ScientificScholar®
Knowledge is power
Publisher of Scientific Journals

https://thegjms.org/

Global Journal of Medical Students

Original Article

Resilience as a Buffer against Stress: Effects on Academic Performance in Indian Medical Students

Dazelle Sungoh[1], Shivanand Kattimani[1], Rajeswari Murugesan[2]

[1]Department of Psychiatry, Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, [2]Department of Biostatistics, All India Institute of Medical Sciences, Mangalagiri, Andhra Pradesh, India.

ABSTRACT

Objectives: Students in the MBBS program experience stress. The main source of stress is academically related. We assessed academic resilience, a new concept and its relationship with stress and academic performance among medical students at a Government Medical Institute.

Material and Methods: Medical students (n = 327) from the 1st to 4th year were included based on probability proportional to size. We assessed their academic resilience using the Academic Resilience Scale-30 (ARS-30) and stress among these using the Medical Student Stress Questionnaire (MSSQ) during the initial months of the academic year. We collected their year-end examination results (n = 314).

Results: Stress level among these students was moderate overall (1.81 ± 0.69). Stress was higher among final-year students. Their main ways of coping with stress were procrastination (60%) and social isolation (52.3%). Students' academic resilience varied among the years of study; 1st-year students showed higher academic resilience (median score: 114.50 [105.2, 126.75]) compared to final-year students (median score 103.0 [89.50, 117.75]). The study showed that academic performance had a positive correlation with and academic resilience (rho= 0.182, p <0.05) but a negative correlation with medical student stress(rho= -0.161, p <0.05). The mediation analysis showed that the estimated coefficient for the direct effect of ARS-30 on MSSQ was −0.013, indicating that a one-unit increase in ARS-30 was associated with a 0.013 unit decrease in MSSQ, assuming a linear relationship.

Conclusion: Academic resilience showed a direct relationship with academic performance and stress among medical students. Thus, this study emphasises the importance of boosting academic resilience as a viable strategy to overcome stress-related challenges in medical education.

Keywords: Medical students, Stress, Academic resilience, Academic performance

INTRODUCTION

The MBBS course demands unwavering dedication, focused attention and substantial effort, making it a challenging journey for medical students who enter early adulthood. This phase is marked by competition among peers, mastering extensive study materials, coping with setbacks and striving for a balanced life outside of academics. How students manage these challenges significantly impacts their stress levels.

When the curriculum's demands surpass a student's coping abilities, medical students often experience higher perceived stress compared to the general population and students in other fields, which, in turn, negatively affects their academic performance.[1] Studies have shown an inverse relationship between stress and academic performance. Understanding that high-stress levels can hinder learning and performance is essential.[2] In contrast, other studies state that medical students with higher stress had better academic performance.[3] It has been noted in these studies that a certain stress level among students can be beneficial for achieving academic success.

Resilience is a term commonly used in psychology is the ability to withstand, adapt to and recover from adversity or stress, while maintaining or quickly regaining normal functioning.[4] It is a process of positive adaptation in presence of significant adversity. While the term academic resilience refers to a student's capacity to achieve academic success despite academic challenges, stressors, or setbacks.[3] Academic resilience emphasise the interaction of personal attributes with academic adversities in promoting better outcome.

Procrastination negatively impacts academic performance, adding to increased stress and reduced task efficiency.[5]

***Corresponding author:** Shivanand Kattimani, Department of Psychiatry, Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, India. drshivanand@gmail.com

Received: 05 August 2024 **Accepted:** 10 December 2024 **Published:** 27 December 2024 **DOI:** 10.25259/GJMS_15_2024

Those with reduced academic performance tend to develop avoidance behavior, may limit social interactions, leading to social isolation and reducing access to support systems.[6] Social isolation further undermines resilience by limiting protective social networks and emotional support.[7] Resilient students, however, are less likely to procrastinate, as emotional regulation and coping skills buffer stress.[3]

Some students excel academically despite stress, showcasing academic resilience, a psychological trait that enables individuals to overcome hardships and adversity.[8] This resilience predicts better coping and academic achievement, though its connection to academic performance in Indian settings remains unexplored. Our study aims to assess potential correlations between stress, resilience and the academic performance of medical undergraduates. Identifying stress areas and academic resilience will help create a stress profile, enabling timely interventions for students in need and potentially shaping resilience-building programs for undergraduates.

Aims and objectives

Our study aimed to evaluate the association of academic resilience measured by Academic Resilience Scale-30 (ARS-30)[8] with academic performance and stress measured by the Medical Student Stress Questionnaire (MSSQ)[9] among the MBBS undergraduates of a Government Medical Institute in India.

MATERIAL AND METHODS

The study was conducted among undergraduate MBBS students at a government medical institute, in Puducherry, India. We conducted a cross-sectional study using computer-generated stratified random sampling. Stratification was based on the year of study, using the principle of probability proportional to size. Both male and female undergraduates from the 1st to 4th year were included, excluding interns, chronically absent, unresponsive or unwilling participants. We obtained permission from the Dean of Academics and ethics approval was given by the Institute Ethics Committee. Students' contact details were collected. Students were invited to participate through WhatsApp between July and October 2022, the first 3 months of the academic year. They were given an online survey through Google Forms. The form covered various aspects, including gender, age, residence, extracurricular activities, substance use, 12th board examination scores, well-being (WHO-5 well-being scale), coping strategies, stress (MSSQ), academic performance and academic resilience (ARS-30).

MSSQ[9] is a 40-item questionnaire assessing stress over 6 domains, that is academic-related stressors (ARS), inter and intrapersonal-related stressors (IPRS), teaching and learning-related stressors, social-related stressors, drive and desire-related stressors (DRS) and group activities-related stressors (GARS). It is a validated instrument to study stressors among medical undergraduates in India.[10] Stress score is scored as mild (0–1), moderate (1.01–2), high (2.01–3) and severe (3.01–4) under the different domains.

ARS-30 measures cognitive-affective and behavioural responses to academic adversity, representing positive enabling factors such as a sense of mastery and belief that one's efforts can make a difference. There are 30 items on the scale, each belonging to one of the three categories (reflection and adaptation of the search for help, perseverance, negative affect and emotional response). It utilises a Likert scale from 1 (probable) to 5 (improbable). A high score will indicate greater academic resilience.[8]

The students' scores were collected after their final examination results were declared about 3–5 months after initial data were taken. Using a correlation of 0.5 with a 1% level of significance and a 90% power, accounting for a 10% attrition rate, the sample size was calculated to be 327. Out of 406 students approached, 79 declined to participate and 80 needed reminders. The Statistical Package for the Social Sciences, version 19, was used for statistical analysis. Associations were analysed using Kruskal-Wallis or Mann–Whitney U-tests based on data type and distribution. The correlation between the ARS and academic performance was determined using Spearman's Rank correlation.

RESULTS

Our study involved 327 students, and various factors were explored to understand their well-being, stress levels, resilience and academic performance. The majority of participants were male (58.4%), with 12.5% reporting substance use. Social media was the most common extracurricular activity (48.9%), and students often coped with stress through procrastination (60.6%) and social isolation (52.3%). The socio-demographic details of the students are summarised in Table 1.

The cumulative MSSQ score indicated a moderate stress level (1.81 ± 0.69), with final-year students reporting the highest stress levels (2.12 ± 0.64). Resilience, measured by ARS-30, showed significant differences across all 4 years, with 1st-year students having the highest resilience score, 114.50 (105.2, 126.75), compared to final-year students, 103.0 (89.50, 117.75).

Using the Spearman rank test, the results in Table 2 show a statistically significant correlation between Academic performance with age, WHO well-being score and 12th board examination marks. Age is negatively correlated with performance, whereas well-being as measured by the WHO-

Table 1: Socio-demographic data of MBBS students.

Participants characteristics	Frequency/ Median	Percentage/ IQR
Gender		
Female	135	41.0
Male	192	58.4
Year of study		
1st year	80	24.5
2nd year	68	20.8
3rd year	91	27.8
4th year	88	26.9
Age*		
Overall	20	(19, 22)
1st year	18	(18, 19)
2nd year	20	(19, 20)
3rd year	21	(20, 21)
4th year	22	(21, 22)
Substance use		
Yes	286	87.5
No	41	12.5
Residence		
Day scholar	88	26.9
Hosteller	239	73.1
Extracurricular activities		
Sports	147	45
Music	78	23.9
Art	74	22.6
Drama	39	11.9
Photography	33	10.1
Singing	50	15.3
Social media	160	48.9
Video games	75	22.9
Others	25	7.6
Reaction to stress		
Self-medicate	22	6.72
Focus on the pain	88	26.9
Over generalise the pain impact	65	19.9
Socially isolate yourself	171	52.3
Blame others for your problems	56	17.1
Lose sleep	137	41.9
Procrastinate	198	60.6
Others	70	21.4
WHO well-being *	10	(6, 14)
12th board examination scores*	95.5	(92, 97)

*Median with interquartile range. IQR: The interquartile range, WHO: World Health Organization

well-being score and the 12th board examination scores are positively correlated.

There is a statistically significant positive correlation between MSSQ and age and a negative correlation between the WHO well-being score and MSSQ. However, there is no correlation between previous 12th board examinations and MSSQ.

There is a statistically significant negative correlation between ARS-30 and age and a positive correlation between WHO well-being score with ARS-30. However, there is no correlation between previous 12th board examinations and ARS-30.

Table 3 shows the results of the relationship between academic performance and the participant's characteristics. Using the Mann–Whitney U-test, there was no statistically significant correlation between academic performance and gender, residence or substance use.

The relationship between MSSQ and the participant's characteristics was tested. There was a statistically significant correlation between gender ($P = 0.038$) and substance use ($P < 0.001$) with stress.

The relationship between ARS-30 and the participant's characteristics was tested. There was a statistically significant correlation between genders, with males scoring higher than females. Non-substance users had a higher resilience score than substance users. The results of the test are summarised in Table 4.

Of the 327 students, 314 attempted final examinations. Thirteen were ineligible to write the exams due to attendance deficiencies. The Spearman rank test results demonstrate a significant negative correlation ($P = 0.004$) between the overall MSSQ score and academic performance. Moreover, we observe substantial negative correlations between ARS ($P = 0.008$), IPRS ($P = 0.006$), DRS ($P = 0.003$) and GARS ($P = 0.004$) with academic performance.

In contrast, there is a remarkable positive correlation between academic performance and ARS-30 overall ($P = 0.001$) along with all its domains, that is reflective and adaptation of the search for help ($P = 0.005$), perseverance ($P = 0.005$) and negative affect and emotional response (0.019). The results are presented clearly in Table 3.

Mediation analysis was conducted to explore the relationship between ARS-30, MSSQ and academic performance. The estimated coefficient for the direct effect of ARS-30 on MSSQ is −0.013, indicating that a one-unit increase in ARS-30 is associated with a 0.013-unit decrease in MSSQ, assuming a linear relationship. Similarly, the estimated coefficient for the direct effect of MSSQ on academic performance is −1.436, indicating that a one-unit increase in MSSQ results in a 1.436-unit decrease in academic performance, assuming a linear relationship. Figure 1 shows the mediation process of the direct and indirect effects of resilience on academic performance.

The direct effect of ARS-30 on academic performance without considering the mediation effect is 0.045, suggesting that a one-unit increase in ARS-30 is associated with a 0.045-unit rise in academic performance, assuming a linear relationship. However, when the indirect effect of ARS-30 on academic performance through MSSQ is considered, the total impact of ARS-30 on academic performance is positive

Table 2: Correlation between academic performance, MSSQ, ARS and participants' characteristics (*n*=314).

Participant characteristics	Academic performance			Medical student stress questionnaire			Academic resilience score -30		
	ρ	*P*-value	95% CI	*ρ*	*P*-value	95% CI	*ρ*	*P*-value	95% CI
Age	**−0.309**	<0.001	−0.405–−0.206	**0.280**	<0.001	0.175–0.378	**−0.239**	<0.001	−0.340–−0.132
WHO well-being Score	**0.215**	<0.001	−0.318–−0.107	**−0.343**	<0.001	−0.437–−0.242	**0.396**	<0.001	0.299–0.484
12th board examination score	**0.201**	<0.001	0.093–0.304	0.011	0.846	−0.099–−0.134	0.003	0.956	−0.107–0.113

Bold value signifies at *P*<0.05. MSSQ: Medical Student Stress Questionnaire, ARS: Academic Resilience Scale-30,CI: Confidence interval,WHO:World Health Organization

Table 3: Relationship between Academic performance, Medical Student Stressor Questionnaire and Academic Resilience Scale -30 with participants' characteristics.

Participants' characteristics Mean±SD		Academic performance			Medical Student Stressor Questionnaire			Academic Resilience Scale -30		
		Mean±SD	Mann-Whitney U test z score	*P*-value	Mean±SD	Mann-Whitney U test z score	*P*-value	Mean±SD	Mann-Whitney U test z score	*P*-value
Gender	Male	65.0±7.5	1.837	0.066	1.7±0.69	**3.695**	<0.001	111.25±17.64	**2.225**	0.024
	Female	66.8±6.8			1.9±0.65			105.86±18.81		
Residence	Hosteller	66.0±7.4	0.804	0.421	1.8±0.69	0.98	0.922	109.50±18.643	-1.231	0.218
	Day scholar	65.1±6.9			1.8±0.68			107.7±17.42		
Substance abuse	Yes	64.8±7.6	-1.102	0.270	2.0±0.7	**-2.073**	0.038	105.47±17.877	0.678	0.497
	No	65.9±7.2			1.78±0.7			109.49±17.88		

Bold value signifies *P*<0.05, *ρ* = Spearman's rank correlation coefficient, SD:Standard deviation

Table 4: Correlation table between academic performance, medical student stressor questionnaire and academic resilience scale-30 (*n*=314).

	Academic performance		
Variables	***ρ***	***P*-value**	**95% CI**
Medical student stressor questionnaire			
Overall	**−0.161**	0.004	−0.266–−0.052
Academic-related stress	**−0.149**	0.008	−0.255–−0.039
Intra- and interpersonal related stress	**−0.155**	0.006	−0.261–−0.046
teacher and learning related stresses	−0.080	0.155	−0.189–0.03
Social-related stress	−0.029	0.608	−0.139–0.081
Drive-related stress	**−0.169**	0.003	−0.274–−0.060
Group- and activity-related stress	**−0.160**	0.004	−0.265–−0.051
Academic resilience scale-30			
Overall	**0.182**	0.001	0.073–0.286
Perseverance	**0.156**	0.005	0.047–0.262
Reflective and adaptive help seeking	**0.158**	0.005	0.049–0.264
Negative affect and emotional response	**0.132**	0.019	0.022–0.239

Bold value signifies *P*<0.05, *ρ* = Spearman's rank correlation coefficient

(0.019). This means that, on average, a one-unit increase in ARS-30 indirectly results in a 0.019 unit rise in academic performance through its effect on MSSQ.

Considering both the direct and indirect effects, the estimated total impact of ARS-30 on academic performance is 0.064. This suggests that, on average, a one-unit increase in ARS-30 is associated with a 0.064-unit rise in academic performance when considering both the direct and indirect effects.

DISCUSSION

In our study, several significant associations emerged between academic performance, stress and academic resilience.

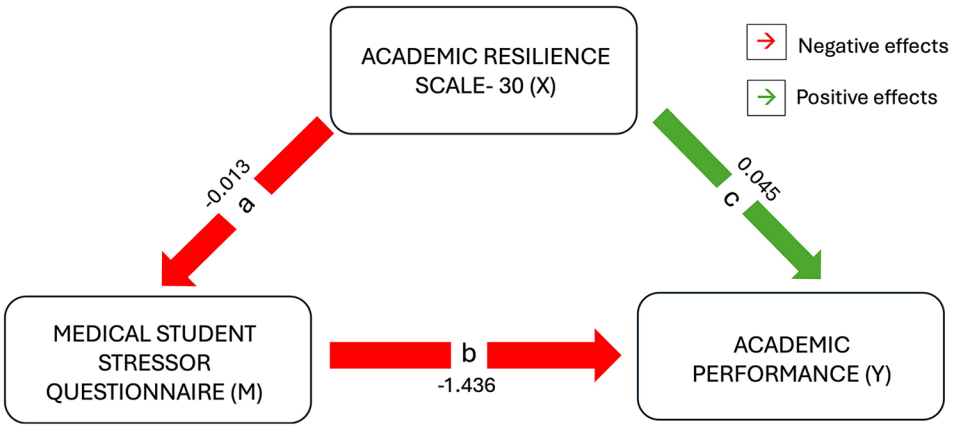

Figure 1: Mediation analysis: Direct and Indirect effect (through stress) of academic resilience on academic performance. (a) estimated coefficient for the direct effect of ARS (X) on MSSQ (M), (b) estimated coefficient for the direct effect of MSSQ (M) on academic performance (Y), (c) estimated coefficient for the direct effect of ARS (X) on academic performance (Y) without considering the mediation effect.

Academic resilience, a crucial component of student well-being, exhibited an inverse relationship with age. Students in later years displayed a diminishing trend in resilience. In contrast, individuals with higher overall well-being demonstrated greater academic resilience, emphasising the protective role of well-being.

There was a negative relationship between the various stress domains assessed by the MSSQ and academic performance. The primary source of stress was academics (ARS). This is in line with other studies.[11-13] Medical students frequently deal with excessive information that must be mastered in a constrained examination timeframe. This overwhelming information can lead to academic frustration, as many students doubt their capacity to comprehensively review the subjects they've studied to reach their desired exam performance objectives. Consequently, they frequently question their ability to cope with the demands of the medical curriculum, intensifying their stress levels.[13] Therefore, it is important to consider offering study skill support and promoting mental health resources to alleviate the burden on medical students facing information overload and academic stress.

It is worth noting that academic performance is also significantly influenced by their scores in drive-related stressors (P = 0.003), group activities related stressors (0.004) categories and Interpersonal relationship stressors (P = 0.006). These findings highlight the need for a closer examination of three specific areas: student motivation and group skills, which are intertwined with the student selection process and the students' relationships.

Many medical schools in India primarily rely on academic excellence as the sole criterion for student selection. Moreover, professional skills, particularly those related to teamwork and group dynamics, are not considered during the selection process.

We found a strong positive correlation between ARS-30 (P = 0.001) and all its domains with Academic performance. This indicates that students who demonstrate higher academic resilience, tend to perform better academically. In our study, resilience was represented by perseverance, reflection, adaptation of the search for help and negative affect and emotional response. The associations identified between resilience and prospective academic performance were consistent with the previous studies.[14,15]

Our study highlights a significant positive correlation between resilience' domains and academic performance. Moreover, both the 'Reflective and adaptation of the search for help' domain and the 'Perseverance' domain exhibit a strong positive correlation with academic performance (P = 0.005), suggesting that students who possess these qualities are more likely to excel in their studies. Although somewhat weaker, the 'Negative affect and emotional response' domain also shows a statistically significant positive correlation with academic performance (P = 0.019). It is essential to nurture academic resilience to improve academic outcomes. These results provide valuable insights for students and educators to improve academic outcomes.

To enhance resilience, individuals can develop skills such as mindset-based training, maintaining a positive outlook, reflexive and managing time effectively.[16] According to resilience theory,[17] positive outlook and finding meaning are building blocks of resilience that can lead to enhanced stability. University students face competing demands and activities, so mastering time management skills can help

them better manage academic outcomes and reduce stress levels.[18]

Culturally, societal expectations and stigma around failure can heighten stress, particularly in Asian students.[19] Educationally, lack of tailored mentorship, inadequate coping skills training and rigid curricula can hinder resilience.[20]

Our study reveals a complex interaction between stress (MSSQ) and academic resilience (ARS-30) in the context of academic performance. First, as academic resilience (ARS-30) increases, medical student stress (MSSQ) tends to decrease. This suggests that higher levels of academic resilience are associated with lower stress levels among students.

Conversely, higher stress levels are linked to lower academic performance, indicating a negative impact of stress on academic success. However, when increased, academic resilience is positively related to academic performance. This implies that students with higher educational stability tend to perform better academically. Notably, academic strength appears to act as a mediator, mitigating the negative influence of stress on academic performance. This study supports other research on resilience, indicating that despite experiencing high-stress levels, students still achieve academic success and learn effectively.[10]

Academic resilience plays a crucial role in how stress affects academic performance. It not only directly enhances academic performance but also indirectly buffers the detrimental impact of stress, allowing students to maintain or improve their academic outcomes even when experiencing high stress levels. This suggests that fostering academic resilience can be a valuable strategy for helping students cope with stress and excel in their studies.

Enhancing academic resilience can be done through goal setting and positive reinforcement strategies.[5] Teaching better coping skills, such as mindfulness and problem-solving, helps manage academic stress.[21] Cultivating a growth mindset encourages persistence despite setbacks.[22] Supportive relationships with family, peers and teachers, along with school climate and positive opportunities foster resilience through emotional and academic support.[23] Schools should promote a positive learning environment with access to resources and mentorship programs.[24] Integrating these strategies holistically strengthens students' ability to overcome challenges.

Strengths and limitation

The major strengths of our study include the use of validated tools, specifically the MSSQ and ARS-30, which ensure reliable measurements of stress and resilience among medical students. In addition, we involved a diverse population and sought to explore the relationship between resilience, stress and academic performance through mediation analysis.

However, we also recognise several limitations that may affect the generalizability of our findings. The study was conducted at a single centre, and the data were self-reported, which means that bias cannot be entirely ruled out.

To gain a more comprehensive understanding of how stress and resilience evolve and affect academic performance, future studies could benefit from longitudinal data collection, which would allow for the tracking of these dynamics over an extended period.

CONCLUSION

This study found positive correlation between academic resilience and academic performance among the medical students. Academic resilience directly decreases stress level and thereby improving the academic performance.

These findings emphasise the importance of enhancing academic resilience as a possible strategy to mitigate the adverse effects of stress on academic outcomes.

Ethical approval

The research/study approved by the Institutional Review Board at JIPMER(Jawaharlal Institute of Postgraduate Medical Education and Research), number IEC Protocol No: JIP/IEC/2022/023, dated 09th February 2022.

Declaration of patient consent

Patient's consent was not required as there are no patients in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirms that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

REFERENCES

1. Salgar S. Stress in First Year Medical Students. Int J Biomed Adv Res 2014;5:5.

2. Sohail N. Stress and Academic Performance among Medical Students. J Coll Physicians Surg Pak 2013;23:67-71.
3. Martin AJ, Marsh HW. Academic Resilience and Its Psychological and Educational Correlates: A Construct Validity Approach. Psychol Sch 2006;43:267-81.
4. Luthar SS, Cicchetti D, Becker B. The Construct of Resilience: A Critical Evaluation and Guidelines for Future Work. Child Dev 2000;71:543-62.
5. Steel P. The Nature of Procrastination: A Meta-analytic and Theoretical Review of Quintessential Self-regulatory Failure. Psychol Bull 2007;133:65-94.
6. Ferrari JR, Johnson JL, McCown WG. Procrastination and Task Avoidance. Boston, MA: Springer US; 1995. Available From: http://link.springer.com/10.1007/978-1-4899-0227-6 [Last accessed on 2024 Nov 20].
7. Holt-Lunstad J, Smith TB, Layton JB. Social Relationships and Mortality Risk: A Meta-analytic Review. PLoS Med 2010;7:e1000316.
8. Cassidy S. The Academic Resilience Scale (ARS-30): A New Multidimensional Construct Measure. Front Psychol 2016;7:1787.
9. Yusoff MS, Rahim AF. The Medical Student Stressor Questionnaire (MSSQ) Manual. Kubang Kerian, Kelantan: Universiti Sains Malaysia; 2010.
10. Nebhinani N, Kuppili PP, Mamta 3. Stress, Burnout, and Coping among First-Year Medical Undergraduates. J Neurosci Rural Pract 2021;12:483-9.
11. Haider SI. Effect of Stress on Academic Performance of Undergraduate Medical Students. Community Med Health Educ 2017;7:566.
12. Yusoff MS, Abdul Rahim AF, Yaacob MJ. Prevalence and Sources of Stress among Universiti Sains Malaysia Medical Students. Malays J Med Sci 2010;17:30-7.
13. Yusoff MS, Abdul Rahim AF, Baba AA, Ismail SB, Mat Pa MN, Esa AR. Prevalence and Associated Factors of Stress, Anxiety and Depression among Prospective Medical Students. Asian J Psychiatr 2013;6:128-33.
14. Allan JF, McKenna J, Dominey S. Degrees of Resilience: Profiling Psychological Resilience and Prospective Academic Achievement in University Inductees. Br J Guid Couns 2014;42:9-25.
15. Johnson ML, Taasoobshirazi G, Kestler JL, Cordova JR. Models and Messengers of Resilience: A Theoretical Model of College Students' Resilience, Regulatory Strategy Use, and Academic Achievement. Educ Psychol 2015;35:869-85.
16. Ang WH, Shorey S, Lopez V, Chew HS, Lau Y. Generation Z Undergraduate Students' Resilience during the COVID-19 Pandemic: A Qualitative Study. Curr Psychol 2022;41:8132-46.
17. Van Breda A. Critical Review of Resilience Theory and Its Relevance for Social Work. Soc Work 2018;54:1-18.
18. Mehnaz Kaushar MK. Study of Impact of Time Management on Academic Performance of College Students. IOSR J Bus Manag 2013;9:59-60.
19. Yusoff MS. A Multicenter Study on Validity of the Medical Student Stressor Questionnaire (MSSQ). Int Med J (1994) 2011;18:14-8.
20. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and Self-reported Patient Care in an Internal Medicine Residency Program. Ann Intern Med 2002;136:358-67.
21. Ungar M. Resilience Across Cultures. Br J Soc Work 2006;38:218-35.
22. Dweck C. Mindset: The New Psychology of Success. New York: Random House; 2006.
23. Rutter M. Psychosocial Resilience and Protective Mechanisms. Am J Orthopsychiatry 1987;57:316-31.
24. Wang MT, Eccles JS. Social Support Matters: Longitudinal Effects of Social Support on Three Dimensions of School Engagement from Middle to High School. Child Dev 2012;83:877-95.

How to cite this article: Sungoh D, Kattimani S, Murugesan R. Resilience as a Buffer against Stress: Effects on Academic Performance in Indian Medical Students. Glob J Med Stud. 2024;4:9-15. doi: 10.25259/GJMS_15_2024