Anxiety, depressive symptoms, sleep patterns & associated factors among Bangladeshi wage earners during the COVID-19 pandemic: A cross-sectional study

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Highlights:

- Fear of COVID-19 when working outside during the pandemic situation was inextricably linked with anxiety (AOR=2.08; 95% CI:1.42-3.04) and depressive symptoms (AOR=1.51; 95% CI= 1.04-2.20) among wage-earners.
- Longer home stay (>60 days) was found to a significant risk factor for anxiety and depressive symptoms.
- Participants who were responsible to support their family financially had significant decreased duration of sleep (β = -0.68; 95% CI: -1.18 to -0.20).
- Longer home stay increased wage earners' sleep duration significantly (β =0.70; 95% CI: 0.30 to 1.10).

Abstract:

Introduction:

The economic vulnerability imposed by the COVID-19 pandemic induces stress on mental health of wage earners in Bangladesh which is largely unexplored. This evidence gap was addressed in this study aiming to evaluate the mental health difficulties among Bangladeshi wage earners by assessing the associated factors influencing anxiety, depressive symptoms and sleep patterns.

Methods:

This cross-sectional study was conducted through online survey, a total of 707 individual Bangladeshi wage earners were enrolled in between 20 May 2020 and 30 May 2020. The questionnaire had sections on sociodemographic information, COVID-19 related information, & sleep duration; PHQ-9 & GAD-7 scales to assess depressive symptoms & anxiety, respectively. STATA version 14.1 program was used to carry out all the analyses.

Results:

The study revealed that anxiety and depressive symptoms among wage earners differed by gender, educational status, occupation, total monthly income ($p \leq 0.01$). Fear of COVID-19 when working outside during the pandemic situation was inextricably linked with anxiety (AOR=2.08; 95% CI:1.42-3.04) and depressive symptoms (AOR=1.51; 95% CI= 1.04-2.20) among wage-earners. Participants who stayed at home for longer duration (>60 days) were more likely to have elevated anxiety and depressive symptoms ($p \leq 0.05$). Regarding sleep pattern, longer home stay during COVID-19 pandemic increased duration of sleep ($\beta=0.70$; 95% CI: 0.30 to 1.10) and respondents who were responsible to financially support their family experienced significantly decreased duration of sleep ($\beta=-0.68$; 95% CI: -1.18 to -0.20).

Conclusions:

The results of this study provided novel evidence on psychological difficulties among Bangladeshi wage earners which calls for an in-depth & longitudinal evaluation and immediate low intensity psychosocial interventions.

Keywords: COVID-19; Anxiety; Depressive symptoms; Sleep pattern; Wage earners; Bangladesh.

1.Introduction:

The COVID-19 pandemic has inebriated the day by day schedule, trade, schools, way of life and economy worldwide (Gautam & Sharma, 2020). Peoples' life has drastically been changed for job lossness, social distance and COVID-19-related risen number of passings and cases. Amid epidemics, the number of individuals whose mental wellbeing is influenced tends to be more noteworthy than the number of individuals influenced by the disease(Reardon, 2015). To say more specifically, a current study showed a substantial percentage of participants had anxiety and depression during the COVID-19 pandemic in Bangladesh (Khan et al., 2020) and a chance of increasing in clinical anxiety, depression prevalence and risky behaviors (such as suicide and self-harm) can not be ignored (Holmes et al., 2020). Consequently, the COVID-19 pandemic has seemingly come about in a mentally chaotic and melancholy environment as it is anticipated to wreak destruction on mental wellbeing issues. Concern about mental health and psycho-social effect of the pandemic has already been elicited by World Health Organization (World Health Organization (WHO), 2020).

According to the United Nations Development Program, developing countries will go through \$220 billion worth of income losses and economy will be disrupted which will affect essential services and production due to the lockdown (Ebrahim, Ahmed, Gozzer, Schlagenhauf, & Memish, 2020; UNDP, 2020). Being unable to maintain the family need can be a tremendous stressful situation for the bread earner. It is anticipated that wage earners could face the negative consequences of unemployment and joblessness in a greater extent which can result into financial constraints and force them towards mental health issues. Two studies have reported the increase in numbers of the suicide cases in Bangladesh and Pakistan which is connected with the economic crisis imposed by COVID-19 (Bhuiyan, Sakib, Pakpour, Griffiths, & Mamun, 2020; Mamun & Ullah, 2020).

A recent study on Bangladeshi adult peoples' mental health during COVID-19 revealed a higher percentage of anxiety (33.7%) & depressive symptoms (57.9%) (Banna et al., 2020). This study described that perceptions that the pandemic disrupted life events, affected mental health, jobs, the economy and education, predictions of a worsening situation, and uncertainty of the health care system capacities were significantly associated with poor mental health outcomes (Banna et al., 2020). To the best of our knowledge, no study by far has presented evidence on wage earners' mental health in Bangladesh during this COVID-19 pandemic which is creating undoubtedly a huge economic stress. This evidence gap was addressed in this study aiming to evaluate the mental health difficulties among Bangladeshi wage earners by assessing the associated factors influencing anxiety, depressive symptoms and change in sleep patterns.

2. Methodology:

2.1 Study design and participants:

A cross-sectional study design was adopted to assess wage earners' psychological responses, sleep pattern and associated factors during the pandemic. The study was conducted following the Checklist for Reporting Results of Internet ESURVEYS (CHERRIES) guidelines (Eysenbach, 2004). The inclusion criteria of this study were: i) adult (age ≥ 18 years); ii) Bangladeshi income earners iii) living in Bangladesh during the pandemic; iv) able to read and write Bangla; v) willing to participate in this online survey voluntarily. Convenience sampling technique was used to get earners' responses. The protocol of this study was reviewed & supported by the Department of Public Health and Informatics, Jahnagirnagar University, Savar, Dhaka, Bangladesh and was permitted to conduct this study.

2.2 Data collection:

The survey was conducted from 20th May to 30th May 2020. A total of 707 wage-earners from 50 districts of Bangladesh completed the survey formulating 99.2% response rate. A semi-structured and self-administered questionnaire was developed by using google form to collect data. The questionnaire was developed in Bangla language first, then it was translated in English. Back translation was done again from English to Bangla by bilingual experts. The Bangla version of the questionnaire was used in the online survey. The questionnaire included 1) socio-demographic questions; 2) COVID-19 related questions including sleep duration; 3) PHQ-9 scale and 4) GAD-7 scale. Data were collected online by recruiting eligible participants via social media platforms to participate voluntarily. Survey link was disseminated on approximately 30 Facebook groups

including different alumni and organizational groups (i.e., Jahangirnagar University Alumni Association, Bangladesh Teachers Association, etc.) where the group members were mostly wage-earners from different occupations. Respondents signed an electronic informed consent form and provided informed consent prior to the investigation assuring their willingness to participate in the study.

2.3 Measures:

2.3.1 Sociodemographic information:

Demographic information included sex, age, religion, marital status, educational status, occupation, monthly average household income, area of residence (rural or urban), name of district, number of family members and number of earning members in the family. Average family income was categorized as: i) <30,000BDT; ii) 30,000BDT-70,000BDT; iii) >70,000BDT. Occupation consisted of the following four types: i) Public/Pvt. Service holders ii) Businessman iii) Healthcare workers, which included doctors, nurses, medical technologists etc.; and iv) Others, which consisted of journalists, farmers, tutors, etc.

2.3.2 COVID-19 related information and sleep duration:

An open-ended question inquiring the duration (in days) of staying at home was added. Duration of home stay during the lockdown was categorized into 3 groups: <30 days, 30-60 days, >60 days. Moreover, participants were asked if they had to go out of home for work and also if they had fear of getting infected with COVID-19 when they went out of home during the pandemic situation. Furthermore, respondents were inquired if they were responsible to support their families financially from their earning with a close ended question giving answer option: yes or no. For determining sleep duration, participants were asked 'How much sleep have you had on average every night over the past four weeks?' and this question had three answer options: <7 hours, 7-9 hours, >9 hours where 7-9 hours were taken as recommended sleep duration.

2.3.4 Patient Health Questionnaire (PHQ-9):

Bangla validated Patient Health Questionnaire (PHQ-9) (Chowdhury, Ghosh, & Sanyal, 2004) was used to assess depression symptoms in the participants. This is a nine-item depression module corresponds to DSM-IV Diagnostic Criteria of major depressive symptoms and is a validated tool to measure depression with good sensitivity (88%) and specificity (94%) for measuring the severity of depression among both clinical and general population samples both in general people and mental health patients (Kroenke, Spitzer, Williams, & Löwe, 2010). Respondents answered on a 4-point Likert scale ranging from "0 = not at all" to "3 = nearly every day" and two weeks recall period was used to measure depression. Total score ranges from 0 to 27 where higher score indicates higher level of depression. Example items include "I feel down, depressed, or hopeless"; "I face trouble falling or staying asleep or sleeping too much". A cut off score 10 or greater was utilized to record the existence of depression by following the convention of other Bangladeshi studies (Anjum, Hossain, Sikder, Uddin, & Rahim, 2019; Hossain et al., 2020). In the present study, the Cronbach's alpha was 0.85.

2.3.5 Generalized Anxiety Disorder (GAD-7):

Generalized Anxiety Disorder scale (GAD-7), a widely used seven-item scale which showed good sensitivity (89%) and specificity (82%) for measuring the severity of anxiety in clinical practice alongside general population was utilized in this study (Löwe et al., 2008; Spitzer, Kroenke, Williams, & Löwe, 2006), which showed . In this study, standardized Bangla version of the scale was utilized (Hossain et al., 2020). Participants were asked how often they were bothered by each GAD-7 item by using two weeks recall period. Respondents answered on a 4-point Likert scale ranging from “0 = not at all” to “3 = nearly every day”. The total score ranges from 0 to 21 where greater score indicates more functional impairments of anxiety disorders. Example items include “I worry too much about different things”; “I am feeling nervous, anxious, or on edge”. A cut off score 10 or greater was utilized to record the existence of anxiety by following the convention of other Bangladeshi study (Hossain et al., 2020). The scale demonstrated excellent internal consistency in this study (Cronbach’s alpha = 0.84).

2.4 Statistical analysis:

Descriptive statistics were employed to summarize the socio-demographic characteristics, sleep patterns & COVID-19 related information and was presented as frequencies and percentages. Measuring the percentage of approving specific PHQ-9 and GAD-7 symptoms was done considering “not at all” option as “not approving that specific symptoms” and remaining 3 options were considered as “approving that specific symptoms”. Chi-square test and reliability test (Cronbach’s alpha) were executed as first-order analyses. The chi-square test was utilized to assess the interactions of sociodemographic variables (i.e., sex, gender, educational qualifications, marital status, occupation etc.) with anxiety and depressive symptoms. Both bivariate and multivariate logistic regression analyses were executed to explore potential associations of anxiety and depressive symptoms (dependent variables) with sleep and COVID-19 related information (independent variables) during COVID-19 outbreak. The results of logistic regression were demonstrated as odds ratio (OR), adjusted odds ratio (AOR), 95% confidence intervals. Linear regression was used to test associations of sleep (outcome variable) with anxiety, depressive symptoms and COVID-19 related information. The strength of estimated associations was demonstrated by the Beta (Co-efficient) with a 95% confidence interval (CI) and p-value. The STATA version 14.1 program (StataCorp LP., College Station, TX, USA) and MS Excel were used to carry out all the analyses. Statistical significance was evaluated as $p \leq 0.05$ for all tests.

3. Results:

3.1 Socio-demographic characteristics:

A total 707 respondents participated in this study and more than half of the respondents belonged to age group 25 to 35 years old (62.38%). The majority of the respondents were male (77.23%) and had “Honors or above” (Honors degree is a four-year education in Bangladesh) as educational qualification (76.38%). Most of the respondents were public or private service holders (60.82%). About half of the respondents were either married or divorced or widowed (51.20%). More than half of the respondents resided in Dhaka division (64.78%), mostly living in urban setting (85.86%). Majority of the respondents lived in a family consisting of either 5 to 7 members (44.70%) or less than 5 members (43.28%). Almost half the respondents reported their monthly

family income to be less than 30,000 BDT (353.73USD) (48.94%). More than half of the respondents presented with anxiety (58.56%) and depressive symptoms (55.87%). Table 1 contains further information.

3.2Anxiety & depressive symptoms:

Gleaned from Figure 1, the highest percentage (76.52%) in specific PHQ-9 symptom was seen in “feeling down, depressed, or hopelessness” symptom. Of all the participants, 72.56% participants were feeling tired or having little energy and 65.21% participants had poor appetite or overeating problem. To a lesser extent, 33.66% of respondents thought that they would be better off dead, or of hurting themselves in some way. Regarding specific GAD-7 symptoms, 83.45% respondents reported to be feeling nervous, anxious, or on edge and were worrying too much about different things. Restlessness was experienced by 59.69% of the respondents and it even made them feel it is hard to sit still.

3.3Associations of socio-demographic characteristics with anxiety and depressive symptoms:

Table 1 shows, there is a significant relationship between age (25-35 years vs <25 years) and depressive symptoms ($\chi^2= 11.14$, $df=2$, $p<0.01$); gender (male vs female) and depressive symptoms ($\chi^2=18.87$, $df=1$, $p<0.01$); education (Honors or above vs up to higher secondary) and depressive symptoms ($\chi^2= 36.11$, $df=1$, $p<0.01$); occupation (public/pvt. service holders vs health care workers) and depressive symptoms ($\chi^2 =11.99$, $df=3$, $p<0.01$); monthly family income (<30,000BDT vs >70,000BDT) (353.73USD vs 825.37USD) and depressive symptoms ($\chi^2=47.01$, $df=2$, $p<0.01$) and anxiety and depression ($\chi^2=225.64$, $df=1$, $p<0.01$).

Furthermore, there is significant relationship between gender (male vs female) and anxiety ($\chi^2=9.27$, $df=1$, $p<0.01$); education (Honors or above vs up to higher secondary) and anxiety ($\chi^2=18.93$, $df=1$, $p<0.01$); occupation (public/pvt. service holders) and anxiety ($\chi^2=15.04$, $df=3$, $p<0.01$); marital status (married/divorced/widowed vs unmarried) and anxiety ($\chi^2=3.96$, $df=1$, $p=0.05$); number of family members (5-7 members vs >7 members) and anxiety ($\chi^2=9.17$, $df=2$, $p<0.01$); number of earning members (more than one earner vs only earner) in the family and anxiety ($\chi^2=5.59$, $df=2$, $p=0.02$); monthly family income (<30,000 BDT vs >70,000 BDT) and anxiety ($\chi^2=36.41$, $df=2$, $p<0.01$); depression and anxiety ($\chi^2=225.64$, $df=1$, $p<0.01$).

3.4Other associated factors of anxiety and depressive symptoms:

More than half of the respondents reported 7 to 9 hours as their sleep duration (55.87%) during this period. Most the respondents had ‘fear of COVID-19’ during their stay outside home (69.73%). Bivariate analysis showed that, respondents that reported ‘fear of COVID-19’ when working outside home during pandemic were more likely to be in the form of anxiety (OR=1.79; 95% CI: 1.30 to 2.48) and respondents stayed at home for more than 60 days were more likely to experience depressive symptoms (OR=1.56; 95% CI: 1.07 to 2.29). (Table 2) Multivariate analysis showed that, respondents stayed at home for more than 60 days were more likely to be in anxiety (AOR=1.64; 95% CI: 1.07 to 2.54). Respondents having ‘fear of COVID-19’ when working outside home during pandemic were more likely to be in anxiety (AOR=2.08; 95% CI: 1.42 to 3.04) and depressive symptoms (AOR=1.51; 95% CI: 1.04 to 2.20). Where the other variables

including change in sleep duration did not play any significant role on anxiety or depression. (Table 2)

3.5 Association of sleep pattern with COVID-19 related information, anxiety & depression symptoms:

Results of linear regression analysis of factors associated with sleep pattern changes during the COVID-19 crisis are presented in Table 3. In unadjusted model, it was seen that respondents who stayed home for 30 to 60 days had increased sleep duration ($\beta=0.69$; 95% CI: 0.35 to 1.02) and who stayed home for more than 60 days had even more increased sleep duration ($\beta=0.80$; 95% CI: 0.44 to 1.17). Respondents who had to go out for work during pandemic ($\beta= -0.33$; 95% CI: -0.63 to -0.04), had 'fear of COVID-19' when working outside ($\beta= -0.39$; 95% CI: -0.71 to -0.08), those who were responsible to support their family financially ($\beta= -0.78$; 95% CI: -1.28 to -0.29) had decreased sleep duration. Depressive symptoms or anxiety had no significant association with sleep duration. (Table 3)

In adjusted model, it was seen that respondents stayed at home for 30 to 60 days had an increase in sleep duration ($\beta=0.65$; 95% CI: 0.30 to 0.99) and who stayed home during the lockdown for more than 60 days had even more increased sleep duration ($\beta=0.70$; 95% CI: 0.30 to 1.10). Respondents who were responsible to support their family financially ($\beta= -0.68$; 95% CI: -1.18 to -0.20) had decreased sleep duration. (Table 3)

4. Discussion:

The study was conducted approximately four months after the World Health Organization declared COVID-19 as public health emergency and social distancing was recommended to ensure public safety and contain the pandemic. Thus, the study was able to capture the preliminary findings about the potential influencing factors of anxiety, depressive symptoms & changes in sleep patterns during a crucial time of the pandemic in the country.

The greater percentage in "feeling down, depressed, or hopelessness" symptom (76.52%) may be attributed to the suffering from economic loss and unemployment due to lockdown as unemployment is associated with higher level of depression (Whooley et al., 2002). A recent study showed that 69.6% respondents were worried about the financial loss during the lockdown period (Chakraborty & Chatterjee, 2020) and unfavorable financial conditions are more defenseless to mental wellbeing issues (Lei et al., 2020). Furthermore, 72.56% of the participants responded to "feeling bad about yourself -or that you are a failure or have let yourself or your family down". This greater percentages in these symptoms might be explained by the fact that lockdown had led many wage earners towards losing their job which had made them unable in fulfilling needs and that sudden fall out in income included frustration, guilt and other mental distress (Subbaraman et al., 2014). Notably, 33.66% respondents responded to "thoughts that you would be better off dead, or of hurting yourself in some way" symptom. It was recommended previously that personal loss or elevated risk can disrupt an individual's adapting potential, or the mental assets required to overcome a potential risk (S. E. Taylor & Stanton, 2007). In terms of specific GAD-7 symptoms, 83.45% respondents reported to be feeling nervous, anxious, or on edge and were worried too much about different things. Worrying about children's educational loss may contribute to this

higher percentage in those two symptoms as measures regarding COVID-19 have imposed negative impacts on the education and the prosperity of students (Cao et al., 2020), though further study is needed to prove this finding.

Male gender was associated with both anxiety and depressive symptoms which aligns with an earlier research (Wang, Di, Ye, & Wei, 2020). But this finding is inconsistent with some other studies where female gender was found to be associated with depression and/ anxiety (Huang & Zhao, 2020; Khan et al., 2020). The possible reason behind this finding could be that the role of financial provider is more applicable to males than females in Bangladesh and the financial brunt has had a noteworthy effect on mental wellbeing. Parallel to a previous study (Huang & Zhao, 2020), our study revealed that younger age (25-35 years old) was associated with depressive symptoms compared to their older counterparts (>35 years old). The possible reason may be that the younger adults engage themselves more with social media and are more vulnerable to online misinformation that triggered the mental distress (The, 2019). Also, they had less coping ability to adopt with impacts and thus remain as a risk group (M. R. Taylor, Agho, Stevens, & Raphael, 2008). Moreover, the study demonstrated that respondents having higher education had higher anxiety and depressive symptoms which corresponds to a previous study (Zhou et al., 2020). This phenomenon might be attributable to the higher level of self-awareness about their health (Roberts et al., 2018).

Service holders had statistically significant higher level of anxiety and depressive symptoms which is near identical to a recent study (Islam, Ferdous, & Potenza, 2020). Being married/widowed/divorced were associated with both anxiety and depressive symptoms, this finding accords with the other studies (Islam et al., 2020; Lei et al., 2020). Moreover, low family income had more pernicious outcome which echoes the previous finding from other study (Lei et al., 2020; Stanton et al., 2020). People with lower income are more likely to face challenges by the sudden income loss and economic hardship, not having any insurance mechanism or social safety net programmes showed a positive relationship with anxiety and depression (González-Sanguino et al., 2020; Lei et al., 2020). Thus, it is not surprising to find elevated psychological distress in those participants whose family income was low in this pandemic. In our study, although not statistically significant, respondents from Dhaka division, which had the highest cases of COVID-19 (Institute of Epidemiology Disease Control and Research, 2020), had higher level of anxiety and depressive symptoms. This suggests that staying in a high-risk area can impose negative consequences on mental health.

However, it is worth noting that concerning anxiety and depression, our regression analysis suggested that earners who stayed home for longer duration (>60 days) had higher risk of both anxiety and depressive symptoms, in contrast to shorter duration (<30 days). This result also accords with a recent rapid review (Brooks et al., 2020), indicating longer social isolation to be associated with mental health difficulties and also revealed psychological consequences of isolation during previous infectious outbreaks (e.g., SARS, H1N1, Ebola, MERS etc.) as the socially isolated individuals are more likely to experience psychological miseries. It was documented before that staying home for longer time can lead to getting less daylight, which diminishes serotonin levels and decreased serotonin level has been related with anxiety and mainly

depressive disorders. Furthermore, longer duration of isolation or activity confinement may origin fear and also fear of COVID-19 has been reported as positively associated with anxiety and depression (Ahorsu et al., 2020). Besides, anxiety disorders are more likely to arise and deteriorate when interpersonal contact is lacking (Xiao, 2020).

Having ‘fear of COVID-19’ during the time spend out of home for work purpose, found to be associated with elevated anxiety and depressive symptoms in the study. In line with this finding, 14.9% of respondents detailed that returning to work was a moderate to an extremely serious risk to their life as also mentioned in a recent study (Tan et al., 2020). Again, youthful individual who had to work exterior their house displayed higher levels of anxiety (Mazza et al., 2020) which is somewhat identical to the our study and can resemble the “hypochondriac concerns’ (worry about being infected) (Furer, Walker, Chartier, & Stein, 1997).

Our study tool revealed that 30.27% respondents had inadequate sleep (Figure 3) and PHQ-9 scale showed 73.69% respondents had trouble in falling or staying asleep/ sleeping too much (Figure 1). Extensive use of electronic devices and social media had led people to the high exposure of blue light emission which is capable of inhibiting melatonin production and consequently inducing sleep (Yadav et al., 2020). The current study presented that 13.86% participants had oversleeping or more than adequate sleep experience during the pandemic and longer duration of home stay increased sleep duration (Table 3). The negative consequences of oversleeping are also very minacious such as obesity, diabetes, depression, heart disease, mood disorders and even death (Sleep Advisor, 2020). One of the prominent reasons for disrupted sleep in this pandemic is the altered daily life schedule (work from home, institution closer, social distancing) (Yadav et al., 2020). Supporting family with their income was associated with a significant decreased sleep which might be attributed to the fact that anxiety due to financial concerns led them to the bitter experience of such change in sleep pattern. Financial loss during such crisis by obstructing professional activities with no further planning was reported to be a reason for serious socio-economic torment (Pellecchia, Crestani, Decroo, Van den Bergh, & Al-Kourdi, 2015) which might be a reason for the disrupted sleep pattern among wage earners. Further investigation is recommended to prove this finding.

4.1 Strength & Limitations of the study:

The research was conducted to investigate mental health difficulties & associated factors among income earning population during an ongoing pandemic in a low resource country. Associated factors identified in this investigation might be potentially useful for tailoring low intensity psychosocial interventions targeting this sub group of population during this ongoing crisis and strengthening future preparations of such outbreaks. Validated and reliable use of assessment tools has added to the strength of the study. The study is not without limitations. Firstly, the result must be carefully interpreted as the study could not include lower socio-economic subgroup due to the nature of data collection. Second, more than 50% participants were from Dhaka division which limits the representativeness of the study. Another limitation was self-reporting nature of the survey, which might have resulted in recall bias and social desirability bias. The usage of convenience sampling technique might also have included sampling bias. Finally, the cross-sectional nature restricts the study to predict causal inferences as long-term effect was not possible

to explore. Those issues should be overcome thoroughly in future research by tracking longitudinally in different periods of time and using qualitative methods.

5.Conclusion:

The results of this study provided novel evidence on mental health difficulties & changed sleep patterns among Bangladeshi wage-earners which calls for in-depth & longitudinal evaluation and urgent low intensity psychosocial interventions including digital mental health solution & remote psychological first aid for prompt identification & subsequent referral. Anxiety & depressive symptoms and changed sleep patterns among Bangladeshi wage earners were influenced by gender, education, income, longer home stay, fear of COVID-19 infection when working outside & responsibility to support their family financially during the pandemic. Findings derived from the study might be potentially useful for policymakers, health authorities to tailor psychosocial interventions targeting this subgroup of population during this ongoing crisis.

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Figure 1: Distribution of participants by the percentages of specific PHQ-9 symptoms.

Figure 1: Distribution of participants by the percentages of specific GAD-7 symptoms.

Figure 3: Distribution of sleep duration by recommended sleep hours.

Table 1: Distribution of socio-demographic variables, and association with depression and anxiety among Bangladeshi wage earners.

Variables	n (%) (N=707)	Depressive symptoms ^{§§}				Anxiety [§]			
		Positive (n=395)	Negative (n=312)	χ ² (df)	p	Positive (n=414)	Negative (n=293)	χ ² (df)	p
Age (years)									
<25	112 (15.84%)	78 (19.75%)	34 (10.90%)	11.14** (2)	<0.01	71 (17.15%)	41 (13.99%)	1.28 (2)	0.53
25-35	441 (62.38%)	240 (60.76%)	201 (64.42%)			254 (61.35%)	187 (63.82%)		
>35	154 (21.78%)	77 (19.49%)	77 (24.68%)			89 (21.50%)	65 (22.18%)		
Gender									
Female	161 (22.77%)	114 (28.86%)	47 (15.06%)	18.87** (1)	<0.01	111 (26.81%)	50 (17.06%)	9.27** (1)	<0.01
Male	546 (77.23%)	281 (71.14%)	265 (84.94%)			303 (73.19%)	243 (82.94%)		
Education									
Up to Higher secondary	167 (23.62%)	127 (32.15%)	40 (12.82%)	36.11** (1)	<0.01	122 (29.47%)	45 (15.36%)	18.93* * (1)	<0.01
Honors or above	540 (76.38%)	268 (67.85%)	272 (87.18%)			292 (70.53%)	248 (84.64%)		
Occupation									
Public/Pvt. Service holders	430 (60.82%)	236 (59.75%)	194 (62.18%)	11.99** (3)	0.01	250 (60.39%)	180 (61.43%)	15.04* * (3)	<0.01
Businessman	88 (12.45%)	60 (15.19%)	28 (8.97%)			66 (15.94%)	22 (7.51%)		
HCW ^I	103 (14.57%)	46 (11.65%)	57 (18.27%)			49 (11.84%)	54 (18.43%)		
Others ^{II}	86 (12.45%)	53 (13.42%)	33 (10.58%)			49 (11.84%)	37 (12.63%)		
Marital status									
Unmarried	345 (48.80%)	194 (49.11%)	151 (48.40%)	0.04 (1)	0.85	189 (45.65%)	156 (53.24%)	3.96* (1)	0.05
Married/divo rced /widowed	362 (51.20%)	201 (50.89%)	161 (51.60%)			225 (54.35%)	137 (46.76%)		
Division									
Dhaka	458 (64.78%)	256 (64.81%)	202 (64.74%)	4.87 (7)	0.68	268 (64.73%)	190 (64.85%)	8.07 (7)	0.33
Chittagong	89	54	35			58	31		

	(12.59%)	(13.67%)	(11.22%)			(14.01%)	(10.58%)		
Barisal	5 (0.71%)	4 (1.01%)	1 (0.32%)			4 (0.97%)	1 (0.34%)		
Khulna	45 (6.36%)	22 (5.57%)	23 (7.37%)			22 (5.31%)	23 (7.85%)		
Mymensingh	17 (2.40%)	10 (2.53%)	7 (2.24%)			10 (2.42%)	7 (2.39%)		
Rajshashi	35 (4.95%)	17 (4.30%)	18 (5.77%)			16 (3.86%)	19 (6.48%)		
Rangpur	14 (1.98%)	6 (1.52%)	8 (2.56%)			7 (1.69%)	7 (2.39%)		
Sylhet	44 (6.22%)	26 (6.58%)	18 (5.77%)			29 (7.00%)	15 (5.12%)		
Living setting									
Rural	100 (14.14%)	56 (14.18%)	44 (14.10%)	<0.01 (1)	0.98	57 (13.77%)	43 (14.68%)	0.12 (1)	0.73
Urban	607 (85.86%)	339 (85.82%)	268 (85.90%)			357 (86.23%)	250 (85.32%)		
Number of family members									
<5	306 (43.28%)	164 (41.52%)	142 (45.51%)	2.08 (2)	0.35	161 (38.89%)	145 (49.49%)	9.17** (2)	0.01
5-7	316 (44.70)	186 (47.09%)	130 (41.67%)			204 (49.28%)	112 (38.23%)		
>7	85 (12.02%)	45 (11.39%)	40 (12.82%)			49 (11.94%)	36 (12.29%)		
Number of earning member in family									
Only earner	238 (33.66%)	138 (34.94%)	100 (32.05%)	0.65 (1)	0.42	154 (37.20%)	84 (28.67%)	5.59* (1)	0.02
More than one earner	469 (66.34%)	257 (65.06%)	212 (67.95%)			260 (62.80%)	209 (71.33%)		
Family income (monthly)									
<30,000 BDT	346 (48.94%)	233 (58.99%)	113 (36.22%)	47.01** (2)	<0.01	239 (57.73%)	107 (36.52%)	36.41* * (2)	<0.01
30,000-70,000 BDT	232 (32.81%)	119 (30.13%)	113 (36.22%)			123 (29.71%)	109 (37.20%)		
>70,000 BDT	129 (18.25%)	43 (10.89%)	86 (27.56%)			52 (12.56%)	77 (26.28%)		
Anxiety									
Positive	414 (58.56%)	329 (83.29%)	85 (27.24%)	225.64** (1)	<0.01	-	-	-	-
Negative	293 (41.44%)	66 (16.71%)	227 (72.76%)			-	-		
Depressive symptoms									
Positive	395 (55.87%)	-	-	-	-	329 (79.47%)	66 (22.53%)	225.64** (1)	<0.01

Negative	312 (44.13%)	-	-	85 (20.53%)	227 (77.47%)
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*P-value ≤ 0.05 ; **P-value ≤ 0.01

Abbreviations: df= Degree of freedom

[§] Anxiety was defined as individuals who scored ≥ 10 .

^{§§} Depression was defined as individuals who scored ≥ 10 .

[†] Included researchers, journalists, farmers, tutors, etc.

^{††} Included doctors, nurses and medical technologists.

Table 2: Association among sleep & COVID-19 related information, anxiety and depressive symptoms

Variables	n (%) (N=707)	Anxiety [§]		Depression ^{§§}	
		OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
Duration of home-stay					
<30 days	249 (35.22%)	Ref.	Ref.	Ref.	Ref.
30-60 days	265 (37.48%)	1.10 (0.78-1.56)	1.13 (0.78-1.64)	1.12 (0.79-1.59)	1.06 (0.73-1.52)
>60 days	193 (27.30%)	1.41 (0.96-2.08)	1.64* (1.07-2.54)	1.56* (1.07-2.29)	1.49 (0.97-2.27)
Average sleep duration in past four weeks					
<7 hrs.	214 (30.27%)	0.93 (0.66-1.29)	0.91 (0.65-1.29)	0.90 (0.64-1.26)	0.93 (0.66-1.30)
7-9 hrs.	395 (55.87%)	Ref.	Ref.	Ref.	Ref.
>9 hrs.	98 (13.86%)	1.43 (0.90-2.27)	1.47 (0.94-2.43)	1.45 (0.91-2.29)	1.44 (0.90-2.29)
Went out for work during pandemic					
Yes	415 (58.70%)	1.13 (0.83-1.53)	0.94 (0.64-1.38)	0.85 (0.63-1.15)	0.82 (0.56-1.19)
No	292 (41.30%)	Ref.	Ref.	Ref.	Ref.
Fear of COVID-19 when working outside					
Yes	493 (69.73%)	1.79** (1.30-2.48)	2.08** (1.42-3.04)	1.23 (0.89-1.69)	1.51* (1.04-2.20)
No	214 (30.27%)	Ref.	Ref.	Ref.	Ref.
Responsible to support families financially					
Yes	639 (90.38%)	1.47 (0.89-2.42)	1.62 (0.96-2.71)	0.76 (0.46-1.28)	0.84 (0.50-1.42)
No	68 (9.62%)	Ref.	Ref.	Ref.	Ref.

*P-value ≤ 0.05; **P-value ≤ .01

Abbreviations: OR=Odds ratio; AOR=Adjusted odds ratio; CI= Confidence interval

[§]Anxiety was defined as individuals who scored ≥ 10.^{§§} Depressive symptoms was defined as individuals who scored ≥ 10.

Table 3: Association of sleep pattern with COVID-19 related information, anxiety & depressive symptoms.

Variables	n (%) (N=707)	Sleep (unadjusted)			Sleep (adjusted)		
		β	95% CI	P-value	β	95% CI	P-value
Duration of home-stay (days)							
<30	249 (35.22%)	Ref.			Ref.		
30-60	265 (37.48%)	0.69**	0.35 to 1.02	<0.01	0.65**	0.30 to 0.99	<0.01
>60	193 (27.30%)	0.80**	0.44 to 1.17	<0.01	0.70**	0.30 to 1.10	<0.01
Went out for work during pandemic							
Yes	415 (58.70%)	-0.33*	-0.63 to -0.04	0.03	0.09	-0.26 to 0.45	0.61
No	292 (41.30%)	Ref.			Ref.		
Fear of COVID-19 when working outside							
Yes	493 (69.73%)	-0.39**	-0.71 to -0.08	0.01	-0.32	-0.68 to 0.04	0.08
No	214 (30.27%)	Ref.			Ref.		
Responsible to support families financially							
Yes	639 (90.38%)	-0.78**	-1.28 to -0.29	<0.01	-0.68**	-1.18 to -0.20	0.01
No	68 (9.62%)	Ref.			Ref.		
Depressive symptoms ^{§§}							
Positive	395 (55.87%)	0.19	-0.10 to 0.48	0.20	0.10	-0.25 to 0.45	0.57
Negative	312 (44.13%)	Ref.			Ref.		
Anxiety [§]							
Positive	414 (58.56%)	0.12	-0.18 to 0.41	0.43	0.09	-0.27 to 0.44	0.63
Negative	293 (41.44%)	Ref.			Ref.		

*P-value ≤ 0.05 ; **P-value $\leq .01$

Abbreviations: β = Co-efficient; CI= Confidence interval

[§] Anxiety was defined as individuals who scored ≥ 10 .

^{§§} Depressive symptoms was defined as individuals who scored ≥ 10 .