Estimation of Perceived Stress among Doctors in a Peripheral Tertiary Government Medical College of West Bengal: A Cross-sectional Study

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# ABSTRACT

Psychiatry/Mental Health Section

**Introduction:** Doctors working in a tertiary care teaching hospital suffers higher symptoms of psychological distress. The impact of excessive stress may affect the individual employee and the organisation in terms of productivity and performance.

**Aim:** To estimate the perceived stress among doctors and to find out the sources of their stress in a peripheral Government Medical College of West Bengal.

**Materials and Methods:** This was an observational study, cross-sectional in design, conducted to assess the perceived stress and specific stressors among 95 doctors who were posted in a peripheral Government Medical College from June to November 2019. A Perceived Stress Scale (PSS 10) questionnaire was used to assess the perceived stress. Psycho-social and Environmental stressors were assessed using 11 items questionnaire. Data were analysed using the

IBM statistical package for social sciences, (SPSS) software program (version 20.0) (Chicago, USA).

**Results:** The majority of the participant (80%) had moderate level of stress, while 10.5% had low stress and 9.5% had severe stress. The mean PSS score in this study was  $20.49\pm5.61$ . In univariate logistic regression analysis, significant association was found with loneliness {Odds Ratios (OR) 9.3; 95% Confidence Interval (CI)=2.9-29.9}, family problem (OR 2.7; 95% CI=1.1-6.6) and quality of food (OR 2.9: 95% CI=1.2-7.0). Finally, loneliness (AOR 9.6; 95% CI=2.7-34.1) and family problem (AOR 3.7; 95% CI=1.3-10.1) came out to be statistically significant predictors of stress in multivariable logistic regression.

**Conclusion:** Majority of doctors had moderate level of stress and they felt upset, nervous and stressed in last one month of preceding the survey. Professional counseling for the doctors to improve their coping and resilience behaviours is highly recommended.

Keywords: Depression, Mental health, Psychological stress, Questionnaire

# **INTRODUCTION**

"Stress can be described as a circumstance that disturbs or is likely to disturb, the normal physiological or psychological functioning of a person" [1]. It is one's mind and body's response or reaction to a real or imagined threat, event or change. The threat, event or changes are called stressors which can be internal or external. How an individual perceived the situation depends upon-degree of optimism, belief, degree of hardiness, locus of control and sense of self efficiency. Individuals who ignore stress signals or who cope negatively will experience escalating symptoms of stress such as exhaustion, burnout, and emotional illness like depression, anxiety and aggravation of physical illness [2,3].

Every human being experiences occupational stress. The level of stress and response to it, varies from person to person. Stress in medical practice has always been a current subject because medical service involves taking care of other people's lives and mistake could be expensive and sometimes irreparable. The British Medical Association (BMA) published that numbers of doctors has been suffering from stress which affect the doctor's health and patient care [4]. Some personality traits (e.g., Obsessive personality trait) may cause more prone to emotional distress as it harbor chronic self-doubt. Long hours of work, heavy patient loads, dealing with difficult patients and relatives, issues like death, dying and suffering, sacrificing personal life are obvious source of stress [5]. Lack of autonomy and control, lack of resources to work effectively and safely, career expectations, dysfunctional workplace dynamics, monotonous work, distant accommodation, lack of recreational facilities, workplace violence may also engender more stress to doctors [6].

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Doctors experience higher symptom loads of psychological distress, depression, anxiety, emotional exhaustion and professional burnout than the average population [7-9]. Some degree of stress is normal and an unavoidable component in medical profession [7]. High permanent levels of stress can eventually cause wide range of psychological problems such as feelings of fear, incompetence, uselessness, anger, substance abuse, guilt, poor attention and reduced concentration thus impairing optimal level functioning [10,11]. Clinical judgment and decision-making may also be affected. It affects hospitals and organisations in terms of productivity and performance. A stressful working environment invariably leads to poor morale and motivation which ultimately cause reduced level of care towards patients. In some cases, it may lead to premature retirement or premature death, even by suicide as a distinct possibility [12,13].

The present study was undertaken in order to assess the perceived stress and specific stressors among doctors in Government Medical College and Hospital of West Bengal located at remote area.

# MATERIALS AND METHODS

It was an Institution based observational study, cross-sectional in design conducted among doctors of a newly established peripheral Government Medical College and Hospital from June to November 2019. It is a newly established medical college in West Bengal, where 1<sup>st</sup> year MBBS students were admitted for the academic session 2019. This medical college and hospital was an upgradation of District Hospital. Ethical Clearance from the Institution Ethics Committee was obtained. {Ethical committee letter no. RGMC/IEC. 07 (IEC Proposal no: RGMC/IEC/04)}.

**Inclusion criteria:** Complete enumeration technique was used. All the doctors of this Medical College and Hospital were included.

**Exclusion criteria:** All the doctors of this Medical College and Hospital who did not gave consent and were on leave during the study period were excluded.

Data were collected with the help of a prestructured pretested questionnaire from 95 doctors who had been posted in different Departments of this peripheral Government Medical College and Hospital during that period.

The questionnaire consist of three domains which were as follows; background characteristics, stress assessment instrument the PSS-10 [14] and Sources of Stress [15-17]. Background characteristics consist of age, sex, designation, department, duration of services in this medical college and type of services. Questionnaires were given individually to collect data after explaining the study objectives by the researcher.

The PSS-10 [14] consists of 10 questions. The questions in this scale ask about feelings and thoughts during the last month with a five point likert scale 0-never, 1-almost never, 2-sometimes, 3-fairly often, 4-very often. For question no 4, 5, 7, and 8, the scores were reversed. As there were total 10 questions, the maximum attainable score was 40, and the minimum attainable score was 0, with higher scores indicating higher perceived stress. Scores ranging from 0-13 indicate low stress, scores from 14-26 moderate stress and 27-40 considered high perceived stress [18].

A total of 6 questions consist of psychosocial stressors in sources of stress and 5 questions consist of environmental stressors. Questionnaire regarding sources of stress were adopted from different studies [15-17] and modified according to the local context and the objectives of the study in consultation with experts of different medical colleges of West Bengal and pretested by 18 doctors in a different peripheral medical college to test for ease of use, relevance, and understanding. It was revised based on the responses obtained in pretesting and finalised for use in this study.

## **STATISTICAL ANALYSIS**

Data were analysed using the IBM statistical package for social sciences, SPSS statistical software program (version 20.0) (Chicago, USA). At first, univariate logistic regression analysis was done to ascertain one is to one relationship between stress level among the study participants and its various attributes. Then the significant variables in univariate analysis were entered in the multivariable model by forced entry method to find out multivariable predictors of stress level among the study participants. Multivariable logistic regression model fitted well as explained by significant Omnibus Chi-square test and non-significant Hosmer-Lemeshow statistic. The strength of associations was assessed by OR at 95% CI.

## RESULTS

The mean age of the participants was  $40\pm5$  years and 85.3% (n=81) of them were male. Majority of the participants were demonstrator (22.1%, n=21) by designation. Only few participants (2.1%, n=2) were posted for more than 36 months [Table/Fig-1].

PSS-10 Questionnaire was used to measure the stress level of the situations the participant experienced during the last month. During the last month of preceding the survey, 62.1% (59/95) of the doctors ("fairly" or "very often") felt nervous and stressed and 57.9% (55/95) of doctors felt angered by circumstances that were beyond their control [Table/Fig-2].

Majority of the participant (n=76, 80%) had moderate level of stress, while (n=10, 10.5%) had low stress and (n=9, 9.5%) had severe stress. The mean PSS score in this study was  $20.49\pm5.6$ .

Regarding psychosocial stressors, most of the participants (69.5%, n=66) felt that lack of recreation was an important stressor. Regarding environmental stressors the majority of the participants (83.2%, n=79) felt travelling between college and home was important determinants of stress. Accommodation away from home was felt as an environmental stressor among 67.4% (n=64) of the

Characteristics		Number (%)		
<b>Age (year)</b> Mean (IQR) 40 (35-45)	Up to 30	6 (6.3)		
	31-40	42 (44.2)		
	41-50	33 (34.7)		
	61-60	14 (14.7)		
0	Male	81 (85.3)		
Sex	Female	14 (14.7)		
	Anatomy	7 (7.3)		
	Physiology	8 (8.4)		
	Biochemistry	5 (5.3)		
	Pathology	5 (5.3)		
	Microbiology	4 (4.2)		
Demonstration	Pharmacology	3 (3.15)		
Department	Forensic Medicine and Toxicology	3 (3.1)		
	Community medicine	3 (3.1)		
	Medicine and align subjects	23 (24.2)		
	Surgery and align subject	20 (21.05)		
	Gynaecology	8 (8.4)		
	Paediatrics	6 (6.3)		
Designation	Junior Resident	16 (16.8)		
	Senior Resident	19 (20)		
	Demonstrator	21 (22.1)		
	Assistant Professor	20 (21.1)		
	Associate Professor	12 (12.6)		
	Professor	7 (7.4)		
	Up to 12 month	48 (50.5)		
Duration of services in this Government Medical College	13-24 month	34 (35.8)		
	25-36 month	11 (11.6)		
	>36 month	2 (2.1)		
Turpo of convision	Medical Education Services (MES)	67 (70.5)		
Type of services	Health Services (HS)	28 (29.5)		
[Table/Fig-1]: Background characteristics of the study participants (n=95).				

participants and was followed by quality of food (43.2%, n=41) and living condition (38.9%, n=37) [Table/Fig-3].

In univariate logistic regression analysis, significant association was found with loneliness OR 9.3; 95% CI=2.9-29.9), family problem (OR 2.7; 95% CI=1.1-6.6) and quality of food (OR 2.9: 95% CI=1.2-7.0). Multivariable logistic regression model fitted well as explained by significant Omnibus Chi-square test and non-significant Hosmer-Lemeshow statistic. Finally, loneliness (AOR 9.6; 95% CI=2.7-34.1) and family problem (AOR 3.7; 95% CI=1.3-10.1) came out to be statistically significant predictors of stress [Table/Fig-4].

## DISCUSSION

Doctors around the world are subject to stress resulting from technological advances, requirement for more evidence-based and high quality care and an increasing economic pressure. In this study the level of perceived stress and the potential stressors among the doctors of various specialties were assessed. The mean PSS score in this study was 20.49. Similarly, the mean PSS score was 21.7 in cardiology residents of Argentina [19], 19.9 among 159 anaesthesia residents in Turkey, [20] and 22.0 among 938 medical residents in Saudi Arabia [21]. A lower score of 16.1 had been reported among 168 family medicine residents in the United States [22]. On the other hand study done by Sathiya N et al., in Tamil Nadu, India among 84 doctors working in a tertiary care teaching hospital reported a mean PSS score of 18.35 [23]. These variations in the PSS score might be explained by factors like patients load, working environment, work schedule, different departments of doctors.

Never n (%)           5 (5.3)           4 (4.2)           4 (4.2)	Almost never n (%) 11 (11.6) 33 (34.7)	Some times n (%) 13 (13.7) 11 (11.6)	Fairly often n (%)           50 (52.6)	Very often n (%) 16 (16.8)
4 (4.2)	33 (34.7)			16 (16.8)
. ,	. ,	11 (11.6)	00 (00 7)	
4 (4.2)			32 (33.7)	15 (15.8)
	19 (20)	13 (13.7)	48 (50.5)	11 (11.6)
8 (8.4)	17 (17.9)	9 (9.5)	46 (48.4)	15 (15.8)
16 (16.8)	22 (23.2)	9 (9.5)	35 (36.8)	13 (13.7)
5 (5.3)	25 (26.3)	26 (27.4)	33 (34.7)	6 (6.3)
5 (5.3)	25 (26.3)	6 (6.3)	44 (46.3)	15 (15.8)
9 (9.5)	30 (31.6)	9 (9.5)	35 (36.8)	12 (12.6)
4 (4.2)	32 (33.7)	4 (4.2)	53 (55.8)	2 (2.1)
6 (6.3)	35 (36.8)	12 (12.6)	42 (44.2)	0 (0)
16 5 9 4	<ul> <li>\$ (16.8)</li> <li>\$ (5.3)</li> <li>\$ (5.3)</li> <li>\$ (5.3)</li> <li>\$ (9.5)</li> <li>\$ (4.2)</li> <li>\$ (6.3)</li> </ul>	3 (16.8)     22 (23.2)       5 (5.3)     25 (26.3)       5 (5.3)     25 (26.3)       9 (9.5)     30 (31.6)       4 (4.2)     32 (33.7)	a         b         a         b         a         b         a         b         a         b         a         b         a         b         a         b         a         b         a	Attack         Attack         Attack         Attack           § (16.8)         22 (23.2)         9 (9.5)         35 (36.8)           § (5.3)         25 (26.3)         26 (27.4)         33 (34.7)           § (5.3)         25 (26.3)         6 (6.3)         44 (46.3)           9 (9.5)         30 (31.6)         9 (9.5)         35 (36.8)           4 (4.2)         32 (33.7)         4 (4.2)         53 (55.8)           § (6.3)         35 (36.8)         12 (12.6)         42 (44.2)

[Table/Fig-2]: Responses to questions of Perceived Stress Scale-10 among doctors of a peripheral Government Medical College (n=95)

Domains	Items	Response number (%)		
Psychosocial stressors	High expectation from life	41 (43.1)		
	Loneliness	33 (34.7)		
	Family problem	37 (38.9)		
	Financial problem	45 (47.4)		
	Relation with colleagues	43 (45.3)		
	Lack of recreation	66 (69.5)		
Environmental stressors	Travelling between college and home	79 (83.2)		
	Accommodation away from home	64 (67.4)		
	Quality of food	41 (43.2)		
	Living condition	37 (38.9)		
	Adjusting with roommates/neighbors	10 (10.5)		
<b>[Table/Fig-3]:</b> Factors that contributed to stress level of the doctors (n=95). *Responses are multiple for single participant doctor				

The present study found that 80% of the doctors working in this Medical College had moderate level of stress and 9.5% had high level of stress. In a similar study conducted by Waldman SV et al., among doctors in a tertiary care teaching hospital in Tamil Nadu, they found overall prevalence of stress was 39.5% [19]. Another study conducted by Sahasrabuddhe AG et al., among resident doctors of tertiary care hospital of Mumbai reported 37.3% [24]. Similarly, Saini NK et al., found overall prevalence rate of stress among resident doctors 32.8% in a tertiary care institute in Delhi [25]. The result of the present study was different from the comparable studies as they used mean score of PSS as a cut-off mark for stress.

During the 30 days preceding the survey, 62.1% (n=59) of the doctors felt nervous and stressed, which can be considered little lower than the other countries in the region, such as Saudi Arabia, where 68.2% of the medical residents reported being under stress [21]. On the other hand only 4.2% (n=4) of the doctors never felt nervous and stressed during the same period of time. In present study 62.1% (n=59) of the doctors felt nervous and stressed last month in comparison to 34.7% in Saudi residents [21]. This wide variation in terms of control of irritation may be due to the fact that participants in the present study had more clinical experience than Saudi residents.

Assuming the nature of the medical profession as a stressful, here it has been tried to explore psychosocial and environmental stressors among doctors. In this study, most of the participants (69.5%) pointed out that lack of recreation was the most common psychosocial stressor as this institution was located in a small city in a remote area. Similarly, a study conducted by Ndom RJ and Makanjuola AB, among resident doctors of Nigeria found that absence of relaxation

Variables	Stress score ≥20 (Median) Yes=56 (58.9%) N (%)	OR <sup>*</sup> (95% Cl <sup>‡</sup> )	p- value	AOR <sup>†</sup> (95% Cl <sup>‡</sup> )	p- value
High expectation from life; Yes/No	39 (69.6)/17 (30.4)	(95% CF) 1.7 (0.7-4.1)	0.188	-	-
Loneliness; Yes/No	29 (51.8)/27 (48.2)	9.3 (2.9-29.9)	0.001	9.6 (2.7-34.1)	0.001
Family problem; Yes/No	27 (48.2)/29 (51.8)	2.7 (1.1-6.6)	0.029	3.7 (1.3-10.1)	0.011
Financial problem; Yes/No	29 (51.8)/27 (48.2)	1.5 (0.7-3.5)	0.303	-	-
Relation with colleagues; Yes/No	42 (75.0)/14 (25.0)	2.1 (0.9-5.0)	0.101	-	
Lack of recreation; Yes/ No	42 (75.0)/14 (25.0)	1.8 (0.8-4.5)	0.164	-	
Travelling between college and home; Yes/No	49 (87.5)/7 (12.5)	2.1 (0.7-6.2)	0.181	-	-
Accommodation away from home; Yes/No	41 (73.2)/15 (26.8)	1.9 (0.8-4.5)	0.148	-	-
Quality of food; Yes/No	30 (53.6)/26 (46.4)	2.9 (1.2-7.0)	0.016	1.6 (0.6- 4.5)	0.353
Living condition; Yes/No	25 (44.6)/31 (55.4)	1.8 (0.8-4.3)	0.175	-	-
Adjusting with roommates/ neighbours; Yes/No	6 (10.7)/50 (89.3)	1.05 (0.3-3.9)	0.943	-	-

[Table/Fig-4]: Univariate and multivariable logistic regression analysis showing predictors of stress among study participants (n=95).

Negelkerke R square: 0.337; Hosmer-Lemeshow test p-value: 0.313; Predictive Accuracy Rate (PAR): 74.7%

facilities within the hospital environment were considered a source of stress by 84.2% of the residents [26]. Travelling between college and home and accommodation away from home were found to be important environmental stressor. Majority of the participants in the present study had to stay away from their family; they were always worried about the health of their family members. A study conducted by Menon A et al., in Zambia, Africa found that the workload, the low level of reward and the long working hours were most frequently identified causes of stressors among doctors [27]. In univariate logistic regression analysis, significant association was found with loneliness, family problem and quality of food whereas in multivariable logistic regression, significant association was found in loneliness and family problem. In a study conducted by Isikhan V et al., in Turkey among healthcare professionals reported that programs directed to increase motivation and job satisfaction for healthcare professionals were recently considered [28]. Several coping strategies like positive wishful thinking, spirituality, talking to others, regular exercise, meditation or yoga, adequate sleep, balance eating and avoid unhealthy methods like substance abuse can be used to reduce the stress.

A dedicated team should operate in the hospital to promote such healthy eating, exercise and recreation in individuals. It is also recommended that hardworking and committed employees should be benefitted from financial rewards, holidays or career progression to keep their morale high. Posting to Medical College nearest to hometown may reduce frequent long travel between college and home and, it may also give enough time to spend with family members is also recommended.

### Limitation(s)

Present study could not compare perceived stress among faculties of different discipline due to small sample size. Certain factors such as physical activity level, nature of job in different discipline, sleep pattern were not analysed. In future longitudinal research with similar cohorts is necessary to establish a causal relationship.

## CONCLUSION(S)

Majority of doctors had moderate level of stress. They felt upset, nervous and stressed in the last one month of preceding the survey but the perceived ability to anger and irritability by doctors in this study was good. They should be offered programs to improve their coping and resilience behaviours and to learn new functional coping strategies. Establishment of professional counseling for the doctors is highly recommended dealing with their issues in a timely manner that would support their needs.

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