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Generalized Anxiety Disorder and Sleep Quality of Day Laborers during COVID-19 Pandemic

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Abstract

Introduction: *Since December 2019, Coronavirus Disease (COVID-19) has had a significant impact on the world. It had severe economic repercussions in Bangladesh. The lockdown had interfered with the production, availability, and supply of enough food. As a result, food prices have increased, making it harder for low-income individuals, such as day laborers, to survive.* ***Aims and objectives:*** *The purpose of the study was to determine the level of generalized anxiety disorder (GAD) and evaluate the association between sleep quality and GAD among day laborers during the COVID-19 pandemic.* ***Materials and Methods:*** *This cross-sectional study was conducted among 227 construction workers, rickshaw pullers, van pullers, and other day laborers from the Faridpur district. Participants were conveniently selected and interviewed in person using a semi-structured questionnaire, with data collection taking place at their convenience from January to December 2020.* ***Results:*** *The majority of respondents reported minimal anxiety (75.3%), followed by mild anxiety (14.5%), moderate anxiety (9.7%), and severe anxiety (0.4%). most respondents had good sleep quality (74.4%), while 25.6% experienced poor sleep quality. A strong positive correlation was observed between GAD scores and sleep quality scores ($p<0.05$). A significant association was found between anxiety and sleep quality, with higher levels of anxiety linked to poorer sleep quality. Factors such as age, marital status, smoking, and years of work experience were significantly associated with sleep quality ($p<0.05$). Unmarried participants were more likely to report poor sleep, potentially due to fewer family-related responsibilities compared to their married counterparts.* ***Conclusion:*** *This study revealed that day laborers during the COVID-19 pandemic had a significant mental health charges. It should be widespread procedure to continuously monitor and assess the psychological effects of the day workers during this period.*

Keywords: *Generalized anxiety disorder, sleep quality, day laborers, COVID-19 pandemic.*

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Introduction:

COVID-19 has a dangerous effect on the mental health of the general population[1]. The pandemic has a devastating impact on both the physical and mental health of individuals. However, differences in education and occupation lead to varying levels of threat perception, causing people to experience different degrees of anxiety and insomnia severity[2,3]. The nationwide lockdown resulted in significant challenges for the migrant workforce and day laborers, as many lost their jobs and

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were forced to leave their places of employment to return to their villages due to a lack of income[3]. The economic damage has led to unemployment, loss of income, and economic uncertainty, disproportionately affecting informal workers, day laborers, and blue-collar workers[4]. Economic inequality has been exacerbated, particularly among ethnic minorities, small-scale farmers, migrant workers, and women, who face heightened vulnerability to economic hardship[5,6]. Mental stress significantly impacts the poorest segments of the population[7]. During the lockdown in India, thousands of migrant workers crowded railway and bus stations in desperate attempts to return to their villages, often disregarding lockdown rules[8]. This situation created a vicious cycle of susceptibility to infection, quarantine, stress, insomnia, and violation of preventive measures[9,10]. The heightened anxiety among these workers forced many to travel thousands of miles on foot without provisions for food or shelter. Migrant workers also faced psychosocial issues, including high levels of stress and fears related to COVID-19, compounded by predisposing factors like occupational hazards and chronic malnutrition. Additionally, the lack of family support and feelings of loneliness made them vulnerable to mental health problems, such as depression and anxiety[11]. A case study in Bangladesh documented numerous suicide cases between April 6 and April 24, 2020[12]. Most of the victims belonged to low-income groups, including day laborers, auto-rickshaw drivers, garment workers, and small business owners, highlighting the precarious psychosocial condition of Bangladesh's low-income population. This evidence suggests that the pandemic adversely affected the mental health of the general public, particularly the poorest segments[12,13]. The COVID-19 pandemic has also contributed to an economic crisis among Bangladesh's poorest populations, including day laborers. Many day laborers lost their jobs during the nationwide lockdown, while small and medium-sized businesses faced severe disruptions, with some going bankrupt. Consequently, this study aims to assess the mental health burden among Bangladeshi day laborers during the time.

Materials and Methods:

This cross-sectional study aimed to assess the status and association between generalized anxiety disorders (GAD) and sleep quality among day laborers during the COVID-19 pandemic. Data were collected in Faridpur Sadar, Modhukhali, Boalmari, Saltha, and Nagarkanda Upazila in the Faridpur district of the Dhaka division, Bangladesh. The study population included conveniently selected 227 construction workers, rickshaw pullers, van pullers, along with day laborers employed in the Faridpur district. Participants who fulfilled the following criteria were eligible for inclusion: presently working in day labour-intensive jobs like construction, rickshaw, or van pulling; at least 18 years old; worked as a day laborer over 6 months prior or more. Data were collected through face-to-face interviews using a semi-structured questionnaire at the participants' convenience from January to December 2020. The questionnaire included Generalized Anxiety Disorder-7 (GAD-7) scale for anxiety assessment, Pittsburgh Sleep Quality Index (PSQI) scale for sleep quality evaluation, and questions on socio-demographics, behavior, and mental health.Collected data were reviewed for consistency, relevancy, and quality. They were then compiled, coded, and analyzed using IBM SPSS Statistics Version 25 (Armonk, NY, USA). Missing data were identified through frequency analysis. Descriptive statistics, including numbers and percentages, were used to summarize socio-demographic, occupational, behavioral, anxiety, and sleep-related variables. Inferential analyses, such as Chi-square tests and logistic regression, were performed to evaluate associations between variables.

Ethical considerations

Ethical clearance was obtained following the Declaration of Helsinki protocols. Verbal informed consent was sought from participants using a translated Bengali consent form. Participants were informed about the study's objectives, confidentiality measures, and their right to refuse or withdraw at any stage. No invasive procedures or interventions were involved, and participation was entirely voluntary. Ethical approval was obtained from the Institutional Review Board (IRB) of the National Institute of Preventive and Social Medicine (NIPSOM), Dhaka 1212, Bangladesh. (Reference: NIPSOM/IRB/2020/1225)

Results:

The respondents' ages ranged from 18 to 65 years, with a mean of 32.46±12.01 years. The majority of respondents were male (96.9%), with females comprising 3.1%. Islam was the predominant religion, practiced by 98.2% of participants. Most respondents were married (72.7%), while the remaining 27.3% were unmarried. Regarding education, 51.5% had completed classes 1–5, 23.8% had completed classes 6–8, 9.3% were illiterate, 8.4% had completed classes 9–10, and 7.0% had achieved S.S.C. level or higher. In terms of family size, 74.0% of respondents belonged to families with 1–5 members, 25.6% to families with 6–10 members, and 0.4% to families with 16–20 members (Table I).

Table II shows that over half of the respondents were construction workers (51.5%), followed by rickshaw pullers (34.4%) and van pullers (14.1%). The daily income of respondents ranged from 200 to 800 taka, with a mean of 449.07±104.55 taka. Income distribution revealed that 47.1% of participants earned 400–499 taka, 22.0% earned 500–599 taka, 15.9% earned 300–399 taka, 8.4% earned 600–699 taka, 3.1% earned 200–299 taka, 2.2% earned 800–899 taka, and 1.3% earned 700–799 taka. The daily working hours of respondents ranged from 5 to 12 hours, with a mean of 7.98 ± 0.731 hours. Among them, 88.1% worked 8 hours or less daily, while 11.9% worked 9–12 hours per day. The duration of current occupation ranged from 8 months to 40 years, with a mean of 9.88±9.07 years. In terms of occupational duration, 55.1% had been engaged in their current occupation for 6 months to 9 years, 26.9% for 10–19 years, 12.3% for 20–29 years, 4.0% for 30–39 years, and 1.8% for 40–49 years.

Regarding the number of working family members, 49.3% of respondents had one working family member, 39.6% had two, 7.9% had three, 1.8% had four, 0.9% had five, and 0.4% had eight working family members.

Table III shows the leisure activities and behavioral characteristics of the respondents. Among them, 64.3% spent their leisure time gossiping, 32.2% watching TV, and 3.5% playing games. Regarding smoking habits, 47.1% were current smokers, 40.1% had never smoked, and 12.8% were past smokers. Among current smokers, 43.0% had been smoking for 1–5 years, 25.2% for 6–10 years, 10.3% for 11–15 years, 8.4% for 16–20 years, 5.6% for 26–30 years, 3.7% for 21–25 years, 1.9% for 31–35 years, and 1.9% for 36–40 years. The number of cigarettes smoked daily varied: 43.0% smoked 1–5 sticks, 37.4% smoked 6–10 sticks, 10.3% smoked 11–15 sticks, 7.5% smoked 16–20 sticks, and 0.9% each smoked 21–25 or 26–30 sticks. Alcohol consumption was minimal among respondents, with the majority (99.6%) never having consumed alcohol and only 0.4% being past alcohol consumers.

Table IV demonstrates that the majority of respondents experienced minimal anxiety (75.3%), followed by mild anxiety (14.5%), moderate anxiety (9.7%), and severe anxiety (0.4%). Regarding sleep quality, most respondents had good sleep quality (74.4%), while 25.6% reported poor sleep quality.

Figure 1 shows that the Pearson correlation analysis revealed a strong positive correlation between the GAD score and the sleep quality scores ($r= +0.894$, $p<0.001$).

The majority of respondents were aged 21-30. Chi-square analysis showed a significant association between age and sleep quality ($p<0.05$). Most respondents were married, and marital status also showed a significant association with sleep quality ($p<0.05$). The majority had been in their current occupation for 0-9 years, with a significant association between occupation duration and sleep quality ($p<0.05$). Most respondents were current smokers, and smoking status was significantly associated with sleep quality ($p<0.05$). Additionally, the majority had smoked for 1-5 years, with a significant association between smoking duration and sleep quality ($p<0.05$) (Table VI).

Table I: Socio-demographic characteristics of the respondents (n=227)

Characteristics	Frequency (n)	Percent (%)
Age group (year)		
≤ 20	37	16.3
21-30	86	37.9
31-40	58	25.6
41-50	22	9.7
51-60	20	8.8
61-70	4	1.8
Sex		
Male	220	96.9
Female	7	3.1
Religion		
Islam	223	98.2
Hindu	4	1.8
Marital status		
Married	165	72.7
Unmarried	62	27.3
Educational status		
Illiterate	21	9.3
Class 1 – 5	117	51.5
Class 6 – 8	54	23.8
Class 9 – 10	19	8.4
S.S.C. and above	16	7.0
Number of family members		
1 - 5	168	74.0
6 - 10	58	25.6
11 - 20	1	0.4

Table II: Occupation-related characteristics of the study population (n=227)

Characteristics	Frequency (n)	Percent (%)
Occupation		
Rickshaw puller	78	**34.4**
Van puller	32	**14.1**
Construction worker	117	**51.5**
Daily income (in taka)		
200 - 299	7	3.1
300 - 399	36	15.9
400 - 499	107	47.1
500 - 599	50	22.0
600 - 699	19	8.4
700 - 799	3	1.3
800 – 899	5	2.2
Daily working hours (in hours)		
≤8	200	88.1
9-12	27	11.9
Duration of current occupation (in years)		
Month 6 to 9 years	125	55.1
10 - 19	61	26.9
20 - 29	28	12.3
30 - 39	9	4.0
40 - 49	4	1.8
Number of working family members		
1	112	49.3
2	90	39.6
3	18	7.9
4	4	1.8
5	2	0.9
8	1	0.4

Table III: Behavior-related characteristics of the study population (n=227)

Characteristics	Frequency (n)	Percent (%)
Activities in leisure time		
Gossiping	146	64.3
Watching TV	73	32.2
Playing game	8	3.5
Smoking status of day laborers		
Current smoker	107	47.1
Past smoker	29	12.8
Never smoked	91	40.1

Duration of smoking of current smoker (n=107)		
1 - 5	46	43.0
6 - 10	27	25.2
11 - 15	11	10.3
16 - 20	9	8.4
21 - 25	4	3.7
26 - 30	6	5.6
31 - 35	2	1.9
36 – 40	2	1.9
Number of sticks taken (n=107)		
1 - 5	46	43.0
6 - 10	40	37.4
11 - 15	11	10.3
16 - 20	8	7.5
21 - 25	1	0.9
26 – 30	1	0.9
Alcohol consumption status		
Current alcohol consumer	0	0
Past alcohol consumer	1	0.4
Never consumed	226	99.6

Table IV: GAD and sleep quality status of the study population (n=227)

GAD and sleep quality status	Frequency (n)	Percent (%)
Level of anxiety		
Minimal	171	75.3
Mild	33	14.5
Moderate	22	9.7
Severe	1	0.4
Level of sleep quality		
Good	169	74.4
Poor	58	25.6

Table V: Association between generalized anxiety disorder and sleep quality (n=227)

Level of anxiety	Level of sleep quality		x^2 value	p-value
	Good	Poor		
	n (%)	n (%)		
Minimal	168 (74.0)	3 (1.3)	206.408	0.000
Mild	1 (0.4)	32 (14.1)		
Moderate	0 (0.0)	22 (9.7)		
Severe	0 (0.0)	1 (0.4)		

p<0.05 considered as statistically significant value

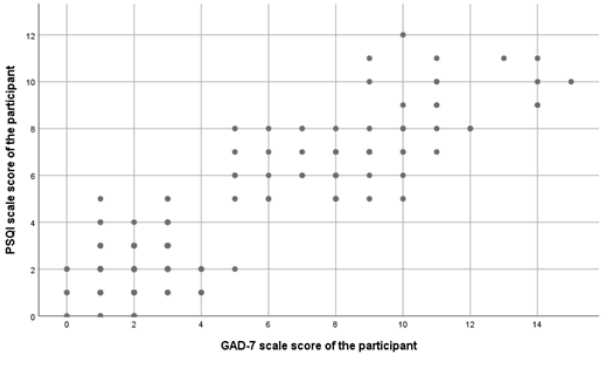

Figure 1: Correlation Coefficient between GAD and sleep quality (n=227)

In the Univariate logistic regression analysis, several factors were found to be significantly associated with poor sleep quality. Participants over the age of 30 were 2.43 times more likely to report poor sleep quality compared to those under 30 (OR= 2.430, 95% CI: 1.317-4.487). Married participants had a 4.30 times higher likelihood of poor sleeps quality compared to unmarried participants (OR= 4.295, 95% CI: 1.740-10.603). Smokers were 2.26 times more likely to experience poor sleep quality compared to non-smokers (OR= 2.259, 95% CI: 1.225-4.165). Participants with more than 10 years of smoking duration were 3.21 times more likely to have poor sleep quality than those with less than 10 years of smoking (OR= 3.214, 95% CI: 1.642-6.289). Additionally, participants with over 10 years of occupation duration had a 2.10 times higher likelihood of poor sleep quality compared to those with less than 10 years of occupational experience (OR= 2.104, 95% CI: 1.148-3.858). All associations were statistically significant (Table VII).

In the multivariate logistic regression models, the strength of the associations weakened, but some factors remained significant. Married participants were 2.78 times more likely to experience poor sleep quality compared to unmarried participants (OR= 2.779, 95% CI: 1.007-7.674) (Table VIII).

Table VI: Association between different variables and sleep quality (n=227)

Variables	Level of sleep quality		x^2 value	p-value
	Good	Poor		
		n (%)		
Age (in years)	35 (15.4)	2 (0.9)	12.988	0.023
≤ 20	66 (29.1)	20 (8.8)		
21-30	37 (16.3)	21 (9.3)		
31-40	15 (6.6)	7 (3.1)		
41-50	13 (5.7)	7 (3.1)		
51-60	3 (1.3)	1 (0.4)		
61-70				
Marital status				
Married	113 (49.8)	52 (22.9)	11.298	0.001
Unmarried	56 (24.7)	6 (9.7)		
Duration of current occupation (in years)				
0-9	101 (44.5)	24 (10.6)	10.370	0.035
10-19	42 (18.5)	19 (8.4)		
20-29	18 (7.9)	10 (4.4)		
30-39	7 (3.1)	2 (0.9)		
40-49	1 (0.4)	6 (1.3)		
Smoking status				
Current smoker	71 (31.3)	36 (15.9)	6.995	0.030
Past smoker	24 (10.6)	5 (2.2)		
Never smoked	74 (32.6)	17 (7.5)		
Duration of smoking (in years)				
1-5	35 (32.7)	11 (10.3)	16.717	0.019
6-10	16 (15.0)	11 (10.3)		
11-15	7 (6.5)	4 (3.7)		
16-20	8 (7.5)	1 (0.9)		
21-25	0 (0.0)	4 (3.7)		
26-30	2 (1.9)	4 (3.7)		
31-35	2 (1.9)	0 (0.0)		
36-40	1 (0.9)	1 (0.9)		

p<0.05 considered as statistically significant value

Table VII: Univariate logistic regression of different variables associated with poor sleep quality (n=227)

Poor sleep quality				
Variables	**OR**	**p-value**	**95% CI for OR lower**	**95% CI for OR higher**
Age				
18-30 years	1.00	0.005	1.317	4.487
31-65 years	2.430			
Marital status				
Married	4.295	0.002	1.740	10.603
Unmarried	1.00			
Smoking history				
Smoker	2.259	0.009	1.225	4.165
Non-smoker	1.00			
Year of smoking				
0-9 years	1.00	0.001	1.642	6.289
10-40 years	3.214			
Duration of occupation				
0-9 years	1.00	0.016	1.148	3.858
10-40 years	2.104			

p<0.05 considered as statistically significant value

Table VIII: Multivariate logistic regression of different variables associated with poor sleep quality (n=227)

Variables	AOR	p-value	95% CI for OR lower	95% CI for OR higher
Age			0.511	2.898
18-30 years	1.00	0.657		
31-65 years	1.217			
Marital status				
Married	2.779	0.049	1.007	7.674
Unmarried	1.00			
Smoking history				
Smoker	1.676	0.212	0.745	3.772
Non-smoker	1.00			
Year of smoking				
0-9 years	1.00	0.422	0.566	3.886
10-40 years	1.484			

p<0.05 considered as statistically significant value

Discussion:

The study aimed to investigate the impact of socio-demographic and socio-economic factors on anxiety and sleep quality among day laborers in Bangladesh during the COVID-19 pandemic. These workers, primarily male (96.9%), were from Faridpur district, with an age range of 18-65 years (mean age 32.46 ± 12.01). The findings highlight notable socio-demographic differences compared to other countries[3,6,] such as China, where a study found a more balanced gender distribution (45.4% male and 54.6% female)[2]. This gender disparity may stem from conservative cultural norms in Bangladesh, which restrict women from working as day laborers. The educational level of Bangladeshi day laborers was also lower, with 51.5% having only completed primary education, whereas Chinese participants had higher educational qualifications[2]. The study also observed differences in marital status, with 72.7% of Bangladeshi participants being married, which contrasts with the 54% observed in a similar Chinese study[14]. The family structure in Bangladesh appeared more nuclear, with 74.4% of respondents living in families of 1-5 members. The daily income of participants ranged from 200 to 800 taka, with 47.1% earning between <500 taka[12,15]. Despite working predominantly 8 hours or less daily, the study identified violations of labor laws, with many laborers working beyond the regulated hours due to economic instability[16]. Among the participants, 64.3% spent their leisure time gossiping, while 32.2% watched TV, and 3.5% played games. Regarding smoking habits, 47.1% were current smokers, 40.1% had never smoked, and 12.8% were past smokers. In a similar study found that 46.7% of participants were smokers and 53.3% were nonsmokers[17]. These findings are consistent with other studies that report higher rates of current smoking among day laborers. In terms of mental health, the study revealed that 75.3% of participants had minimal anxiety, and 25.6% reported poor sleep quality. The studies indicated that the general population experienced an increase in anxiety-related symptoms and sleep disorders during the occurrence of a major infectious disease[10,18]. A significant association was found between anxiety and sleep quality, with higher anxiety correlating to poorer sleep[9,19]. Factors such as age, marital status, smoking, and years of work experience were significantly associated with sleep quality (p<0.05), which were almost similar to these studdies[20,21]. Specifically, unmarried participants were more likely to experience poor sleep, potentially due to fewer family-related responsibilities compared to their married counterparts[22]. These results were consistent with similar studies conducted in other regions, such as China[20] and Latin America[23], which observed high levels of anxiety and poor sleep quality among day laborers. The study emphasizes the psychological toll the COVID-19 pandemic has had on vulnerable populations, particularly day laborers. It also underscores the need for policies to address the socio-economic disparities and mental health challenges faced by these workers.

Conclusion:

The countries faced multiple challenges as a result of the global spread of COVID-19 and associated morbidity and mortality. The mental health problems of day laborers are one such underappreciated and neglected topic. Day laborers' sleep problems and generalized anxiety disorder have been associated to economic crisis, unemployment, and poverty. These factors are also related to various co-morbidities that may harm day laborers' physical and mental health.

Recommendations:

To discourse mental health concerns and provide psychological support to day laborers, health authorities need to think about establishing multidisciplinary mental health teams at the local, regional, and national levels. In order to help people deal with economic uncertainty and lack of financial security, we need maintain socioeconomic stability during this crisis. We need to make sure that day

workers have enough leisure time and economic diversity. To provide day workers with timely, high-quality, crisis-oriented psychological assistance, the government, non-governmental organizations, and local authorities should work together to address these problems.

Conflict of Interests: None.

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