

The level of stress and coping behaviour techniques of undergraduate medical student in Raigarh district of Chhattisgarh, India

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ABSTRACT

Objective: To investigate and compare the perceived stress level and coping strategies of the undergraduate medical student studying in the first year and second year MBBS. **Method:** The sample was selected from 100 undergraduate medical students, 50 were in the first year, and 50 were in the second year, at Late Shree Lakhiram Agrawal Memorial Govt. Medical College, Raigarh Chhattisgarh, India. Stress Assessment Scale Indian adaptation and Stress Coping Behaviour Scale was used for assessment. **Result:** The age of first-year participants was between 18 to 19 years while the second year participants aged between 20 to 21 years, first-year students were showing a higher level of stress (mean: 830.40, sd- 108.75) than the second-year student (mean: 517.80, SD – 78.07, t - value 16.51, significance $P > 0.001^*$). **Conclusion:** Medical students perceived high levels of stress and emotional distress. First-year students are more likely to suffer from stress and use poor coping strategies than the second-year student. Review of academics, better interaction with the faculty, intervention programs, and counselling sessions can help a lot to reduce stress in medical students.

Keywords: Stress; Stress coping behaviour; Emotion; Medical student

Stress is a negative emotional experience, which is accompanied by the predictable, psychophysiological, and behavioural change that directed toward altering the stressful event or accommodating its effects.¹ The term stress has been used in different ways by different theorists. Some author views it as a stimulating event that presents challenging demands (a divorce, for instance), while others have viewed stress as the response of physiological arousal elicited by a troublesome event.²

There is a consensus among contemporary researches that stress is neither a stimulus nor a response, but is a unique stimulus-response transaction in which one feels threatened.³ Stress is perceived to threaten one's well-being and thereby tax one's coping abilities.^{4,5} Authors

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studied stress as the circumstance in which transaction lead a person to perceive a discrepancy between the physical or physiological demands of a situation and the resource of his or her biological, psychological, or social system.

Lovallo (2015) noted that the condition of stress has two components: physical involving direct materials or bodily challenge, and psychological involving individual perceived circumstance in their lives.⁵ According to the components that can be examined in three ways: one approach focus on the environment, stress is seen as a stimulus, as have been a demanding job, or experience severe pain from arthritis or death of the family member. Physically or psychologically challenging events or circumstances are called stressors. The second approach treats stress as a response, focusing on people's reactions to stressors. The third approach describes stress as a process that includes stresses and strains, an essential dimension of person and environment.⁶

Stress is not just a stimulus or a response, but rather a process in which the person is an active agent can influence the impact of a stressor through behaviour, cognition, and emotional strategies.⁴ People manage stress based on how they experience stress, and it increases with stressor frequency, intensity, and duration.⁷ The more substantial stress produced a more significant physiological strain.⁸ Several other aspects of jobs can increase a worker's stress.⁹ Chronic stress makes people immunocompromised and more susceptible to catching a cold when exposed to infection than people with occasional stress.¹⁰

Overloaded people are more stressed than people with fewer tasks to perform.^{11,12} Stress and immune function have been reported to be related to each other. It is noted that stress alters the physiological condition in terms of physical and physiological consequences, suppressing the immunity level of the individual, increasing susceptibility to many psychosomatic problems.

Aim of this study

There is a significant lacuna in this field and a better understanding of stress among medical students needed to improve our ability to assess, treat, and prevent stress among them. Our study is a small step toward the future with the aim of conducting a more in-depth analysis of the stress among medical students.

The main objectives of our study are to investigate and compare the stress levels of the undergraduate medical student studying in the first year and second year MBBS.

METHODOLOGY

Sample

This cross-sectional study was carried out in the department of psychiatry, Late Shree Lakhiram Agrawal Memorial Govt. Medical College, Raigarh Chhattisgarh, India (LAMGMC) between September 2019 and December 2019. The study was approved by the ethical committee of the institution. The sample was selected from 100 undergraduate medical students, 50 were studying in the first year, and 50 were studying in the second year of the MBBS.

Participants aged 18 years and above, both sexes and giving informed consent, were included in the study. Subjects below 18 years of age, with severe neurological or physical illness and refusing to give informed consent, were excluded from the study.

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Structured data was collected from each participant with regards to the socio-demographic variables like age, gender, and residence (rural/urban). Stress Assessment Scale Indian adaptation and Stress Coping Behaviour Scale was used for assessment of stress and coping behaviour among participants.

Measures

Stress Assessment Scale Indian adaptation (SAS in Hindi adapted by Janghel & Shrivastava, 2018)¹³ The stress assessment scale was administered of the adult population (N=200, Age group 30-60 years) of Raipur and Rajnandgaon district of Chhattisgarh, India. The psychometric properties of the scale were established by computing exploratory factor analysis, reliability (Cronbach's Alpha), and concurrent validity. The result of the inter-correlation in the stress assessment scale on the Hindi language and the English language is found to be (.90). The reliability of the stress assessment scale (Hindi version) was Cronbach's Alpha is 0.82. Exploratory factor analysis was done, and 41 items were significant loading on twelve factors.

Stress Coping Behaviour Scale (SCBS in Indian adaptation in Janghel and Shrivastava 2018)¹⁴ The SCBS has 28 items assessing stress coping behaviours among adults. The analysis included basic items and scale descriptions, as well as concurrent validity data, revealed 28 items SCBS. The statistical analysis of content through internal consistency of alpha (α) and construct validity as well as exploratory factor analysis, reliability provided evidence of significant, convergent and discriminate validity is significant evidence of the scale. The result of exploratory factor analysis revealed two important factors, namely- Adaptive Coping and Maladaptive coping behaviour, which are 15 items in adaptive coping behaviour and 08 items in maladaptive coping behaviour.

Statistical analyses

The descriptive and independent t-test was used in data analyses with the help of SPSS 22. The statistical analysis was done through the statistical package for social sciences (SPSS–22.0 version). The descriptive and independent t-test was used in data analyses. The significance level was used at a 95% confidence level ($p < 0.001$)

RESULTS

The current study finding shows (Table 1) that the age of the first-year participants was between 18 to 19 years and the second year participants were aged between 20 to 21 years, first-year students were showing a higher level of stress (mean 830.40, sd- 108.75) compared to the second-year student (mean - 517.80, sd – 78.07, t - value 16.51 significance in 0.001*).

Table 1: showing the mean, sd, and t-value of stress level of the first-year and second-year student

Particulars of variables	Participants year of study	Total no. of participants	Mean	sd	t-value	P-value
Age	1 st year	50	18.96	1.47	9.50	0.00*
	2 nd year	50	20.22	0.81		
Stress	1 st year	50	830.40	108.75	16.51	0.00*
	2 nd year	50	517.80	78.07		
Adjustive coping	1 st year	50	14.08	1.66	15.67	0.00*
	2 nd year	50	23.24	3.78		
Maladjustive coping	1 st year	50	18.60	2.30	13.66	0.00*
	2 nd year	50	12.78	1.94		

** Significance level at 95% confidence level ($p < 0.001$)

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Coping strategies in the student: first-year student's Adjustive coping is inferior to the second-year student. The adjustive coping mean is 14.08 (sd 1.66); second-year student's Adjustive coping mean is 23.24 (sd 3.78), and the t-value is 15.67.

Maladjustive coping behaviour in the first-year students is higher than the second-year students, the mean value in first-year students is 18.60, (sd 2.30), and the second year students mean 12.78, (sd 1.94) (t-value is 13.66 which is significant in 0.001* level) (Table 1).

Table 2 showing the model summary of stress level in medical student

Model	R-square	R - square change	Adjusted R-square	The standard error of the Estimate
Enter	.759	.759	.735	94.3731

Table of model summary suggested that the overall predictor such as age, sex, socioeconomic status, religion, domicile, adaptive and maladaptive coping behaviour were positively associated with the level of stress in an undergraduate medical student. The value of R-square is .759, and it suggests that 75.90 % predicting factors were positively associated with the stress level of an undergraduate medical student (Table 2).

Table 3 showing the coefficient of the predictor variables and stress level of medical student

Predictors	Standardized Coefficient of Beta	t-value	Level of significant
Age	-0.103	-1.423	.158
Sex	0.112	2.033	.045*
Socioeconomic Status	-0.055	-0.941	.349
Religion	-0.005	-0.084	.933
Locality	-0.017	-0.312	.756
Domicile	0.034	0.634	.528
Maladaptive Coping	0.023	0.249	.804
Adaptive Coping	0.104	1.052	.296
Study Year	-0.856	-6.299	.000***

** Significance level at 95% confidence level ($p < 0.001$)

Observation of the coefficient table of stress level in under graduate medical students shows that the sex ($t = 2.033$, p -value= 0.45) and study years ($t = -6.299$, p - value= .000) are significant predictor for stress (Table 3).

Table 4 shown the model summary of maladaptive coping behaviour of the medical student

Model	R square	R square change	Adjusted R square	The standard error of the Estimate
Enter	.539	.539	.504	2.5433

The model summary has confirmed that 53% of predictors is positively contributed to maladaptive coping behaviour in undergraduate medical student (Table 4).

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Table 5 showing the coefficient of predicting variables of maladaptive coping behaviour in student.

Predictors	Standardized Coefficient Beta	t-value	Level of significant
Age	-0.181	-1.933	.056*
Sex	-0.013	-0.173	.863
Socioeconomic Status	-0.048	-0.615	.540
Religion	0.070	0.968	.335
Locality	0.012	0.168	.867
Domicile	0.053	0.744	.459
Stress	0.577	5.938	.000***

** Significance level at 95% confidence level ($p < 0.001$)

The table shows the coefficient of standard Beta; some predictors had positively and negatively predicted the maladaptive coping behaviour. The predicting factors include age which is negative (standardized coefficient of beta = -0.181, t-value= -1.933, p-value= 0.056*). It indicates that age was negatively associated with maladaptive coping behaviour. The presence of stressful situation is positively associated with maladaptive coping behaviour (standard coefficient of Beta=0.566, t-value= 5.938, p-value= 0.000***), Which suggests that the continuous stressful situation increases the possibility of repetitive maladaptive coping behaviour in undergraduate medical student (Table 5).

Table 6 showing the model summary of adaptive coping behaviour of the medical student.

Model	R square	R square change	Adjusted R square	The standard error of the Estimate
Enter	.735	.541	.506	.506

Table of model summary suggests that the overall predictor such as age, sex, socioeconomic status, religion, domicile and stress were positively associated with the level of coping behaviour in undergraduate medical student. The value of R-square is .735; it means 73.50 % predicting factors were positively associated with the stress level of an undergraduate medical student (Table 6).

Table 7 shown the coefficient of the predicting variables of adaptive coping behaviour in medical student.

Predictors	Standardized Coefficient Beta	t-value	Level of significant
Age	0.247	2.643	.010**
Sex	0.068	.904	.368
Socioeconomic status	-0.035	-.443	.659
Religion	-0.077	-1.064	.290
Locality	0.015	.206	.837
Domicile	0.101	1.410	.162
Stress	-0.527	-5.439	.000***

* Significance level at 95% confidence level ($p < 0.001$)

The table shows the coefficient of standard Beta, and it reveals that some predicting factors had positive as well as negatively correlated with the adaptive coping behaviour, e.g. age (standardized coefficient of beta = 0.247, t-value= 2.643, p-value= 0.010**), it suggests that the age was positively associated with the adaptive coping behaviour in a stressful situation.

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In contrast, the stress is negatively associated with the adaptive coping behaviour (standard coefficient of Beta= - 0.527, t-value= -5.439, p-value= 0.000***), it means the continuously low level of a stressful situation for a longer duration can predict the repetitive pattern of adaptive coping behaviour in undergraduate medical student (Table 7).

DISCUSSION

Stress has been described as a double-edged sword that can either stimulate and motivate the students to perform well or dwell the students to incompetence. The authors have concluded high levels of distress among undergraduate medical students. A high-stress level, along with the social, emotional, physical, and family problems, may hamper the learning ability and academic performance of a student. Excessive stress may cause mental and physical problems and may negatively affect the academic achievement of the student.¹⁵

Medical student faces more stress than non-medical students. Almost 76% of them have one or other type of stress that was associated with personal problems, sleep disturbance, difficulty in understanding the subjects, difficulty in managing time and homesickness (p=0.001).^{16,17,18}

Current study findings reveal that first-year medical students were more stressed than second-year medical students. The first-year student uses poor coping strategies (low adjective coping and high maladjusted coping strategy) to deal with their stress compared to second-year students.

Our study findings correlated and in line with other studies, which concluded that Both first-year and second-year students were facing high levels of perceived stress and psychological morbidity. Though unlike the first-year students, the second-year student showed less perceived stress (p = 0.007) and psychological morbidity (p = 0.006) than the first-year students, although levels of both were still high. First-year students are more likely to use active problem-focused coping strategies, and they are also more likely to cope by using substances (alcohol or other drugs).^{19,20,21,22}

Our study finding revealed female gender, and studying in the first year are the predictors for an increased level of stress in the medical students. Younger age and the persistent stressful situation was associated with a high level of maladaptive coping behaviour in undergraduate medical student.

Medical students suffer more stress at their entry-level, and the possible causes include academic-related problems, exam schedules, family and peer pressure, and a new environment. The first-year student uses faulty coping strategies to deal with their problems which can cause even worse their stress. Though progressively, they learn better-coping strategies to handle stress, which helps them to keep their stress at a low level.

Medical students need interventions to prevent maladaptive coping styles and encourage adaptive coping that are tailored according to their individual needs. Such interventions should be targeted at first-year students. These students must develop positive coping skills to benefit them during training and in a future career that is inherently stressful.²¹

Review of academics, exam schedules and patterns, better interaction with the faculty, proper guidance, intervention programs, and counselling could undoubtedly help a lot to reduce

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stress in medical students. Thus, to prevent the long-term antagonistic effects of elevated stress levels on the physical and mental health of future doctors.²²

CONCLUSION

Medical students perceived high levels of stress and emotional distress. First-year students of more likely to suffer from stress and uses poor coping strategies than the second-year student. Review of academics, better interaction with the faculty, intervention programs, and counselling can help a lot to reduce stress in medical students and thus to prevent the long term adverse effects of stress on the physical and mental health of future doctors.

Limited sample size, selective sample population which cannot be generalized, and lack of control group are the limitations of our study, which can be overcome in future studies.

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Conflict of Interest

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