Original Research Article

To Study the Prevalence and Sources of Stress among Medical Students of Sangareddy District

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Abstract

Background: This study aimed to investigate the stress levels experienced by medical undergraduates in order to comprehensively evaluate stressors, their sources and contributing factors.

Method: This cross-sectional study conducted at a private medical college in Sangareddy district, used the Kessler 10 Psychological Distress Inventory to evaluate the mental well-being of medical undergraduates. Additional data points were collected for analysis and Cronbach's alpha coefficient was used to scrutinize the questionnaire's reliability.

Results: This study conducted with a sample size of 320 participants, the prevalence of stress among medical students was explored. The sample group consisted of 36.25% males and 63.75% females, aged between 18 and 24 years with a mean age of 20.8 years (standard deviation of 1.3). The findings revealed that 72.5% of the medical students experienced mild to severe stress, with prevalence rates of 22.5% for mild stress, 21.3% for moderate stress and 28.7% for severe stress. Notably, female students had a slightly higher likelihood of experiencing stress compared to males.

Conclusion: We discovered that stress is significantly related with various factors such as procrastination, perceived physical ailments and multiple sources of stress. The most common sources of stress are demanding academic workloads, exam-related pressures, financial difficulties and personal problems.

Keywords: stress, medical students, Kessler, medical college, Sangareddy

Introduction

Stress is a normal physiological and psychological response to demands and challenges. It can be triggered by various factors, including academic demands, time pressure, interpersonal relationships and personal problems etc[1].

Medical college is a challenging and demanding environment that can expose students to high levels of stress. Medical students face a heavy workload, intense competition and high stakes in their academic and clinical training. They also encounter various stressors related to their future career, such as the uncertainty of the job market, the demands of the profession and the ethical and moral dilemmas of medical practice[2,3]

Studies have consistently shown that medical students experience high levels of stress compared

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to their non-medical counterparts and the general population. A review of the literature found that medical students had higher rates of stress, anxiety and depression than the general population with rates ranging from 20% to 70% depending on the study and the measures utilized[4,5].

Several factors contribute to the high levels of stress experienced by medical students. One of the main stressors is the academic demands of medical college, which include a heavy workload, challenging course material and high expectations for grades. Medical students also face the added pressure of clinical rotations, where they are expected to perform under the supervision of attending physicians and residents. Other stressors include time management challenges, financial concerns and personal relationships[6,7].

One intriguing aspect of stress management in medical school is the use of adaptive coping strategies by students to tackle both external and internal stressors. Medical students often harbour the belief that their lives would significantly improve if the challenges they face were somehow lifted. Nevertheless, the transition from student to intern only adds to the burden of stress, as the responsibility for the well-being of patients now rests squarely on their shoulders[8,9].

Stress can have negative consequences on the physical and mental health of medical students. It can lead to sleep disturbances, fatigue and decreased immune function, which can affect their performance and well-being. Stress can also increase the risk of developing mental health problems, such as anxiety, depression and burnout. Burnout, in particular, is a syndrome characterized by emotional exhaustion, depersonalization and a lack of accomplishment and it has been found to be prevalent among medical students[10,11].

In addition to its impact on health, stress can also affect academic performance and retention. Studies have shown that high levels of stress are associated with lower grades and a higher risk of dropping out of medical college. Stress can also impact the quality of care provided by medical students, as it can lead to poor communication and decision-making skills[12-14].

In this background the present study was done with the following objectives.

Objectives:

To estimate the prevalence of stress among undergraduate medical students.

To identify the sources of stress.

To determine the association of stress with socio-demographic factors.

To examine the association between stress levels and academic performance.

Methodology

Study Subjects:

It was a cross-sectional study conducted in all the male and female medical students in the four academic years of a private Medical College from Sangareddy district. The students were invited to participate in the study by sending invitation through Whatsapp. The data was collected from the students who accepted the invitation using a questionnaire prepared in google forms. The google forms link was sent through whatsapp. The study period was from October 2022 to February 2023.

Inclusion Criteria:

Students from all the semesters who had completed at least 6 months in medical college and all selected individuals who have accepted the invitation and gave consent were included in the study.

Exclusion Criteria:

Students who did not accept the invitation and who have not given consent.

Study Tool:

There were various methods that was used to address psychological distress scales among medical students, including the Perceived Stress

Scale (PSS), Stress Symptoms Inventory (SSI), Cohen Perceived Stress Scale (CPSS) and other commonly and less commonly used instruments. For this study, we employed the Kessler10 Psychological Distress instrument (K10), developed by Kessler and colleagues, which was widely utilized in population-based epidemiological studies to measure current (1-month) distress[15,16].

The K10 was translated into several languages and was been utilized in the World Mental Health Survey of the World Health Organization as a clinical outcome measure. It consists of 10 questions regarding specific symptoms of distress, such as feeling tired or sad and offers responses on a scale from "none of the time" to "all of the time". The responses are scored from 1 to 5 and all of the questions are combined to obtain a total score. A score below 20 is considered to indicate no stress, while scores between 20 and 24 indicate mild stress, scores between 25 and 29 indicate moderate stress and scores between 30 and 50 indicate severe stress. In addition to the K10 questions, the questionnaire also included additional questions related to academic achievement, sources of stress and perceived physical symptoms. The K10 has demonstrated good psychometric properties, with a Cronbach's alpha co-efficient of 0.913 in this study.

Collection of Data:

To ensure the authenticity of the responses, google forms questionnaires were administered to the students two months prior to the examination period. The students were given ample time and privacy to answer additional questions on their academic achievements, sources of stress and number of days missed to college. It's important to note that participation in the study was voluntary and the main aim was to obtain unbiased and accurate data.

Analysis of Data:

The study data was inputted into Microsoft Excel and analysed using SPSS software (version 26.0). The outcome variable, which was categorized dichotomously as either no stress or presence of stress, was created by combining the three levels of stress (mild, moderate and severe) into one category. Descriptive statistics, including mean, standard deviation and percentages, were used to summarize the study and outcome variables. The association between the categorical outcome variable (i.e., stress level) and the different study variables was observed and quantified using Pearson's chi-square test for trend and odds ratios. Logistic regression was used to identify independent risk factors for stress. Odds ratios (adjusted) with 95% confidence intervals were calculated and a p-value of less than 0.05 was considered significant.

Results

This research examined the stress levels of 320 medical students from 1st to 4th year. The participants had a mean age of 20.8 years, with a standard deviation of ±1.3 and their characteristics are presented in Table 1.

The findings revealed that female students were slightly more likely to experience stress (73.5%) compared to their male counterparts (χ^2=0.29; p=0.58) and third-year students had slightly higher stress levels (75.4%) than students in other years (χ^2=0.42; p=0.93) (Table 1)

Moreover, the analysis indicated that there was no significant association between regular attendance in academic coursework and stress levels among the students. The distribution of stress did not significantly differ between regular and irregular attendees (χ2=1.2; p=0.25).

In this study, procrastination and the presence of stress showed statistically significant relation (χ2=3.8; p=0.049) (Table 1).

Students who reported physical symptoms were more likely to be stressed than those who did not perceive physical symptoms (Table 1).

Table 1: The study characteristics

Study characteristics		STRESS			
		Yes	No	Total	P Value
Gender	Male	82	34	116	0.584
	Female	150	54	204	
I am student of	1st Year MBBS	72	28	100	0.936
	2nd Year MBBS	68	28	96	
	3rd Year MBBS	49	16	65	
	4th Year MBBS	43	16	59	
Did you perceive any physical problems like headache, anxiety etc. due to stress?	Yes	184	46	230	0.000*
	No	48	42	90	
Procrastination (Postponement of work)	Yes	196	66	262	0.049*
	No	36	22	58	

*The Chi-square is significant at less than 0.05 level

The distribution of stress levels among the study subjects, revealing a prevalence of approximately 72.5% for stress of all levels. The prevalence of severe stress was identified to be 28.7%, while moderate stress accounted for 21.3% and mild, no stress is 22.5%, 27.5% respectively.

Students who are presented with stress have different sources like "Demanding daily academic work", "Pressure to perform well in exams", "Financial problems", "Personal problems" and "Other problems", all these sources of stress have been shown statistically significant with p value less than 0.05 as shown in Table 2.

Table 2: Sources of Stress

Sources of Stress		STRESS					
		Yes		No			
		Count	Row N %	Count	Row N %	Total	P Value
Demanding daily academic work	Yes	154	77.8%	44	22.2%	198	0.007*
	No	78	63.9%	44	36.1%	122	
Pressure to perform well in exams	Yes	192	75.0%	64	25.0%	256	0.045*
	No	40	62.5%	24	37.5%	64	
Financial Problems	Yes	116	86.6%	18	13.4%	134	0.000*
	No	116	62.4%	70	37.6%	186	
Personal Problems	Yes	166	78.3%	46	21.7%	212	0.001*
	No	66	61.1%	42	38.9%	108	
Other Problems	Yes	126	80.8%	30	19.2%	156	0.001*
	No	106	64.6%	58	35.4%	164	

*The Chi-square is significant at less than 0.05 level

Table 3 shows the association between student's academic performance, year of study and procrastination with the presence of stress was examined throughbinary logistic regression. The study revealed that there was no significant association between academic performance, year of study and procrastination with the stress experienced by the students.

Table 3: Binary Ligistic Regression Analysis

Variables	AOR (95% C.I)	P-Value
Year of Study		
1st year (ref)	-	-
2nd year	1.0 (0.5-1.9)	0.88
3rd year	0.8 (0.3-1.7)	0.57
4th year	0.8 (0.4-1.9)	0.77
Procrastination (Postponement of work)		
Present (ref)	-	-
Absent	1.8 (0.9-3.3)	0.05
Academic Performance in last 30 days		
Very Poor (ref)	-	-
Poor	0.8 (0.2-3.1)	0.79
Good	0.8 (0.2-3.0)	0.81
Very Good	1.8 (0.3-11.1)	0.50

*Significance at p < 0.05; AOR: Adjusted Odds Ratios; CI: Confidence Interval

Table 4 shows the proportion of male students with severe stress perceiving physical problems like headache, anxiety (38.9%) is slightly higher than that of female students (χ^2=11.02, p=0.012)

Table 4: Relation between levels of stress and perceived physical problems due to stress

Physical Problems			Kessler K10 Stress Levels					P Value
			No Stress	Mild Stress	Moderate Stress	Severe Stress	Total	
Did you perceive any physical problems like headache, anxiety etc. due to stress?	Yes	Male	18	20	10	28	72	0.012*
		Female	28	30	42	58	158	
	No	Male	16	16	10	2	44	0.056
		Female	26	6	10	4	46	

Note: *Significance at p < 0.05

Table 5 shows the proportion of students with severe stress and very poor academic performance (50%) is substantially larger than those with other levels of stress (χ^2=11.7, p=0.22)

Table 5: Academic Performance

Academic performance		Kessler K10 Stress Levels				
		No Stress	Mild Stress	Moderate Stress	Severe Stress	Total
How is your academic performance during your past 30 days?	Very Poor	4	2	2	8	16
	Poor	20	18	16	30	84
	Good	60	48	48	54	210
	Very Good	4	4	2	0	10
	Excellent	0	0	0	0	0

Our findings demonstrated a Cronbach's alpha co-efficient of 0.913, which indicates a high degree of internal consistency among the survey questions used in the study.

Discussion

Stress can sometimes serve as a motivating factor, helping people to focus and work harder towards achieving a goal. However, when stress is prolonged or chronic, it can have negative impacts on a person's performance and efficiency. Chronic stress can lead to physical and mental exhaustion, difficulty concentrating and a reduced ability to think and make decisions. It is important to find healthy ways to manage stress and to take breaks to recharge and reduce the risk of burnout.

Several studies have shown that medical students experience a higher prevalence of emotional distress compared to the general population[17,18].

This research aimed to investigate the perceived levels of stress and their primary sources among health profession students and explore the possible association between stress levels and academic performance. The findings indicated that 28.7% of the participants reported high stress levels, which is consistent with previous studies conducted in Saudi Arabia. This may be due to the higher academic demands and time constraints placed upon the students[19].

The study further revealed that the primary sources of stress were related to demanding daily academic work, pressure to perform well in exams, financial problems, personal problems. Similar results were reported in a study by Al-Dubai et al in medical students of Malaysia, which ranked academic stress, residence and other stressors encountered by students[20].

In our study the procrastination or postponement of college work like exam preparations, record-work, assignments etc. to the last moment had ill effects on stress levels and you can see the similar procrastination effect on stress in the study conducted by Kuftyak, Elena from Moscow institute of Psychoanalysis[21].

Stress is manifested in different forms and one of it is perceived in physical problems like headache, anxiety, insomnia etc. and in this study, it showed a significance and is similar to the study conducted by Regab et al from Middle East and also Bergmann C from Germany[22,7].

In a study conducted by Tyssen et al, it was discovered that mental distress and depression were significant predictors of suicidal ideation among medical students in Norway[23].

This study employed the Kessler K-10 psychological stress assessment tool, which has been widely used in similar research studies. For instance, a related investigation conducted by Qamar K from Pakistan also utilized this tool and discovered that female medical students experienced higher levels of stress and Kessler k10 was also used in medical students by Sat pal et al from India[24,25].

According to research conducted by a medical college in New Delhi, it was found that depression, anxiety, emotional distress is prevalent among medical students, highlighting the pressing need for personalized counselling, support and attention[26].

Conclusion

While conducting our study, we discovered that a large percentage of students (72.5%) were experiencing stress, with 28.7% of them being severely affected. Our research revealed that stress was significantly associated with various factors such as procrastination, perceived physical problems and multiple sources of stress such as demanding academic work, exam pressure, financial problems and personal problems.

Recommendations:

Given that the majority of students are experiencing stress due to academic & other factors, it is imperative that they are equipped with better life skills such as time management, study planning and relaxation techniques such as meditation, yoga and extracurricular activities. Furthermore, it is necessary to review and make changes to the medical curriculum to address the mental health of students. Future studies should also be conducted to gain a deeper understanding of the various medical college environments in order to enhance the mental well-being of students throughout the country.

Limitations:

Student's family background, economic status and marital status, have not been taken into account which might have an impact on stress levels in medical students.

Since this cross-sectional study relied on self-reported data provided by the participating students, there is a possibility of reporting bias that may have resulted from a variety of factors. Respondent's personal interpretation of the questions, their desire to report their emotions in a certain way and the potential for inaccuracies in their responses could all contribute to this bias. Due to the limited scope of the study, it may not fully capture the negative impact of stress on medical students in its entirety. Therefore, the study results should be interpreted with caution and additional research may be necessary to corroborate the findings.

Ethics Approval:

Approval from the Institutional Ethics Committee was obtained for the study.

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