Content available at: https://www.ipinnovative.com/open-access-journals

Journal of Education Technology in Health Sciences

Journal homepage: https://www.jeths.org/

Original Research Article

The effect of academic stress on lifestyle habits among medical students

Zahra Al Mohsen [1,*]

[1] *Dept. of Hematology, King Salman Hospital, Riyadh, Saudi Arabia*

ARTICLE INFO

Article history:
Received 24-05-2023
Accepted 24-08-2023
Available online 22-09-2023

Keywords:
Stress
Academic distress
Lifestyle
Medical students Lifestyles

ABSTRACT

Background: Stress plays a role in altering people's lifestyles. When individuals experience stress and its associated pressures and anxiety, they often respond by engaging in unhealthy behaviors that can have a negative impact on their health. Assessing the impact of perceived stress is crucial in motivating students to adopt positive health behaviors as long-term coping strategies.
Aim of the Research: Study the link between perceived stress and lifestyle behaviors among medical students. Additionally, to explore how health-related behaviors impact the association between perceived stress and lifestyle in the same group of medical students.
Materials and Methods: To investigate the impact of perceived academic stress on the lifestyle habits of the medical students and to explore how health-related lifestyle factors mediate the relationship between increased perceived stress and changes in lifestyle. Perceived stress will serve as the independent variable in this non-experimental, descriptive cross-sectional study, where the focus is on observing the effects of academic stress on the lifestyle habits of the participants.
Results: Significant association between levels of stress and both real change of lifestyle and perceived change of lifestyle risk factors were increased.
Conclusion: Promoting positive health behaviors among students for coping purposes is crucial. By helping young individuals develop these coping techniques for handling stressful situations, we offer them the chance to enhance their appearance, boost body image and self-esteem, improve academic and work performance, lower the risk of depression, and ultimately enhance their overall quality of life.

1. Introduction

The continuous cycle of stress and sadness poses a persistent challenge in today's culture. Stress plays a significant role in influencing people's lifestyles. When individuals experience stress, they often respond by engaging in negative health behaviors, such as alcohol consumption and tobacco use, which can lead to an increase in depression rates.[1,2] This cycle is particularly evident among college students due to the perceived academic stress they face during this tumultuous period. The alarming rise in student stress is a concerning trend in college student health, with a large percentage of students reporting moderate stress or burnout.[3,4] As stress can have detrimental effects on both physical and mental well-being, it is essential to intervene by assessing perceived stress in college students and its impact on their lifestyles.[3,5,6] By doing so, we can identify ways to reduce the risk and rate of negative changes in eating or diet, physical activity, and sleeping patterns. Stress comes in various forms, including distress, which has a negative impact on the body and can lead to breakdowns, and eustress, which results from challenges and motivates optimal performance leading to positive self-esteem. Traumatic stress, although less common, has

* *Corresponding author*.
E-mail address: zahralmohsen@gmail.com (Z. Al Mohsen).

https://doi.org/10.18231/j.jeths.2023.008

a more significant impact on health and is caused by severely disturbing events beyond normal daily stressors.[7,8] Coping with stress can involve engaging in negative health behaviors like smoking, drug use, overeating, poor nutrition, physical inactivity, sleep deprivation, and increased caffeine intake. Many of these behaviors are associated with depression and even suicidal thoughts.[8] However, some individuals cope with stress in positive ways, such as exercise, proper nutrition, adequate sleep, positive thinking, and relaxation techniques. The college period is particularly susceptible to high levels of stress due to the "university transition," where students face significant adjustments and pressures related to academic performance, financial responsibilities, social expectations, and uncertainty about the future. Properly managing distress and eustress during this time is crucial, as the habits formed can persist for years and impact physical and psychological well-being. The relationship between perceived stress and depression, as well as the influence of health behaviors on this relationship, needs to be addressed to prevent harmful health outcomes in the future. While studies have been conducted on the effect of stress on college students' quality of life and sources of stress, more research is needed to understand the connections between perceived stress and negative health outcomes like depression and its physiological and psychological effects on students.[9,10] Assessing the effects of perceived stress is essential to encourage students to adopt positive health behaviors as coping mechanisms for the long term. Properly managing stress can lead to improved mental and physical well-being, increased self-efficacy, and a better quality of life. Therefore, the aim of the present work is to understand the relationship between perceived academic stress and real lifestyle changes in college students is crucial for promoting their overall well-being.

2. Material and Methods

2.1. The research designs

This research study aimed to examine the impact of perceived academic stress on the lifestyle habits of medical students. Additionally, it sought to investigate the role of health-related lifestyle in mediating the relationship between increased perceived stress and changes in lifestyle. The study considered perceived stress as the independent variable, which influenced the changes in lifestyle behaviors observed among the participants. The proposed study design followed a descriptive non-experimental approach, specifically a cross-sectional study, to explore the effects of academic stress on the lifestyle habits of medical students.

2.2. Setting

The research is in the Prince Sultan Medical College for Health Science.

2.3. The population

Study population consists of all the medical students in Prince Sultan Medical College for Health Science.

Sampling techniques; The sample size is calculated using the following formula:

$$Sample\ size\ N = \frac{Z1-\alpha/z2\ P(1-P)}{d2}$$

So, the sample size for this research can be 96 +/- 25. The sample size will be 71 to 121 selected by using a convenient sampling technique.

2.4. Inclusion criteria

All the students in Prince Sultan Medical College for Health Science.

2.5. Exclusion criteria

The students who are studying in the Prince Sultan Medical College for Health Science for more than one year.

2.6. Description of the tool

The questionnaire as a main tool in data collection. The questionnaire will be adapted from different previous studies. The questionnaire will be written in English and it will be divided into two sections:

2.7. Sections I: Lifestyle questionnaire

Information about the participant's lifestyle habits. It consists of four parts.

The first part focused on general information such as the age, specialty, and marital status. The second part included eating habits, and frequency of foods consumed, snacks and fast food. Third part considered physical activity including sports activity such as scoring, walking, and horse riding and frequency and duration for exercise. And the fourth part dedicated to sleeping habits which include time to go to bed and sleeping hours per day.

2.8. Questionnaire II: stress scale

Consists of the main part to assess the stress level of Prince Sultan Medical College for Health Science students. By using the stress scale to explore the personal characteristics of the participants including the level of stress and causes. The stress scale questionnaire will include 23 questions (seven items measure if the stress from the instructor side, six items from the student character, five items came from the effect of the class environment and the last five items from the examination) The score of the item will be by 4 points in scale form no stress (1) slight stress (2) moderate stress (3) to high stress (4).

2.9. Procedure of data collection

The procedures will start with the formulation of a research proposal and its approval from the internal review board of prince sultan military college of health sciences.

The questionnaire will be sent to Prince Sultan Medical College for Health Science security department seeking approval for distribution within the college.

The questionnaires will be distributed to the students (respondents).

The questionnaire will be collected back from respondents.

The collected data will be analyzed statistically and interpreted.

Plan for data analysis; Collected data will be analyzed using SPSS software. The collected data will be revised and coded to be entered to statistical software SPSS. All statistical analysis will be performed using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 will be statistically significant.

3. Results

This research study used a cross-sectional correlation design to determine the relationship between perceived academic stress and its influence in lifestyle habits among medical students. This was done by administering a web-based survey sent via email to males and females attending Prince Sultan Medical College for Health Science. Data Cleaning Survey responses from 120 students were recorded and transformed into raw data, then downloaded into Statistical Package for Social Sciences (SPSS for Windows, Version 19.0). Data were organized into categories according to the questions of the survey and unnecessary data from questions that were not relevant to this study were cleared from the data. Categorical data were recorded into ascending numeric form based on the responses to the survey questions (i.e., traits, characteristics, levels, and behaviors) in order to allow for further analyses (1 = negative, 2 = moderate, 3 = positive). All missing and extreme values in the data were determined and eliminated. Two lifestyle groups were created. One labeled "real change in lifestyle" for those respondents who were clinically diagnosed and treated for change lifestyle, while the other was "perceived change lifestyle" for those who claimed to feel sad, hopeless, change diet habits, and suicidal. The sample included more women (n = 70) than men (n = 50).

Frequency and descriptive analyses were used to examine the demographic characteristics of the students. As can be seen in (Table 1), age was not different between the sexes with a mean age of 23.4 ± 6.2 years. Marital status: single participants from male and female 74.3% were significantly higher as compared to married, divorced and widowed participants from both sexes.

Table 1: Comparison of means of socio-demographic characteristics

Variable	Male (n=50)	Female (n = 70)	Total (n = 120)	P value
Age	23.2 ± 6.4	23.6 ± 6.4	23.4 ± 6.2	0.374

*Significant differences between means (p-value)

(Table 2) displays that 20.0% of participants reported being in their first year of college. Whereas almost 30% of participants reported that they were in their third year and only 10.5% reported as being a fifth-year student.

Table 2: Demographic characteristics by percentage of males and females

Variable	Male Valid % (n=50)	Female Valid % (n = 70)	Total Valid % (n = 120)
Year in School			
1^{st} year	35.7	64.3	20.00
2^{nd} year	43.2	56.8	16.6
3^{rd} year	49.5	50.5	29.6
4^{th} year	47.00	53.00	23.3
5^{th} year	53.6	46.4	10.5

Comparison of Mean Values changes in lifestyle (Table 3) demonstrates the comparison of mean data for between measures of stress which make changes in lifestyle and lifestyle factors (sleep patterns, physical activity and diet) in this research. These reporting change in lifestyle had significantly higher stress ($p < 0.001$) and reported higher general health ($p = 0.012$).

Prescription misuse ($p = 0.011$) compared to those who did not report being diagnosed. In addition, those in the stress group reported that academic responsibilities and current living situations where the cause of their stress as compared to those with Stress. There were no significant differences between stress groups.

The stress and change in lifestyle behavior in (Table 4) indicates the mean data for the outcome measures of stress and several factors and behaviors in this study. Individuals in the Stress group were significantly different from no stress on many variables. Significant mean differences between Stress groups were seen in stress and causes of stress. Those in the Stress group had more stress from academic responsibilities, as well as from friendships and intimate relationships, career, living, and financial issues. Those in the perceived depression group also reported being more over committed, got less sleep each night, and had a greater amount of sleep difficulties. An important finding was that participants in the perceived depression group also had lower physical activity levels than those who did not have perceived stress.

Correlation analysis the overall correlations spearman Rho for each of the primary outcome variables for real

Table 3: Comparison of mean values of real stress and change in health habits

Variable	Real Stress		
	No Stress (n= 85)	Stress (n=35)	P- Value
General Health	2.0 ± 0.1	2.0 ± 0.2*	0.012
Level of Stress	1.7 ± 0.7	1.5 ± 0.7*	0.000
Stress from the instructor side	1.9 ± 0.7	1.7 ± 0.7*	0.002
Stress from the student character	2.3 ± 0.7	2.2 ± 0.8	0.281
Stress from the effect of the class Environment	2.4 ± 0.7	2.3 ± 0.7*	0.010
Stress from examination	2.2 ± 0.8	2.2 ± 0.8	0.945
Relationships	2.2 ± 0.8	2.2 ± 0.8	0.945
Causes of Stress; Over committed	2.2 ± 0.8	2.1 ± 0.8	0.264
Causes of Stress; Sleep Difficulties	1.2 ± 0.3	1.9 ± 0.3	0.079
Physical Activity Level	1.9 ± 0.7	1.9 ± 0.8	0.251
Number of Fruits/Vegetables Daily	1.3 ± 0.5	1.3 ± 0.5	0.690
Nutrition Habits	1.5 ± 0.5	1.4 ± 0.5	0.111
Amount of Sleep (each night)	2.1 ± 0.7	2.0 ± 0.7	0.362
Sleep Issues	1.7 ± 0.5	1.7 ± 0.5	0.325

*Significant differences between means (p-value)

Note. Means data are reported as means ± standard deviation. All variables were recorded in three distinct groups: 1 = negative behavior/factor, 2 = moderate behavior/factor, 3 = positive behavior/factor. Only "General Health" had two groups: 1 = "Other" and 2 = "Excellent"

Table 4: Comparison of mean values of perceived stress and change in health habits

Variable	Perceived Stress		
	No Stress (n= 85)	Stress (n=35)	P- Value
General Health	2.0 ± 0.0	2.0 ± 0.1	0.207
Level of Stress	2.4 ± 0.7	1.5 ± 0.7*	0.000
Stress from the instructor side	2.6 ± 0.6	1.8 ± 0.7*	0.000
Stress from the student character	2.3 ± 0.5	2.2 ± 0.7*	0.000
Stress from the effect of the class Environment	2.9 ± 0.4	2.4 ± 0.7*	0.000
Stress from examination Relationships	2.7 ± 0.5	2.2 ± 0.8	0.000
Causes of Stress; Over committed	2.8 ± 0.5	2.1 ± 0.8*	0.000
Causes of Stress; Sleep Difficulties	2.0 ± 0.1	1.9 ± 0.3*	0.009
Physical Activity Level	1.7 ± 0.6	1.9 ± 0.7*	0.033
Number of Fruits/Vegetables Daily	1.5 ± 0.5	1.5 ± 0.5	0.394
Nutrition Habits	2.1 ± 0.6	2.0 ± 0.7*	0.026
Amount of Sleep (each night)	1.8 ± 0.5	1.7 ± 0.5	0.299
Sleep Issues	1.7 ± 0.5	1.7 ± 0.5	0.325

* Significant differences between means (p-value)

Note. Means data are reported as means ± standard deviation. All variables were recorded in three distinct groups: 1 = negative behavior/factor, 2 = moderate behavior/factor, 3 = positive behavior/factor. Only "General Health" had two groups: 1 = "Other" and 2 = "Excellent".

Stress and perceived Stress are offered in (Table 5). Low but significant relationships were present between real Stress and levels of stress (r = -0.124). (Note: behaviors were categorized such that negative value was labeled lower number, e.g., high stress = 1, thereby making the relationship inverse). Also, academic responsibilities, current living situations, nutrition habits, prescription misuse, and self-destruction were all significantly correlated to real Stress. The strongest associations with real Stress were found between attempts or thoughts of self-destruction (r= -0.14; $p < 0.01$); and levels of stress (r = -0.12; $p < 0.01$). Total physical activity level, levels of sleep, and nutrition habits were expected to have strong correlations, but were not statistically correlated with real Stress (Table 5). Significant inverse relationships also existed between perceived depression and other health variables. Levels of stress and perceived depression were significantly correlated (r = -0.27). The table also displays low but significant ($p < 0.01$) correlations between perceived stress with academic responsibilities, career-related issues, current living situation, being over committed, and substance use. Interestingly, participation in sports and total physical activity were weakly positively associated with perceived stress. This indicates that greater participation in activity or sport was resulted in greater perceived real Stress.

Table 5: Overall bivariate correlations of real stress, perceived stress, and attributing factors

	Real Stress (n = 85)	Perceived Stress (n = 35)
Age (years)	-0.013	-0.076*
General Health	-0.075	* -0.037
Level of Stress	-0.124**	-0.272**
Stress from the instructor side	-0.095**	-0.266**
Stress from the student character	-0.038	-0.206**
Stress from the effect of the class Environment	-0.091**	-0.198**
Stress from examination	-0.013	-0.193**

*Correlation is significant at the 0.05 level. (2-tailed) **Correlation is significant at the 0.01 level. (2-tailed)
All attributing factors were recorded in three distinct groups: 1 = negative behavior/factor, 2 = moderate behavior/factor, 3 = positive behavior/factor. Only "General Health" had two groups: 1 = "Other" and 2 = "Excellent"

The significant relationships between perceived Stress and the other variables ranged from 0.06 to -0.27 with the strongest association was found between levels of stress and perceived Stress ($r = -0.27$; $p < 0.01$); the weakest significant relationship was total physical activity level and perceived Stress ($r = 0.060$; $p < 0.05$). The correlations that were present for both real and perceived depression were levels of stress, which shows that this factor does have a relationship with stress in college students. In addition, having numerous academic responsibilities, a bad living situation, and attempting or thinking of self-destruction were also correlated to both forms of Stress. However, it is again key to mention that these correlations listed were all very weak. The strongest statistically significant variable that predicted students in the perceived Stress category was levels of stress (Chi Square value = 60.600, Odds Ratio = 20.837, and 95% C.I. = 9.700-44.760), which was significant at the $p < 0.01$ level. The odds ratio of this factor showed that a student was almost 21 times more likely to be in the perceived stress category if he or she had high levels of stress. Two other variables had significant odds ratios for predicting the perceived stress category. These were substance use (Chi Square value= 8.080, Odds Ratio = 2.885, and 95% C.I. = 1.390-5.990) and female gender (Chi Square value = 6.307, Odds Ratio = 2.172, and 95% C.I. = 1.186-3.979), both significant at the $p < 0.05$ level. Thus, those with substance abuse were about 3 times more likely to be categorized in the perceived stress group and females were about 2 times more likely to be in the perceived stress group.

4. Discussion

The basic demographics characteristics of the study sample were similar to what others have reported other surveys to assess health behaviors and outcomes in college students.[11,12] The age of the female and male participants was about the same in other studies, most using college undergraduates from 18-25 years old, in some cases ranging up to only 22 or 24 years. The previous studies also had samples that included more females than males. Marital status was similar; few confirmed that they were "married" and more reported being "single". It was observed that participants in the present study were less physically active than in other studies. A report by Taliaferro[12] and colleagues associating physical activity and stress specified that 76.5% of their participants were active Only 69.2% of the focusses were active (48.4% did low amounts of activity and 20.8% met the general references of at least 3 days a week). Since the survey was directed in the spring in Phoenix, perhaps high temperatures may have discouraged participants from exercise, reducing the amount of activity performed. In contrast to other studies.[12,13] This study divided stress into two groups, real and perceived. The survey exactly asked questions about those who reported having been clinically diagnosed with and work wise treated for stress and those who reported that they felt sadness, hopelessness, lonely, and overwhelmed (perceived stress). Taliaferro and colleagues[12] created 3 separate groups of stress: hopelessness, depression, and unhappy. The variable stress would be equivalent to real stress in the present and hopelessness would be relevant to perceived stress.

The study was that confirmed health behaviors significantly influence the relationship between perceived stress and depression. Of all the health behaviors assessed, only substance abuse seemed to predict depression in this sample of college students. While prescription misuse and suicide were significant predictors for having real depression, the only behavior that significantly predicted perceived depression was substance use. This study had results that partially supported the findings of[14] in their experiment on depressive symptoms, stress, and coping in college students. They discovered that females use more emotion-based coping techniques, while males execute more problem-focused or avoidant-focused strategies to cope with stress. More importantly, they found that there was a significant combination of stress, coping strategies, and depressive symptomatology. Thus, being more related to depressive symptomatology.

The logistic regression did not show any health behaviors that significantly predicted having real depression. However, health behaviors seemed to influence perceived depression to a greater extent. Total physical activity

level, the amount of sleep consumed each night, smoking, substance use, participation in sports, and attempting or thinking of suicide were all significantly correlated with perceived depression. It was expected that physical activity would mediate the relationship between stress and depression, but this was not the outcome. In fact, physical activity levels were not prognostic of perceived depression according to the logistic regression model. A possible explanation for may be that those who engage in physical activity also engage in behaviors that affect and confound their levels of stress, such as lack of sleep due to exams. Significant positive correlations were seen between physical activity level, sports, and perceived depression. In dissimilarity, inverse relationships were shown between perceived depression and smoking, substance use, and self-destruction. Therefore, the results indicated that perhaps participants used coping behaviors such as smoking and using drugs as a way to successfully manage their depression. The finding that physical activity and sports had a weak but direct positive relationship to depression suggests that exercise or physical activity has little or no relationship in mediating or preventing perceived depression. These data suggest that those who report more physical activity are more likely to be depressed. Possibly those who participate in high levels of physical activity or sport are overtraining, thereby increasing their level of stress and depression. The only significant behavior for having perceived depression in the logistic regression model was substance use. It is important to note that too few subjects reported having attempts or thoughts of suicide to make it a clinically meaningful variable to identify depression.

The outcomes of these overall logistic regression models showed that stress, general health, and substance use are important predictors for depression. Then perhaps depression levels in college students could be prevented or reduced by addressing the levels of stress, improving general health, and reducing substance abuse in this population.

5. Conclusion

The study supports the use of developing and improving stress coping techniques for medical students to prevent and possibly treat depression in college students. It is important to encourage students to carry out positive health behaviors for coping as opposed to negative ones. Aiding young people in developing these coping techniques to use during stressful situations can provide the opportunity to look and feel good, increase body image and self-esteem, academic and work routine, reduce the risk of depression and improve quality-of-life. Upcoming study would continue to identify factors that may mediate the relationship between perceived stress and depression in medical students.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Nonis SA, Hudson GI, Logan LB, Ford CW. Influence of perceived control over time on college student's stress and stress-related outcomes. *Res High Educ*. 1998;39(5):587–605.
2. Cohen S, Herbert TB. Health psychology: psychological factors and physical disease from the perspective of human psychoneuroimmunology. *Annu Rev Psychol*. 1996;47:113–42.
3. Larson EA. Stress in the lives of college women: "lots to do and not much time". *J Adolesc Res*. 2006;21(6):579–606.
4. Misra R, Mckean M. College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *Am J Health Stud*. 2000;16(1):41–51.
5. Hall NC, Chipperfield JG, Perry RP, Ruthig JC, Goetz T. Primary and secondary control in academic development: gender-specific implications for stress and health in college students. *Anxiety Stress Coping An Int J*. 2006;19(2):189–210.
6. Andrews B, Wilding JM. The relation of depression and anxiety to life-stress and achievement in students. *Br J Psychol*. 2004;95(Pt 4):509–21.
7. Fevre ML, Kolt GS, Matheny J. Eustress, distress and their interpretation in primary and secondary occupational stress management interventions: which way first. *J Manag Psychol*. 2006;21(6):547–65.
8. Suedfeld P. Reactions to societal trauma: distress and/or eustress. *Pol Psychol*. 1997;18(4):849–61.
9. Boswell WR, Olson-Buchanan JB, Lepine MA. Relations between stress and work outcomes: the role of felt challenge, job control, and psychological strain. *J Vocational Behav*. 2004;64:165–81.
10. Reibel DK, Greeson JM, Brainard GC, Rosenzweig S. Mindfulness-based stress reduction and health-related quality of life in a heterogeneous patient population. *Gen Hosp Psychiatry*. 2001;23(4):183–92.
11. Adams TB, Colner W. The association of multiple risk factors with fruit and vegetable intake among a nationwide sample of college students. *J Am Coll Health*. 2008;56(4):455–61.
12. Taliaferro LA, Rienzo BA, Pigg RM, Miller MD, Dodd VJ. Associations between physical activity and reduced rates of hopelessness, depression, and suicidal behavior among college students. *J Am Coll Health*. 2009;57(4):427–36.
13. Marshall LL, Pharm D, Allison A, Nykamp D, Lanke S. Perceived stress and quality of life among doctor of pharmacy students. *Am J Pharm Educ*. 2008;72(6):137. doi:10.5688/aj7206137.
14. Dyson R, Renk K. Freshman adaptation to university life: depressive symptoms, stress, and coping. *J Clin Psychol*. 2006;62(10):1231–44.

Author biography

Zahra Al Mohsen, Clinical Laboratory Specialist
https://orcid.org/0009-0002-1818-1682

Cite this article: Al Mohsen Z. The effect of academic stress on lifestyle habits among medical students. *J Educ Technol Health Sci* 2023;10(2):29-34.