

Original Research Article

Mental health status among intern doctors during COVID-19 pandemic in Bangladesh

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Received: 11 June 2026

Accepted: 08 July 2026

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ABSTRACT

Background: The COVID-19 pandemic has imposed substantial physical and psychological burdens on healthcare workers worldwide, with high levels of anxiety, depression and stress reported among physicians, especially frontline staff. Intern doctors in Bangladesh, who work long hours in high-risk and resource-limited settings, may be particularly vulnerable; however, data on this group remain limited. This study aimed to assess the prevalence and determinants of depression, anxiety and stress among intern doctors in Bangladesh during the pandemic.

Methods: This cross-sectional study included 317 intern doctors from public and private medical college hospitals, recruited through convenience sampling between April and July 2021. Data were collected using a structured questionnaire covering sociodemographic and work-related variables, along with the DASS-21 scale to measure depression, anxiety and stress. Statistical analysis was performed using SPSS, applying descriptive statistics, chi-square tests and binary logistic regression to identify factors independently associated with mental health outcomes, with $p < 0.05$ considered significant.

Results: A high prevalence of psychological distress was observed: 73.2% of participants had depression, 69.4% had anxiety and 51.1% had stress, with many experiencing severe or extremely severe symptoms. Working in private hospitals was independently associated with higher odds of depression (OR 2.25), anxiety (OR 3.81) and stress (OR 2.31). Experiencing occupational stigma and working overtime were also significant contributors.

Conclusions: Intern doctors in Bangladesh experienced a substantial mental health burden during COVID-19. Targeted psychological support, improved workplace conditions and organizational interventions are urgently needed to safeguard their well-being.

Keywords: COVID-19 pandemic, DASS-21, Depression anxiety and stress, Intern doctors

INTRODUCTION

The worldwide health emergency caused by the coronavirus disease (COVID-19), which emerged in late

2019 in Wuhan, the capital of Hubei province, China.¹ COVID-19 was detected in Bangladesh in late March 2020 and Bangladesh has among the highest total case counts in Asia, despite control and mitigation measures.² The

COVID-19 seroprevalence among health care workers in Dhaka is estimated to be approximately 10.79% between April and May 2020.³ The pandemic caused by the SARS-CoV-2 virus, which develops COVID-19, is wreaking havoc on the global population's mental well-being. As countries have implemented harsh social distancing measures to combat infection, stress has increased. In the future months, presumably, there is an increasing danger of psychiatric conditions linked to COVID-19 limitations.⁴

Additionally, there are indications that a new wave is forming as a result of the rise in mental disorders and substance misuse.⁵ Workload, a lack of safety equipment, as well as the fear of spreading the disease to friends and family, all contribute towards the hazard, potentially provoking anxiety, exhaustion, melancholy, irritability, terror and insomnia. Healthcare professionals are particularly at risk of contracting infection and infecting others in their private environment, resulting in increased emotional distress. Despite efforts to adhere to government-mandated measures to contain the epidemic, studies in 2003 on severe acute respiratory syndrome (SARS) observed that, while those who were afflicted and healthcare personnel were encouraged to follow quarantine to avoid infecting others, emotional distress led some to break quarantine.⁶

Similarly, doctors had a higher prevalence of sleep problems, anxiety, depression, somatization and obsessive-compulsive behaviors than non-medical health workers, according to a survey of 2182 individuals.⁷ Frontline clinicians in Emergency and Intensive Care Units were 1.4 times as likely to be fearful and double as likely to experience anxiety and depression as administrative staff.⁸ Clearly, the pandemic has resulted in a rise in the prevalence of mental health problems among the global population.⁹ To establish a holistic strategy to support people at the very first line of treatment, it is essential to understand the factors that impact these findings and the relationship (or lack thereof) between this result and mental health. Under the direction of a medical officer, intern physicians conduct, among other things, patient visits, compile clinical histories, monitor the daily progression of patients' conditions and attend teaching meetings. While trainee physicians' responsibilities vary by training facility and residency program, they generally accept patients, complete rotations across several medical specialties and perform daily patient assessments.

Internships and medical residencies are conducted at public and private hospitals throughout Bangladesh and are linked with the medical college and hospitals. Due to their position on the front lines of treatment, these physicians work long hours in hospitals and care centers, performing shifts on both weekdays and weekends. This increases the danger of infection due to the increased workloads associated with the public health system reaching capacity, as well as the shortage of protective gear, which may act as a catalyst for mental health problems. Mental stress is the primary indicator of risk for

psychiatric illnesses and continuous sustained stress might raise the likelihood of developing depression and other psychiatric disorders.¹⁰ Investigating the emotional well-being of medical interns and recently graduated physicians is critical for developing and implementing strategies to prevent and treat potential injuries, thereby improving the performance of professional activities. Thus, the purpose of this study was to determine the influence of the COVID-19 pandemic on the mental health of intern doctors in Bangladesh.

METHODS

A cross-sectional study was conducted to assess the mental health status among intern doctors in Bangladesh during the COVID-19 pandemic. The study population comprised intern doctors working in various public and private medical college hospitals across Bangladesh. Data collection was conducted via telephone interviews and face-to-face interactions, using a standardized, validated questionnaire. The study period extended from April 2021 to July 2021, a time during which the COVID-19 pandemic had substantial psychosocial impacts on healthcare professionals.

A total of 317 intern doctors participated in this study, representing both government and private medical institutions. The inclusion criteria included all intern doctors from public and private medical colleges in Bangladesh who were willing to participate and provided written informed consent. Individuals who declined participation or had a previously diagnosed psychological disorder were excluded from the study. Respondents were selected using convenience sampling, with consideration of accessibility and willingness to participate during the pandemic. All participants provided informed written consent before inclusion. They were clearly informed of the study's purpose and anonymity and confidentiality were strictly maintained throughout. Ethical approval was obtained and all procedures were conducted in accordance with the principles outlined in the Declaration of Helsinki.

Data were collected using a structured questionnaire that consisted of several components: sociodemographic variables (age, gender, marital status, income, etc.), work-related factors (type of hospital, workload, availability of personal protective equipment, experience of stigma and government incentives) and clinical variables (presence of chronic diseases, comorbidities and family health conditions). Mental health status was assessed using the depression, anxiety and stress scale-21 (DASS-21)¹¹, a validated psychometric instrument widely used to measure psychological distress in similar populations.

Data were entered, cleaned and analyzed using SPSS (e.g., version 26.0). Continuous variables (DASS-21 scores) were summarized as mean±SD and categorical variables as frequencies and percentages; DASS-21 subscales were categorized into severity levels using standard cut-offs. Associations between predictors and depression, anxiety

and stress were first examined with chi-square tests, then with separate binary logistic regression models, reporting odds ratios with 95% confidence intervals and $p < 0.05$ was considered statistically significant.

RESULTS

Among the 317 intern doctors, depressive symptoms were prevalent, as 73.2% met criteria for at least mild depression (any depression, $n=232$), including 22.4% with moderate, 17.7% with severe and 22.7% with extremely severe depression, with a mean depression score of 17.6 ± 11.3 . Anxiety was also highly prevalent, with 69.4% having at least mild anxiety (any anxiety, $n=220$); one third of participants (33.1%) fell in the extremely severe anxiety category and the mean anxiety score was 14.7 ± 10.9 . Stress was somewhat less frequent but still substantial, with 51.1% having at least mild stress (any stress, $n=162$), including 19.2% severe and 10.1% extremely severe stress and a mean stress score of 16.7 ± 11.8 . Overall, most intern doctors reported clinically relevant levels of at least one mental health problem.

The figure shows a high burden of psychological symptoms among intern doctors: 73.2% have at least some level of depression, 69.4% have anxiety and 51.1% experience stress. Depression is the most common condition, followed closely by anxiety. At the same time, about half of the interns report significant stress, indicating that mental health problems are widespread in this group during the COVID-19 pandemic.

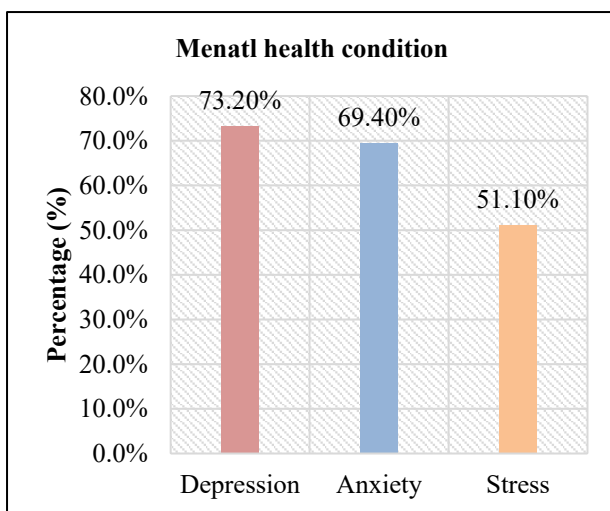


Figure 1: Distribution of the respondents by Mental health condition (n=317).

Depression, anxiety and stress were distributed across socio-demographic groups, but with a clear predominance in younger and female interns. The vast majority of those with depression, anxiety or stress were aged 23–26 years (for example, 88.8% of depressed and 89.1% of anxious interns), reflecting the typical age profile of interns. Females contributed slightly more cases than males; for

instance, 54.7% of depressed and 54.5% of anxious interns were female, indicating a modest gender skew. Most affected interns came from lower income brackets, with around 89.6% of depressed, 90.9% of anxious and 88.9% of stressed interns reporting a monthly income $\leq 15,000$ taka. Family and household factors showed that many affected interns were embedded in relatively larger and medically vulnerable families. Among those with depression, 55.6% lived in families with more than four members and similar patterns were seen for anxiety (54.1%) and stress (51.9%). Around two-thirds of interns with each condition had at least one family member aged over 60 years, for example, 65.9% among those depressed and 66.0% among those stressed and around 80% in each mental health group reported at least one family member with a chronic disease.

Workplace conditions during COVID-19 were strongly related to mental health outcomes. A higher proportion of depressed, anxious and stressed doctors were working in private hospitals than in government hospitals, for example, 59.9% of depressed and 56.4% of anxious interns were in private institutions. Most of those with mental health problems reported insufficient PPE, with 69.4% of depressed, 70.5% of anxious and 70.4% of stressed interns indicating inadequate precautionary measures.

Experience of stigma due to being a doctor was also frequent among those with poor mental health, affecting 58.6% of depressed, 60.5% of anxious and 62.3% of stressed interns. In addition, around two-thirds of those with depression, anxiety or stress were working overtime during COVID-19, for example, 65.9% of depressed and 66.8% of anxious interns. These patterns point to occupational exposure, perceived risk and stigma as important correlates of psychological burden.

In the final adjusted models, type of hospital, stigma and to a lesser extent, overtime work remained the key factors associated with mental health outcomes. Interns working in private hospitals had more than double the odds of depression (OR 2.247, 95% CI 1.240–4.070, $p=0.008$), almost four times the odds of anxiety (OR 3.806, 95% CI 2.038–7.106, $p<0.01$) and more than double the odds of stress (OR 2.31, 95% CI 1.417–3.765, $p=0.001$) compared with those in government hospitals.

Experiencing stigma due to occupation showed a borderline association with depression (OR 1.704, 95% CI 0.980–2.963, $p=0.059$) and a significant association with both anxiety (OR 1.91, 95% CI 1.106–3.298, $p=0.02$) and stress (OR 1.703, 95% CI 1.042–2.783, $p=0.034$). Working overtime during COVID-19 increased the odds of all three conditions, although these estimates did not reach conventional statistical significance after adjustment; for example, OR 1.648 for depression ($p=0.074$) and OR 1.407 for stress ($p=0.182$). Taken together, these results indicate that private sector work and stigma are robust independent risk factors for poor mental health among intern doctors in this setting.

Table 1: Severity and prevalence of depression, anxiety and stress among intern doctors (DASS-21, n=317).

Domains	Category (DASS-21)	Frequency (N)	(%)
Depression	Normal (0–9)	85	26.8
	Mild (10–13)	33	10.4
	Moderate (14–20)	71	22.4
	Severe (21–27)	56	17.7
	Extremely severe (≥ 28)	72	22.7
	Any depression (≥ 10)	232	73.2
Anxiety	Normal (0–7)	97	30.6
	Mild (8–9)	20	6.3
	Moderate (10–14)	57	18
	Severe (15–19)	38	12
	Extremely severe (≥ 20)	105	33.1
	Any anxiety (≥ 8)	220	69.4
Stress	Normal (0–14)	155	48.9
	Mild (15–18)	30	9.5
	Moderate (19–25)	39	12.3
	Severe (26–33)	61	19.2
	Extremely severe (≥ 34)	32	10.1
	Any stress (≥ 15)	162	51.1

Table 2: Distribution of depression, anxiety and stress by socio-demographic characteristics (n=317).

Factors	Category	Depression N (%)	Anxiety N (%)	Stress N (%)
Age group (in years)	23–26	206 (88.8)	196 (89.1)	181 (87.0)
	27–30	26 (11.2)	24 (10.9)	21 (13.0)
Gender	Male	105 (45.2)	100 (45.5)	75 (43.3)
	Female	127 (54.7)	120 (54.5)	87 (53.7)
Marital status	Unmarried	184 (79.3)	171 (77.1)	128 (79.0)
	Married	88 (37.9)	49 (22.3)	34 (21.0)
Monthly income (taka)	≤ 15 000	208 (89.6)	200 (90.9)	144 (88.9)
	> 15 000	24 (10.3)	20 (9.1)	18 (11.1)

Table 3: Distribution of depression, anxiety and stress by family and household characteristics (n=317).

Factors	Category	Depression N (%)	Anxiety N (%)	Stress N (%)
Number of family members	≤ 4	103 (44.4)	101 (45.9)	78 (48.1)
	> 4	129 (55.6)	119 (54.1)	84 (51.9)
One or more children in family	Yes	76 (32.8)	73 (32.2)	51 (31.5)
Any family member aged > 60 years	Yes	153 (65.9)	143 (65.0)	107 (66.0)
Any family member with chronic disease	Yes	186 (80.2)	176 (80.0)	130 (80.2)

Table 4: Distribution of depression, anxiety and stress by occupational and workplace factors during COVID-19 (n=317).

Factors	Category	Depression N (%)	Anxiety N (%)	Stress N (%)
Type of hospital currently working	Government	93 (40.1)	96 (43.6)	73 (45.1)
	Private	139 (59.9)	124 (56.4)	89 (54.9)
Precautionary measures (PPE) at work	Sufficient	71 (30.6)	65 (29.5)	48 (29.6)
	Insufficient	161 (69.4)	155 (70.5)	114 (70.4)
Experience of stigma due to occupation	Yes	136 (58.6)	133 (60.5)	101 (62.3)
	No	96 (41.4)	87 (39.5)	61 (37.7)
Got any extra incentive by Government	Yes	8 (3.4)	8 (3.6)	6 (3.7)
	No	224 (96.6)	212 (96.4)	156 (96.3)
Working overtime during COVID-19	Yes	153 (65.9)	147 (66.8)	110 (67.9)
	No	79 (34.1)	73 (33.2)	52 (32.1)

Table 5: Multivariable logistic regression of factors associated with depression, anxiety and stress among intern doctors (n=317).

Risk factors	Depression OR (95% CI)	P value	Anxiety OR (95% CI)	P value	Stress OR (95% CI)	P value
Type of hospital currently working (Private)	2.247 (1.240–4.070)	0.008	3.806 (2.038–7.106)	<0.01	2.31 (1.417–3.765)	0.001
Precautionary measures (PPE) in workplace	–	–	0.865 (0.502–1.491)	0.62	–	–
Experience of stigma due to occupation	1.704 (0.980–2.963)	0.059	1.91 (1.106–3.298)	0.02	1.703 (1.042–2.783)	0.034
Working overtime during COVID-19	1.648 (0.952–2.851)	0.074	1.58 (0.910–2.743)	0.104	1.407 (0.852–2.323)	0.182

DISCUSSION

COVID-19 is a pandemic disease that emerged in Wuhan, China and has spread worldwide since December 2019.¹² This infectious disease causes severe acute respiratory illness. It also affects the mental health situation of almost everyone, as well as the physicians. Compared with previous epidemics, both anxiety and depression were found to be higher in physicians in Bangladesh during COVID-19.¹³

Several studies have been conducted on the mental health conditions of different professionals. However, very little research on the mental health problems of physicians during the COVID-19 outbreak in Bangladesh has been reported so far (36–38). The current study aimed to assess the mental health status of intern doctors in Bangladesh during the COVID-19 pandemic. A total of 317 doctors were enrolled in the study. The current study revealed that the prevalence of depression was 73.2%, anxiety was 69.4% and stress was 51.1% among the intern doctors. The majority (53.3%) of the doctors were female. During the early stages of the COVID-19 epidemic in Bangladesh, the prevalence of anxiety (32.5%) and depression (34.2%) among physicians during the COVID-19 outbreak was high in comparison to previous epidemics.¹⁴ In the study of Lai et al, depression was found in 50.4% cases, 44.6% had anxiety and 71.5% were distressed. Most participants were female.¹⁵ As the pandemic situation was getting worse day by day, no one could predict its outcome. So, direct comparisons of previous studies in measuring the psychological impact on physicians may not be similar. Place and time of study are likely to impact mental health. A considerable proportion of doctors in Bangladesh have experienced psychological symptoms due to the COVID-19 pandemic.¹⁶ Qiu et al also revealed that the COVID-19 epidemic has caused serious threats to people's physical health and lives.

It has also triggered a wide variety of psychological problems, such as panic disorder, anxiety and depression.¹² Logistic regression showed that depression, anxiety and stress levels were significantly higher in those who worked in a private hospital, experienced stigma due to their

occupation and worked overtime during COVID-19. Besides, the anxiety level was also significantly higher in those who did not get sufficient PPE. Depression, anxiety and stress were more common in females than in males, but no significant difference was found. Additionally, the current study did not find any association between marital status, chronic disease or other sociodemographic factors. Khatun et al found. According to the study of Khatun et al, multivariate logistic regression showed that marital status, current job location and working hours per day were significant predictors for anxiety. In addition, gender, age and marital status were highly significant predictors for depression.¹⁴ Poor mental health may impede physicians' professional performance, adversely affect the quality of healthcare provided and also likely influence patient health outcomes, as in the study by Barua et al.^{16,17} Univariate analysis (Chi-square test) showed an association between anxiety and depression and several factors, including gender ($p=0.03$), inadequate resources ($p<0.001$) and the presence of chronic disease ($p=0.001$). However, in the multinomial regression, only inadequate resources in a working setting were found to be a significant predictor for severe, moderate and mild anxiety and depression.¹⁶ In the current study, differences were observed in marital status, age group, income and chronic disease status among intern doctors at the hospital. The current study identified several factors contributing to the burden of psychological symptoms among intern doctors.

Working place, availability of resources, workload and experiencing stigma due to occupation were the most significant. Bangladesh is not the only country that faced a shortage of resources during the pandemic. The shortage of such resources has also been observed in many other countries due to a distorted global supply chain.¹⁸ Factors that are responsible for poor mental health status among doctors must be minimized to improve the healthcare system and maintain doctor-patient's relationships.

Limitations

This study has several limitations. It used a cross-sectional design with convenience sampling from selected hospitals, so the findings may not be generalizable to all doctors and

cannot establish causality. Self-reported DASS-21 scores indicated mental health status without a clinical diagnosis. There were no pre-pandemic or non-intern comparison groups and important factors such as prior psychiatric history, coping strategies and access to mental health support were not assessed, so residual confounding is likely.

CONCLUSION

The present study found that a high percentage of Bangladeshi intern doctors have been suffering from depression, anxiety and stress during the pandemic. There is an urgent need to develop methods to lower the dangers of depression, anxiety and stress among intern doctors. Counselling for mental health coping treatments should be based on the COVID-19 protocol standards. Interventions should also highlight intern doctors' abilities to operate safely and effectively while delivering care to their patients. Such treatments include triaging patients by clinic staff members for symptoms and/or exposure to COVID-19 before referring them to a physician, ensuring the availability of personal protective equipment and implementing personal protective procedures.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Haque MM, Chowdhury MTS, Islam S, Shafaatullah AA, Zisan FMW, Rangan IK, et al Mental health status among intern doctors during COVID-19 pandemic in Bangladesh. *Int J Res Med Sci* 2026;14:3142-7.