Original Article

WORK STRESS OF THE PHYSICIANS WORKING IN DEDICATED COVID-19 HOSPITALS

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ABSTRACT

Background: Physicians working in dedicated COVID-19 hospitals face enormous stress due to high patient loads, ethical dilemmas, miscommunication, and the demanding nature of pandemic healthcare. Work stress can negatively impact physicians' well-being, patient care quality, and overall healthcare outcomes. This study aimed to assess the work stress among physicians in COVID-19 hospitals and examine its association with their background characteristics.

Methods: The cross-sectional study was conducted in three dedicated COVID-19 hospitals in Dhaka city; Kuwait Bangladesh Friendship Hospital, Kurmitola General Hospital, and Mugda Medical College Hospital. Data were collected from 168 physicians using a semi-structured questionnaire. Statistical analyses, including t-tests, ANOVA, and chi-square tests, were performed using SPSS.

Results: Among the respondents, 50.6% had mild stress, while 49.4% had moderate stress (Mean±SD=65.14±10.27) requiring better management. Work stress was higher among unmarried physicians (75.6%), younger age (24-29 years) groups (56%) and those with lower monthly income. Gender, religion, and family type did not show significant associations with work stress.

Conclusion: A substantial proportion of physicians experienced moderate stress, highlighting the need for effective workplace interventions. Strategies such as improving work environments, ensuring adequate rest, providing psychological support, and offering incentives can help to mitigate work stress following exposure to any public health emergency like COVID-19.

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INTRODUCTION

Stress is any action that places special physical or psychological demands upon a person, anything that can unbalance logical demands upon a person, anything that can unbalance his individual equilibrium[1]. Stress is not merely a reaction—it's a dynamic interaction between an individual and their environment. It arises when a person perceives that external demands exceed their internal resources, disrupting their physical, emotional, or cognitive balance. Physicians' in COVID-19 hospitals face high-stress situations, leading to burnout. Stressors include end-of-life issues, ethical decision making, patient suffering, disproportionate care, miscommunication, and demanding relatives. The technical nature of the COVID-19 work environment

requires advanced medical therapies, complicating communication and decision-making processes[2]. The combination of medical uncertainty, overwhelming patient loads, and personal risk created a perfect storm of stressors. These conditions not only strained their clinical capacity but also deeply affected their emotional and psychological well-being.

Work stress can be identified in various healthcare systems, offering potential for remedial interventions if its organizational correlates are identified[3]. Work stress among healthcare professionals is a pervasive issue, with prevalence rates ranging from 27% to 87% depending on the setting[4]. It affects not only individual well-being but also the quality, safety, and sustainability of healthcare delivery. Work stress can have a negative effect on an individual´s enjoyment of

work. It might even result in threatening brain and skill drain if the professionals leave their jobs prematurely to preserve their own health, ultimately leading to economic burdens. When the focus is on the physicians, work stress may lead to less willingness to undertake leadership, lower quality of medical care, reduced satisfaction level of hospitalized patients, increased level of healthcare-related infections, and higher mortality rates among the patients[5]. In addition, the COVID-19 work environment has become increasingly technical, which requires extended skills in advanced life sustaining medical therapies[2]. The COVID-19 pandemic has brought about significant change in the global health system, causing significant changes in doctors' working lives due to high workload and expected to continue in the coming years[6]. So, work stress among physicians has been an issue of growing concern. Physicians' work stress is a significant issue that requires organizational interventions to ensure the quality of patient care, highlighting the need for comprehensive support during the pandemic.

METHODS

Study design, period and settings

This cross-sectional study was conducted over a year in three dedicated COVID-19 hospitals in Dhaka: Kuwait Bangladesh Friendship Government Hospital, Kurmitola General Hospital, and Mugda Medical College Hospital. The study period spanned from January to December 2020, covering literature review, protocol development, ethical approval, data collection, analysis, and report submission.

Study population, sample size, and sampling technique

Data were collected from 168 physicians involved in treating COVID-19 patients using a purposive sampling technique. Physicians were included based on their direct involvement in patient care and willingness to provide informed consent.

Data collection

Data were collected using a pre-tested semi-structured questionnaire through face-to-face interviews. The collected data underwent verification, validation, and processing, including coding, editing, and categorization.

Data analysis

Statistical analysis was performed using SPSS version 24, employing descriptive and inferential statistical methods such as chi-square test, t-test, ANOVA, and linear regression. The findings aimed to address work stress for physicians working in COVID-19 hospitals.

Ethical clearance

Ethical clearance was obtained from the Institutional Review Board of National Institute of Preventive and Social Medicine. The Memo number was NIPSOM/IRB/2020/1225, dated 17th December 2020.

RESULTS

Background Characteristics of the physicians

Among the physician's female physicians were predominant 87 (51.8%) and male were 81 (48.2%). Majority (70.2%) of the physicians were in the age group of 30-46 years. 50 (29.8%) were between 24-29 years old. Among the total physicians 126 (75%) were married, 41 (24%) were unmarried and 01 (0.6%) were widowed. Among all 76 (45.2%) physicians have been earning in between 50,000-99,000 BDT, 74 (44%) in between 15000-49000 BDT and 18 (10.7%) in between 100000-200000 BDT monthly Among all physicians 97 (57.7%) physicians live in nuclear family and 71 (42.3%) physicians live in joint family. 82 (48.8%) physicians live in 2-4 membered family, 65 (38.7%) in 5-7 membered family and 21 (12.5%) in 8-11 membered family [Table-1].

Table 1. Background Characteristics of the physicians (n=168)

Socio-demographic Characteristics		Frequency	Percentage	Statistics
Sex	Male	87	51.8	
	Female	81	48.2	
Age Group (Years)	24-29	50	29.8	Mean: 33.18 ± 5.65
	30-53	118	70.2	Minimum: 24
	Total	168	100	Maximum: 53
Religion	Islam	147	87.5	
	Hinduism (Sanatan)	19	11.3	
	Buddhism	2	1.2	
Marital status	Married	126	75	

	Unmarried	41	24	
	Widow	1	0.6	
Educational Status	MBBS	115	68	
	Post-graduation	53	32	
Monthly family income	30000-50000	26	15.5	Mean: 133579.98 ± 146196.748 Minimum: 30000 Maximum: 400000
	51000-200000	129	76.8	
	201000-400000	13	7.7	
Family type	Nuclear family	97	57.7	
	Joint family	71	42.3	
Family member	2-4	82	48.8	Mean: 5 ± 2.248
	5-11	86	51.2	Range: 2 - 11

Distribution of physician by work stress score
Among the physician's 50.6% (85) scored 32-64, i.e., they have safe levels of stress and they manage stress very well, on the other hand 49.4% (83) scored 65-95, i.e., having moderate stress which needs better stress management [Table-2].

Table 2. Distribution of physician by work stress score

Level of stress	Frequency	Percentage	Statistics
Mild stress (32-64)	85	50.6	Mean ± SD = 65.14 ± 10.274 Minimum= 45, Maximum=90
Moderate stress (65-95)	83	49.4	
Total	168	100	

Comparison of mean ± SD of work stress with selected attributes
Table-3 showed the comparison of work stress with selected attributes. The comparison of mean work stress across selected attributes was analyzed using an independent t-test.

Female physicians had the highest mean stress (65.32±10.335). Physicians aged 24-29 years had the highest mean stress (67.06±11.541). MBBS doctors had higher stress (66.21±9.926) than postgraduates. Physicians in nuclear families experienced more stress (65.41±9.327). Hindu (Sanatan) physicians had the highest stress (68.74±9.666). Those who lived in 2-4 member families had higher stress (65.78±10.188). Those earning 15,000-49,000 BDT and monthly family income 30,000-50,000 BDT had higher stress (66.34±11.04 and 66.62±9.038, respectively). Marital status showed a significant association with work stress, with unmarried physicians having the highest mean stress (68.98±10.704, p = 0.005). Gender, age, education, family type, religion, family size, and income did not show statistically significant associations with work stress (p > 0.05).

Table 3. Comparison of mean ± SD of work stress by background characteristics

Attributes	Mean ± SD	Significance
Gender		
Male	64.95±10.269	t = - 0.233 p = 0.843
Female	65.32±10.335	
Age Group		
24-29	67.06±11.541	t = 1.582 p = 0.148
30-46	64.33±9.625	
Educational Status		
MBBS	66.21±9.926	t = 1.998 p = 0.393
Post-graduation degree	62.83±10.725	
Type of family		
Nuclear Family	65.41±9.327	t = 0.286

Joint Family	64.95±10.959	p = 0.138
Religion		
Islam	64.65±10.355	F = 1.368
Hinduism (Sanatan)	68.74±9.666	p = 0.257
Buddhism	67±1.414	
Marital Status		
Married	63.77±9.778	F = 5.445
Unmarried	68.98±10.704	p = 0.005
Widow/Widower	81±0	
Family Income		
30000-50000	66.62±9.038	F = 0.998
51000-200000	63.42±10.676	p = 0.395
201000-400000	63.46±12.461	
Family Member		
2-4	65.78±10.188	F = 2.264
5-11	60.71±10.135	p = 0.107

Level of work stress of by Background characteristics

Table-4 showed the association between socio-demographic characteristics and work stress among physicians was analyzed.

Gender: Among 87 female physicians, 46 (52.9%) had a reasonably safe level of stress, while 44 (54.3%) of 81 male physicians had very well-managed stress levels. The association was not statistically significant (p>0.05).

Age: Among 50 physicians aged 22-29 years, 28 (56%) had a reasonably safe level of stress. In the 30-46 years' age group (118 physicians), 63 (53.4%) had very well-managed stress. No significant association was found (p>0.05).

Religion: Among 147 Muslim physicians, 78 (53.1%) had very well-managed stress, while among 19 Hindu physicians, 12 (63.2%) had a reasonably safe level of stress. The association was not statistically significant (p>0.05).

Marital Status: Among 126 married physicians, 75 (59.5%) had very well-managed stress, while among 41 unmarried physicians, 31 (75.6%) had a reasonably safe level of stress. The association was statistically significant (p<0.05).

Educational Qualification: Among 115 MBBS physicians, 62 (53.9%) experienced stress, while among 53 post-graduate physicians, 32 (60.4%) had no stress. The association was not statistically significant (p>0.05).

Family Type: Among 97 physicians in joint families, 50 (51.5%) had no stress, while among 36 physicians in nuclear families, 50.7% experienced stress. The association was not statistically significant (p>0.05).

Family Size: Among physicians in 2-4 member families, 43 (52.4%) had stress; and among those in 5-11 member families, 40 (46.5%) experienced stress. The association was statistically significant (p<0.05).

Table 4. Work stress and socio-demographic characteristics of physicians (n=168)

Attributes	Work stress (%)		Total	Significance
Gender	**Mild stress**	**Moderate stress**		
Male	44 (54.3)	37 (45.7)	81 (100)	χ^2 = 0.869
Female	41 (47.1)	46 (52.9)	87 (100)	df = 1
Total	85 (50.6)	83 (49.4)	168 (100)	p = 0.351
Age group				
24-29	22 (44)	28 (56)	50 (100)	χ^2 = 1.239
30-46	63 (53.4)	55 (46.6)	118 (100)	df = 1
Total	85 (50.6)	83 (49.4)	168 (100)	p = 0.266
Religion				
Islam	78 (53.1)	69 (46.9)	147 (100)	Fisher's Exact
Hinduism (Sanatan)	7 (36.8)	12 (63.2)	19 (100)	test = 3.441
Buddhism	0 (0)	2 (100)	2 (100)	df = 2

Total	85 (50.6)	83 (49.4)	168 (100)	p = 0.116
Marital Status				
Married	75 (59.5)	51 (40.5)	126 (100)	Fisher's Exact
Unmarried	10 (24.4)	31 (75.6)	41 (100)	test = 16.473
Widow/ Widower	0 (0)	1 (100)	1 (100)	df = 2
Total	85 (50.6)	83 (49.4)	168 (100)	p = 0.000
Educational Qualification				
MBBS	53 (46.1)	62 (53.9)	115 (100)	χ^2 = 2.964
Post-graduation	32 (60.4)	21 (39.6)	53 (100)	df = 1
Total	85 (50.6)	83 (49.4)	168 (100)	p = 0.085
Family type				
Nuclear Family	35 (49.3)	36 (50.7)	71 (100)	χ^2 = 0.083
Joint Family	50 (51.5)	47 (48.5)	97 (100)	df = 1
Total	85 (50.6)	83 (49.4)	168 (100)	p = 0.773
Family Member				
2-4	39 (47.6)	43 (52.4)	82 (100)	χ^2 = 8.974
5-11	46 (53.5)	40 (46.5)	86 (100)	df = 2
Total	85 (50.6)	83 (49.4)	168 (100)	p = 0.011

DISCUSSION

A cross-sectional study was conducted from January to December 2020 to assess work of the physicians working in dedicated COVID-19 hospitals. Data were collected from the physicians of the Kurmitolla General Hospital, Kuwait Bangladesh Friendship Hospital and Mugda General Hospital. In total 168 physicians were selected by cluster sampling. Findings of this study were compared with the other relevant study and logical argument were done as follows.

The COVID-19 pandemic has presented Bangladeshi physicians with unprecedented and growing challenges. The study revealed that 50.6% of physicians had a reasonably safe level of stress, whereas 49.4% required better stress management. Notably, none of the participants exhibited high levels of stress (score range: 96-128). The mean work stress score was 65.14 ± 10.274, with a minimum of 45 and a maximum of 90. These findings suggest that although a substantial proportion of physicians manage stress well, nearly half experience moderate stress levels that could benefit from improved coping strategies. In a study[7], 59% (193) scored 65 to 95, i.e., having moderate stress which needs better stress management; 41% of the study population (136) scored 32 to 64, i.e., they have safe levels of stress and they manage stress level very well. Another study in China[8] revealed that it was very challenging for physicians participating in direct treatment procedures for infected patients, as the physicians were involved in direct treatment for infected patients face significant stress due to the high transmission efficiency, rapid deterioration, and pathogenicity of the disease. Regarding gender of the physician's 46 (52.9%) of the

female physicians had stress and 37 (45.7%) of the male physicians had stress. Female physicians have more stress (7.2%) than male physicians. Similar result found in a study[9] out of 151 physicians included in the study sample, 99 were females (65.6%) and 52 were males (34.4%). The average age of all participants was 41.09 ± 9.7 years. The average age of the participants in primary health care centers was 37.9 ± 9.3 years, while the average age of hospital doctors participating in the study was 44.17 ± 9.2 years. Regarding the education level, most of them (total 86; 57.9%) were specialists, and the lowest number of the participants was in residency (total 20; 13.2%). By analyzing the results of the questionnaire for self-assessment of stress level, it is evident that more than half of the participants (total 78; 51.7%) had a high stress level. A low stress level was found in 48.3% of participants, while 51.7% of them had a high stress level. Regarding the institution where the participants were employed, there was no significant difference (p = 0.101) for the stress level. Although not statistically significant, the highest stress level was reported by the doctors working in the Primary Health Care Center. Regarding the gender, there was no significant difference in the stress level between male and female doctors. Regarding the education level, there was no significant difference in the stress level. Regarding the marital status, there was no significant difference in the stress level. No significant differences regarding gender and place.

In another study[1] in India 144 (60%) of the male physicians had stress and 185 (58%) female physicians had stress. Male physicians have marginally more stress (2%) than female. It occurred due to COVID-19 situations. Unmarried physicians exhibited

significantly higher stress levels (68.98 ± 10.704) compared to married physicians (63.77 ± 9.778). This difference was statistically significant (p = 0.005), indicating that marital support may play a crucial role in managing work-related stress. But another study[1,10] found that married people experience higher stress levels compared to unmarried people. Regarding religion of the physicians' 147 (87.5%) were Muslim, 19 (11.3%) were Hindu and 02 (1.2%) were Buddhist. In this study work stress was maximum in Hindu (Sanatan) physicians (Mean ± SD: 68.74±9.666). A study[11] in Nigeria revealed that job stress was not significantly correlated with age, gender, years of clinical experience, religion, ethnicity, or marital status (p>0.05).

Regarding educational qualification 115 (68%) were MBBS degree and 53 (32%) had post-graduation degree. Among them work stress was maximum in graduate degree (Mean ± SD: 66.21±9.926). In another study 72 (37.5%) were post graduate physicians whilst others are graduate doctors (62.5%)[12]. Physicians earning lower monthly incomes (15,000-49,000 BDT) had the highest stress levels (66.34 ± 11.04), though the association was not statistically significant (p = 0.24). This suggests that financial stability may influence stress levels but is not a sole determinant. Physicians in nuclear families reported slightly higher stress scores (65.41 ± 9.327) compared to joint families (64.95 ± 10.959), but this difference was not statistically significant. Physicians in smaller families (2-4 members) had higher stress levels (65.78 ± 10.188) compared to those in larger families (8-11 members) (60.71 ± 10.135). The association was not significant (p = 0.107). But another study[13] found a noteworthy difference in the degree of work-related stress was seen between nuclear and joint family physicians. When compared to joint family doctors, doctors from nuclear families reported higher levels of work-related stress.

CONCLUSION

The work stress of physicians is considered high, and many are contemplating leaving the profession. These impacts, in turn, may affect the individual's motivation to work, as well as the quality of care provided to patients. Special attention should be given to reduce the work stress of the physicians such as positive attitude, ensure healthy work environment, adequate leisure time, special medical care, incentive and transport should be ensured. This is particularly important to improve the quality of life by reducing work stress of the physicians to enhance their professional performance and hence the care of the patients.

REFERENCES

1. Kushal A, Gupta S, Mehta M, Singh MM. Study of stress among health care professionals: A systemic review. Int J Res Foundation Hosp Healthcare Adm. 2018 Jan;6(1):6-11.

2. Talaee N, Varahram M, Jamaati H, Salimi A, Attarchi M, Kazempour Dizaji M, Sadr M, Hassani S, Farzanegan B, Monjazebi F, Seyedmehdi SM. Stress and burnout in health care workers during COVID-19 pandemic: validation of a questionnaire. Journal of Public Health. 2020 Jan 1:1-6.

3. Siegrist J, Shackelton R, Link C, Marceau L, von dem Knesebeck O, McKinlay J. Work stress of primary care physicians in the US, UK and German health care systems. Social science & medicine. 2010 Jul 1;71(2):298-304.

4. Joshi K, Modi B, Singhal S, Gupta S. Occupational Stress among Health Care Workers [Internet]. Identifying Occupational Stress and Coping Strategies. IntechOpen; 2023. Available from: http://dx.doi.org/10.5772/intechopen.107397

5. Dyrbye LN, Shanafelt TD, Johnson PO, Johnson LA, Satele D, West CP. A cross-sectional study exploring the relationship between burnout, absenteeism, and job performance among American nurses. BMC nursing. 2019 Dec;18:1-8.

6. Sharmin S, Khanom F, Rahman ZS, Tonik TM, Abbas G, Khanam F. Satisfaction Levels in Doctors About Workplace Environment During the COVID-19 Pandemic: Experiences from Tertiary Hospitals in Dhaka, Bangladesh. Cureus. 2023 Aug 22;15(8).

7. Lu, Y., Hu, X.M., Huang, X.L., Zhuang, X.D., Guo, P., Feng, L.F., Hu, W., Chen, L., Zou, H. and Hao, Y.T., 2017. The relationship between job satisfaction, work stress, work–family conflict, and turnover intention among physicians in Guangdong, China: a cross-sectional study. *BMJ open*, *7*(5), p.e014894.

8. Liu CY, Yang YZ, Zhang XM, Xu X, Dou QL, Zhang WW, Cheng AS. The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a cross-sectional survey. Epidemiology & Infection. 2020 Jan;148:e98.

9. Stanetić KD, Savić SM, Račić M. The prevalence of stress and burnout syndrome in

hospital doctors and family physicians. Medicinski pregled. 2016;69(11-12):356-65.

10. Ghafoor S, Chaudhry S, Khan JS. Marital status as a stress indicator in postgraduate dental students. JPMA. 2020 Sep 4;2019:158-61.

11. Adeolu JO, Yussuf OB, Popoola OA. Prevalence and correlates of job stress among junior doctors in the university college hospital, Ibadan. Annals of Ibadan postgraduate medicine. 2016;14(2):92-8.

12. Mahmud I, Azad KA, Al Mamun A, Hoque MM, Mallik MU, Moniruzzaman M, Saha S, Mark SH, Rahman MM. Psychological assessment of doctors working in a pandemic condition in Dhaka Medical College Hospital. Journal of Bangladesh College of Physicians and Surgeons. 2020 Jun 9:50-5.

13. Hussain S, Batool I, Bano S, Ali H. Emotional climate, work stress and occupational cognitive failure in doctors. Peshawar Journal of Psychology and Behavioral Sciences (PJPBS). 2018;4(2):221-35.