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Original article

Prevalence and Associated Factors of Academic Stress among Medical Students in the University of Tripoli, Libya

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Abstract
This study aims to assess the prevalence of academic stress among medical students at the University of Tripoli and explore the associated factors influencing stress levels. The study also examines the impact of gender, academic major, marital status, and academic year on students' stress levels. This cross-sectional descriptive study was conducted on a random sample of 400 students enrolled at the University of Tripoli, Libya, during Fall 2023. Data were collected through an online Google Form survey and analyzed using the Statistical Package for Social Sciences (SPSS) and Q-Square statistical analysis. The findings revealed that stress levels among medical students were extremely high (96%), with moderate stress reported in 75.69% of students and severe stress in 14.66%. Female students were more affected by stress than males (94% vs. 80%). Additionally, third- and fourth-year students experienced the highest stress levels (94.07% and 92.66%, respectively). Among different medical disciplines, pharmacy students exhibited the highest stress levels (97.78%), followed by dentistry students (94.06%). The primary sources of stress were teaching methods (32.25%), lack of time (22.75%), and course difficulty (20%). The study recommends implementing clear curricula, structured educational plans with strict timelines, academic advisors, and student support programs to help students manage academic stress effectively.
Keywords. Academic Stress, Mental Health, Medical Colleges, Students.

Introduction

A common mental health problem that affects people of all ages, stress is especially problematic for college students. As students adjust to university life, they face a variety of social and academic obstacles that make them more vulnerable to stress, which may result in poor academic performance and long-term health issues. Research shows that stress is more common among medical students than among students in other fields, with incidence rates ranging from 50% to 96% worldwide [1,2]. This is explained by the demanding academic schedule, cutthroat competition, and pressure to perform well in clinical settings. If academic stress is not adequately managed, it can lead to physical health problems like exhaustion and digestive disorders as well as anxiety, depression, and sleep disruptions.

Long-term exposure to high stress levels may potentially harm professional growth and cognitive function, raising the risk of burnout for aspiring medical professionals [3,4]. The frequency and effects of academic stress among college students, especially those pursuing medical degrees, have been the subject of numerous studies. Research continuously shows that medical students are more stressed than their counterparts in other fields, mostly as a result of the rigorous coursework, competitive setting, and pressure to perform well in clinical settings. According to a comprehensive review by Mofatteh (2020), medical students are far more likely than the general population to experience stress, anxiety, and depression. The study found that lack of social support, financial limitations, and academic workload were the main contributing factors [1]. In a similar vein, a meta-analysis conducted by Li et al. (2022) that examined more than 60 papers found that 39.4% of medical students had symptoms of depression, while 49.1% had symptoms of anxiety [2].

According to a study by Sherif et al. (2021) in Libya, which measured the stress levels of medical students at the University of Tripoli, 45% of students suffered from depression during their time in school, while 40% and 50% of students, respectively, had mild and moderate stress (3). These results are consistent with a longitudinal study by Zivin et al. (2009), which revealed that students who had high levels of stress during their time in college continued to suffer these stressors two years after graduation, impacting both their personal and professional lives [4]. Al-Dabal et al. (2010) compared the stress levels of Saudi Arabian medical and non-medical students. The results showed that, in comparison to non-medical students, 48.6% of medical students had significant levels of stress ($p < 0.01$). The study also showed that medical students were more likely to experience stress from inadequate study spaces, inappropriate teaching strategies, and failure-related anxiety ($p < 0.05$). [5]. Additionally, Fergusson et al. (2007) conducted longitudinal research in New Zealand that looked at the long-term impacts of stress and depression in adolescence and early adulthood.

Even after controlling for other factors, the study discovered that students who had high levels of stress between the ages of 16 and 21 had a considerably worse quality of life later in life ($p < 0.05$) and were more likely to be unemployed (6). Although earlier research offers insightful information, it falls short in addressing the particular difficulties experienced by medical students in post-conflict areas such as Libya.

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By examining the incidence of academic stress at the University of Tripoli and identifying important contributing factors, this study seeks to close this gap and provide a foundation for focused intervention techniques. The purpose of this study is to determine how common stress is among University of Tripoli medical students and investigate the related variables that affect stress levels. It specifically looks at the relationship between stress severity and factors including year of study, marital status, gender, and academic major. This study aims to draw attention to the necessity of institutional interventions that assist students in managing academic stress and preserving their mental and physical health by identifying the main stressors. The results of this study will help medical faculties create focused stress management programs, which will improve the academic environment and mental health of aspiring medical professionals.

Methods

Study design

In order to evaluate the prevalence and contributing causes of academic stress among medical students at the University of Tripoli in Libya, this study used a cross-sectional, descriptive approach. Serving students from a variety of medical schools, including medicine, pharmacy, dentistry, medical technology, and nursing, the university is the biggest public institution in Tripoli.

Study population and sampling

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Data collection

A structured online survey created with Google Forms was used to gather data. The Beck Anxiety Inventory (BAI) and the Influence of Studying on Students' Health (ISSH) Questionnaire are two validated stress assessment instruments that served as the basis for the questionnaire's adaptation. There were three primary sections to the survey: 1) Academic and demographic background (major, academic year, age, gender, and marital status). 2) The effects of academic stress on students' mental and physical well-being. 3) Important stressors and coping strategies.

Data analysis

IBM SPSS Statistics 24 was used to examine the data that was gathered. Frequency distributions and percentages were computed using descriptive statistics. Relationships between stress levels and factors like gender, academic year, and major were evaluated using the chi-square (Q-Square) test. Statistical significance was defined as a significance level of $p < 0.05$.

Results

Demographic Characteristics of Participants

The study involved 400 medical students in total. The age group that predominated was 21–24 years old (68.75%), and the majority were female (84.75%). Ninety percent of the participants were unmarried, and their distribution by academic year looked like this: Students in their first and second years: 10.75%. 32.5% are third- and fourth-year students. Students in their fifth and sixth years: 27.25%. Students in their seventh and eighth years: 29.5%.

A total of 400 students (68.75%) who were between the ages of 21 and 24 made up the sample. Just 15.25% of study participants were men, whereas the bulk (84.75%) were women. Ninety percent of the individuals were unmarried. Regarding academic years, 32.5 percent of the participants were enrolled in the third or fourth semester, 29.5 percent were enrolled in the seventh or eighth semester, 27.25% were enrolled in the fifth or sixth semester, and 10.75 percent were enrolled in the first or second semester (Figures 1&2; Table 1).

Table1. Distribution of socioeconomic status and academic year among university students under study

Variable	Frequency n = 400	% Percentage
Age		
20-18	72	%18.00
24-21	275	%68.75
Above 24	53	%13.25
Gender		
Female	339	%84.75
Male	61	%15.25

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Marital Status		
Married	40	%10.00
Single	360	%90.00
Academic Year		
First, Second Semester	43	%10.75
Third, Fourth Semester	130	%32.50
Fifth, sixth semesters	109	%27.25
Seventh, Eighth Semester	118	%29.50
Total	400	%100.00

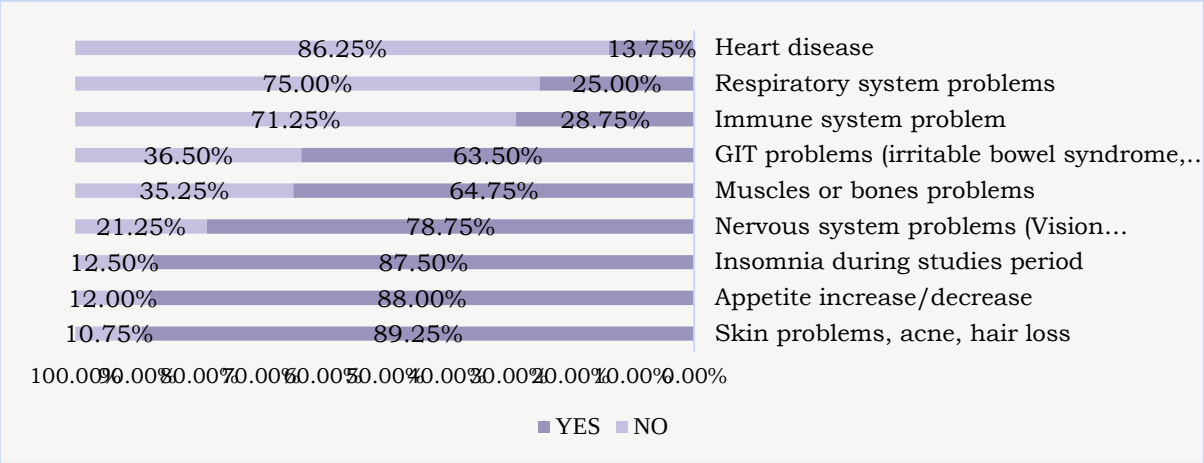

Figure 1. Distribution of physical health problems among university students under stress

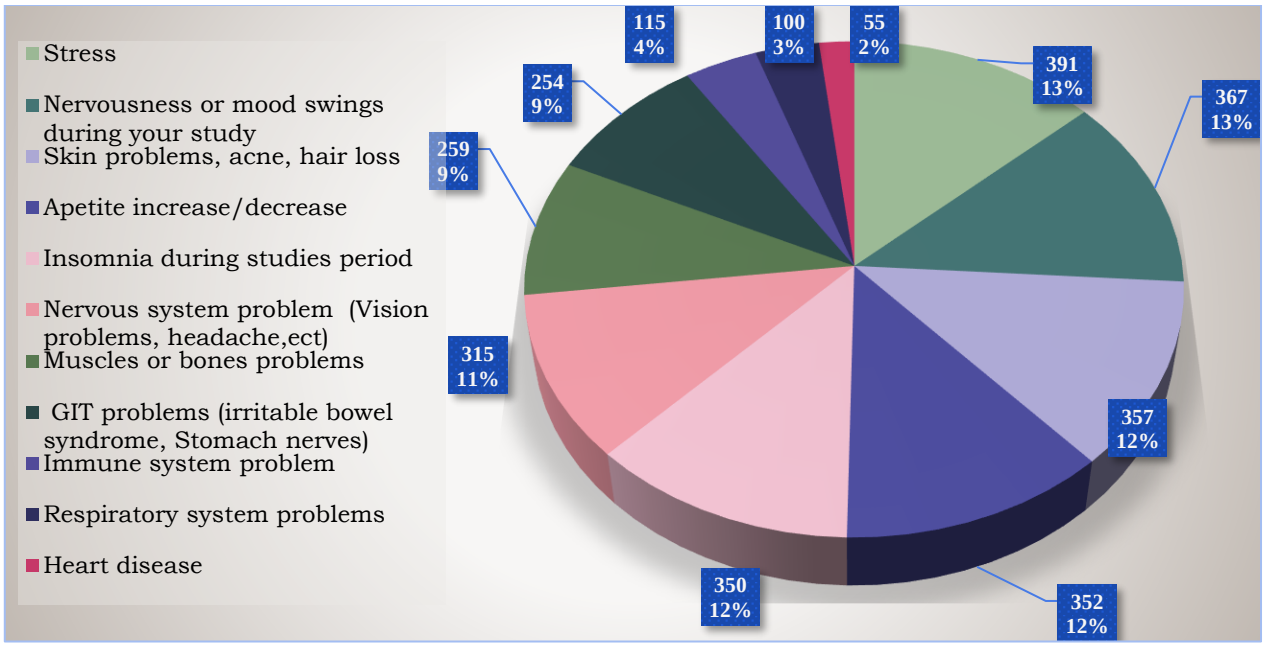

Figure 2. The distribution of physical problems arises from the stress of college students during their studies.

According to Table 2, only 18.75% of students reported making poor academic attempts, while 81.25% reported making acceptable academic efforts. Concerning the university's academic atmosphere, 37.25% of students were in a good learning environment, and 62.75% were in a terrible one. While 22.75% worked while they were studying, 77.25% did not work during that time. 35.25% of participants did not fail any subjects in the course, whereas the majority (64.75%) had failed some of the subjects. When comparing students' physiological health state before and after attending college, the majority of them reported worsening health (73.5%), whereas others claimed improving health (26.5%). The majority of students (92%) experienced stress during the school year, which was a highly common occurrence.

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Table 2. Distribution of Academic efforts among university students under stress their studies

Variable	Frequency (N=400)	Percentage (%)
How do you describe your academic efforts?		
Good	325	81.25%
Not good enough	75	18.75%
Academic Environment at University		
Poor	251	62.75%
Good	149	37.25%
Do you work during studying?		
Yes	91	22.75%
No	309	77.25%
Have you ever failed any subject during studies?		
Yes	259	64.75%
No	141	35.25%
Compared to before university, how would you describe your physiological health?		
Worse	294	73.50%
Better	106	26.50%
Total	**400**	**100%**

According to Figure 3, the majority of students (89.25%) had hair loss, acne, and skin issues. However, heart disorders had the lowest percentage (13.75%). According to a statistical study, lack of time accounted for 22.75% of stressors, while course material (difficult, long) and teaching methods (boredom, inadequate explanation) accounted for 32.25%. (18%) Fear of failing, 4% of the general campus environment and coworkers, and 3% of the environment at home when studying.

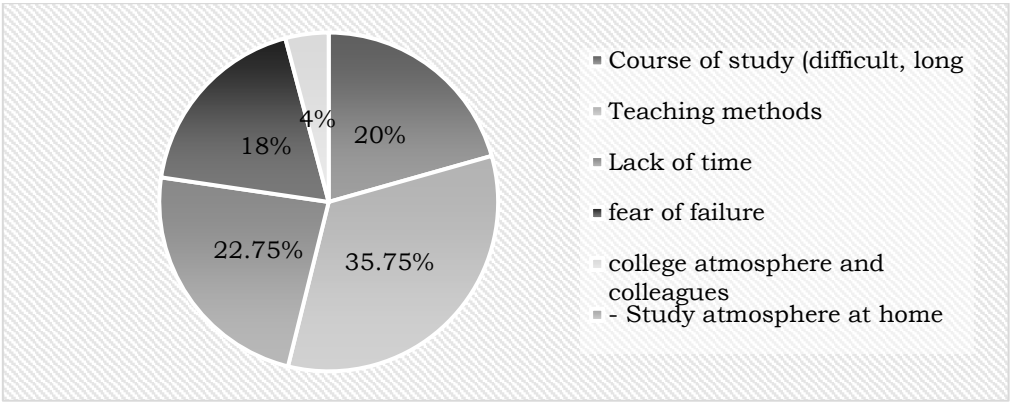

Figure 3. Distribution of reasons for feeling academic stress among university students.

Women are more likely than men to experience stress (94.1% vs. 80.3%, respectively). The findings indicate that social status did not significantly affect stress levels; married and single students experienced stress levels that were comparable (92.5% and 91.94%). Additionally, evidence indicates that students in their final two semesters have higher levels of stress than freshmen and second-year students (94.07%) and third-year students (92.66%). Additionally, among medical students, pharmacy students experienced the highest levels of stress (97.78%), followed by dentistry students (94.06%), medical technology students (92.05%), medicine students (90.91%), and nursing students (85.71%).

Table 3. Relationship of sex, academic year, and major with stress prevalence

Effects of Study on Physical health	**No**		**Yes**	
	N	%	N	%
Stress per Gender				
Female	20	5.90%	319	94.10%
Male	12	19.67%	49	80.33%
Stress related to Social State	No		Yes	
Married	3	7.50%	37	92.50%
Single	29	8.06%	331	91.94%
Stress per Class taken				
Fifth, sixth semesters	8	7.34%	101	92.66%

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First, Second Semester	4	9.30%	39	90.70%
Seventh, Eighth Semester	7	5.93%	111	94.07%
Third, Fourth Semester	13	10.00%	117	90.00%
Stress per Major				
Dentistry	6	95	5.94%	94.06%
Medical Technology	7	81	7.95%	92.05%
Medicine	10	100	9.09%	90.91%
Nursing	8	48	14.29%	85.71%
Pharmacy	1	44	2.22%	97.78%

According to Figure 4, 89.25% of students had skin issues, acne, and hair loss, while the majority (63.5%) experienced gastrointestinal issues (gastric nerves, irritable bowel syndrome). The majority of pupils deal with nervous system issues (78.75%), and over half (64.75%) have bone and muscle issues. Generally speaking, students never experienced serious immunological issues, heart disease, or respiratory disease (71.25%), 86.25%, or 75%, respectively. Additionally, 88 percent of students experienced changes in appetite during the study years, and 87.5% of students experienced insomnia. The incidence of stress differed among medical specialties: Students studying pharmacy: 97.78% (highest).
Students studying dentistry: 94.06%. Students studying medical technology: 92.05%. 90.91% are medical students. Nursing students: lowest at 85.71%. The results imply that students in subjects like pharmacy and dentistry, which have heavy theoretical and practical workloads, are more stressed than students in other fields. The findings show that academic stress is extremely common among medical students, especially those pursuing hard courses and advanced academic years. The results are consistent with earlier studies, highlighting the negative effects of academic overload and poor teaching practices on students' wellbeing. These findings highlight the need for focused interventions to assist students in better managing stress, such as enhanced academic support, mental health resources, and curricular modifications.

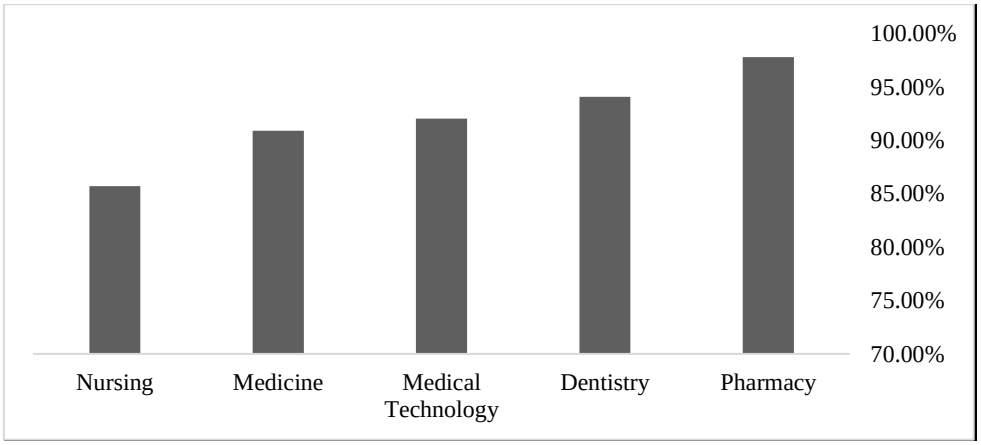

Figure 4. Relationship of medical disciplines with stress prevalence

Discussion

According to this survey, academic stress affects 96% of University of Tripoli medical students, with 75.69% reporting moderate stress and 14.66% reporting severe stress. These results are consistent with earlier studies carried out in Libya by Sherif et al. (2021), who found that 50% of medical students had moderate-to-severe stress and 45% had depression [1]. The high incidence found in this study could be explained by the complexity of the curriculum, increased academic pressure, and outside sociopolitical events that have an impact on students' wellbeing. Similar patterns have been noted worldwide. Medical students have much greater stress levels than non-medical students, according to Mofatteh (2020), with a heavy workload, failure-related anxiety, and a lack of social support being the main causes [2]. Furthermore, in line with our findings, Li et al. (2022) noted that up to 96% of medical students experience stress [3]. According to the survey, female students are more stressed (94%) than male students (80%), which is consistent with other studies. According to Al-Shahrani et al. (2023), female students reported higher levels of academic weariness, anxiety, and sleep disruptions than their male counterparts [4]. Higher social expectations, more duties, and heightened emotional sensitivity to academic difficulties may all be at blame for this.
According to our findings, the highest stress levels are found in third- and fourth-year students (94.07% and 92.66%, respectively). This runs counter to certain research, such Raj et al. (2021), which discovered that the move from high school to university causes increased stress for first-year medical students [5]. Onolemhenhen & Abel (2020), however, concur with our findings, stating that clinical responsibilities, more coursework, and higher performance expectations cause stress to peak in later academic years [6].

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Students studying pharmacy had the greatest stress levels of any medical discipline (97.78%), followed by those studying dentistry (94.06%). These results imply that stress levels are higher among students in fields that demand both in-depth theoretical understanding and practical training. Al-Dabal et al. (2010) reported similar findings, showing that students studying dentistry and pharmacy experienced much greater levels of stress compared to other medical students [7]. Significant Stressors and Their Effects. The most often cited reasons for stress were: Inefficient methods of instruction (32.25%). insufficient study time (22.75%). 20% is the course difficulty. These results are in line with those of Dabal et al. (2010) and Mofatteh (2020), who highlighted that medical students' main sources of stress are confusing curriculum, subpar teaching strategies, and an overwhelming workload [2,7].

Conclusion

This study highlights the high prevalence of academic stress among medical students in Libya, with females, pharmacy students, and those in advanced academic years being the most affected. These findings underscore the need for curriculum modifications, enhanced academic support, and mental health resources to mitigate stress and improve student well-being. The findings align with global studies, reinforcing those medical students experience higher stress levels compared to their peers in other disciplines. The results emphasize the urgent need for academic and psychological support systems to mitigate stress and enhance students' overall well-being. Without intervention, chronic stress may lead to burnout, decreased academic performance, and long-term health consequences. Given these findings, universities should reassess their educational structures, teaching methodologies, and student support systems to create a healthier learning environment for medical students.

Conflict of interest. Nil

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المستخلص

تهدف هذه الدراسة إلى تقييم انتشار الضغوط الأكاديمية بين طلاب الطب بجامعة طرابلس واستكشاف العوامل المرتبطة التي تؤثر على مستويات التوتر. كما تدرس الدراسة أيضًا تأثير الجنس والتخصص الأكاديمي والحالة الاجتماعية والسنة الدراسية على مستويات التوتر لدى الطلاب. أجريت هذه الدراسة الوصفية المقطعية على عينة عشوائية من 400 طالب مسجلين في جامعة طرابلس بليبيا خلال خريف 2023. تم جمع البيانات من خلال استبيان عبر الإنترنت من Google Form وتم تحليلها باستخدام الحزمة الإحصائية للعلوم الاجتماعية (SPSS) والتحليل الإحصائي Q-Square. كشفت النتائج أن مستويات التوتر بين طلاب الطب كانت مرتفعة للغاية (96٪)، حيث تم الإبلاغ عن ضغوط متوسطة لدى 75.69٪ من الطلاب وضغوط شديدة لدى 14.66٪. كانت الطالبات أكثر تأثرًا بالتوتر من الذكور (94٪ مقابل 80٪). بالإضافة إلى ذلك، واجه طلاب السنة الثالثة والرابعة أعلى مستويات التوتر (94.07٪ و92.66٪ على التوالي). من بين التخصصات الطبية المختلفة، أظهر طلاب الصيدلة أعلى مستويات التوتر (97.78%)، يليهم طلاب طب الأسنان (94.06%). وكانت المصادر الرئيسية للتوتر هي أساليب التدريس (32.25%)، وضيق الوقت (22.75%)، وصعوبة المقررات الدراسية (20%). وتوصي الدراسة بتطبيق مناهج واضحة، وخطط تعليمية منظمة ذات جداول زمنية محددة، ووجود مرشدين أكاديميين، وبرامج دعم طلابي لمساعدة الطلاب على إدارة ضغوطهم الدراسية بفعالية.

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