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Stress among students of a medical school: An analytical cross-sectional study

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Abstract

Background: Psychological distress is high in medical undergraduate students which has a huge impact on their mental health and academic performance.

Objectives: This study aimed to assess the prevalence of stress among medical students and potential factors contributing to stress levels among undergraduate medical students at Kathmandu Medical College Teaching Hospital (KMCTH) in Nepal.

Methods: An analytical cross-sectional study was conducted among undergraduate medical students at KMCTH between 2023 August 13 to 2023 December 16 using convenience sampling. Ethical approval was obtained from the Institutional Review Committee of Kathmandu Medical College and the calculated sample size was determined to be 378. Data were collected with a questionnaire containing socio-demographic questions and the Perceived Stress Scale (PSS-10) to assess stress levels.

Results: Among the 378 participants, 48 (12.7%) reported high stress, 295 (78%) moderate stress, and 35 (9.3%) low stress. Gender differences were evident, with female students having significantly more preponderance to high perceived stress (36, 20.3%) than males (12, 6%). Final-year students reported the greatest percentage (7, 23.3%) of high perceived stress.

Conclusion: The study reveals a high level of stress among medical students at KMCTH, particularly in the final year and among female students. Strategies to reduce stress, such as aligning the curriculum with the duration of study and further investigating the causes of higher stress in females, are crucial for improving mental health and preventing stress-related illnesses.

Key words: Mental health; Medical school; Perceived stress; Stress.

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INTRODUCTION

Stress can be defined as a state of worry or mental tension caused by a difficult situation.[1] A systematic review showed overall psychological distress was relatively higher in medical undergraduates than in the general public.[2] Medical education has been one of the stressful, demanding fields with an overwhelming burden of information that leaves students with little time to relax and engage in recreational activities.[3] The persistent stress has been associated with anxiety, depression, interpersonal conflict, sleeping disorders, low academic performance, decreased concentration, and reduced self-esteem.[4]

There have been very few studies conducted in Nepal to assess psychological stress among medical students. Since stress has a huge impact on the mental health, academic performance and career of students, regarding which teachers, parents and students themselves are

unaware, the investigators felt the need to conduct this study to identify the present situation regarding the prevalence of stress, among medical students of Kathmandu Medical College Teaching Hospital (KMCTH) so that it may aid in improving the mental health of medical students and also prevent potential risk of developing stress-related illness in upcoming days.

METHODOLOGY

This analytical cross-sectional study was conducted among undergraduate medical students studying at KMCTH from 2023 August 13 to 2023 December 16. Ethical approval was obtained from the Institutional Review Committee of KMCTH (Ref. 31082023/03). The study population consisted of undergraduate students of Bachelor of Medicine and Bachelor of Surgery (MBBS) and Bachelor of Dental Surgery (BDS) from the first to the fourth year who were willing to participate, interns were excluded. Sample size was calculated in reference to prevalence of stress 62.66%[5] and allowable error 5%. By using the formula z^2pq/e^2 and adding a 5% non-response rate, sample size calculated was 378.

Participants were asked to fill up the standard questionnaire through Google Forms. The questionnaire was in English language and had two sections consisting a total of 17 items. The first section consisted of seven socio-demographic questions and the second section consisted of 10 standard Perceived Stress Scale (PSS-10) for assessing level of stress.[6] The PSS, is a five point Likert scale ranging from "0" never to very often. Likewise, certain items were reverse coded. Score ranged from 0-40, score ranging from 0-13 would be considered low stress, 14-26 moderate stress and 27-40 high perceived stress. Data were collected and stored in Microsoft Excel Sheet and the collected data were rechecked and validated before analysis for errors. Analysis of the data was done later with IBM SPSS Statistics for Windows, version 26 (IBM Corp., Armonk, N.Y., USA). Descriptive statistics (mean, frequency, standard deviation, and percent) and associations between the variables (chi-square and chi-fisher's exact test) were applied. Informed consent was taken online at the start of the survey.

RESULTS

The socio-demographic data of the participants includes 177 (46.8%) females and 201 (53.2%) males (Table 1). Among 378 students who completed the questionnaire, 48 (12.7%) had high perceived stress, 295 (78%) had moderate stress, and 35 (9.3%) had low stress (Table 2).

Gender distribution of stress showed that females had more preponderance to severe or high stress (36, 20.3%) than males (12, 6%), ($p < 0.001$), whereas 158 (78.6%) males and 137 (77.4%) females had moderate stress and 31 (15.4%) males and four (2.3%) females had low stress (Table 2).

When the level of stress was assessed among students of different years of study, seven (23.3%) final-year students had high stress whereas only six (6.7%) third-year students had high stress. Out of 378 students, the majority of students (270, 71.4%) were staying in hostels, 32 (11.8%) of them had high stress, 210 (77.8%) had moderate stress, and 28 (10.4%) had low stress. No significant difference was observed in the level of stress among the students living in the hostel, or out of the hostel ($p > 0.05$). The difference also was not statistically significant ($p > 0.05$) among the students having parents holding different occupations (Table 2).

Table 1: Demographic data of participants (N = 378)

Socio-demographic variables	n (%)
Age (years)	
17-20	126 (33.3)
21-24	236 (62.4)
25-30	16 (4.2)
Sex	
Female	177 (46.8)
Male	201 (53.2)
Area of residence	
Rented rooms (alone/with friends)	53 (14)
Hostel	270 (71.4)
With family	55 (14.6)
Stream of study	
MBBS	323 (85.4)
BDS	55 (14.6)
Year of study	
First year	175 (46.3)
Second year	84 (22.2)
Third year	89 (23.6)
Final year	30 (7.9)
Government scholarship	
Yes	44 (11.6)
No (paying)	334 (88.4)
Parental occupation	
Business	143 (37.8)
Doctor/Engineer/Teacher	112 (29.7)
Government employee	65 (17.2)
Others	58 (15.3)

Table 2: Stress level (N = 378)

Variables	Low stress n (%)	Moderate Stress n (%)	High stress n (%)	Fisher's Exact Test p-value
Sex				
Male	31 (15.4)	158 (78.6)	12 (6.0)	<0.001
Female	4 (2.3)	137 (77.4)	36 (20.3)	
Year of study				
First year	15 (8.6)	136 (77.7)	24 (13.7)	0.07
Second year	4 (4.8)	69 (82.1)	11 (13.1)	
Third year	14 (15.7)	69 (77.5)	6 (6.7)	
Final year	2 (6.7)	21 (70.0)	7 (23.3)	
Area of residence				
Rented rooms (alone/with friends)	1 (2.0)	43 (81.0)	9 (17.0)	0.26
Hostel	28 (10.4)	210 (77.8)	32 (11.8)	
With family	6 (10.9)	42 (76.4)	7 (12.7)	
Parental occupation				
Business	12 (8.4)	109 (76.2)	22 (15.4)	0.31
Doctor/Engineer/Teacher	10 (8.9)	88 (78.5)	14 (12.6)	
Government Employee	6 (9.2)	49 (75.4)	10 (15.4)	
Others	7 (12.0)	49 (84.6)	2 (3.4)	
Government scholarship				
Yes	2 (4.6)	36 (81.8)	6 (13.6)	0.625
No (paying)	33 (9.9)	259 (77.5)	42 (12.6)	

p <0.05 = significant.

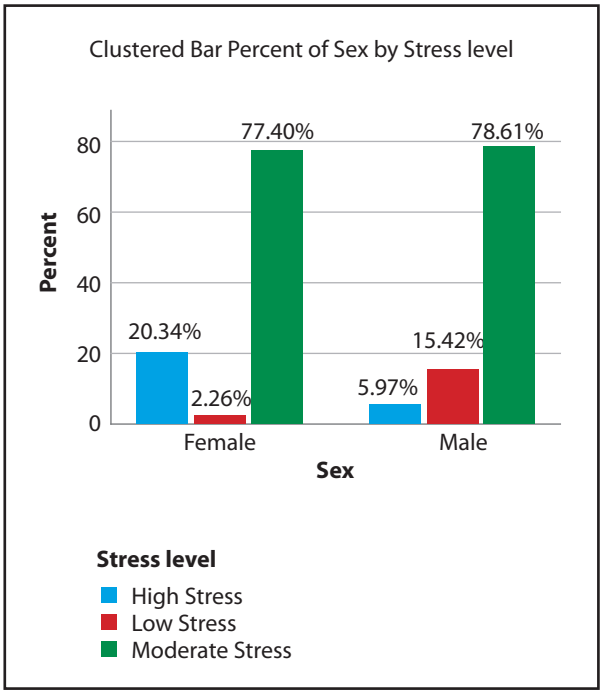

Figure 1: Stress level among different sex groups (N = 378)

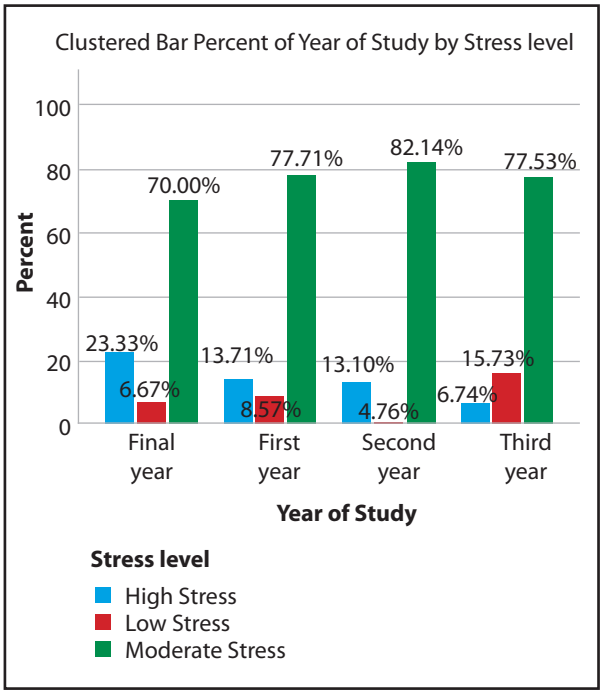

Figure 2: Stress level among different years (N = 378)

DISCUSSION

Stress among medical students has become a universal entity, they face multifactorial stressors involving academic (understanding the complex and vast course, reading numerous textbooks, the length of the course, and examinations), physical, emotional, family, and social stressors.[7]

In this study, authors evaluated perceived stress among undergraduate medical students along with its correlation to stressors and coping mechanisms. The authors of present study found that among the 378 participants, 48 (12.7%) reported high stress levels, 296 (78%) reported moderate stress levels and 35 (9.3%) of the population reported low stress levels. A similar study reported high perceived stress in 12.38%.[8] Another previous study reported that the prevalence of stress was 31.2% in three British universities.[9] In a study conducted in south India, 10.8% had high perceived stress which is lower than the report of this study.[10]

The results of this study revealed that female students had significantly higher perceived stress than male students reported in 36 (20.3%) and 12 (6.0%) respectively, however moderate and low stress was found to be higher in male students than the female students. Likewise, a similar study conducted in Egypt reported higher perceived stress among female students in comparison to male students.[11]

In terms of the year of study, a greater percentage of high perceived stress was reported among final year students seven (23.3%), followed by first, second and third year reported as 24 (13.7%), 11 (13.1%), and six (6.7%) respectively. High stress is reported during the final year due to greater academic pressure in comparison to other years, the lowest percentage is reported during the third year as the duration is longer, providing more time to cover the vast syllabus. In a prior descriptive cross-sectional study, the level of stress among students decreased from 83% in the first year of MBBS to 60% in the second year.[12] However, stress levels experienced a resurgence during the clinical years, reaching 79% in the third year and 85% in the fourth year.[12]

The likelihood of stress during medical school may serve as an indicator for future mental health issues; however, it is noteworthy that students often refrain from seeking assistance for their challenges.[9] Elevated stress levels can result in anxiety disorders, a tendency towards suicidal thoughts, and various other psychological repercussions for those students who struggle to manage these challenges.[13] Medical educators need to be aware of the occurrence, reasons, and levels of stress in students. This knowledge is crucial as it not only impacts their well-being but also influences their academic performance at various stages during their study period.[9]

The limitation of this study was that this was a cross-sectional study relied on self-reported information from students. Consequently, there exists a potential for reporting bias, which could stem from respondents' interpretations of the questions, a tendency to convey their emotions in a specific manner, or inaccuracies in their responses.

CONCLUSION

Majority of the students had moderate to high levels of stress, with academic stress in the final year being the predominant factor in comparison to other years and female students had significantly higher perceived stress than males. Information from this study can be used to develop appropriate methods to reduce stress. This study also signifies the need to conduct further studies to identify the cause of higher stress in female students than males. Also, the categorisation of stress into various levels can help in the prevention of further stress-related diseases like anxiety, depression, panic attacks, etc. Those who are already in 'high stress' should be advised to seek professional help. Further longitudinal multicentric studies are recommended for generalisation of findings.

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