between sleep satisfaction and depression ($\chi2=2.809$, $p<0.05$). The respondents who slept less than seven hours (44.44%) were likely to suffer more from stress. However, the respondents unsatisfied with their sleep issues mostly had depression symptoms (52.50%).

Table 5. Statistical association of sleep satisfaction, sleeping pattern with depression, anxiety and stress symptoms

Variables	Depression Positive ($n_1=80$, 71.43%)			Anxiety Positive ($n_2=67$, 59.82%)			Stress Positive ($n_3=36$, 32.14%)		
	n_1 (%)	χ^2	p-value	n_2 (%)	χ^2	p-value	n_3 (%)	χ^2	p-value
Sleep patterns									
<7 Hours	34 (42.50)	7.326	0.220	30 (44.78)	7.789	0.757	16 (44.44)	1.373	0.010*
7-9 Hours	33 (41.25)			28 (41.79)			11 (30.56)		
>9 hours	13 (16.25)			9 (13.43)			9 (25.00)		
Sleep satisfaction									
Yes	38 (47.50)	2.809	0.017*	30 (44.78)	3.605	0.166	13 (36.11)	2.253	0.488
No	42 (52.50)			37 (55.22)			23 (63.89)		

*$p<0.05$

3.8. Relationship between work and mental health

Table 6 demonstrates a significant relationship between the duration of staying at home and the amount of stress ($\chi2=6.278$, $p<0.05$) the respondents had to suffer. In view of that, the respondents who stayed at home for more than 60 days were more likely to feel stress (55.56%). An association between job maintenance and stress ($\chi2=8.971$, $p<0.05$) was also identified where 75% of respondents who worked from home had a prevalence of stress. Furthermore, a significant relationship between anxiety and concentration on work ($\chi2=2.844$, $p<0.05$) was also found. This relation shows that 56.72% of respondents lost concentration on work due to anxiety.

Table 6. Association among work, depression, anxiety, and stress

Variables	Depression			Anxiety			Stress		
	Positive (n_1= 80, 71.43%) n_1 (%) χ^2 p-value			Positive (n_2= 67, 59.82%) n_2 (%) χ^2 p-value			Positive (n_3= 36, 32.14%) n_3 (%) χ^2 p-value		
Staying home									
<20 days	15 (18.75)	7.323	0.861	12 (17.91)	3.455	0.584	5 (13.89)	6.278	0.027*
20-60 days	23 (28.75)			22 (32.84)			11 (30.56)		
>60 days	42 (52.50)			33 (49.25)			20 (55.56)		
Job maintenance									
Work from home	59 (73.75)	5.443	0.385	50 (74.63)	5.695	0.362	27 (75.00)	8.971	0.015*
Roster duty	21 (26.25)			17 (25.37)			9 (25.00)		
Concentration on work	23 (28.75)	1.622	0.196	17 (25.37)	2.844	0.049*	7 (19.44)	2.146	0.371
Yes	43 (53.75)			38 (56.72)			24 (66.67)		
No	14 (17.50)			12 (17.91)			5 (13.89)		
Maybe									
Workload pressure									
Yes	52 (65.00)	0.471	0.527	45 (67.16)	2.049	0.939	25 (69.44)	0.639	0.802
No	28 (35.00)			22 (32.84)			11 (30.56)		

*$p < 0.05$

3.9. Discussion

Depressive symptoms among female workers during COVID-19 in Dhaka were detected in 71.43% of the respondents. The intensity of depression fluctuated unevenly from mild to extremely severe. Anxiety, identified at 59.82% of the respondents, also shows the same intensity pattern as depression. However, stress was detected as the lowest (32.14%) among the respondents than depression and anxiety. Also, stress intensity shows a downward trend from mild to extremely severe as shown in Figures 2-4. A similar study by Chowdhury [23] found the same direction. However, some other studies [1], [24], [25] found higher depressive, anxiety and stress symptoms from the female respondents. So, the current research depicts fewer symptoms of stress, anxiety, and depression compared to other similar studies. The result might be due to sampling size, different locations, or different data collection, statistical tools, or scales. In this study, religion and child bearers have a significant relationship with anxiety in which Muslim and non-child bearer working women were the most prone to anxiety. Also, female workers whose age range was 20-30 years, Master's and above graduate, private jobholders, and also whose income range was below 30,000 BDT per month showed higher symptoms of depression, anxiety, and stress as shown in Table 4. Similar studies found that respondents aged 18 [26] to 35 [27] years were vulnerable to mental health during the COVID-19 rampage. However, Liu's [28] study found that the female participants aged 31 to 40 suffered the most from mental health deterioration during the COVID-19 incident. This study has revealed that women jobholders of Dhaka city who were higher educated but had fewer earnings were exposed to mental health deterioration.

This study also disclosed that the female workers aged between 20-30 years, income range equal to or less than 30,000 BDT per month, Muslims, and non-child bearers had to face sleep disturbance more than the other groups and showed depressive symptoms as shown in Tables 3 and 5. The respondents, who were unable to sleep more than seven hours daily during the COVID-19 lockdown, felt the stress most as shown in Table 5. Therefore, this finding explains that the middle-aged women workers who had less sleep and also the child bearers, Muslims, and who earned less, suffered from mental health corrosion during the COVID-19 pandemic. A former study by Ripon *et al.* [29] showed higher sleep disturbance (91%) due to depressive symptoms.

According to this study, 55.56% of women jobholders who remained at home for more than 60 days, experienced stress most. Moreover, 75% of women who felt stressed did their office work from home and 56.72% of women were identified as anxious and couldn't concentrate on their work as shown in Table 6. Xiao [30] stated that anxiety disorders are estimated to occur when interactive contact is confined. During the COVID-19 pandemic, women jobholders had to do home and office duties altogether [2]. So, extra duties put them in a situation where there is a lack of positive reinforcement. Therefore, they were unable to concentrate on their job and felt more workload pressure. The current study shows that 44.64% and 52.68% of the respondents could not focus on their work and failed to maintain stable mental conditions respectively as presented in Table 6. At the same time, they had to do office works staying at home for a longer period. As a result, it leads them to anxiety, stress, and depression. So, this process further reflects the behavior theory of depression. So, it can be asserted that the environment of the COVID-19 pandemic created unconscious fear, exhaustion, despair, and lower self-esteem in the minds of the women workers of Dhaka city.

4. CONCLUSION

The surge of COVID-19 has caused an unprecedented effect on the mental health of the women workers in Dhaka city. Psychological disorders that are depression, anxiety, and stress symptoms were identified among the respondents, especially in middle-aged, higher educated, private jobholders, low-income earners, and mothers. The same group of respondents faced sleep disturbance problems. Doing office at home, extra workload pressure, and long home stay negatively reinforced women jobholders' minds. Therefore, symptoms of stress and anxiety developed gradually. If this situation continues, it may cause a mental breakdown, and as a consequence, some acute social problems such as suicide, divorce, family violence, and the unemployment rate may increase in women communities. The findings of this study might be the valuable references for the policymakers and others related to mental health interventions.

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