Original Article

Prevalence of Stress, Anxiety and Depression among Intern Doctors during Hospital Ward Rotations: A Multicentre Experience from Bangladesh

Ahsan K[1], Zaher A[2], Roy S[3], Nurunnabi ASM[4], Sera TM[5]

ABSTRACT

Stress is a common response to demanding situations and can adversely affect emotional, physical, and cognitive functioning. Intern doctors working in different medical college hospitals are particularly vulnerable due to heavy workloads, night duties and continuous exposure to critically ill patients. In Bangladesh, an extremely low doctor–patient ratio and overcrowded public hospitals further intensify their burden. A cross-sectional, descriptive study was conducted, between September 2024 and August 2025, to assess psychological distress among 118 purposively selected intern doctors from four government medical college hospitals in Dhaka city, Bangladesh. We used a pre-tested, structured questionnaire for data collection. Level of stress was measured using Kessler 10 Psychological Distress (K10), while anxiety level was determined using the General Anxiety Disorder 7 (GAD 7) scale and depression level by using Patient Health Questionnaire 9 (PHQ-9). The mean age of the participants was 25.3±0.83 years; most of the participants belonged to the 25–26 years age group. Male-female ratio was 1:1.5. The prevalence of stress, anxiety, and depression were found high at 68%, 76%, and 77% respectively. Logistic regression analysis showed that female and unmarried interns had markedly higher odds of stress (OR=26.6), while high workload increased anxiety risk (OR=6.11). Severe sleep disturbance strongly predicted all three conditions. Interns in the 9–12-month duration group had significantly higher odds of depression (OR=21.7). Overall findings highlight substantial psychological distress among intern doctors, closely linked to gender, workload, sleep quality, workplace stress, and internship duration. Improved working conditions and targeted mental health support are urgently needed to protect wellbeing of the intern doctors working at different medical college hospitals across the country.

Keywords: *Stress, anxiety, depression, intern doctors, medical education, Bangladesh*

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INTRODUCTION

Stress is a feeling of emotional pressure resulting from the body's reaction to life events.[1] Stress and its psychological manifestations are inherent in human life. These are a major source of concern in the modern day society. Stress affects daily life activities and sleep qualities. Stress in individuals disrupts the normal person's physical or mental wellbeing.[2] Stress has been found to be associated with anxiety and depression interpersonal conflict, sleep problems, and lower academic and clinical performance.[2] Stress has negative effects on attention, memory, decision making and performance.[3] Stress can be positive or negative. Positive stress is called eustress and negative

1. Prof. Kamrul Ahsan, Professor, Department of Paediatrics, Mugda Medical College & Hospital, Dhaka-1214, Bangladesh. Email: kamrul.hersmile@gmail.com (Corresponding author)
2. Dr. Arifa Zaher, Senior Consultant, Department of Obstetrics & Gynaecology, Sarkari Karmachari Hospital, Dhaka-1000, Bangladesh.
3. Dr. Subrata Roy, Senior Consultant, Department of Paediatrics, Mugda Medical College Hospital, Dhaka-1214, Bangladesh.
4. Dr. Abu Sadat Mohammad Nurunnabi, Graduate Student, Mitch and Leslie Frazer Faculty of Education, Ontario Tech University, Oshawa, ON, Canada.
5. Tushnad Mahzabeen Sera, MBBS Student, Mugda Medical College, Dhaka-1214, Bangladesh.

stress distress. Eustress triggers the body alarm, and enhances attention, performance and creativity. It has temporary effects only. Distress has negative effects on the body. Stress represents the wear and tear of the body. Chronic stress can have serious effects on human health and behavior.[2]

Undergraduate medical education is one of the most academically and emotionally demanding programmes in Bangladesh. After completion of MBBS programme, the mandatory one-year internship training adds to the already high level of stress associated with undergraduate medical education.[1,4] Intern doctors working in different medical college hospitals encounter various challenges in their work place, including academic demands, peer competition, limited leisure time, and frequent exposure to patients' suffering. Work place stress can negatively affects quality of work place performance, daily activities of life and sleep qualities. These challenges make the training more stressful. High levels of stress harm physical and mental health.[1]

Bangladesh is one of the most populous country of the world with the population of 18 billion. Doctor patient ratio is a major concern in health care delivery system. The current doctor-patient ratio in Bangladesh is only 5.26 per 10,000 population.[5] Bangladesh is one of the countries experiencing a significant shortage of healthcare workers.[6] As tertiary care facilities and referral centres, our medical college hospitals are overburdened.[6,7] High workload and not having personal free time are sources of dissatisfaction with work.[7] Medical practice is a stressful job by its nature. Dealing with noncompliant and recalcitrant patients, patient not responding to treatment or caring for dying patient are stressful job.[8] On the other hand, night shift resulting negative effects on hours of sleep and daytime sleepiness and fatigue, decrease the performance and increase the risk of accidents.[9]

The Diagnostic and Statistical Manual (DSM-5) specifically describes anxiety as excessive worry and apprehensive expectations, occurring more days than not for at least 6 months, about a number of events or activities, such as work or school performance, while depression (major depressive disorder) is individual must be experiencing depressed mood or loss of interest or pleasure like symptoms during the same 2-week period.[10] These conditions can damage both personal and professional reputations. Negative consequences may include decreased commitment, substance abuse, suicidal ideation, clinical incompetence, medical mistakes, and poor job performance. These adverse effects can ultimately diminish the quality of patient care.[1,7-9] Evidence showed that the prevalence of anxiety among house officers in Malaysia was observed between 60.7% and 63.7%, while depression was found in 42.9%, and stress in 57.1% of the study participants.[11]

Many studies have investigated the prevalence of anxiety, depression, and stress among medical interns/residents in different countries across the globe. However, there is insufficient information about such study in a developing country like Bangladesh. Therefore, this study was propsed to investigate the rate of anxiety and depression among intern doctors of Bangladesh. We conducted the survey among intern doctors working in four public medical college hospitals in Dhaka city, Bangladesh. Dhaka is the most populous city in Bangladesh and those government hospitals catchment area is substantially large, and hence the workload is fairly significant.

METHODS

This cross-sectional, descriptive study was conducted, between September 2024 and August 2025, on 118 purposively selected intern doctors from four government medical college hospitals in Dhaka city, Bangladesh. Intern doctors from Dhaka Medical College Hospital, Shaheed Suhrawardy Medical College Hospital, Sir Salimullah Medical College & Mitford Hospital, and Mugda Medical College Hospital were invited to take part in this study. We adopted a purposive sampling method. Intern doctors having completed at least four weeks of clinical rotation in different departments such as Medicine, Surgery, Paediatrics, Obstetrics & Gynaecology and experience of evening and night shift duties were enrolled in this study. Our exclusion criteria were: i) less than four weeks training period in total training period as intern, ii) having no experience of evening and night shift duties, and iii) declining consent to participate in the study. Our data collection tool was a pre-tested, structured questionnaire including demographic variables, stress indicators, and standardized scores for stress, anxiety and depression.

This self-report, pre-tested, structured questionnaire was used as tool having four parts. The first part collected sociodemographic data like age, gender, marital status, residence, duration of internship training and perception of stress. The second part measured the level of stress using Kessler 10 Psychological Distress (K10), while the third part measureed anxiety level using the General Anxiety Disorder 7 (GAD 7) scale and the fourth part measured depression level using Patient Health Questionnaire 9 (PHQ-9).

In this study, Kessler 10 Psychological Distress (K10) instrument was employed to measure stress levels. The K10 instrument has been widely used in population based epidemiological studies to measure current (4 weeks) distress, and is available in several languages. The K10 works without any substantial bias with respect to sex and educational level. The instrument has been designed to measure the severity and level of distress associated with psychological symptoms in population surveys. The K10 questionnaire consists of ten questions in the form of "how often in the past month did you feel" and offers specific symptoms such as "tired out for no good reason", "nervous", and "sad or depressed". The five possible responses to each question range from "none of the time" to "all of the time" and are scored from 1–5, respectively. The scores for all questions are summed to obtain a total score. The total scores are interpreted as follows: a score 20 is considered to represent no stress of any level; a score of 20–24 represents mild stress; a score of 25–29 represents moderate stress; and a score of 30–50 represents severe stress.[3]

To assess anxiety levels, we used the 7-item Generalized Anxiety Disorder-7 (GAD-7) scale. The GAD-7 scale comprises of seven highly relevant questions selected from 13 items (nine questions from the Diagnostic and Statistical Manual of Mental Disorder, 4th Edition, and four questions from the Anxiety Symptom Scale). The answers were scored as follows: 0 point for not at all, 1 point for several days, 2 points for more than half of the days, and 3 points for nearly every day. The score was scaled from 0–21 (0–4: without anxiety symptoms, 5–9: with mild anxiety symptoms, 10–14: with moderate anxiety symptoms, and 15–21: with severe anxiety symptoms).[12]

We used the 9-item Patient Health Questionnaire-9 (PHQ-9) to assess the level of depression. The participants were instructed to answer the questions in order to evaluate the frequency of the particular symptoms they felt during the duration of internship training through rotation. The answers were scored as follows: 0 point for not at all, 1 point for several days, 2 points for more than half of the days, and 3 points for nearly every day. The score was scaled from 0–27 (0–4: without depression symptoms, 5–9: with mild depression symptoms, 10–14: with moderate depression symptoms, 15–19: with moderate to severe depression symptoms, and 20–27: with severe depression symptoms).[13]

It may be mentioned that the participating intern doctors were informed that their participation would be voluntary, and in no way it would affect their performance in internship training. Besides, due to the sensitive nature of some questions, existing mental health support was provided to them including consultation with the psychiatrist, if needed. Moreover, as being vulnerable group of study participants as well as posing risks of suicidal ideation/thoughts, their anonymity, confidentiality and effective care during and after study were strictly ensured.[14]

After collection, data was scrutinized, cleaned, and coded. Then data analysis was done using R Statistical Software version 4.4.1 for Windows; R Core Team 2024 (R Foundation for Statistical Computing, Vienna, Austria). Data was expressed in the form of frequencies and percentages. Associations between variables was assessed using Chi-square (χ^2) test. Statistical significance was set at a two tailed p-value of <0.05. Logistic regression analysis was also done.

RESULTS

A total of 118 intern doctors were included in this study. The mean age was 25.3±0.83 years; most of them were in the 25–26 years age group. Male-female ratio was 1:1.5. The prevalences of stress, anxiety and depression among interns were found 68%, 76% and 77% respectively (Table-I). Anxiety levels differed significantly by gender (p=0.027); female interns showed higher rates of severe stress (39% vs. 19%) and severe anxiety (25% vs. 6%) (Table-II). Regarding workload, self-perceived workplace stress of the interns was significantly associated with measured

stress (p=0.034) and anxiety (p=0.028) (Table-III). Among male interns, training duration was significantly associated with stress (p=0.018) and anxiety (p=0.042), most notable in the 9–12-month group of intern doctors (Table-IV). Logistic regression analysis showed that female and unmarried interns had markedly higher odds of stress (OR=26.6). Heavy workload increased anxiety risk (OR=6.11). Severe sleep disturbance strongly predicted all three conditions. Interns in the 9–12-month duration group had significantly higher odds of depression (OR=21.7) (Table-V).

Table-I: *Prevalence of stress, anxiety and depression among intern doctors (N=118)*

Variables	Frequency
Stress Prevalence	
No	38 (32%)
Yes	80 (68%)
Anxiety Prevalence	
No	28 (24%)
Yes	90 (76%)
Depression Prevalence	
No	27 (23%)
Yes	91 (77%)

Table-II: *Gender related difference in stress and anxiety levels (N=118)*

Variables	Male n=47	Female n=71	p-value	Test Statistics
Stress				
No stress	19 (40%)	19 (27%)	0.106	χ^2=6.13, df=3
Mild stress	10 (21%)	15 (21%)		
Moderate stress	9 (19%)	9 (13%)		
Severe stress	9 (19%)	28 (39%)		
Anxiety				
No anxiety symptoms	15 (32%)	13 (18%)	0.027	χ^2=6.13, df=3
Mild stress	10 (21%)	15 (21%)		χ^2=9.16, df=3
Mild anxiety	13 (28%)	23 (32%)		
Moderate anxiety	16 (34%)	17 (24%)		
Severe anxiety	3 (6.4%)	18 (25%)		

Table-III: *Associations of stress, anxiety and depression levels with perceived stress at workplace (N=118)*

Variables	Feel stressed at workplace		p-value	Test Statistics
	Yes n=93	No n=25		
Stress				
No stress	26 (28%)	12 (48%)	0.034	χ^2=8.68, df=3
Mild stress	18 (19%)	7 (28%)		
Moderate stress	14 (15%)	4 (16%)		
Severe stress	35 (38%)	2 (8.0%)		
Depression				
No depression symptoms	18 (19%)	9 (36%)	0.213	χ^2=5.82, df=4
Mild depression	15 (16%)	6 (24%)		
Moderate depression	25 (27%)	3 (12%)		
Moderate to severe depression	20 (22%)	3 (12%)		
Severe depression	15 (16%)	4 (16%)		
Anxiety				
No anxiety symptoms	17 (18%)	11 (44%)	0.028	χ^2=9.13, df=3
Mild anxiety	29 (31%)	7 (28%)		
Moderate anxiety	27 (29%)	6 (24%)		
Severe anxiety	20 (22%)	1 (4.0%)		

Table-IV: *Prevalence of stress and duration of internship training (N=118)*

Variables	Duration of internship training				
	1–4 months n=29	5–8 months n=41	9–12 months n=48	p-value	Test Statistics
Stress prevalence among male					
No	3 (30%)	10 (71%)	6 (26%)	0.018	χ^2=8, df=2
Yes	7 (70%)	4 (29%)	17 (74%)		
Stress prevalence among female					
No	7 (37%)	9 (33%)	3 (12%)	0.113	χ^2=4.36, df=2
Yes	12 (63%)	18 (67%)	22 (88%)		

Table-V: *Logistic Regression Analysis*

Variables	Stress		Anxiety		Depression	
	OR	p-value	OR	p-value	OR	p-value
Age	0.50	0.078	0.43	0.040	0.45	0.066
Gender						
Male	—		—		—	
Female	0.03	0.011	0.05	0.034	0.00	<0.001
Workload						
No	—		—		—	
Yes	1.74	0.525	6.11	0.046	1.85	0.524
Sleep qualities						
No	—		—		—	
To some extent	1.83	0.624	8.96	0.098	1.15	0.915
Mostly	9.24	0.088	22.2	0.026	3.91	0.344
Badly	17.2	0.033	40.2	0.009	8.84	0.138
Marital status						
Married	—		—		—	
Unmarried/Divorced	0.15	0.038	0.19	0.086	0.26	0.190
Institution						
Mugda Medical College Hospital	—		—		—	
Shuhrawardy Medical College Hospital	1.03	0.972	5.30	0.137	4.08	0.216
Dhaka Medical College Hospital	0.81	0.795	0.58	0.522	5.77	0.070
Sir Salimullah Medical College & Mitford Hospital	0.59	0.507	0.52	0.453	0.77	0.780
Duration of training						
1–4 months	—		—		—	
5–8 months	0.75	0.716	2.30	0.332	2.58	0.325
9–12 months	4.37	0.076	4.88	0.073	21.7	0.005
Gender * Workload						
Female * Yes	5.36	0.154	2.36	0.486	52.7	0.008
Gender * Marital status						
Female * Unmarried/divorced	26.6	0.006	45.1	0.003	120	0.002

DISCUSSION

This study assessed the prevalence and determinants of stress, anxiety, and depression among intern doctors working in different government medical college hospitals in Dhaka city, Bangladesh. The findings reveal a high burden of psychological distress among medical interns, with 68% experiencing stress, 76% anxiety, and 77% depression. These rates are consistent with earlier studies from South Asian countries that have documented similarly high levels of mental health symptoms among medical trainees due to demanding workloads, inadequate rest, and limited institutional support.[7,15-18] Evidence showed that the prevalence of depression among medical students and young doctors ranged between 25% and 80% highlighting the global nature of this issue.[19]

The substantial proportion of interns with moderate-to-severe symptoms (31% severe stress, 43% moderate-to-severe anxiety, and 35% moderate-to-severe depression) indicates a clinically significant problem. Comparable findings are observed in studies done in tertiary hospitals in Bangladesh, India, Pakistan, and Nepal, where intense clinical responsibilities and extended duty hours contribute to emotional exhaustion and psychological morbidity.[7,15-18] The high psychological burden among interns in the present study underscores the urgent need for structured well-being programmes, stress-relief interventions, and routine mental health screening in Bangladeshi internship training programmes.

In our study, female intern doctors experienced higher levels of severe stress (39% vs 19%) and severe anxiety (25% vs 6%), and gender differences in anxiety were statistically significant (p=0.027). This gender trend has been consistently reported in medical literature. Several previous studies also reported that female medical trainees more frequently experience anxiety and depressive symptoms, attributed to social expectations, workplace pressures, and gender-linked psychosocial stressors.[15,17,18] Neurobiological and hormonal factors may play an important role here. Therefore, gender-responsive mental health strategies are needed, including supportive peer networks and access to counseling services tailored for female trainees.[20]

Workload emerged as a major contributor to psychological distress, anxiety and depression. Besides, disruption of daily life, sleep disturbance and reduced work performance illustrate the toll of demanding clinical duties. Overloaded with clinical duties and sleep disturbance were widely recognized as a strong risk factor for stress, anxiety, depressive illness, and burnout among interns, as per study reports from several countries.[7,11.15-18,20-23] In this study, association between workplace stress and measured stress (p=0.034) and anxiety (p=0.028) aligns with the 'Job Demand–Control model',[24] which predicts that high demands combined with low control enhance psychological strain in our hospitals. Considering the mandatory nature of internship duties in Bangladesh, revisiting duty hours, ensuring adequate rest, and implementing structured shift schedules may help reduce these adverse outcomes.

In the present study, training duration was significantly associated with stress (p=0.018) and anxiety (p=0.042) among male interns, particularly in the 9–12-month group. This pattern may reflect cumulative burnout, increasing patient-care responsibilities, and prolonged exposure to emotionally challenging situations. Similar findings have been documented internationally, where psychological symptoms intensify during later phases of internship due to fatigue, repeated night shifts, and increased expectations.[7,11,15,21-23] These results highlight the importance of periodic well-being assessments throughout the internship year rather than a one-time final evaluation.

The findings from this study highlight a concerning mental health burden among intern doctors and reinforce the need for systemic reforms in internship training in Bangladesh, which include but not limited to ensuring reasonable duty hours and adequate rest, integrating stress-management and self-care training into internship orientation programs, implementing structured mental health support services, offering inclusive and gender-sensitive psychological support, providing counseling and peer support especially for unmarried or socially isolated interns.[25-27]

Strengths of the study include the focus on multiple teaching hospitals in Dhaka city and the use of validated psychological scales with regression analysis to identify predictors. However, the present study has certain limitations. Because it followed a cross-sectional design, it was not possible to determine any cause-and-effect relationships between the variables. Self-reporting nature of the

questionnaire could be a potential for recall bias or concerns about the stigma attached. Exclusion of intern doctors working in different private medical college hospitals may limit generalizability of the study findings.

CONCLUSION

Our study revealed a high prevalence of stress (68%), anxiety (76%) and depression (77%) among intern doctors of Bangladesh. Female gender, heavy workload, and poor sleep quality were major contributing factors. Feeling stressed at workplace strongly aligned with measured stress/anxiety. Interaction effects (female × unmarried) were strong predictors across all models. Internship duration (9–12 months) associated with greater depression risk. Medical interns are at a critical stage of their professional development and this is the transitioning from theoretical learning to hands-on patient care. During this time, they face the challenges of hospital ward rotations, which often involve high patient loads, long duty hours and need for quick decision making. These conditions expose them to substantial workplace stress, anxiety and depression that effects on health care performance and qualities of daily life. This study will help us understand the extent and impact of these mental health issues in the context of patient care, professional development, workplace culture, efficiency of the health system, sustainability, and societal expectations. It will also help to mitigate challenges faced by the medical interns during ward rotations, providing insights that can lead to better support system, improved training environments and achieving required competences in medical training.

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Ethical clearance: This study was approved by the Institutional Review Board (IRB) of Mugda Medical College, Dhaka, Bangladesh.

Authors' contribution: Conceptualization and design of the study: K Ahsan; Questionnaire formulation: K Ahsan, A Zaher, Data collection and compilation: K Ahsan, A Zaher, S Roy, TM Sera; Data analysis: K Ahsan, ASM Nurunnabi; Manuscript preparation, editing and final submission: K Ahsan, A Zaher, S Roy, ASM Nurunnabi, TM Sera.

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