Indian Journal of Public Health Research and Development
Volume 14 No. 1, January-March 2023

Prevalence of Psychological Stress among Undergraduate Medical Students in Southern District of Karnataka

Rajashree Kotabal[1], Kruthika K[2], Jayashree KS[3]

[1,2]Assistant Professor, [3]Statistician, Department of Community Medicine, Kodagu Institute of Medical Sciences, Madikeri.

How to cite this article: Rajashree Kotabal, Kruthika K, Jayashree KS. Prevalence of Psychological Stress among Undergraduate Medical Students in Southern District of Karnataka. Indian Journal of Public Health Research and Development 2023;14(1).

Abstract

Background: Medical students experience more stress because of the vast medical syllabus, immense academic workload, inter and intrapersonal issues and motivation-related hurdles, financial and personal reasons.

Objectives: To assess the prevalence of stress and stressors among undergraduate medical students and to find thefactors affecting their levels of stress.

Methodology: A cross-sectional study was conducted among Phase 1 to 3 medical students of Kodagu Institute of Medical Sciences, Madikeri, Karnataka for a period of 2 months. The data was collected using standard Medical Student Stressor Questionnaire and Perceived Stress Scale questionnaire.

Results: Out of 386 students 16.6%,76.7% and 6.7% of the students were suffering from High, Moderate and Low stress respectively. Academic-related stressors were causing more stress and least by Drive and Desire Related Stressors. Medical students with >20 years of age group, females, final year students, and occupation of their father being doctor showed significant association with the level of stress

Conclusion: In our study, 93.3% of the students were suffering from stress. Academic-related stressors were the major causes of stress among medical students. Logistic regression analysis depicts that a significant association was present between the level of stress and female students, final year MBBS students.

Keywords: Medical students, Psychological Stress, Perceived stress, Stressors.

Introduction

All over the world medical profession is considered an esteemed profession. It is an immense dream for parents of many students and pre-university students to get into the medical course. But as they enter into the course theywill start experiencing stress because of the vastmedicalsyllabus, hefty academicworkload, high academic and parentexpectations, long study hours, and tough competition among students. Many other factors like teaching style, inter and intrapersonal issues, drive and motivation-related

Corresponding Author: Kruthika K, Assistant Professor, Department of Community Medicine, Kodagu Institute Of Medical Sciences, Madikeri-571201, Karnataka, India.

E-mail: kruthikakishore@gmail.com

Mobile: +918105117980

troubles, lack of leisure time, financial problems and personal reasons such as emotional and family problems may also add-up to the distressed state of the students.[1,2]

The perception of stress is a highly subjective phenomenon so each person has different levels of stress. Psychological stress is defined as "The unique discomforting, emotional state experienced by an individual in response to a specific stressor or demand that results in harm, either temporary or permanent, to the person".[1] If this is experienced by students it will have a negative impact on their mental health status which leads to sleep deprivation, reduced concentration, lack of confidence, substance abuse, anxiety, interpersonal conflict, depression,suicidal attempts, etc.

From the previous studies, it is estimated that the prevalence of stress among medical students is 28.5–78%.[2] Multiple studies have disclosed that significantly high-stress level was noticed among medical students and high stress has been reported in multiple countries[3-5] and more than half of the medical students were found to be affected by depression, anxiety, and stress.[6]

In India, only a few studies have been conducted tofind theprevalence of stress and stressors among medical students by using different methods. The current study was done to assess the prevalence of stress and stressors among undergraduate medical studentsand to find the factors affecting their levels of stress.

Methodology

A cross-sectional study was conducted among Phase 1 to Phase 3 medical students which include all term students of Kodagu Institute of Medical Sciences, Madikeri, Karnataka for a period of 2 months by nonprobability sampling method. The data was collected by using the standard Medical Student Stressor Questionnaire(MSSQ) and Perceived stress scale questionnaire(PSS). Ethical clearance was taken by the Institutional ethical committee of Kodagu Institute of Medical Sciences, Ref id: KoIMS/IEC/24/2021-22.Informed written consent was obtained from the students after explaining the study procedure.The participation of students was voluntary, and they were guaranteed about confidentiality.

The questionnaire includes socio-demographic characteristics of the students, six domains of stress-related questions of the standard Medical Student Stressor Questionnaire (MSSQ) to find out the stressors and level of stress, and 10 questions from the Perceived Stress Scale(PSS) to find out the prevalence of stress.A stressor is defined as a personal or environmental eventthat causes stress and these stressors were categorized as 6 domains of stress. Finally combining all these 6 domains of stress in a single questionnaire is the Medical Student Stress Questionnaire. Six domains of stress in MSSQ are: Academic Related Stressors (ARS), Interpersonal and Intrapersonal Related Stressors (IRS), Teaching and Learning Related Stressors(TLRS), Social Related Stressors(SRS), Drive and Desire Related Stressors(DRS), Group Activities Related Stressors(GARS) and each domain have many questions and each question has 5 responses. In MSSQ the responses will be marked from causing no stress at all as 0 to causing severe stress as 4. Mean domain score was calculated and classified it as 0.00 – 1.00 = Mild stress, 1.01 – 2.00 = Moderate stress, 2.01 – 3.00 = High stress& 3.01 – 4.00 = Severe stress[7]. The perceived stress scale consists of 10 questions and each question has 5 responses and which were marked from 0 as never to 4 as very often and scores were classified as 0-13=low stress, 14-26 = moderate stress, and 27-40 = high perceived stress.[8]

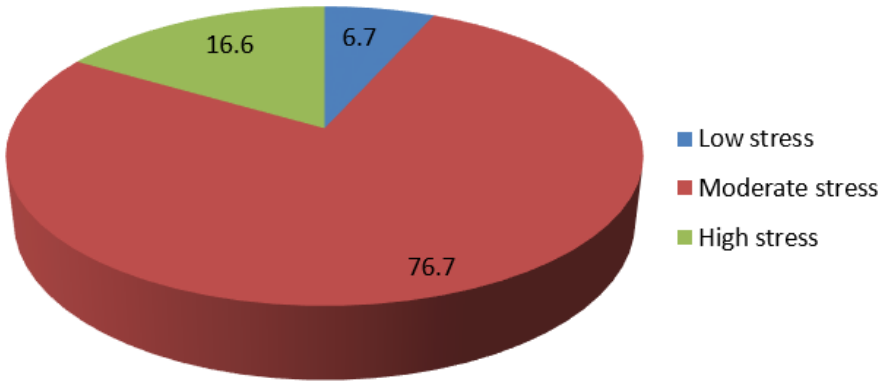
Statistical analysis: It was done by using Microsoft Excel and SPSS 25 software.The data was entered in the Microsoft Excelspreadsheet. Percentage andMean domain score was calculated. The Chi-square test was used for testing the significance between levels of stress and socio-demographic factors. Logistic regression was used to adjust the confounding factors.

Results

The present study was conducted among Phase 1 to Phase 3 medical students of Kodagu institute medical sciences, Madikeri. Total 386 students have given consent and participated. Out of 386 students, 43.8% of the students belongs to ≤20 years of age

group and 56.2% of the students belongs to >20 years. 202(52.3%) were boys and 184(47.7%)were girls. 26.4%of the students were studying in 1st Year MBBS, 26.4%, 28.5% ,and 18.7% of the students were studying in 2nd year, 3rd year, and 4th year MBBS respectively. Among all, 10.4% of the student's father were being doctors.

According to Perceived Stress Scale, the majority (76.7%) of the students were suffering from Moderate levels of stress and 16.6% of the students were suffering from high stress [Graph 1].



Graph 1: Prevalence of stress among Medical students.

In this study majority of the students were consider academic-related stressors (mean score 2.27±0.89) were causing more stress followed byTeaching and Learning Related Stressors(mean score 1.69±0.89) and least by Drive and Desire Related Stressors (mean score 1.29±0.96)[Table1].

Table 1: Percentage of stress among different domains.

Domains of stress	Stress		Mean score (Mean ±SD)
	Yes	No	
Academic Related Stressors (ARS)	99.5%	0.5%	2.27±0.89
Interpersonal and Intrapersonal Related Stressors(IRS)	97.7%	2.3%	1.47±0.84
Teaching and Learning Related Stressors(TLRS)	98.2%	1.8%	1.69±0.89
Social Related Stressor(SRS)	97.9%	2.1%	1.59±0.78
Drive and Desire Related Stressors(DRS)	90.2%	9.8%	1.29±0.96
Group Activities Related Stressors(GARS)	97.2%	2.8%	1.89±0.92

Note: SD – Standard Deviation

Out of 386 students, severe and high level of stress was found among 61% of the students due to Academic related stressors.Social Related Stressors(SRS) were causing the prevalent moderate level of stress among 50.5% of the students.[Table 2]

Table 2: Levels of stress and different Domains

Classification	Academic Related Stressors	Interpersonal and Intrapersonal Related Stressors	Teaching and Learning Related Stressors	Social Related Stressors	Drive and Desire Related Stressors	Group Activities Related Stressors
Mild	10.6%	36.0%	27.2%	25.9%	50.5%	23.1%
Moderate	27.7%	37.0%	39.6%	50.5%	31.1%	35.8%
High	42.0%	22.5%	27.2%	18.9%	13.0%	32.4%
Severe	19.7%	4.4%	6.0%	4.7%	5.4%	8.8%

Levels of stress from all 6 domains were categorized as mild stress in one category and moderate, high, and severe stress in another category. The Association between socio-demographic factors and the level of stress was calculated. Age, sex, Year of studying, and Father's occupation show significant association with the level of stress [Table 3].

Table 3: Association between socio-demographic factors and level of stress (MSSQ).

Variables		Mild stress	Moderate, High, and severe stress	Chi-square value	p-value
Age	≤20 years	40(23.7%)	129(76.3%)	3.924	0.048
	>20 years	34(15.7%)	183(84.3%)		
Sex	Male	51(25.2%)	151(74.8%)	10.098	0.001
	Female	23(12.5%)	161(87.5%)		
Year of studying	1st year	28(27.5%)	74(72.5%)	11.826	0.008
	2nd year	18(17.6%)	84(82.4%)		
	3rd year	23(20.9%)	87(79.1%)		
	4th year	5(6.9%)	67(93.1%)		
Father Occupation	Medico	3(7.5%)	37(92.5%)	3.923	0.048
	Non-medico	71(20.5%)	275(79.5%)		
Mother Occupation	Medico	2(10.05)	18(90.0%)	1.145	0.285
	Non-medico	72(19.7%)	294(80.3%)		
Habits	Yes	2(18.2%)	9(81.8%)	0.007	0.933
	No	72(19.2%)	303(80.8%)		
Hobbies	Yes	68(20.2%)	268(79.8%)	1.906	0.167
	No	6(12.0%)	44(88.0%)		

When Logistic regression analysis was applied to find out the association between the significant variables and level of stress we found that female students(AOR: 2.316, 95%CI: 1.331-4.032 and p-value: 0.003), final year MBBS students (AOR: 3.563, 95% CI: 1.070-11.861, p value:0.038) were associated with moderate to severe levels of stress [Table 4].

Table 4: Logistic regression among different variables and level of stress(MSSQ)

Variables		Mild stress	Moderate, High, and severe stress	AOR*(95% CI**)	p-value
Age	≤20 years	40(23.7%)	129(76.3%)	1.166 (0.575 - 2.365)	0.671
	>20 years	34(15.7%)	183(84.3%)		
Sex	Male	51(25.2%)	151(74.8%)	2.316 (1.331-4.032)	0.003
	Female	23(12.5%)	161(87.5%)		
Year of studying	1st year	28(27.5%)	74(72.5%)	3.563 (1.070-11.861)	0.038
	2nd year	18(17.6%)	84(82.4%)		
	3rd year	23(20.9%)	87(79.1%)		
	4th year	5(6.9%)	67(93.1%)		
Father Occupation	Medico	3(7.5%)	37(92.5%)	0.532 (0.147-1.924)	0.336
	Non-medico	71(20.5%)	275(79.5%)		

Note: * Adjusted Odds Ratio, ** Confidence Interval

Discussion

Prevalence of low, moderate, and high perceived stress in our study was found to be 6.7%, 76.7%, and 16.6% respectively. This was in comparison with the study done byAgrawal, et al in which 24.3% had low, 65.9% had moderate, and 9.8% had high stress.[9] The percentage of medical students without stress and with mild, moderate, and severe stress was 32%, 24%, 22%, and 21.8%, respectively in a study done by Rafique N.[10] One plausible explanation for this difference in the level of stress could be due to different geographical areas with differences in the curricula, teaching facilities, experience of the teachers, personal problems of the students, and also due to the use of different diagnostic instruments or scales for finding out stress among medical students.

Our study revealed that academic-related stressors (99.5%)were the major source of stress among medical students followed by Teaching and Learning Related stressors (98.2%). This is similarto the findings of a study done in Ethiopia.[11] Our study also showed that high and severe stress was more observed for ARS while mild stress was prevalent for Drive and Desire Related Stressorssimilar findings were found in the study done in South India.[12]

The present study showed that a significant association was present between the level of stress and >20 years age group students. Similar results were found in the study done by Bhavani Nivetha M et al.[13] and Bassols AMS.[14] The reason for this may be as the age increasesthe volume of thestudy also increases which is associatedwiththe high academic workload but this is in contrast with the results from a study done by Kumar et al.[15]where no difference was observed between stress and age groups.

Our study demonstrated thata significant association was noticed between the level of stress and female students. This finding is in agreement with the findings of the other studies[13,16,17] showing that high stress was noted among female students but there was no significant association found.

This study showed a significant association between the level of stress and students studying in final year MBBS which was similarto the results ofthe study done by Ragab E A et al.[2] this may be due to an increase in the clinical load, curriculum, and fear of failure. This finding contradicts those of Saeed AA,[17] and Kakoli Ghosal[18] who reported first-year students and 2nd year students were showing high stress than the final-year students.

In our study, a significant association was found between stress and students whose parent was in the medical field. A similar result was found in the study Sreeramareddy C, in Nepal.[19] Doctors or medical background parents will expect high results from their children which is the sourceof high stress among the students.But study done by Bhavani Nivetha M et al.[13] shows a low level of stress amongstudents whose parents were doctors compared to non-medical field parents.

After doing logistic regression the present study revealed that female students and final year students showa significant association with the level of stress. Similarly in Ragab et al.[2] study female MBBS students and final year students show Significant association withacademic-related stress. Al-Qahtani MF showed a year of studying was associated with a level of stress.[20]

Conclusion

The current study shows that 76.7% of the students were suffering from moderate stress and 16.6% of the students were suffering from high stress. Academic-related stressorswere causing more stress among medical students followed by Teaching and Learning Related Stressors.>20 years age group students, female,final year students, and parents being in the medicalprofessionwere found to be significantly associated with stress. When Logistic regression analysis was done, female students and final year students showed significant association with the level of stress.

Recommendations:

Academic-related stressors were the major factors causing stress among medical students so we recommend life skill education, time management, and proper study planningshould be given to the students. To reduce the stress among medical students, colleges should implementrelaxation techniques such as Yoga, meditation, and extracurricular activities.

Future larger studies need to be conducted among different medical college studentsin order to have acomprehensiveanalysis report soas to improve the overall mental health status of medical students fromall over the country.

Funding: Nil

Conflict of Interest: None declared.

References

1. Sahu PK, Nayak BS, Rodrigues V, Umakanthan. Prevalence of Psychological Distress among Undergraduate Medical Students: A Cross-Sectional Study. Int J Appl Basic Med Res. **2020 Oct-Dec**;10(4):270–275.
2. Ragab et al. Stress and its correlates among medical students in six medical colleges: an attempt to understand the current situation. Middle East Current Psychiatry (2021) 28:75.
3. Shaikh BT, Kahloon A, Kazmi M, Khalid H, Nawaz K, Khan N, et al.Students, stress and coping strategies: A case of Pakistani medical school. Educ Health (Abingdon) 2004;17:346-53.
4. Saipanish R. Stress among medical students in a thai medical school. Med Teach 2003;25:502-6.
5. Radcliffe C, Lester H. Perceived stress during undergraduate medical training: A qualitative study. Med Educ 2003;37:32-8.
6. Iqbal S, Gupta S, Venkatarao E. Stress, anxiety & depression among medical undergraduate students & their socio-demographic correlates. Indian J Med Res. 2015;141:354-7.
7. Muhamad S B Yusoff, Ahmad F A Rahim and Mohd J Yaacob. The development and validity of the Medical Student Stressor Questionnaire (MSSQ), ASEAN Journal of Psychiatry, Jan-June 2010; 11 (1). Available online at http://www.aseanjournalofpsychiatry.org/oe11105.htm
8. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav 1983;24:386-96.
9. Agrawal N, Sharma H, Dabas A, Mishra A. Perceived Stress Among Medical Students and Doctors in India During COVID-19 Pandemic. MAMC J Med Sci 2021;7:14-20.
10. Rafique N, Al-Asoom LI, Latif R, Al Sunni A, Wasi S. Comparing levels of psychological stress and its inducing factors among medical students.J Taibah Univ Med Sc 2019;14(6):488e494.
11. Melaku L, Mossie A, Negash A. Stress among Medical Students and Its Association with Substance Use and Academic Performance. Journal of Biomedical Education.2015.
12. Tinju James, Richard Sunny, Femina Jose. Analysis of stressors among undergraduate medical students in a teaching medical institution of South India. International Journal of Contemporary Medical Research 2020;7(2):B5-B8.
13. Bhavani Nivetha M, Ahmed M, Prashantha B. Perceived stress and source of stress among undergraduate medical students of Government Medical College, Mysore. Int J Community Med Public Health 2018;5:3513-8.
14. Bassols AMS, Carneiro BB, Siqueira AM, Guimarães GC, Okabayashi LMS, Carvalho FG, Silva ABD. Stress and coping in a sample of medical students in Brazil. Arch Clin Psychiatry. 2015;42(1):1-5
15. Kumar SD, Kavitha HS, Kulkarni P, Siddalingappa H, Manjunath R. Depression, anxiety and stress levels among medical students in Mysore, Karnataka, India. Int J Community Med Public Health. 2016;3:359-62.
16. Seedhom AE, Kamel EG, Mohammed ES, Raof NR. Predictors of perceived stress among medical and nonmedical college students, Minia, Egypt. Int J Prev Med 2019;10:107.
17. Saeed AA, Bahnassy AA, Al-Hamdan NA, Almudhaibery FS, Alyahya AZ. Perceived stress and associated factors among medical students. J Fam Community Med 2016;23:166-71.
18. Kakoli Ghosal*, Abhiram Behera, Study on prevalence of stress in medical students, J Res Med Dent Sci, 2018, 6 (5):182-186
19. Sreeramareddy C, Shankar P, Binu V, Mukhopadhyay C, Ray B, Menezes R. Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. BMC Medical Education. 2007;7(1):26.
20. Al-Qahtani MF, Alsubaie AS. Investigating Stress and Sources of Stress Among Female Health Profession Students in a Saudi University. Journal of Multidisciplinary Healthcare 2020;13: 477–484.