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Assessment of mental health conditions among working class people during COVID-19: insights from Dhaka South City, Bangladesh

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ABSTRACT

The recent coronavirus disease 2019 (COVID-19) virus caused unprecedented vulnerabilities in the physical and mental health conditions of people across the world. This research explored the effect of COVID-19 on the mental health, sleeping patterns and professional atmosphere of the working people of Dhaka South City (DSC) in Bangladesh. We applied a range of tools of quantitative method to carry out the present study. The data were collected from purposively selected 139 respondents from DSC. A structured questionnaire was prepared and disseminated among the sampled respondents through online platforms in October 2020. Employing the depression anxiety stress scale (DASS) 21 scale, the study revealed that depression (82.7%), anxiety (87.8%), stress (77.7%) and sleep disturbance (56.1%) occurred due to the COVID-19 pandemic in the study area. In addition, the paper found that respondents faced difficulty concentrating on work ($p<0.05$), felt workload pressure, and experienced shaky mental conditions ($p<0.05$) accompanied by mild to extremely severe conditions of depression, stress, and anxiety. Statistical analysis pearson Chi-square test showed that socio-demographic aspects and COVID-19 factors significantly impacted mental health conditions among the respondents. This research recommends providing low-intensity psychological interventions and mental health strategies are needed to lessen sufferings for the target population.

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1. INTRODUCTION

The unprecedented event of coronavirus disease 2019 (COVID-19) tremendously affected health (mental and physical) and livelihood of the people across the world [1]–[4]. The effect on mental health is evidently more than the direct physical strains of the disease. The cases of depression and anxiety due to COVID-19 was significant in Bangladesh [2]. Risky attitudes such as suicide and self-harm due to lockdown and the induced stress were detected [5]. These never-before-seen events added to the worries of the wage earners in Bangladesh. Unemployment not only resulted in financial loss but also gave rise to negative

mental health conditions. Number of suicides rose in Bangladesh and Pakistan due to the economic crisis [6], [7]. Almost 34% and 58% of adults reported to have anxiety and depressive symptoms in Bangladesh [4].

COVID-19 worsened the quality of life across the nations impacting occupations, which in turn raised psychological problems [8]–[10]. Depression, anxiety, stress, fear, and other conditions hamper mental health condition. In consequence, one experiences disturbance, displeasure and difficulty in decision-making [11]. In the pandemic, many live without work, while others are periled due to the high chances of losing their jobs. People are compelled to take extra duties because of the departure of their colleagues. Employees who work from home struggle due to insufficient working space, divided concentration, heavy workload, unstable internet connections, caring for children and elders, and the essentiality to balance between professional and home obligations [12]. Therefore, COVID-19 is responsible for events like disruption, psychological imbalances, and loss of jobs. A few studies addressed its impact on the mental health of working class in Bangladesh. Dhaka South City has a fair share of COVID-19 cases, disturbing the psychological states of the working class. Thus, the paper aims to evaluate the mental health conditions of the working people during the Corona pandemic, and its impact on sleeping patterns, loss of self-esteem, daily and professional lives by incorporating the depression anxiety stress scale (DASS-21) scale.

The paper explored how and why COVID-19 affected the mental health conditions of the working-class people in Dhaka South City. The specific objective of this study is to investigate the mental health problems e.g. depression, anxiety and stress faced by the respondents in the study area, to examine the health-related changes occurred to their regular and professional lives, to assess the impact of deteriorating mental health on the respondent's professional lives, and to recommend few evidence-based policies for reducing the effects of COVID-19 for the respondents.

The paper aimed to examine the behavioral theory of depression in accordance with the research objectives. The theory states that depression is the outcome of loss or reduction of response-contingent positive reinforcement, which indicates that a lack of positive reinforcement leads to dysphoria and declination in actions among individuals [13]. This situation is the primary cause of depression and other associated conditions like low self-esteem and hopelessness. The emergence of insufficient reinforcement can be explained in three ways. Firstly, the individual might lack sufficient reinforcement because of inadequacy of the prevailing environment. Secondly, the individual may lack essential skills to acquire reinforcement from a potential environment. Thirdly, the individual might fail to enjoy or receive satisfaction in spite of having positive reinforcement [14]. The mediating role of COVID-19 situation leads to the reduction of human skills and functions as a response to the negative interference in border sense.

2. RESEARCH METHOD

2.1. Conceptual framework the COVID-19 mental health framework

The study has examined the COVID-19 mental health framework to explore the research questions and study objectives as shown in Figure 1. The above framework demonstrated how COVID-19 pandemic situation affected on mental health, sleeping patterns and regular and professional life of the individual. COVID-19 is responsible to create stressful situation that leads to the disruption of mental health condition, sleeping quality, and regular and professional life situation for the working people of Dhaka South City. The mediating factors like gender, age and income also contributed in the process of creating disturbance in their daily lives.

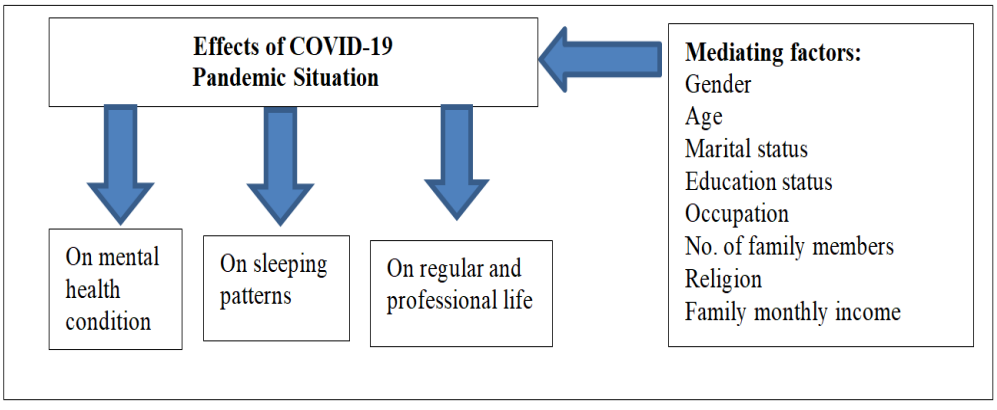

Figure 1. Research framework

2.2. Selection of study area and participants

The study was conducted in Dhaka South City due to high prevalence of COVID-19 cases. Cross-sectional quantitative research was conducted from 1 to 15 October, 2020. To meet the study objectives, a structured questionnaire with closed-ended questions was disseminated among sample respondents through a purposive sampling technique. Due to the nationwide hard lockdowns and COVID-19 pandemic, the study was fully relied on an online survey. We disseminated the questionnaire among estimated 384 respondents through online platforms such as Facebook, Messenger, WhatsApp, and email. However, we received voluntary responses from only 139 respondents. Prior to data collection, a pilot study was counducted among randomly chosen working-class people to test the quality of the reserch questionnaire. During data collection, survey was conducted among participants but voluntary agreement was taken. A consent form was prepared to maintain confidentiality and anonymity of the research respondesnts.

2.2.1. Data analysis statistical tools

The collected data were analyzed using SPSS, 25.0 versions. Descriptive statistics were used to analyze socio-demographic information and inferential statistics for associations between independent and dependent variables were carried out by Chi-square tests ($\chi 2$) and cross tabulations. Regression analysis was also done to see the effect of independent variables on dependent variables, p-value of <0.05 was considered as level of significance.

2.3. List of variables

2.3.1. Socio-demographic information, regular and professional life related measures

Demographic information included gender, age, marital status, educational qualification, occupation, religion, no. of family members, and family monthly income. The survey aslo included the inquiry of duration of home stay, average hours of sleep, and sleeping satisfaction. In addition, the professional life-style related measures concerning the questions like concentration on work, work load, and mental stability were also measured to see COVID-19 effect.

2.3.2. The DASS 21 scale

The DASS-21 scale is extensively used to measure depression, anxiety, and stress. This is a revised and shorter version of DASS-42 item scale [15], [16]. Each of the scales has 7 items which divided to three subscales having similar content. Also, each of them comprises a four-point Likert scale ranging from 0 (never) to 3 (almost always) [17]. The scores were summed up based on the given score for each item e.g. depression, anxiety and stress and multiplied them by 2. In this present study, we used mild to moderate to severe to extremely severe to classify the intensities of depression, anxiety, and stress. Based on the following cutoffs, they were categorized into positive and negative: depression ≥ 10, anxiety ≥ 8 and stress ≥ 15. The present study used a validated English version of DASS-21 scale to assess the psychological condition of the participants. This DASS scale is considered to be the most significant and reliable to analyze the mental condition of Bangladeshi people and also used in other studies [10], [18]–[21].

3. RESULTS

Among 139 respondents, majority of them were female (52.5%), age group of 20-<30 years (55.4%), married (57.6%), Muslim (91.4%) and most educational attainment were masters and above (69.1%), respectively. By profession, most of the respondents were private job holders (34.5%), and had income more than 50,000 Bangladeshi Taka (BDT) (52.5%) per month see Table 1.

3.1. Mental health status of the respondents

To assess mental health status e.g. depression, stress and anxiety, DASS-21 scale was used. Among depression categories, 17.3% reported as normal, 23.7% mild, 40.3% moderate, 13.7% severe, and 5% experienced extremely severe depression. In terms of anxiety, 12.2% reported having a normal condition, while mild, moderate, severe and extreme severe conditions were 17.3%, 37.4%, 12.2%, and 20.9% respectively. Additionally, 29.5% of the participants reported having moderate stress during COVID-19 days while 22.3% had normal, 25.2% had mild, 16.5% had severe, and 6.5% of them had extremely severe levels of stress.

3.2. Mental health severities among respondents

Mental health of the participants was further analyzed to measure severity among respondents. In terms of depression, 82.7% responded depression positive, 87.8% anxiety positive and 77.7% faced stress during COVID-19 days, respectively.

Table 1. Socio-demographic features of the research participants, (n=139)

Charateristics		(%)	Characteristics		(%)
Gender	Male	47.5	Education status	Secondary	.7
	Female	52.5		Higher secondary	2.9
				Undergraduate	27.3
				Graduate	69.1
Age	≤ 20 years	.7	Occupation	Govt. job	12.2
	20-<30 years	55.4		Private job	34.5
	30-<40 years	35.3		Non-Government Organisazion (NGO) worker	16.5
	40 years and above	8.6		Business	9.4
				Health workers	10.1
				Others	17.3
Marital status	Unmarried	40.3	No. of family members	2-4 persons	58.3
	Married	57.6		>4-6 persons	33.1
	Divorced/Widow	2.2		>6 persons	8.6
Income	≤ 30,000 BDT	18.7	Religion	Muslim	91.4
	30.000-<50,000 BDT	28.8		Hindu	6.5
	>50,000 BDT	52.5		Others	2.2

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

Most of the respondents were staying at home for more than 60 days (57.6%) maintaining their work 68.3% from home. Also, 56.1% reported to have difficulty in sleeping that was less than seven hours per night (58.3%). 45.3% could not concentrate properly on their official work and faced work pressure (70.5%) see Table 2.

Table 2. Distribution of home stay, sleep satisfaction and working situation during COVID-19 days, (n=139)

Variable (s)		(%)	Variable (s)		(%)
Duration of stay at home	<20 Days	12.9	Sleeping patterns	<7 hours	58.3
	20-60 Days	29.5		7-9 hours	38.1
	>60 Days	57.6		>9 hours	3.6
Maintenance of job	Work from home	68.3	Satisfaction with sleeping	Yes	43.9
	Office duty	31.7		No	56.1
Pressure for work load	Yes	70.5	Concentration on work	Yes	30.2
	No	28.8		No	45.3
Mental stability	Yes	38.8		Maybe	23.7
	No	40.3			
	Maybe	20.1			

3.4. Associations between demographic information and participants' sleep satisfaction

From Table 3, the gender monthly income had a significant association with sleep satisfaction. Sleeping problem was more common among male participants (53.03%) compared to females (35.61%). The highest prevalence (58.33%) of sleep trouble was found among group aged 40 years and above. Besides, 69.3% respondents whose income was less than 30,000tk had sleeping issues.

3.5. Associations between socio-demographic information and mental health

From Table 4, significant relationship between gender and depressive symptoms ($\chi2=6.343$, $p<0.05$); number of family members and depressive symptoms ($\chi2=5.995$, $p<0.05$); income and depressive symptoms ($\chi2=7.204$, $p<0.05$) were observed. Females (90.4%) were more likely to suffer from depression than male (74.2%). In case of family members, families having more members had experienced more depression (100%). Income also showed a positive correlation with depression patterns. Individuals (90%) having a medium range of monthly income were more likely to suffer. In terms of anxiety, statistical correlation was found with religion ($\chi2=9.557$, $p<0.05$).

3.6. Relationships between sleep satisfaction and mental health

Pearson's Chi-square test showed that there was a significant statistical association between sleep satisfaction and depressive symptoms ($\chi2=4.082$, $p<0.05$). It was also evident to find a statistical correlation between sleep satisfaction and stress symptoms ($\chi2=4.908$, $p<0.05$). Anxiety symptoms had no significant association with sleeping satisfaction as shown in Table 5.

Table 3. Relationship between respondent's demographic and sleep satisfaction

Variable	Sleep disturbance		
	No, n (%)	Yes, n (%)	p-value
Gender			
Male	31 (46.97)	35 (53.03)	0.039*
Female	47 (64.38)	26 (35.61)	
Age			
≤ 20 Years	0 (0)	1 (100)	
20-<30 Years	45 (58.44)	32 (41.56)	0.478
30-<40 Years	28 (57.14)	21 (42.86)	
40 Years and Above	5 (41.67)	7 (58.33)	
Income			
≤ 30,000 BDT	8 (30.77)	18 (69.23)	0.015*
30.000-<50,000 BDT	24 (60)	16 (40)	
>50,000 BDT	46 (63.01)	27 (36.99)	

Significant difference (*p-(Significance Value)

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

Variables	Depression			Anxiety			Stress		
	Positive (n=115, 82.7%)			Positive (n=122, 87.8%)			Positive (n=108, 77.7%)		
	n (%)	χ2	p-value	n (%)	χ2	p-value	n (%)	χ2	p-value
Gender									
Male	49 (74.2)	6.343	.012*	59 (89.4)	.309	.578	53 (80.3)	.492	.483
Female	66 (90.4)			63 (86.3)			55 (75.3)		
No. of family members									
2-4 Persons	62 (76.5)			70 (86.4)			59 (72.8)		
>4-6 Persons	41 (89.1)	5.995	.050*	40 (86.9)	1.838	.399	38 (82.6)	3.095	.213
>6 Persons	12 (100)			12 (100)			11 (91.7)		
Religion									
Muslim	105 (82.7)			112 (88.2)			98 (77.2)		
Hindu	8 (88.9)	.781	.677	9 (100)	9.557	.008**	8 (88.9)	.882	.643
Others	2 (66.7)			1 (33.3)			2 (66.7)		
Income									
≤ 30,000 BDT	17 (65.4)			22 (84.6)			16 (61.5)		
30.000-<50,000 BDT	36 (90)	7.204	.027*	37 (92.5)	1.221	.543	34 (85)	5.279	.071
>50,000 BDT	62 (84.9)			63 (86.3)			58 (79.5)		

Significant difference (*p-value< 0.05, **p-value<0.01)

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

Variables	Depression			Anxiety			Stress		
	Positive (n=115, 82.7%)			Positive (n=122, 87.8%)			Positive (n=108, 77.7%)		
	n (%)	χ2	p-value	n (%)	χ2	p-value	n (%)	χ2	p-value
Sleep satisfaction									
Yes	46(75.4)	4.082	.043*	52(85.2)	.645	.422	42(68.9)	4.908	.027*
No	69(88.5)			70(89.7)			66(84.6)		

Significant difference (*p-value<0.05)

3.7. Relationships between work and mental health

Longer duration of home stay found significant association with anxiety ($\chi2=6.123$, $p<0.05$). Moreover, respondents' concentration on work had a strong statistical association with depression ($\chi2=7.470$, $p<0.05$) and stress ($\chi2=9.488$, $p<0.05$). 92.2% of respondents were unable to fully concentrate on work due to depression, 93.8% due to anxiety and 89.1% due to stress. A strong significant relationship was observed between mental stability (yes vs. no) and depression ($\chi2=7.177$, $p<0.05$), anxiety ($\chi2=9.121$, $p<0.05$), and stress ($\chi2=11.312$, $p<0.05$) see Table 6.

3.8. Summary of the regression model

The regression model is shown Table 7. It demonstrated that there is significant relationship between the dependent factor (depression and sleep satisfaction) and independent factors e.g. sex, income. In the multi-linear regression model demonstrated that two factors were having a moderate level ($p<0.05$) of influence on the level of depression and sleeping satisfaction. Apparently, two different factors of influence were observed for the two different dependent variables. Sex and number of family had a significant influence on the level of depression. Also, religion and income significantly influenced on sleeping satisfaction as shown in Table 8.

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

Variables	Depression Positive (n=115, 82.7%)			Anxiety Positive (n=122, 87.8%)			Stress Positive (n=111, 79.9%)		
	n (%)	$\chi 2$	p-value	n (%)	$\chi 2$	p-value	n (%)	$\chi 2$	p-value
Duration at home									
<20 Days	15 (83.3)			13 (72.2)			13 (72.2)		
20-60 Days	34 (82.9)	.009	.996	39 (95.1)	6.123	.047*	33 (80.5)	.497	.780
>60 Days	66 (82.5)			70 (87.5)			62 (77.5)		
Concentration on work									
Yes	31 (73.8)			33 (78.6)			30 (71.4)		
No	59 (92.2)	7.470	.024*	60 (93.8)	5.443	.066	57 (89.1)	9.488	.009**
Maybe	25 (75.6)			29 (87.9)			21 (63.6)		
Work load									
Yes	88 (88.9)	9.211	.010	91 (91.9	5.579	.061	80 (80.8)	2.135	.344
No	27 (67.5)			31 (77.5)			28 (70)		
Mental stability									
Yes	39 (72.2)			42 (77.8)			35 (64.8)		
No	50 (87.7)	7.177	.028*	55 (96.5)	9.121	.010*	52 (91.2)	11.312	.003**
May be	26 (92.9)			25 (89.3)			21 (75)		

Significant difference (*p-value< 0.05; **p-value<0.01)

Table 7. Regression model

Model	R	R square	Adjusted R square	Std. error of the estimate	F	Sig.
1(depression)	333	.111	.049	.370	1.784	.077
2(sleep satisfaction)	377	.142	.082	.477	2.379	.016

Table 8. Determinants of depression and sleep satisfaction

Factors	Unstandardized Coefficients B	Std. Error	Standardized coefficients Beta	t	Sig.
Coefficients (depression)					
(Constant)	1.076	.302		3.566	.001
Sex	.141	.068	.187	2.081	.039*
No. of family	.119	.050	.205	2.370	.019*
Coefficients (sleep satisfaction)					
(Constant)	1.315	.389		3.474	.001
Religion	-.25	.111	-.190	-2.280	.024
Income	.134	.060	.209	2.243	.027

Significant difference (*p-value< 0.05)

4. DISCUSSION

The prevalence estimates of depressive symptoms varying from mild to extremely severe was 82.7%, which indicates a clear increasing trend of the prevalence of depressive symptoms among the working people [4], [10], [22]. The percentages of anxiety and stress were also high among the respondents, following by 87.8% and 77.7%. A very similar study conducted by Alkhamees *et al.* [23] found that the incidence of moderate to severe depressive, anxiety, and stress symptoms with a response of 28.3%, 24%, and 22.3%. The frequency of anxiety and depressive symptoms among wage earners were high, having the responses of 58.6% and 55.9% according to another study [24]. The recent studies revealed less prevalence of depression, anxiety, and stress compared to this study. Different timing of COVID-19 days and use of different tools might be the factor of having the differences between this study and the above relevant works. Another finding of this study was more than half (58.3%) of the respondents reported not having enough sleep during COVID-19 days which was less than seven hours a day, followed by 56.1% as shown in Table 2. Similar association of COVID-19 and sleep disturbance was found in Italy consisting of 42.2% positive responses [25]. Former studies also revealed the occurrence of sleep disturbance among respondents from 18.2% [26] to 52.4% [21].

The Pearson's Chi-square test indicated a significant positive relationship between female (90.4%) and depressive symptoms as shown in Table 4. Females were generally much vulnerable compared to male members [27]–[29]. Women are exposed to be more susceptible to psychological disorders and developing post-traumatic symptoms [30]. The psychological distress is greater in magnitude among women because they constitute a higher proportion of labor force which negatively impacted by COVID-19. Additionally, women exhibit higher percentage of neurobiological responses when exposed to the factors that create mental disorders due to disruption in employment sector [31], [32]. Moreover, in accordance with previous studies [4], [25], [33] this study indicated that young adults aged 30-<40 years and having a limited income were more exposed to depression, anxiety, stress and sleep disturbance (Tables 3 and 4). Evidently, when individual manages expenses of a big family, he/she becomes more susceptible to psychological distress.

This study also found that respondents who were more educated had higher anxiety, depression and stress which relates to a previous study [34].

Working people who stayed at home for longer duration (20-60 days/>60 days) had higher levels of anxiety as presented Table 6. The ongoing COVID-19 situation obliged people to stay indoors for a long period of time. As a result, people remain in mental distress which has been clearly illustrated by Lewinsohn's behavioral theory of depression. Several authors [8] reported that longer social isolation is linked with mental health difficulties, which is coherent with this study. Anxiety disorders are expected to occur when interpersonal contact is restricted [35]. Service holders had experienced a significantly higher level of anxiety, depression and stress which consistently relates to a recent study [36]. Furthermore, work from home is the result of lack of productivity among working class can be further explained by the behavioral theory of depression. Maintaining office work from home sometimes puts extra responsibilities and lack of suitable environment which decline the efficiency of people. 92.2% of the respondents were unable to fully concentrate on work with having workload than before. Their mental stability was partially shattered because of COVID-19 related depression, stress and anxiety as shown in Table 6. Mental health problems may lead to the reduction of work and productiveness [37]. These findings illustrated that COVID-19 itself is a stressful event in contributing to massive havoc in the mental condition of people [38]. Family and office work balance [24] financial instability and social isolation [4] further elevated the sufferings. It can be said that, COVID-19 situation and associated factors create negative reinforcement and lead the people to depression, low self-esteem, lack of motivation and other relevant conditions [39].

5. CONCLUSION

The severity and spread of the Corona virus have led working people of Dhaka South to unprecedented psychological disorders that with great impacts like sleep disturbance, prolonged stay at home, lack of concentration, mental instability. Mental health crisis brought by COVID-19 is seen to be aggravated by the socio-demographic factors like gender, income, and large family. The extent of depression, stress and anxiety is high among the working people of Dhaka South. Mental disorders disrupt activities of daily life and create uncertainty.

The findings help the government officials, policymakers and healthcare specialists for psychological interventions of the target population. The following evidence-based recommendations have been prepared from the thoughts and statements provided by the respondents. These are: i) psychological intervention and mitigation should be urgently implemented by government, healthcare specialists and relevant stakeholders. Well-informed collective campaigns will be helpful in this regard; ii) quality time with family and relatives, sports, exercise and extra-curricular activities like dance can lessen burden of responsibility; iii) several tools of social media can be effective ways to mitigate the effects of COVID-19 pandemic among the respondents.

REFERENCES

[1] F. Ahmed and R. I. Sifat, "The impact of the COVID-19 pandemic on the mental health of the rickshaw-puller in bangladesh," *Journal of Loss and Trauma*, vol. 26, no. 8, pp. 782–789, Nov. 2021, doi: 10.1080/15325024.2020.1852823.

[2] A. H. Khan, M. S. Sultana, S. Hossain, M. T. Hasan, H. U. Ahmed, and M. T. Sikder, "The impact of COVID-19 pandemic on mental health andamp; wellbeing among home-quarantined bangladeshi students: A cross-sectional pilot study," *Journal of Affective Disorders*, vol. 277, pp. 121–128, Dec. 2020, doi: 10.1016/j.jad.2020.07.135.

[3] M. M. Kibbey, E. J. Fedorenko, and S. G. Farris, "Anxiety, depression, and health anxiety in undergraduate students living in initial US outbreak 'hotspot' during COVID-19 pandemic," *Cognitive Behaviour Therapy*, vol. 50, no. 5, pp. 409–421, Sep. 2021, doi: 10.1080/16506073.2020.1853805.

[4] M. H. Al Banna *et al.*, "The impact of the COVID-19 pandemic on the mental health of the adult population in Bangladesh: a nationwide cross-sectional study," *International Journal of Environmental Health Research*, pp. 1–12, Aug. 2020, doi: 10.1080/09603123.2020.1802409.

[5] E. A. Holmes *et al.*, "Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science," *The Lancet Psychiatry*, vol. 7, no. 6, pp. 547–560, Jun. 2020, doi: 10.1016/S2215-0366(20)30168-1.

[6] A. K. M. I. Bhuiyan, N. Sakib, A. H. Pakpour, M. D. Griffiths, and M. A. Mamun, "COVID-19-related suicides in bangladesh due to lockdown and economic factors: case study evidence from media reports," *International Journal of Mental Health and Addiction*, vol. 19, no. 6, pp. 2110–2115, Dec. 2021, doi: 10.1007/s11469-020-00307-y.

[7] M. A. Mamun and I. Ullah, "COVID-19 suicides in Pakistan, dying off not COVID-19 fear but poverty? – The forthcoming economic challenges for a developing country," *Brain, Behavior, and Immunity*, vol. 87, pp. 163–166, Jul. 2020, doi: 10.1016/j.bbi.2020.05.028.

[8] S. K. Brooks *et al.*, "The psychological impact of quarantine and how to reduce it: rapid review of the evidence," *The Lancet*, vol. 395, no. 10227, pp. 912–920, Mar. 2020, doi: 10.1016/S0140-6736(20)30460-8.

[9] A. Y. Naser *et al.*, "Mental health status of the general population, healthcare professionals, and university students during 2019 coronavirus disease outbreak in Jordan: A cross-sectional study," *Brain and Behavior*, vol. 10, no. 8, Aug. 2020, doi: 10.1002/brb3.1730.

[10] C. Wang *et al.*, "immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease

(COVID-19) epidemic among the general population in China," *International Journal of Environmental Research and Public Health*, vol. 17, no. 5, p. 1729, Mar. 2020, doi: 10.3390/ijerph17051729.
[11] N. K. Fofana, F. Latif, S. Sarfraz, Bilal, M. F. Bashir, and B. Komal, "Fear and agony of the pandemic leading to stress and mental illness: An emerging crisis in the novel coronavirus (COVID-19) outbreak," *Psychiatry Research*, vol. 291, p. 113230, Sep. 2020, doi: 10.1016/j.psychres.2020.113230.
[12] G. Giorgi, L. I. Lecca, F. Alessio, G. L. Finstad, G. Bondanini, L. G. Lulli,G. Arcangeli, and N. Mucci, "COVID-19-Related Mental Health Effects in the Workplace: A Narrative Review, " *Int J Environ Res Public Health*, vol. 17, no. 21, p. 7857, Nov.2020, doi: 10.3390/ijerph17217857.
[13] P. M. Lewinsohn, *A behavioral approach to depression*. New York University Press New York, 1974.
[14] P. R. Abreu and C. E. Santos, "Behavioral models of depression: A critique of the emphasis on positive reinforcement.," *International Journal of Behavioral Consultation and Therapy*, vol. 4, no. 2, pp. 130–145, 2008, doi: 10.1037/h0100838.
[15] P. F. Lovibond, Sydney H Lovibond, *Manual for the depression anxiety stress scales*. Psychology Foundation of Australia, 1996.
[16] P. F. Lovibond and S. H. Lovibond, "The structure of negative emotional states: comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories," *Behaviour Research and Therapy*, vol. 33, no. 3, pp. 335–343, Mar. 1995, doi: 10.1016/0005-7967(94)00075-U.
[17] P. F. Lovibond, "Long-term stability of depression, anxiety, and stress syndromes," *Journal of Abnormal Psychology*, vol. 107, no. 3, pp. 520–526, Aug. 1998, doi: 10.1037/0021-843X.107.3.520.
[18] S. M. A. H. M. Alim *et al.*, "Assessment of depression, anxiety and stress among first year MBBS students of a public medical college, Bangladesh," *Bangladesh Journal of Psychiatry*, vol. 29, no. 1, pp. 23–29, Jun. 2017, doi: 10.3329/bjpsy.v29i1.32748.
[19] M. S. I. Sadiq, Mohammad Shibli Morshed, Nahid Mahjabin Rahman, Wasima Chowdhury, Nafia Farzana Arafat, SM Yasir Mullick, "Depression, anxiety, stress among postgraduate medical residents: a cross sectional observation in Bangladesh," *Iranian Journal of Psychiatry*, vol. 14, no. 3, p. 192, 2019.
[20] J. Xiong *et al.*, "Impact of COVID-19 pandemic on mental health in the general population: A systematic review," *Journal of Affective Disorders*, vol. 277, pp. 55–64, Dec. 2020, doi: 10.1016/j.jad.2020.08.001.
[21] N. Cellini, N. Canale, G. Mioni, and S. Costa, "Changes in sleep pattern, sense of time and digital media use during COVID-19 lockdown in Italy," *Journal of Sleep Research*, vol. 29, no. 4, Aug. 2020, doi: 10.1111/jsr.13074.
[22] C. González-Sanguino *et al.*, "Mental health consequences during the initial stage of the 2020 Coronavirus pandemic (COVID-19) in Spain," *Brain, Behavior, and Immunity*, vol. 87, pp. 172–176, Jul. 2020, doi: 10.1016/j.bbi.2020.05.040.
[23] A. A. Alkhamees, S. A. Alrashed, A. A. Alzunaydi, A. S. Almohimeed, and M. S. Aljohani, "The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia," *Comprehensive Psychiatry*, vol. 102, p. 152192, Oct. 2020, doi: 10.1016/j.comppsych.2020.152192.
[24] M. S. Sultana, S. Khan, Abid Hasan Hossain, T. Islam, M. T. Hasan, H. U. Ahmed, and J. A. M. Khan, "The association between financial hardship and mental health difficulties among adult wage earners during the COVID-19 pandemic in Bangladesh: findings from a cross-sectional analysis," *PsyArXiv*, no. 2, pp. 1–18, 2020, doi: 10.31234/osf.io/q3ehv.
[25] M. R. Gualano, G. Lo Moro, G. Voglino, F. Bert, and R. Siliquini, "Effects of covid-19 lockdown on mental health and sleep disturbances in italy," *International Journal of Environmental Research and Public Health*, vol. 17, no. 13, p. 4779, Jul. 2020, doi: 10.3390/ijerph17134779.
[26] Y. Huang and N. Zhao, "Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey," *Psychiatry Research*, vol. 288, p. 112954, Jun. 2020, doi: 10.1016/j.psychres.2020.112954.
[27] L. Lei, X. Huang, S. Zhang, J. Yang, L. Yang, and M. Xu, "Comparison of prevalence and associated factors of anxiety and depression among people affected by versus people unaffected by quarantine during the COVID-19 epidemic in southwestern china," *Medical Science Monitor*, vol. 26, Apr. 2020, doi: 10.12659/MSM.924609.
[28] C. Mazza *et al.*, "A nationwide survey of psychological distress among italian people during the COVID-19 pandemic: immediate psychological responses and associated factors," *International Journal of Environmental Research and Public Health*, vol. 17, no. 9, p. 3165, May 2020, doi: 10.3390/ijerph17093165.
[29] J. Qiu, B. Shen, M. Zhao, Z. Wang, B. Xie, and Y. Xu, "A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations," *General Psychiatry*, vol. 33, no. 2, p. e100213, Mar. 2020, doi: 10.1136/gpsych-2020-100213.
[30] J. Sareen *et al.*, "Risk factors for post-injury mental health problems," *Depression and Anxiety*, vol. 30, no. 4, pp. 321–327, Apr. 2013, doi: 10.1002/da.22077.
[31] N. Goel, J. L. Workman, T. T. Lee, L. Innala, and V. Viau, "Sex differences in the HPA axis," in *Comprehensive Physiology*, Wiley, 2014, pp. 1121–1155.
[32] R. S. Eid, A. R. Gobinath, and L. A. M. Galea, "Sex differences in depression: Insights from clinical and preclinical studies," *Progress in Neurobiology*, vol. 176, pp. 86–102, May 2019, doi: 10.1016/j.pneurobio.2019.01.006.
[33] M. S. Sultana, S. Khan, Abid Hasan Hossain, A. Ansar, and M. T. Sikder, Md Tajuddin Hasan, "Anxiety, depressive symptoms, sleep patterns and associated factors among Bangladeshi wage earners during the COVID-19 pandemic: A cross-sectional study," *journal preprint policies, see SHeRPa*, no. 1, pp. 1–18, 2020.
[34] S.-J. Zhou *et al.*, "Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19," *European Child & Adolescent Psychiatry*, vol. 29, no. 6, pp. 749–758, Jun. 2020, doi: 10.1007/s00787-020-01541-4.
[35] C. Xiao, "A novel approach of consultation on 2019 novel coronavirus (COVID-19)-related psychological and mental problems: structured letter therapy," *Psychiatry Investigation*, vol. 17, no. 2, pp. 175–176, Feb. 2020, doi: 10.30773/pi.2020.0047.
[36] M. S. Islam, M. Z. Ferdous, and M. N. Potenza, "Panic and generalized anxiety during the COVID-19 pandemic among Bangladeshi people: An online pilot survey early in the outbreak," *Journal of Affective Disorders*, vol. 276, pp. 30–37, Nov. 2020, doi: 10.1016/j.jad.2020.06.049.
[37] I. Jansson and A. B. Gunnarsson, "Employers' views of the impact of mental health problems on the ability to work," *Work*, vol. 59, no. 4, pp. 585–598, Apr. 2018, doi: 10.3233/WOR-182700.
[38] S. Hamouche, "COVID-19 and employees' mental health: stressors, moderators and agenda for organizational actions," *Emerald Open Research*, vol. 2, p. 15, Apr. 2020, doi: 10.35241/emeraldopenres.13550.1.
[39] P. M. Lewinsohn, A. Biglan, and A. M. Zeiss, "Behavioral treatment of depression," In *The behavioral management of anxiety, depression and pain*, P. O. Davidson (Ed.), New York: Brunner/Mazel, pp. 91-146, 1976.

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