Original Research

Assessment of stress among medical students visiting a tertiary care hospital of central Kerala, India

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Abstract

Introduction: Stress among undergraduate students has become a significant concern in higher education due to its detrimental effects on their health and academic performance. By exploring the association between various sociodemographic variables and stress levels, valuable insights into the factors contributing to stress among undergraduate students can be provided.

Objectives: To determine the prevalence of stress and its associated factors among medical students in a tertiary care hospital

Methods: A cross-sectional study was conducted among 133 undergraduate students selected utilising convenience sampling. A pre-designed close-ended questionnaire, specifically tailored for this study, was employed to collect data related to stress experienced by undergraduate students. Appropriate statistical analyses were performed with significance level set at $p < 0.05$.

Results: The study revealed that 19% of the undergraduate students experienced high perceived stress, 67% experienced moderate stress and 13% experienced low stress levels. A significant association was observed between perceived stress and reduced appetite (p=0.014). Additionally, significant associations were found between stress and poor relationships with faculties (p=0.003); the warden (p=0.01); family members (p=0.003); facing time pressure (p=0.006); heavy workload (p=0.029); fear of failure (p=0.002); suffering from frequent exams (p=0.003); and exam patterns and curriculum (p=0.024).

Conclusions & Recommendations: Results highlight considerable prevalence of stress among undergraduate students, with the majority demonstrating moderate stress levels. It is imperative to prioritise undergraduate students' mental and physical wellbeing by incorporating counselling services and preventive mental health programs as integral components of routine clinical services, so that educational institutions can foster a supportive learning environment.

Keywords: *academic stress, perceived stress, sociodemographic variables, health risk, psychological health, learning abilities, mental wellbeing*

Introduction

Challenges during education create sources of stress for students, and put their health at risk, in turn affecting their learning abilities and even costing their lives. Therefore, paying attention to the factors that could have a positive impact on the agreeableness could increase the positive psychological status, and thereby the physical and psychological health of the students (1).

Stress is the "wear and tear" our bodies experience as we adjust to our continually changing environment; it has physical and emotional effects and can create positive or negative influence on us. As a positive influence, stress can help to compel us for action. As a negative influence, it can result in feelings of distress, rejection, anger and depression, which in turn can lead to health problems (2). It is a psychological and physical reaction to the ever-increasing demands of life.

Stress development has been shown to increase the number of adverse effects personally and professionally among students, importantly of medicals students (3). Worldwide, medical colleges are responsible for making sure that medical students have adequate knowledge and skills before taking the professional responsibilities. In order to achieve these goals, medical colleges typically use a curriculum of lectures, simulations supervised practice, mentoring and hands-on experience to boost individual skillset. Unfortunately, some aspects of the training processes have unintended negative consequences on students' physical and emotional health. Life as a medical student call for complete commitment and responsibility toward academic tasks and care provided to patients.

The prevalence of stress among medical students has been reported in various studies between 20.9% and 94.5% (4). Persistent stress that is not resolved through coping or adaptation, has been shown to cause physical and mental health problems and reduced self-esteem that may affect academic achievements and personal and professional development of the medical students (5). Students use various coping mechanisms to process stress. Strategies that involve engagement such as problem solving, positive reinterpretation and expression of emotions facilitate student adaptation, which reduces anxiety and depression (5). Extracurricular activities involving music, watching movies, social media and physical exercise have been associated with decreased stress and burnout levels in preclinical medical students (4). In turn, stress can lead to addiction and substance abuse in certain cases (6-7).

Medical students experience stress during their undergraduate training and later during internship, postgraduate study period and clinical practice, and may even reach burnout level. Unfortunately, only a few would seek help, and distress often continues into residency and beyond, resulting in adverse effects like self-harm and suicide (8). Most students experience a greater risk of suicide ideation and thoughts of dropping out of medical school (8-9). The magnitude of suicide ideation among medical students in Western and non-Western countries range from 1.8% to 53.6% (10-11). Between 2010 and 2019, suicide deaths have been reported in India among 125 medical students, 105 residents and 128 physicians (12-13). This study is to provide an overview of factors for distress among medical students and provide direction to prevent this scenario.

Methods

This cross-sectional study was conducted at a college providing undergraduate degrees to investigate stress levels among undergraduate medical students. The study included participants from the 2019, 2020 and 2021 batches and was conducted from July to August in 2022. Convenience sampling was used to select participants, and the minimum required sample size was determined as 85 based on an expected

prevalence of 0.54 from a previous study, but 133 were included in the study.

A predesigned close-ended questionnaire consisting of two parts was utilized as the study instrument. The questionnaire covered various aspects, including sociodemographic variables (4 questions), personal details (11 questions) and the perceived stress scale (10 questions). Each question had four alternatives with corresponding scores. Data collection was performed using Google Forms.

Data analysis

The data collected were transferred to Microsoft Excel spreadsheets for analysis. Descriptive statistics such as frequency and percentage were used to summarize qualitative variables, while mean and standard deviation (SD) were used for quantitative variables. The association between variables was analysed using Chi-squared test, with a significance level of p less than 0.05.

Results

The age range of medical students was 19 to 26 years, with most of them in the 21–22-year age group. Majority were females (78%) and belonged to the upper middle class, grouped as per the Modified Kuppuswamy Scale (69.2%). In addition, the majority were having proper sleep for 6 or more hours (n=81; 60%); using phones for less than 6 hours (n=101; 75%); and engaged in physical activities (48.1%) (Table 1).

Out of the total participants, 19% had high perceived stress, 67% had moderate stress and 13% had low perceived stress (Figure 1). Among the two students having increased intake of food, one student had low stress and the other moderate stress. Among those 98 students having normal appetite, 13 had low stress, 72 had moderate stress and 13 had high stress. Among those 31students having reduced food intake, three had low stress, 16 had moderate stress and 12 had high stress. A statistically significant association was found between stress and appetite (p=0.014). Also, significant associations were found between stress and relationship with family members, relationship with faculties and relationship with warden (Table 2).

Discussion

This cross-sectional study conducted among students in a medical college in Central Kerala showed that 5% of them were at higher risk of stress and that students with reduced intake of food (38.7%), having poor relationship with warden (25.8%), facing time pressure (20.87%), suffering from heavy workload, fear of failure (21.15%) and suffering from examinations were developing stress than others.

Most studies have shown that students having high stress suffer from academic pressure, poor personal relationships and reduced appetite similar to our study; and also revealed additional factors contributing to stress such as new environment, peer pressure and poor interaction with faculty. A study conducted by Ragabet.al. in 2021 reported that the overall prevalence of stress was 31.7% and the main sources of stress were time pressure, heavy workload, fear of failure and examination frequency. These factors were similar to our study (12). In another study conducted by Parmeshwar et al. in 2020 concluded that 91% of participants were suffering from high levels of stress, with similar factors such as curriculum vastness, frequency of examination, competition with peers, performance in examinations, worry about future, loneliness, relations with opposite sex and quality of food playing a major role in creating additional stress. Another study conducted by Shubhada et al. in 2014 concluded that perceived stress is high among medical students (10).

A study conducted by Saipanish in 2003 reported that 2.4% of students had a high level of stress. Academic problems were found to be a major cause of stress among all students (11). The most prevalent source of academic stress was the test/exam (14). Salam et al. conducted a study in 2013 and reported that stress among Malaysian medical students was 56%. Year of study, financial problems and relationship problems with parents, siblings and lecturers were significant determinants (12). Examination and academic related stressors were the most significant source and religion was the most used coping strategy. Most of the studies, including our study show that academic related problems are greater stressors. Teaching processes exert an unintentional negative effect on students' mental health. Therefore, teachers must ensure a supportive learning environment to facilitate students and be more aware of their function as an ideal role model and guide them to relieve academic and examination related stress from their students. in this regard, review of academics, exam schedules and patterns, better interaction with the faculty and proper guidance, intervention programs and counseling could certainly help to reduce the stress in medical students.

A study was conducted by Khadija Qamar et al. in 2015 and reported that 30.4% of students had mild to moderate physical problems, 17.4% had severe physical problems and 52.2% did not have any physical problems (13). Their average stress score was 19.6 (SD=6.76). The major elements responsible for stress were environmental factors, new college environment, student abuse, tough study routines and personal factors. Most of the undergraduate students experienced stress due to both academic and emotional factors.

Conclusions & Recommendations

Through the study, we have found a strong association between high stress and anxiety levels and the major finding of high psychological stress in medical students points to the need for establishing counseling and preventive mental health services as an integral part of routine clinical services being provided to them.

Table 1: Characteristics of the study participants (N=133)

Characteristics	No.	%
Sex		
Males	29	22.0
Females	103	78.0
Age in years		
Less than 20	37	27.7
20-24	93	70.0
25 and more	3	2.3
Socio-economic status		
Lower	2	1.5
Lower middle	31	23.3
Upper	7	5.3
Upper lower	1	0.7
Upper middle	92	69.2
Physical activity		
Inadequate	69	51.9
75-150 minutes a week of vigorous intensity physical activity	15	11.3
150-300 minutes a week of moderate intensity physical activity	33	24.8
An equivalent composition of both	16	12.0

Table 2: Factors associated with stress level among study participants

Factor		Level of stress						
		Low (n=17)		Intermediate (n=89)		High (n=25)		χ^2 p value
		No.	%	No.	%	No.	%	
Relationship with family members	Fair	1	5.8	5	5.6	7	28.0	
	Good	16	94.1	84	94.3	17	68.0	15.9
	Poor	0	0	0	0	1	4.0	**0.003**
Relationship with faculties	Fair	4	23.5	49	55	10	40	
	Good	13	76.4	33	37	9	36	15.9
	Poor	0	0	7	7.8	6	24	**0.003**
Relationship with warden	Fair	5	29.4	46	51.6	11	44	
	Good	11	64.7	21	23.5	6	24	13.2
	Poor	1	5.8	22	24.7	8	32	**0.01**
Academics (time pressure)	No	6	35.2	9	10.1	1	4	11.5
	Yes	11	64.7	80	89.8	24	96	**0.003**
Academics (workload)	No	6	35.2	11	12.3	2	8	7.1
	Yes	11	64.7	78	87.6	23	92	**0.03**
Academics (fear of failure)	No	9	52.9	15	16.8	3	12	12.8
	Yes	8	47	74	83.1	22	88	**0.002**
Academics (exam pattern and curriculum)	No	8	47	19	21.3	3	12	7.4
	Yes	9	52.9	70	78.6	22	88	**0.02**
Academics (exam frequency)	No	10	58.8	23	25.8	3	12	11.5
	Yes	7	41.1	66	74.1	22	88	**0.003**

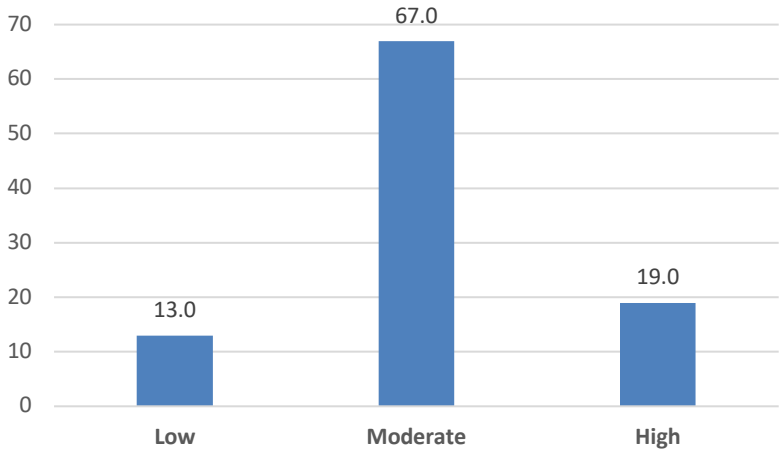

Figure 1: Distribution of participants based on the perceives stress level

Public Health Implications

- The study found that students who consume less food (38.7%), have a poor relationship with their warden (25.8%), are under time constraints (20.87%), have a heavy workload, are afraid of failing (21.15%), and have frequent exams are more likely to develop stress than others.
- Maintaining physical exercise and good nutrition, maintaining good relationships with friends, family, teachers and wardens, getting adequate sleep, participating in extracurricular activities, and receiving counselling and preventive mental health services as an integral part of routine clinical services will help medical students to overcome their stress.

Author Declarations

Competing interests: The authors declare that they have no competing interests.

Ethics approval and consent to participate: Ethics clearance was granted by the Ethics Review Committee of the P K Das Institute of Medical Sciences, Vaniyamkulam. Informed written (verbal) consent was obtained from each participant prior to data collection.

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