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Expert Opinion Article

Prevalence Of Academic Stress And Coping Up Strategies In Students Pursuing Undergraduate Health Science Program

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ABSTRACT

BACKGROUND: Stress, a state of worry or mental tension, significantly impacts our overall well-being. Undergraduate health science students experience higher rates of sadness and anxiety due to the numerous stress triggers. As they mature, they undergo emotional, behavioral, sexual, economic, academic, and social changes, making crucial life decisions Thus, aim was to evaluate prevalence of academic stress and coping up strategies in students pursuing undergraduate health sciences program.

METHODOLOGY: This is cross sectional study that includes undergraduate health sciences students studying in Sumandeep Vidyapeeth deemed to be university. Stress was assessed using Academic Stress Inventory and coping strategies were analyzed using Stress Coping Style Inventory. 454 data were collected from November 2023 to September 2024.

RESULTS: Out of 454 majority of the subjects more than half i.e. 69% were females and remaining 31% were males. After analysis it was found that 75% had moderate stress, 23% had high stress, only 2% had low stress. 33% subjects had good stress coping up ability, 66% had fair coping ability and 1% had poor strategies.

CONCLUSION: Most individuals experience moderate stress; a substantial number lack optimal coping strategies. There is need for interventions focused on improving stress management skills and coping mechanisms, particularly for those facing higher levels of stress.

KEYWORDS: Prevalence, Stress, coping strategies, health sciences students, medical students, Gender differences, Academic performance.

INTRODUCTION

Stress can be defined as a state of worry or mental tension caused by a difficult circumstance. Everyone experiences stress to some degree. The way we react to stress, however, makes a big difference to our overall well-being. Stress hinders our ability to calm down and cause a variety of emotions, such as worry and irritation. We could find it difficult to focus while we are under stress. [1]

Demands concerning to academics that strain the student's internal or external capabilities are referred to as academic stress. Nowadays, medical students face more academic stress due to the increasingly competitive nature of higher education. It requires students to develop strong interpersonal skills, clinical expertise and academic abilities. Students experience stress in the classroom, which affects academic tasks. [2,3]

Due to the excess pressures and triggers, medical students struggle with stress at higher rates. Transitioning from youth to adulthood and making crucial life decisions, they experience a decisive period in their lives. Intrapersonal stressors can be self-appearance, self-esteem, body image, and lack of confidence. Interpersonal stressors are relationships with family, coworkers, and roommates; health issues or the death of a family member. [3,4,5]

Researches have been done on the risk factors for stress among undergraduates at universities. Mainly, focusing on the incidence and influencing factors in medical students. Untreated mental health issues can have a adverse impact on their quality of life and educational performance. These issues include poorer academic integrity, substance abuse, alcohol consumption, unstable relationships and negative self-esteem. [6,7]

The medical students go through more stress due to senior teasing, written exams, and particularly finals. With a highly strict timetable, more paperwork, execution of skills and assessment system add to the stress. Long study sessions for tests, assignments, and grades, a lack of spare time results in stress. They encounter new associates, roommates, a different way of life, and a different culture. Young adults faced challenges adapting to a new social life, managing finances, and living independently. They also struggle to uphold educational integrity and meet academic standards in their new environment. [8,9]

Academic pressure from exams, strenuous workloads, and a lack of free time can be major sources of stress. Competition, worry about not living up to parents' expectations add to the burden. Other factors include biological factors like age and gender, particularly being a female. Studies show that females face more stress than male. Other stressors can be fear of failing, lack of a supportive atmosphere, favoritism and pending deadlines. [4,10]
A student's ability to communicate effectively can be affected by anxiety and fear in various situations. This results in of confidence and fear to keep opinion. [11]

Students encounter physiological and psychological challenges while learning, and coping methods are essential skills to manage academic stress effectively. These strategies may involve continuous adjustments in emotional, reactionary, or cognitive patterns, with a distinction between problem-focused coping, which involves direct action, and emotion-focused coping, which alters behaviours to manage stress. Understanding the coping techniques used by medical students is vital for addressing their unique challenges. [12,13]

Coping methods significantly affect students' academic success and persistence, as their ability to manage emotions and setbacks influences their motivation and effort towards achieving goals. Less motivated students often struggle in challenging academic situations and lack trust in the benefits of perseverance. In contrast, those utilizing effective coping mechanisms feel more capable and encouraged. Additionally, some students resort to unhealthy behaviours like drug abuse and alcohol consumption, often influenced by their social environment and a lack of awareness of healthier coping strategies. [6,14]

Identifying predisposing factors for stress, misery, and nervousness early in university is crucial. This helps to offer students with extra mental health help. Early measure can also avoid these risk factors from getting worse. [15] Hence, need of the study is to evaluate prevalence of academic stress and coping up strategies in students pursuing undergraduate health science program.

LITERATURE REVIEW

Adnan Alzahrani's 2023 study examined contributors to stress and poor well-being among paramedicine students in the UK and Saudi Arabia using a qualitative exploratory design. Through 20 semi-structured interviews, four main stressors were identified: exposure to traumatic incidents, relationship and communication issues, the atmosphere, and career objectives. The study concluded that enhancing student welfare could be achieved through supportive connections, particularly counselling, and by addressing these identified concerns to improve the student atmosphere. [16]

Xiaoyun Zhou's 2023 qualitative study explored stress and coping strategies among Chinese high school students. Through priority group interviews and purposive sampling, focusing on tenth to eleventh graders, it identified high academic standards, peer interactions, and family concerns as primary stress sources. The study reported detrimental effects of stress on students' feelings, sleep, educational achievement, and mental health, with avoidance being the most common coping mechanism. [17]

Zhen Gong's 2023 analysis on learning stress and burnout involved 1,680 college students through a cross-sectional survey. The outcome measures included general data, a learning stress scale, a psychological resilience scale, and a learning burnout scale. The study concluded that college students experience medium levels of learning strain, with psychological resilience potentially aiding in the management of learning stress. The predominant coping mechanism identified was avoidance. [18]

Mariam A Yousif's 2022 study at Khartoum University examined the perceived educational stress among pharmacy students, identifying its causes and coping techniques. Utilizing three validated self-administered assessments—the study habits inventory, the mental health inventory, and the perceived stress scale—the research revealed a significant prevalence of stress among students, recommending the development of stress relief programs. [19]

Madison L. Straup's 2022 study analysed coping methods among 222 students experiencing trauma. Utilizing the Coping Scale (COPE-EAC) and the Impact of Event Scale-Revised, the study found that students managed pandemic-related distress primarily through social support, agreement, and emotional processing. Coping strategies varied based on factors such as age, race, and academic year. [20]

Shamaila Manzoor's 2022 study examined work-related stress among medical residents using coping techniques, with a sample size of 146. Through web-based surveys, the research assessed stress management strategies among residents in both surgical and non-invasive specialties. The findings indicated no significant differences in coping methods, though minor variations were noted, particularly with surgical residents being more prone to mental and physical burnout. [21]

Shoukot Ali's 2021 study investigated the adaptation struggles and coping strategies of countryside pupils using mixed research methods, including paper-based forms and open-ended interviews. The research involved 400 students and

identified several difficulties in the adaptation process, such as poor food quality, unsanitary conditions, and mental trauma. In-depth interviews revealed that hostel residents encountered various adjustment issues, with students from remote areas facing greater challenges adapting to urban life compared to those from nearby regions. [22]

B. Sue Graves ID 2021 investigated gender disparities in college students' perceptions of stress and coping strategies among 448 university students. Conducted during the 11th week of the semester, four weeks before final examinations, the study utilized the Brief Cope and the Perceived Stress Scale. Results indicated that female students reported moderate to high stress levels, while male students exhibited significantly lower stress levels. Gender differences in coping methods were evident, correlating with the distinct approaches utilized by students. [23]

Anna Babicka-Wirkus 2021 studied coping skills during the COVID-19 outbreak, surveying 577 participants from 17 universities using the Mini Cope Questionnaire. The study identified three primary coping mechanisms: acceptance, planning, and seeking support. Factors such as age, gender, and residence influenced the choice of techniques, with younger individuals exhibiting the least effective coping strategies due to a lack of life experience. The study suggests that introducing a course on coping skills in the first-year curriculum would be beneficial. [24]

Luise von Keyserlingk 2021 conducted a longitudinal survey to assess university students' stress levels before and after institutional closures due to COVID-19. Utilizing the University Stress Scale and involving 274 students, the study found that stress levels increased post-closure, primarily due to the transition to virtual classes and heightened academic challenges. It was also noted that students who believed they could manage their behaviour reported lower stress levels. [25]

METHODOLOGY

The study was proposed and submitted for approval to the Sumandeep Vidyapeeth Institutional Ethics Committee (SVIEC) prior to commencement. It was cross-sectional research design that includes undergraduate health science students from the constituent institutes of Sumandeep Vidyapeeth Deemed to be University. The sample size was calculated using the formula $n = 4pq/l^2$, which was 400. Data was collected using the Academic Stress Inventory and Stress Coping Style Inventory. Undergraduate health science students of both genders aged between 18 and 28 years were included in the study. Students pursuing courses other than undergraduate health science programs such as ANM and GNM, any other factors like personal, social, financial, or family issues that affects mental status, and those with a known history of psychomotor illness were excluded from the study. Academic Stress Inventory (ASI) is a self-reporting scale. It is used to assess students' stress levels associated to their academics. It helps evaluate how stressed-out students feel about their academic tasks. Lin and Chen created this instrument in 2009. This scale consists of 34 questions. With a Likert scale rating of 1 (totally disagree), 2 (absolutely disagree), 3 (neutral), 4 (agree), and 5 (completely agree). The ASI assesses students' stress level across seven potential areas. 1. Stress from teachers. 2. Stress from outcomes. 3. Stress from tests. 4. Stress associated with group study. 5. Stress associated with peers. 6. Stress associated with time management. 7. Self-inflicted stress. [26] The Academic Stress Coping Style Inventory created by Lin and Chen (2010). It was used to gauge the students' coping mechanisms. Scores ranged from 1 for "completely disagree" to 5 for "completely agree." Overall coping with stress was rated as poorly adoptive when score of ranged from 25 to 58. Rated average when it was 59 to 92. Rated good when it was 93 to 125. [27]

RESULTS

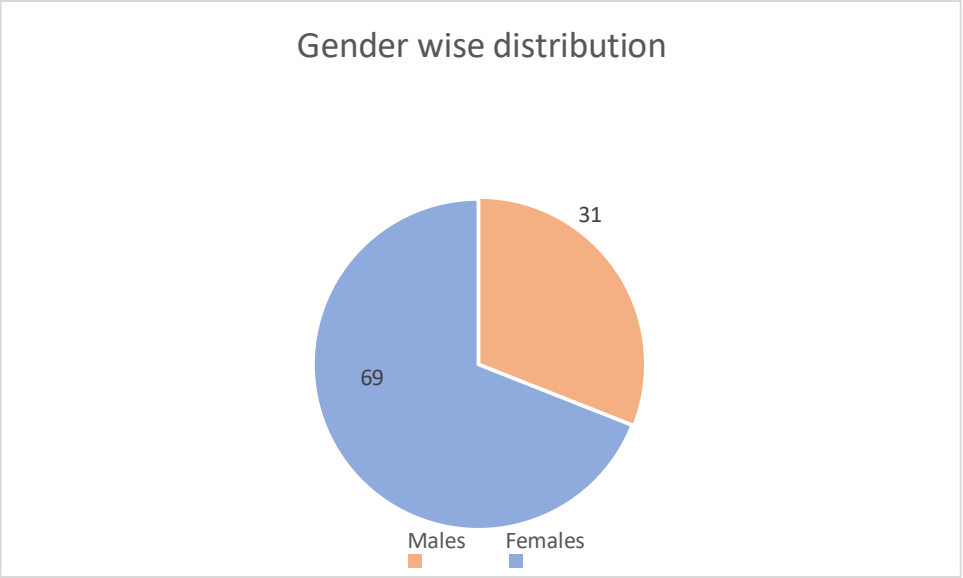
580 students were screened for the eligibility. Total 454 undergraduate students aged 18–25 years were included in the study. 126 were excluded as their stress was affected by personal, social and family issues.

Table 1: The table gives mean and standard deviation of age

Variables	Mean	Standard deviation
Age (years)	20	1.51

Figure 3: Shows percentage for gender distribution

Medical and Personal Histories: Regarding medical history, 96% of students had no medical conditions. The common conditions found were PCOD (0.6%), ADHD (0.4%), and asthma (0.4%). If we consider personal history, 90% of students showed no personal habits. While 7% had sleep disturbances, and 3% reported nail-biting. 90%



of students belonged to good socioeconomic background (SES).

Table 2: The table gives the mean, standard deviation and standard error of mean for ASI and SCSI.

Variables	Mean	Standard deviation	Standard error of mean
ASI	100.76	18.55	0.87
SCSI	87.25	10.77	0.50

Table 3: The table gives frequency and percentage of the stress levels and coping strategies of students.

Variables	Frequency	Percentage
ASI		
Low stress	7	2
Moderate stress	342	75
High stress	105	23
SCSI		
Poor	3	1
Fair	301	66
Good	150	33

Table 4: The table shows relation of stress with personal factors

	Low stress	Moderate stress	High stress	Total	Mean	SD	T test	P value
Gender								
Males	4	105	31	140	98.40	19.22	-1.775	0.077
Females	3	237	74	314	101.81	18.18		
Residence								

Home	1	114	24	139	99.94	17.25	-0.65	0.516
Hostel	6	228	81	315	101.12	19.11		
SES								
Poor	0	4	3	7	104.85	20.46	0.671	0.512
Fair	0	27	10	37	104.51	14.68		
Good	7	311	92	410	100.35	18.82		
Sleep pattern								
<5	0	41	19	60	103.78	17.66	2.445	0.088
6 to 8	6	261	83	350	100.85	18.98		
>8	1	40	3	44	95.95	15.36		
Satisfied with marks								
Yes	5	148	24	177	96.2	18.1	-4.023	0.00008
No	0	57	25	82	105.84	17.86		
Fear of failure								
Yes	3	216	82	301	104.14	17.62	5.530	<0.00001
No	4	126	23	153	94.11	18.59		
Parents Expectations								
Yes	7	320	99	426	100.84	18.59	0.356	0.722
No	0	22	6	28	99.57	18.25		

Table 5: The table shows relation of stress with academic factors

	Low stress	**Moderate stress**	**High stress**	**Total**	**Mean**	**SD**	**T test**	**P value**
HSC Board								
Central	1	89	27	117	100.26	19.59	7.051	0.008
ICSE	0	1	0	1	77			
State board	6	252	78	336	101.00	18.18		
Study Year								
First	2	157	58	217	101.78	18.34	3.034	0.029

Second	2	69	26	97	101.98	19.75		
Third	2	58	10	70	95.68	18.58		
Final	1	58	11	70	100.98	16.94		
Stream								
COP	2	89	35	126	104.87	17.68	7.677	<0.00001
DASLP	2	16	7	25	95.6	20.52		
DOP	0	42	7	49	94.73	18.41		
KMSDCH	0	29	15	44	106.90	19.97		
SAMCH	0	45	23	68	104.97	15.91		
SBKS	2	46	6	54	93.5	19.76		
SHMCH	1	44	7	52	95.57	18.25		
SNC	0	31	5	36	101.11	14.12		
Study regularly								
Yes	5	233	67	305	99.89	18.25	-1.406	0.160
No	1	109	38	148	102.54	19.08		
Career goals								
Yes	7	290	88	385	100.26	18.72	-1.420	0.156
No	0	52	17	69	103.53	17.41		
Follow lectures								
Yes	6	261	74	341	99.73	18.61	-2.092	0.037
No	1	81	31	113	103.87	18.1		

Table 6: The table shows relation of coping strategies with gender, study year, stream and fear of failure

	Poor coping	**Fair coping**	**Good coping**	**Total**	**Mean**	**SD**	**T test**	**P value**
Gender								
Males	0	90	50	140	87.27	10.87	0.046	0.964
Females	3	211	100	314	87.22	10.57		
Year								
First	0	148	69	217	87.26	10.38	1.2	0.309
Second	1	60	36	97	87.78	10.41		

Third	2	48	20	70	85.25	12.9		
Final	0	45	25	70	88.5	10.03		
Stream								
COP	0	82	44	126	88.47	10.48	6.15	<0.000001
DASLP	0	17	8	25	87.2	10.5		
DOP	1	31	17	49	87.42	10.91		
KMSDCH	0	28	16	44	87.34	11.19		
SAMCH	0	48	20	68	86.38	8.69		
SBKS	2	40	12	54	81.38	12.17		
SHMCH	0	40	12	52	85.69	9.22		
SNC	0	15	21	36	95.41	9.55		
Fear of failure								
Yes	0	199	102	301	87.62	10.44	0.982	0.327
No	3	102	48	153	86.54	11.39		

DISCUSSION

The results of this study showed important insights into the prevalence of academic stress and the coping strategies among undergraduate health science students. The findings suggest that a significant number of students experience moderate stress.

Prevalence of Academic stress

This study suggests that academic stress is a common issue among health science students. The result of this study shows that most of students (75%) are facing moderate stress (M=100.76 SD=18.55). The score of stress level varied from 46-159 on scale of 170. This aligns with previous studies that shows academic stress in medical students is not uncommon. Coursework demands, clinical practice, and future career expectations contribute to this stress. [2,28,29] This is due to the nature of health science programs. As often seen as academically challenging and demanding. These factors place significant pressure on students. Similar findings have been observed in other studies as well. [8,19,30] The result of present study shows that only 2% of students have low stress levels. This signifies that students in health field are likely to be affected by academic pressures.

- **Influence of personal factors on stress levels**

The factors that have statistically significant influence on stress were fear of failure (p value <0.00001) and satisfaction with marks (p value 0.00008).

The students who had fear of failure are more likely to experience stress. This result is consistent with previous literature. Fear of failure is a source of stress in students in tough academic environments. [4,31] Students who are highly self-critical or set impractically high standards may experience more stress. This stress is often linked to the fear of not meeting their own expectations. [32] Satisfaction with academic marks was another significant factor of stress. Students who were not satisfied with their marks reveals significantly higher stress. Poor academic outcome can lead to feelings of inefficiency and worry about future. It also increases pressure to improve. Together, these factors add to elevated stress. [33,34]

Other personal factors were not found to be statistically significant (p value > 0.05) with stress levels. The factors were gender, residence, SES, sleep pattern and parent's expectations.

314 females and 140 males were included in the study. The result contrasts with existing literature, which suggests that females generally report higher levels of stress. The reason can be most of studies included non-medical college students. [10,23,35,36,37,38] Yet if we observe mean females (M: 101.81; SD: 18.18) have higher mean score than males (M:98.40; SD:19.22). However, in medical students, academic stress appears to be a shared experience across

genders. Many studies showed that hostel students experience more stress. One reason being they are away from their parents. They have to manage everything on their own. The mess food, lack of privacy due to room sharing and homesickness [30,39,40]

The finding of present study contrasts with a study that reported higher stress levels among students from lower SES. Financial constraints, limited sources, and additional family obligations can increase stress. [41] The relatively small proportion of students from lower SES backgrounds may limit the ability to detect differences in stress levels across SES groups. The students who had less than 5 hours of sleep had higher mean score (M=103.78, SD=17.66) for stress. However, no statistical significance between sleep patterns and stress levels. This finding is in contrast to previous studies. Studies show lack of sleep is a key contributor to stress. It may also lead to poor psychological health outcomes among students. It also impairs academic performance. [6,42,43,44,45,46]

The relationship between parent's expectations and stress is not significant in the study. This is contradictory finding with the previous studies. Parents do expect that their child performs well, as they have financial strain for their studies. [4,10,43,47]

Influence of academic factors on stress levels

The academic factors that had statistically significant relation with stress levels were stream of study (p value <0.00001), board of HSC (p value 0.008), year of study (p value 0.029) and whether the student was able to follow the lecture or not (p value 0.037).

Several studies have analyzed the prevalence of academic stress among students in health science fields. However, most of these researches have concentrated on a single field, like physiotherapy, nursing, dentistry, or pharmacy. In contrast, this study investigates academic stress and coping strategies across more extensive range of undergraduate health science programs. These included MBBS, dental, physiotherapy, pharmacy, ayurvedic, homeopathy, nursing, and audiology students. The result of this study indicates that the dental students have highest mean score (M=106.90; SD=19.97) for stress. Worry about fine motor skills, clinical decision making and self-doubt might be the reason. [48] Then the ayurvedic (M=104.97; SD=15.91) and physiotherapy (M=104.87; SD=17.68) students had second highest mean score. Physiotherapy students have fear of competition, shortage of opportunities and less free time. [8] Previous studies have shown that all health field students experience stress due to the demands of medical field. [3,19,42,43] Other statistically significant factor was board of higher education. The state board students have more stress than central board students. We hypothesize that as the state board student's study in their state language most of time. They might find it difficult to adapt to English as a regular medium of instruction.

Many studies have shown that first-year medical students experience more stress compared to other years. This is due to the significant transition from school to health science field. Greater academic demands, clinical responsibilities, and exposure to emergency situations during clinical postings can be devastating. [49,50,51,52] This study had found similar findings. Second (M=101.98; SD=:19.75) and first year (M=101.78; SD=18.34) students had highest stress. The students who were not able to follow the lectures were having more stress than those who can follow them. The reason could be that they struggle to prepare during tests and examination.

Other academic factors which were not having statistically significant relation with stress were study habits and career goals (p value > 0.05).

When mean score was observed students who didn't study regularly have high mean score (M=102.54; SD=19.08). Interestingly, the students who regularly studied were also stressed. This shows that studying regularly alone may not alleviate stress. this is contrary to many previous researches. [53,54] The significance was not strong enough to confirm link presence of career goals with stress levels. The mean score for students without career goal (M=103.53; SD=17.41) which was higher than students with career goals (M=100.26; SD=18.72). The reason might be lack of direction and worry about the future. If we consider the negative effects of stress, main consequence is decreased academic performance. Academic output is severely affected when students have stress. A considerable increase in stress impairs their overall reasoning capacity. This leads to a decline in the learning process. This is consistent with many previous researches. [43,46,55]

Coping strategies

33% of students out of 454 were able to cope up with good strategies. Mean score (M=87.25; SD;10.77) found lied in fair coping range. The coping strategies score varied from 47-122 on scale of 140. This study shows that most students can manage their stress to some extent. However, there is room for improvement in developing more effective coping techniques. This finding aligns with other research showing that students in stressful environments need coping methods. These include time scheduling, physical activities, talking to close ones, getting social support, and professional counselling. Upholding positive attitude in stressful situations can remarkably help to alleviate stress. Self-regulation and self-efficacy can be useful. [11,12,13] However, these methods are often only moderately effective. Some students resort inappropriate behaviors such

as escape, addiction, and refusal. [56,57] Improving students' coping abilities could be a primary objective for future remedies. Promoting adaptive techniques like thought reframing and present moment focus can help. These techniques may reduce stress and enhance academic result. [58]

The analysis of coping techniques with various factors like gender, year and stream of study and fear of failure was done. There was significant relation found between coping strategies and stream of study (p value <0.000001). When mean score was observed of all streams, they all had mean score that lies in fair coping techniques (59-92) except one. Only the nursing students had mean score (M=95.41; SD=9.55) that lied in good coping methods (>92). [59] The other factors like gender, year of study and fear of failure were not significant (p value >0.05). The mean scores for all these factors lied between fair coping strategies (59-92)

Males (M=87.27; SD=10.87) and females (M=87.22; SD=10.57) didn't have much difference in mean score. This suggested that males and females both are coping with stress in fair manner. This also explained that why there was no significance in gender and stress levels as we observed above. When coping was related to year of study on average fair coping with their stress for all years was found. But as already discussed earlier, year of study have an influence on stress. Therefore, there is a chance to improve coping techniques. In turn, that would be useful to reduce stress. Students who had fear of failure (M=87.62; SD=10.44) and who didn't (M=86.54; SD=11.39) had a relativelysmall difference in the mean score of stress coping scale.

The present study had shown various factors that can increase stress levels and whether the students were able to cope up with it or not. The outcomes emphasize that proper support from college plays crucial role to manage student's stress.

CONCLUSION

The present study concludes that academic stress is major concern among undergraduate health science students. While all students have stress due to various factors, not all are able to cope competently using appropriate techniques. Additionally, the coping mechanisms employed by students should be examined and more effective strategies should be suggested. Colleges should enforce counselling programs to support students having high stress and those having difficulty to cope up effectively.

LIMITATIONS

The present study was conducted across multiple health science streams; further research can be done in individual streams for more detailed results.

Other factors that can influence stress, like family and college environment, were not assessed; future studies can find other factors that can have an impact on stress levels.

CONFLICTS OF INTEREST

None

REFERENCES

1. Stress [Internet]. 2022. Available from: https://www.who.int/news-room/questions-and-answers/item/stress
2. Fauzi MF, Anuar TS, Teh LK, Lim WF, James RJ, Ahmad R, Mohamed M, Abu Bakar SH, Mohd Yusof FZ, Salleh MZ. Stress, anxiety and depression among a cohort of health sciences undergraduate students: the prevalence and risk factors. International journal of environmental research and public health. 2021 Mar 22;18(6):3269.
3. Swarnalatha T, Janardhanam V. Impact of academic stress and emotional maturity on mental health among nursing college students. Global Journal for Research Analysis. 2021;10(10):39-40.
4. Shah TD, Pol T. Prevalence of depression and anxiety in college students. Journal of Mental Health and Human Behaviour. 2020 Jan 1;25(1):10-3.
5. Gallagher KM, Jones TR, Landrosh NV, Abraham SP, Gillum DR. College students' perceptions of stress and coping mechanisms. Journal of Education and Development. 2019 May 16;3(2):25.
6. Mofatteh M. Risk factors associated with stress, anxiety, and depression among university undergraduate students. AIMS public health. 2021;8(1):36.
7. Shawahna R, Hattab S, Al-Shafei R, Tab'ouni M. Prevalence and factors associated with depressive and anxiety symptoms among Palestinian medical students. BMC psychiatry. 2020 Dec; 20:1-3.
8. Gautam D, Aryal SC, Fernando TA, Afza T, Deepak TR, Airee YS, Joshi DD. Prevalence of Depression, Anxiety & Stress among First Year Students in Physiotherapy Colleges at Bangalore, India. Indian Journal of Physiotherapy & Occupational Therapy Print-(ISSN 0973-5666) and Electronic– (ISSN 0973-5674). 2020 Jan 30;14(1):78-82.
9. Brougham RR, Zail CM, Mendoza CM, Miller JR. Stress, sex differences, and coping strategies among college students. Current psychology. 2009 Jun;28:85-97.
10. Ramón-Arbués E, Gea-Caballero V, Granada-López JM, Juárez-Vela R, Pellicer-García B, Antón-Solanas I. The prevalence of depression, anxiety and stress and their associated factors in college students. International journal of environmental research and public health. 2020

Oct;17(19):7001.
11. Kuncharin L, Mohamad AR. Coping strategies on academic performance among undergraduate students in Malaysia. language. 2014; 23:4.
12. Sinring A, Aryani F, Umar N. Examining the effect of self-regulation and psychological capital on the students' academic coping strategies during the covid-19 pandemic. International Journal of Instruction. 2022;15(2):487-500.
13. Kirikkanat B, Kali Soyer M. Adaptation of the academic coping strategies scale in Turkey: a study with undergraduates. International Journal of Teaching and Education. 2016;4(1):26-44.
14. Sullivan JR. Preliminary psychometric data for the academic coping strategies scale. Assessment for Effective Intervention. 2010 Mar;35(2):114-27.
15. Mofatteh M. Risk factors associated with stress, anxiety, and depression among university undergraduate students. AIMS public health. 2021;8(1):36.
16. Alzahrani A, Keyworth C, Wilson C, Johnson J. Causes of stress and poor wellbeing among paramedic students in Saudi Arabia and the United Kingdom: a cross- cultural qualitative study. BMC Health Services Research. 2023 May 5;23(1):444.
17. Zhou X, Bambling M, Bai X, Edirippulige S. Chinese school adolescents' stress experience and coping strategies: a qualitative study. BMC psychology. 2023 Mar 31;11(1):91.
18. Gong Z, Wang H, Zhong M, Shao Y. College students' learning stress, psychological resilience and learning burnout: status quo and coping strategies. BMC psychiatry. 2023 Jun 2;23(1):389.
19. Yousif MA, Arbab AH, Yousef BA. Perceived academic stress, causes, and coping strategies among undergraduate pharmacy students during the COVID-19 pandemic. Advances in medical education and practice. 2022 Feb 28:189-97.
20. Straup ML, Prothro K, Sweatt A, Shamji JF, Jenkins SR. Coping strategies and trauma-related distress of college students during Covid-19. Journal of College Student Retention: Research, Theory & Practice. 2024 Nov;26(3):882-99.
21. Manzoor S, Sajjad M, Anwar I, Rafi A. Coping strategies adopted by medical residents in dealing with work-related stress: a mixed-methods study. BMC Medical Education. 2022 Jun 9;22(1):449.
22. Ali S, Sarker MF, Islam MS, Islam MK, Al Mahmud R. Pursuing higher education: Adaptation challenges and coping strategies of rural students at urban universities in Bangladesh. Tertiary Education and Management. 2021 Jun;27(2):91-106.
23. Graves BS, Hall ME, Dias-Karch C, Haischer MH, Apter C. Gender differences in perceived stress and coping among college students. PloS one. 2021 Aug 12;16(8):e0255634.
24. Babicka-Wirkus A, Wirkus L, Stasiak K, Kozłowski P. University students' strategies of coping with stress during the coronavirus pandemic: Data from Poland. PloS one. 2021 Jul 26;16(7):e0255041.
25. von Keyserlingk L, Yamaguchi-Pedroza K, Arum R, Eccles JS. Stress of university students before and after campus closure in response to COVID-19. Journal of community psychology. 2022 Jan;50(1):285-301.
26. Lin YM, Chen FS. Academic stress inventory of students at universities and colleges of technology. World Transactions on Engineering and Technology Education. 2009 Jan;7(2):157-62.
27. Lin YM, Chen FS. A stress coping style inventory of studentsatuniversitiesand colleges of technology. World Transactions on Engineering and Technology Education. 2010;8(1):67-72.
28. Kausar R. Perceived stress, academic workloads and use of coping strategies by university students. Journal of behavioural sciences. 2010 Jun 1;20(1).
29. Gopalan M, Linden-Carmichael A, Lanza S. College students' sense of belonging and mental health amidst the COVID-19 pandemic. Journal of Adolescent Health. 2022 Feb 1;70(2):228-33.
30. Freitas PH, Meireles AL, Ribeiro IK, Abreu MN, Paula WD, Cardoso CS. Symptoms of depression, anxiety and stress in health students and impact on quality of life. Revista latino-americana de enfermagem. 2023 Apr 17; 31: e3884
31. Anoita BS, Tiatri S, Sari MP. The relationship between fear of failure and student academic achievement with procrastination as mediating variable. InThe 2nd Tarumanagara International Conference on the Applications of Social Sciences and Humanities (TICASH 2020) 2020 Dec 12 (pp. 538-543). Atlantis Press.
32. Gil TC, Obando D, García-Martín MB, Sandoval-Reyes J. Perfectionism, academic stress, rumination and worry: a predictive model for anxiety and depressive symptoms in university students from Colombia. Emerging Adulthood. 2023 Oct;11(5):1091-105.
33. Deng Y, Cherian J, Khan NU, Kumari K, Sial MS, Comite U, Gavurova B, Popp J. Family and academic stress and their impact on students' depression level and academic performance. Frontiers in psychiatry. 2022 Jun 16; 13:869337.
34. Han W, Altalbe A, Rehman N, Rehman S, Sharma S. Exploring the longitudinal impacts of academic stress and lifestyle factors among Chinese students. Journal of Pharmaceutical Policy and Practice. 2024 Dec 31;17(1):2398706.
35. Gao W, Ping S, Liu X. Gender differences in depression, anxiety, and stress among

college students: a longitudinal study from China. Journal of affective disorders. 2020 Feb 15; 263:292-300.

36. Alsaggaf MA, Wali SO, Merdad RA, Merdad LA. Sleep quantity, quality, and insomnia symptoms of medical students during clinical years: relationship with stress and academic performance. Saudi medical journal. 2016 Feb;37(2):173.
37. Aluh DO, Abba A, Afosi AB. Prevalence and correlates of depression, anxiety and stress among undergraduate pharmacy students in Nigeria. Pharmacy Education. 2020 Sep 1; 20:23648.
38. Saleh D, Camart N, Romo L. Predictors of stress in college students. Frontiers in psychology. 2017 Jan 25; 8:19.
39. Gupta S, Choudhury S, Das M, Mondol A, Pradhan R. Factors causing stress among students of a medical college in Kolkata, India. Education for Health. 2015 Jan 1;28(1):92-5.
40. Mirza AA, Milaat WA, Ramadan IK, Baig M, Elmorsy SA, Beyari GM, Halawani MA, Azab RA, Zahrani MT, Khayat NK. Depression, anxiety and stress among medical and non-medical students in Saudi Arabia: an epidemiological comparative cross-sectional study. Neurosciences Journal. 2021 Apr 1;26(2):141-51.
41. Beiter R, Nash R, McCrady M, Rhoades D, Linscomb M, Clarahan M, Sammut S. The prevalence and correlates of depression, anxiety, and stress in a sample of college students. Journal of affective disorders. 2015 Mar 1;173:90-6.
42. Iqbal S, Gupta S, Venkatarao E. Stress, anxiety & depression among medical undergraduate students & their socio-demographic correlates. Indian journal of medical research. 2015 Mar 1;141(3):354-7.
43. Kumar B, Shah MA, Kumari R, Kumar A, Kumar J, Tahir A. Depression, anxiety, and stress among final-year medical students. Cureus. 2019 Mar;11(3).
44. Varma P, Junge M, Meaklim H, Jackson ML. Younger people are more vulnerable to stress, anxiety and depression during COVID-19 pandemic: A global cross-sectional survey. Progress in Neuro-Psychopharmacology and Biological Psychiatry. 2021 Jul 13; 109:110236.
45. Alotaibi AD, Alosaimi FM, Alajlan AA, Abdulrahman KA. The relationship between sleep quality, stress, and academic performance among medical students. Journal of Family and Community Medicine. 2020 Jan 1;27(1):23-8.
46. Almojali AI, Almalki SA, Alothman AS, Masuadi EM, Alaqeel MK. The prevalence and association of stress with sleep quality among medical students. Journal of epidemiology and global health. 2017 Jan;7(3):169-74.
47. Rehman AU. Academic anxiety among higher education students of India, causes and preventive measures: An exploratory study. International journal of modern social sciences. 2016;5(2):102-16.
48. Hayes A, Hoover JN, Karunanayake CP, Uswak GS. Perceived causes of stress among a group of western Canadian dental students. BMC research notes. 2017 Dec;10:1-9.
49. Garett R, Liu S, Young SD. A longitudinal analysis of stress among incoming college freshmen. Journal of American college health. 2017 Jul 4;65(5):331-8.
50. Asif S, Mudassar A, Shahzad TZ, Raouf M, Pervaiz T. Frequency of depression, anxiety and stress among university students. Pakistan journal of medical sciences. 2020 Jul;36(5):971.
51. Heinen I, Bullinger M, Kocalevent RD. Perceived stress in first year medical students-associations with personal resources and emotional distress. BMC medical education. 2017 Dec; 17:1-4.
52. Ebrahim OS, Sayed HA, Rabei S, Hegazy N. Perceived stress and anxiety among medical students at Helwan University: A cross-sectional study. Journal of Public Health Research. 2024 Feb;13(1):22799036241227891.
53. Ahmady S, Khajeali N, Kalantarion M, Sharifi F, Yaseri M. Relation between stress, time management, and academic achievement in preclinical medical education: A systematic review and meta-analysis. Journal of Education and Health Promotion. 2021 Jan 1;10(1).
54. Hassanbeigi A, Askari J, Nakhjavani M, Shirkhoda S, Barzegar K, Mozayyan MR, Fallahzadeh H. The relationship between study skills and academic performance of university students. Procedia-Social and Behavioral Sciences. 2011 Jan 1; 30:1416-24.
55. Hoying J, Melnyk BM, Hutson E, Tan A. Prevalence and correlates of depression, anxiety, stress, healthy beliefs, and lifestyle behaviors in first-year graduate health sciences students. Worldviews on Evidence-Based Nursing. 2020 Feb;17(1):49-59.
56. Aloka P, Ooko M, Onyango TK, Orao R. Maladaptive Coping Mechanisms to Stress Among University Students from an Integrative Review. Student Stress in Higher Education. 2024:201-17.
57. Misra R, McKean M. College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. American journal of Health studies. 2000;16(1):41.

58. Freire C, Ferradás MD, Regueiro B, Rodríguez S, Valle A, Núñez JC. Coping strategies and self-efficacy in university students: A person-centered approach. Frontiers in psychology. 2020 May 19; 11:841.
59. Rafati F, Nouhi E, Sabzevari S, Dehghan-Nayeri N. Coping strategies of nursing students for dealing with stress in clinical setting: A qualitative study. Electronic physician. 2017 Dec 25;9(12):6120