

## Effects of Academic Stress on Students' Academic Achievements and Its Implications for Their Future Lives

**Gemechu Abera Gobena**

Assoc. Prof., Haramaya University, College of Education and Behavioral Sciences, Ethiopia,  
gemechu46@yahoo.com & gemechugobena127@gmail.com

The study aimed to investigate the Effect of Academic Stress on Students' Academic Achievements and Its Implications for Their Future Lives. A correlational research design was employed through stratified random sampling ( $n_i = 270$ , where female = 80 and male = 190) to collect pertinent data through a questionnaire. Descriptive and inferential statistics were employed. Firstly, academic stress highly affects students' academic achievement, with females being more stressed (65.20%) than males (59.60%), which leads to a high dropout rate and low graduation rate. Secondly, about 69% were accustomed to drinking alcohol, chewing Khat, absenteeism, and smoking whereas about 31% were regularly engaging in unsafe sex, physical fights, smoking shisha, and poor personal sanitation. Thirdly, there were significant positive relationships among sex, age, academic batch, and student's cumulative grade point average. To conclude, academic stress hinders good academic achievement, increases college dropout rates, low graduation rates, and lack of self-confidence. It leads to drinking alcohol, absenteeism, chewing khat, reduced academic morale of students, and failure in completing assignments on time. Therefore, university authorities should ensure a good academic environment for the students and minimize academic stress through appropriate course load, appropriate lecture hours, proper lecture schedules, and non-congested lecture halls.

Keywords: academic achievement, Haramaya university, psychology, stress

### INTRODUCTION

Among various types of stress, academic stress may be the most salient for students at any level of education either primary, secondary, or tertiary, which is highly related to competitive academic examinations, such as university entrance examinations and high school entrance examinations (Jun and Choi, 2015). Consistent with the transactional model of psychosocial stress proposed by Lazarus (1966), the level of perceived academic stress is determined not only by the number of academic stressors but also by how students interpret these stressors (Chua, Ng, and Park, 2018). Consequently, Sun, Dunne, Hou, and Xu (2013) defined academic stress as subjective psychological distress from multiple aspects of academic learning, rather than a sum of stressors. The sources of academic stress can originate from the heavy burden of homework, and negative attitudes toward learning, such as loss of interest and difficulties in learning, etc (Wunsch, Kasten, and Fuchs, 2017). Meanwhile, the academic expectations from students and significant others, like parents and teachers, have also been demonstrated to be important factors of academic stress. Academic stress occurs when academic demands exceed a student's perceived ability to cope with them. As the burden of academic material varies within a semester, the academic stress may also change over time (Xiang, Tan, Kang, Zhang, and Zhu, 2019).

In previous studies, academic stress is associated with negative psychological consequences such as unpleasant emotional states, depression, tearfulness, even self-harm, and suicidal feelings in some cases (e.g., Lotz and Sparfeldt, 2017; Soares and Woods, 2020). Besides, students with a high level of

**Citation:** Gobena, G. A. (2024). Effects of academic stress on students' academic achievements and its implications for their future lives. *Anatolian Journal of Education*, 9(1), 113-130. <https://doi.org/10.29333/aje.2024.918a>

stress also presented poor academic achievement, low self-efficacy, and low classroom participation (Park, Park, Jang, Oh, and Oh, 2020). Meanwhile, some researchers suggested that academic stress may not necessarily result in negative outcomes (Sang, Pan, Deng, and Zhao, 2018; Ye, Posada, and Liu, 2019). Students' responses to stress differ by their abilities and beliefs. Consequently, if the students view academic challenges as opportunities and exert effort to meet the challenges, academic stress may result in a positive impact (Sang et al., 2018). The passouts of any educational institute represent the devotion towards students. It is a long-term investment when people work not only on well-being in their academic achievements but also as unique beings (Tahir, 2016). People who are depressed eat poorly, sleep poorly, rarely exercise, and fail to use seat belts in cars, smoke more, and so on. Therefore, it is a very important and timely issue to study the effect of stress on students' academic achievements at Haramaya University in general and the College of Education and Behavioural Sciences in particular.

Rizwan (2011 as cited in Ye et al., 2019) has identified in his study that academic stress has led a number of university-going students towards depression and hopelessness and in extreme cases, towards suicidal attempts as well. Students in their lives include different commitments toward success, uncertainties regarding the future, and the related difficulties that pressurize the students (Lotz and Sparfeldt, 2017). Students due to stress ultimately do not carry out their plans as it is (Park et al, 2020). Human beings are significantly influenced by various psychological as well as physiological factors they experience in their everyday lives Chua, et al (2018). Moreover, when it comes to academic stresses, specifically, Yang, Viladrich, and Cruz (2022) have found that stress is strongly correlated with students' academic achievements. Despite the fact that increasing educational competition is reaching its ceilings here in Ethiopia, it has been witnessed by many educational institutes that their students have not been delivering their best shots in their academic fields.

Researchers Chua, et al (2018) have long recognized stress symptoms such as loss of energy, elevated blood pressure, depressed mood, increase in craving, difficulty in concentrating, impatience, nervousness, and strain. Moreover, the World Health Organisation (2016) states that students must be healthy and emotionally secure to fully participate in education. Indeed, the abovementioned OECD survey reports that anxiety about schoolwork, homework, and tests has a negative impact on students' academic achievement in science, mathematics, and reading. The survey highlights that top-performing girls report that the fear of making mistakes often disrupts their test achievement (OECD, 2015). Students in the bottom quarter of academic achievement report feeling far more stressed compared to those in the top quarter of academic achievement. As many as 63% of students in the bottom quarter of science achievement report feeling anxious about tests no matter how well prepared they are while 46% of students in the top quarter report feeling anxious (OECD, 2015). This demonstrates that higher perceived stress levels are associated with poorer academic achievement. Previous research shows that the experience of positive and negative emotions is directly related to levels of student engagement (Reschly, Huebner, Appleton, & Antaramian, 2018). In 293 students in Grades 7–10 from the United States, the frequency of positive emotions during classes was associated with higher student engagement. Conversely, the frequency of negative emotions was associated with lower engagement (Reschly et al., 2018). This finding is important as engagement in learning is necessary for achievement, as illustrated by the findings of a survey conducted by the National Union of Students. This survey reported that the main factor affecting the tertiary studies of Australian university students aged 17–25 was stress (Rickwood, Telford, O'Sullivan, Crisp, & Magyar, 2016). In an observational study of 456 German undergraduate medical students, higher perceived academic-related stress was found to predict poor academic achievement (Kotter, Wagner, Bruheim, & Voltmer, 2017). In another study of 121 medical students from Hong Kong, high self-reported stress levels were similarly related to poorer academic achievement (Stewart, Lam, Betson, Wong, & Wong, 2019).

The above findings demonstrate that the academic-related stress that secondary and tertiary students experience constitutes a major factor affecting their academic achievement. Students with higher perceived stress are likely to have lower academic achievement. Stress among students has long been a topic of research study and researchers have recognized different important stressors which include excessive assignments, unhealthy competition among class students, fear of failure in educational achievement and lack of pocket money, poor interpersonal relationships in class or with lecturers, and family problems (Fairbrother & Warn, 2013). However, there are very few studies on the effect of stress on students' academic achievements at Haramaya University, Eastern Ethiopia. From the twelve years of experience of the researcher, many students, and perhaps for many of them, the transition to college or university, with its new relationships and more demanding challenges, proves stressful. Therefore, this paper tried to close these gaps to minimize such risk-taking behaviour among students at the College of Education and Behavioural Sciences.

### **Purpose of the Study**

The specific purposes of this study were intended to:

- Identify the effect of academic stress on students' academic achievements (SAA).
- Stipulate the relationships among genders, age, academic years, respondents' departments, academic achievement, and stress symptoms.
- Assess the effect of academic stress on students' academic achievements in their daily lives.
- Investigate how students can cope with academic stress in the study area.

### **Review of Related Literature**

Academic stress includes exhaustion, depersonalization, cynicism, and inefficacy or reduced accomplishment (Walburg, 2014). It is strongly related to decreased student academic motivation (Liu, 2015; Liu & Lu, 2017; Shinto, 2018) and academic disengagement (National Centre on Addiction and Substance Abuse at Columbia University (CASA) United States of America, 2016). The relationship between academic stress, motivation, and dropout does not appear to be culturally specific, with similar findings shown from a number of international studies (Liu, 2015; Liu & Lu, 2017; Shinto, 2018; Walburg, 2014). In 298 Chinese secondary school students, academic stress in Grade 10 negatively predicted intrinsic academic motivation and positively predicted lack of motivation in Grade 12. This indicates that decreasing academic stress might preserve students' ongoing intrinsic academic motivation (Liu, 2015; Liu & Lu, 2017). Similarly, in 495 Japanese students in junior secondary school, self-reported academic stress was found to negatively relate to feelings of self-growth and academic motivation (Shinto, 2018). A recent literature review highlights how academic stress can also affect academic achievement by increasing the risk of school dropout (Walburg, 2014). This was particularly true for students who experience more stressful life events of a more severe nature, as well as students who do not seek support from their parents or other family members as well as students from ethnically diverse groups (Hess & Copeland, 2020). School dropout is associated with a lifelong reduction in earning capacity and secure employment (Lamb & Huo, 2017). Individuals with lower education levels report having poorer mental health and more illness than those with higher levels of education (Turrell, Stanley, de Looper, & Oldenburg, 2016). Early dropout from school has also been reported to contribute to intergenerational issues including unemployment, poverty, and less academic achievement (Black, 2017; Lamb & Huo, 2017; Muir, Family, Maguire, Slack-Smith, & Murray, 2013). Academic achievement and completion of secondary school leads to greater employability, less reliance on social welfare support, and a higher likelihood of participation in further education (Noble, Wyatt, McGrath, Roffey, & Rowling, 2018). These outcomes in turn increase the likelihood of sustainable employment, adequate income, and self-sufficiency (Noble et al., 2018), which can save governments hundreds of millions of dollars every year (Lamb & Huo, 2017).

### **Relationship between Stress and Students' CGPA**

As revealed by Byrne (2016) this non-significant correlation between the level of perceived stress and academic success during the middle and till the end of the semester can probably be explained by the fact that the students are already used to the system. Apart from that it would not be erroneous to establish here on the basis of implications of the findings extracted so far that despite the fact that no significant impacts of academic stress on students' academic achievement have been found; other socio-economic stress factors are likely to increase from the beginning of the semester to the middle of the semester. These results are correlated with the results proposed by Lackovic-Girgin (2015) in his study. According to them, the levels of academic stress experienced by students are not significantly correlated with their GPAs. For many researchers, these findings can be surprising; but in actual fact, these results are proposed on the basis of observed facts that students by the end of the semester are normally familiar with the schooling system they are enrolled in. by the end of the semester, students are only concerned about their final exams as they have been through all the class assignments and thus, the pressure is now over. As supported by Yang et al (2022) as soon as students enter the tertiary of their educational institution, they are unaware of how the quizzes, tests, and assignments will be held throughout the semester which contributes to their overall stress levels but not the final grades because they still think that final exams are the most important stage where they can make up their grades.

Findings were not expected for the very obvious and general perception reported by a lot of research that was conducted to support that there is a wide difference between males and females on gender and academic stress score (Block & Robins, 2014; Byrne, 2016). However, the review of the literature has significantly mentioned that there are several contradictions among various researchers when it comes to studying the correlation between gender and levels of academic stress specifically among the students' community (Smith, 2017). Most of the studies conducted to investigate gender differences in the context of self-esteem have clearly affirmed that the self-esteem score of adolescent females is usually lower as compared to adolescent males (Block & Robins, 2014; Rosenberg & Simmons, 1975; Byrne, 2016). The same results were found in the context of stress and gender correlation (e.g., Ye et al, 2018). There are also studies that mentioned females view themselves more positively than males (Thornberg & Jones, 2023).

### **Academic stress and physical health**

The experience of high levels of academic stress increases the risk of young people developing preventable physical health problems later in life. A systematic review of prospective studies found that people who were academically stressed, such as during examination periods, were less likely to be physically active, the impact of which is associated with a plethora of potentially inter-related poor physical health outcomes (Stults-Kolehmainen & Sinha, 2014). Academic stress may also lead to the development of non-communicable diseases, including metabolic syndrome, obesity, and reduced insulin sensitivity, resulting from unhealthy lifestyle habits and academic stress system dysregulation (Pervanidou & Chrousos, 2021). Similarly, academic stress has been shown to be associated with increased appetite (Dallman et al., 2022) and higher body weight (Stephens et al., 2017). Therefore, academic stress can contribute to the development of health issues, including chronic non-communicable diseases due to a decrease in physical activity and increases in unhealthy lifestyle habits which will result in risky behaviors.

### **Psychological coping strategies**

The interpretation or evaluation of an event process psychologists call cognitive appraisal helps determine its academic stress impact. For example, suppose students have a huge exam scheduled for next week, the way they appraise or evaluate the situation will determine the level of academic stress they feel. If they appraise the situation as a challenge that they can meet, they have positive feelings

and their academic stress level is reduced. If they think of the situation as a threat, however, their negative feelings will increase their academic stress level. Drugs can affect cognitive appraisal. For example, drinking may help convince a person who has been fired that his troubles are not serious that s/he will enjoy unemployment, or that getting drunk is the best solution for the time being (Chua, et al, 2018).

### **Coping strategies with academic stress**

People can also try to influence their cognitive appraisals by means of coping strategies, and students' academic stress reactions are more likely to occur when these strategies fail. Common defense mechanisms are denial, in which a person decides that the event is not really a stressor, and intellectualization, in which the person watches and analyses the situation from an emotionally detached standpoint. Both denial and intellectualization can prevent physical reactions to academic stress. In a study by (Chua, et al, 2018), three groups of participants viewed a film that showed gruesome accidents at a sawmill. One group was told that the injuries were not real but were staged by the actors (denial). A second group was advised that they were seeing an educational film about the importance of safety measures (intellectualization). The third group was told nothing. The levels of physical reaction were lower in the first two groups than in the third. Thus, if a person does not evaluate an event or situation as stressful, an academic stress reaction will not occur. Yet that is really failing to deal with what could be a legitimate academic stressor.

### **METHOD**

A correlational research design was employed in carrying out this study because correlational research designs provide an opportunity for the researcher to predict scores and explain the relationship among variables. In correlational research designs, investigators use the correlation statistical test to describe and measure the degree of association (or relationship) between two or more variables or sets of scores. In this design, the researchers do not attempt to control or manipulate the variables as in an experiment; instead, they relate, using the correlation statistic, two or more scores for each person (e.g., student motivation and a student achievement score for each individual). This design allows him to predict an outcome, such as the prediction that ability, and academic coursework influence student achievement. He also uses this design when he knows and can apply statistical knowledge based on calculating the correlation statistical test (Cresswel, 2018).

He also interprets the meaning of the data by relating the results of the statistical test back to past research studies. The primary data was collected through a questionnaire from students in this institution. Thirty- eight students (17 females and 21 males) were used to conduct a reliability and validity tests of the questionnaire. This was done, firstly to check the internal consistency of the items by using Cronbach alpha; the validity of the items was checked by the experts who have well experienced in evaluating data collection instruments in survey research. Accordingly, the reliability of the questionnaire was calculated and was .85 which was found highly reliable. The validity test of the items by the experts were indicated that the researcher needed to adjust or remain or change some technical words or phrases that seemed to be technical for these respondents.

### **Population, sampling size, and sampling techniques**

The target population for this study consisted of one public university, Haramaya University, College of Education and Behavioural Sciences-four departments of undergraduate students of a total population of 831. The samples used consisted of 270 students who were selected through a stratified random sampling technique. To make the interpretation descriptively easier, the researcher used descriptive statistics (percentages, means, standard deviation and coefficients of variation) to summarize the characteristics of the samples. Furthermore, inferential statistics (bivariate correlation, ANOVA, and factor analysis) were used to show the degree of strength & relationship, mean

differences between sexes and age of the respondents, and variations respectively. This result was significant at  $\alpha = 0.05$  level.

## FINDINGS

This section of the paper mainly dealt with the quantitative data analysis of the study. Out of 831 undergraduate students in the College of Education and Behavioural Sciences, 285 students participated and 270 of them completed the questionnaires giving a response rate of 94.74%. Out of the 270 respondents, 190 (70.37%) of them were males whereas 80(29.63%) of them were females. The overall mean age was 22.55 years (95% Confidence interval 21.36 - 23.74 years). The overall age ranged from 19 to 25 years. The mean age for the males (22.68 years) was higher as compared to the females (22.48 years). To make an interpretation of the Likert scales, the computed mean scores have been interpreted as follows. Mean and coefficient of variation were employed to determine the level of academic stress of the respondents using the following range and qualitative descriptions where the square bracket indicates inclusion (]) whereas the bracket indicates no inclusion ([). (Bluman, 2017).

Table 1

Qualitative descriptions of range of the mean scores and coefficient of variability

No	Range of scales (mean)	Qualitative Description Academic Stress (AS)	Range of CV (%)	Qualitative Description Coefficient of Variation
1	(1.00 - 1.50]	Very low	(0 – 15]	Very low
2	(1.50 - 2.50]	Low	(15 –30]	Low
3	(2.50 - 3.50]	Moderate	(30 - 45]	Moderate
4	(3.50 – 4.50]	High	(45 – 50]	High
5	(4.50 – 5.00]	Very high AS	Above 50	Very high

## Demographic Characteristics of the Respondents

Table 2

Sex versus age cross-tabulation

Sex	Age				Total	Percentage (%)
	Below 20	20-25	25-30	30-35		
Female	22	54	4	0	80	29.63
Male	28	110	48	4	190	70.39
Total	50	164	52	4	270	100
Percentage (%)	18.52	60.74	19.26	1.48	100	

As Table 2 indicates, 190 (70.39%) of the total sampled respondents were males whereas 80 (29.63%) of them were females. Moreover, it was pinpointed that 164 (60.74%) of the respondents were between 20 to 25 years old; 52 (19.26%) of them were 25 to 30 years old; 50(18.52%) of them were below 20 years old whereas 4 (1.48%) of them were between 30 to 35 years old. This indicates the sample taken from the population can generate adequate information for further interpretation and conclusion made from the analysis part of the study. On the other hand, there was gender disparity in Haramaya University in general and the college under study in particular.

Table 3  
Respondents' department versus sex cross-tabulation

Respondents' Department	Sex		Total	Percentage (%)
	Female	Male		
AECD	9	56	65	24.07
EdPM	18	60	78	28.89
Psychology	19	45	64	23.70
SNIE	34	29	63	23.33
Total	80	190	270	100

As it can clearly be seen from Table 3, 78(28.89%) of the total sampled respondents were from the Department of Educational Planning and Management (EdPM) whereas 192 (71.11%) of them were from the three departments (Adult Education and Community Development (AECD), Psychology, and Special Needs & Inclusive Education (SNIE)).

Table 4  
Respondents' department versus academic level cross-tabulation

Respondents' Department	Academic Level			Total
	First Year	Second Year	Third Year	
AECD	26	25	14	65
EdPM	29	26	23	78
Psychology	27	25	12	64
SNIE	24	22	17	63
Total	106	98	66	270
Percentage (%)	39.26	36.30	24.44	100

As Table 4 reveals, 106(39.26%) of the total sampled respondents were from the first year; 98 (36.30%) of them were from the second year and the rest 66 (24.44%) were of them were from the third-year respondents of the four departments of the college under study.

Table 5  
Respondents' cumulative grade point average versus academic level cross-tabulation

Respondents' Cumulative Grade Point Average	Academic Level			Total	Percentage (%)
	First Year	Second Year	Third Year		
Below 2.00	22	16	2	40	14.81
2.00-2.50	52	48	38	138	51.11
2.50-3.00	18	17	13	48	17.77
3.00-3.50	10	12	10	32	11.84
3.50-4.00	4	6	3	13	4.81
Total	106	98	66	270	100

As it can be seen in Table 5, 138(51.11%) of the sampled respondents scored between 2.00 to 2.50 Cumulative Grade Points Average (CGPA); 48 (17.78%) of them scored between 2.50 to 3.00 CGPA;

40 (14.81%) of them scored below 2.00 CGPA; 32(11.84%) of them scored between 3.00 to 3.50 CGPA whereas 13(4.81%) of them scored 3.500 to 4.00 CGPA.

Table 6  
Effects of academic stress on SAA in CEBS (n = 270, p < 0.05)

Descriptive Statistics					
Sex	n	Mean	%	SD	CV%
Female	80	3.26	65.20	1.05	32.21
Male	190	2.98	59.60	0.92	30.87
Total	270	3.07	61.40	0.98	31.92

As it has been indicated in Table 6, it was clearly indicated that the computed mean score of the respondents were 3.26 and 2.98 for both female and male respondents, respectively. This identifies that the effects of academic stress on SAA by sex in the CEBS were 61.40%, with females being more academically stressed (65.20%) than males (59.60%). From this analysis, it was found that the effect of academic stress on SAA since they joined Haramaya University was found to be at a medium level. This was very frustrating because it had this much effect on students. Moreover, there was a very severe academic stress among female respondents than their male counterparts. Besides, the computed coefficient of variations (CV%) (32.2%) and (30.87%) respectively for both female and their male counterpart showed us that there was moderate variability among female respondents than their males counterpart in the college under the study. However, the total coefficient of variation (31.92%) indicates that there was a moderate variation among the total population of the college under the study. In support of this finding, a study conducted at Jizan University, Kingdom of Saudi Arabia by Sani, Mahfouz, Bani, Alsomily, Alagi, and Alsomily (2012) on the effect of stress among medical students found that 71.9% of females were more stressed (77%) of males (64%). However, the review of related literature has significantly mentioned that there are several contradictions among various researchers when it comes to studying the effect of stress between genders and levels of stress specifically among the students' community (Smith, 2017). Most of the studies conducted to investigate gender differences in the context of self-esteem have clearly affirmed that the self-esteem score of adolescent females was usually lower as compared to that of adolescent males (Block & Robins, 2014; Rosenberg & Simmons, 1975; Byrne, 2016).

Table 7  
Comparison between genders on the effect of academic stress (n<sub>i</sub> = 270, p < = .05)

Inferential Statistics (Summary of ANOVA Table)					
Sources of variation (SV)	Sum of Squares (SS)	Degree of Freedom (df)	Mean of Squares (MS)	F- ratio (F)	Sig.
Between Groups	3.67	1	3.67	3.95	.048
Within Groups	249.24	268	.93		
Total	252.91		269		

As it has been indicated in Table 7, there was a significant mean difference between female and male respondents on the effect of academic stress on their academic achievements,  $F(1, 268) = 3.95$ ,  $p < .05$ , one-tailed. In supporting this finding, a study conducted at Jizan University, Kingdom of Saudi Arabia by Sani et al (2012) on the effect of stress among medical students was a statistically significant mean difference between academic stress and gender ( $p < .01$ , odds ratio 1.89, CI 1.20–2.90). Additionally, the observational checklist evidenced that females were very much more frustrated in educational activities as a result of the academic stresses they perceived in teaching-learning processes than their males counterparts.

Table 8



Frequency of academic stress in the daily life of the respondents (n = 270,  $p < .05$ )

Descriptive Statistics					
Sex	n	Mean	%	SD	CV%
Female	80	3.44	68.80	1.07	31.11
Male	190	3.02	60.40	.89	29.47
Total	270	3.14	62.80	.95	30.26

As it has been indicated in Table 8, it was clearly identified that the computed mean scores of the respondents were 3.44 and 3.02 for both female and male respondents, respectively. This indicates the frequency of academic stress among undergraduate regular students in the College of Education and Behavioral Sciences was 62.80% in their daily life, with females being sometimes more stressed (68.80%) than males (60.40%). This indicates that the frequency of stress among undergraduate regular students since they joined Haramaya University was found to be occasional. Moreover, it seemed more severe among female respondents than their male counterparts. Besides, the computed coefficient of variations (31.11% and 29.47%) respectively for both females and their male counterparts showed us that there was a moderate variability among female respondents than their male counterparts who had a low variability among themselves on a daily life basis. However, the total variability among the two respondents was occasional with a coefficient of variation- 30.26% which was still moderate variability.

In support of these findings, Kotten et al (2017) conducted a study at a medical university in Kebangsaan Malaysia found that the majority of the respondents (84%) were under severe stress, particularly academic-related stressors, followed by 57% in group-activity-related stressor and 56% in intrapersonal and interpersonal stressor domains. Social-related stressors also cause high stress among the respondents (49%). There could be a major problem with a student's social interaction on a daily bases if he or she is mentally stressed out (Lamb & Huo, 2017). On a larger scale, the more the stressful environment at the educational institutes on a daily bases, the more will be productivity hazards (Smith, 2017; Jun and Choi, 2015; Soares & Woods, 2020).

Table 9

Comparison between gender on the frequency of stress in the daily life of the respondents (n = 270,  $p < .05$ )

Inferential Statistics (Summary of ANOVA Table)					
Sources of Variations	SS	df	MS	F	Sig.
Between Groups	3.73	1	3.73	4.14	.042
Within Groups	241.20	268	0.90		
Total	243.93	269			

As indicated in Table 9, there was a significant mean difference between female and male respondents in the frequency of academic stresses on a daily basis,  $F(1, 268) = 4.14$ ,  $p < .05$ , one-tailed. In support of this finding, a study conducted in Malaysia by Thornberk et al (2023) on the frequency of stress in daily life among medical students was found to be 41.90%, with females being more stressed (42.20%) than males (41.4%). But it was found that there was no statistically significant mean difference between the frequency of academic stress on daily life bases and gender which critically opposes this finding. Additionally, the observational checklist evidenced that most of the respondents observed females were very much frustrated in educational activities as a result of academic stresses in daily life bases. As a result, most students particularly females were dropout that was associated with a lifelong reduction in earning capacity and secure employment (Lamb & Huo, 2017). Individuals with lower education levels report having poorer mental health and more illness than those with higher levels of education (Turrell, et al, 2016). Early dropout from school has also been reported

to contribute to intergenerational issues including unemployment, poverty and less academic achievement (Black, 2017; Lamb & Huo, 2017; Muir et al, 2013). Academic achievement and completion of secondary school lead to greater employability, less reliance on social welfare support, and a higher likelihood of participation in further education (Noble et al., 2018). These outcomes in turn increase the likelihood of sustainable employment, adequate income, and self-sufficiency (Noble et al., 2018), which can save governments hundreds of millions of dollars every year (Lamb & Huo, 2017).

Table 10  
Relationship between sex, age, academic stress, and SAA ( $n_i = 270, p < .05$ )

No	Variables	1	2	3	4	5	6
1	Sex	1	.26**	-.29**	.28**	.24**	-.19**
2	Age		1	-.28**	.31**	.20**	-0.12
3	Respondents' Department			1	-.02	-.02	.23**
4	Academic year				1	.43**	-.08
5	Cumulative Grade Point Average					1	-.20**
6	Stress Symptoms						1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

As it has been indicated in Table 10, the Coefficient of Correlation ( $r$ ) between sex and age, sex and academic year, and, sex and CGPA were positive significant relationships among them,  $r(268) = .26^{**}$ ,  $r(268) = .28^{**}$ , and  $r(268) = .24^{**}$ ,  $p < .01$ , two-tailed. These mean that age, sex, students' academic year (I, II, and III) and CGPA were positively contributing to students' academic achievements. However, there was a significant negative relationship between sex and respondents' departments, sex and stress symptoms on students' academic achievement,  $r(268) = -.29^{**}$ , and  $r(268) = -.19^{**}$ ,  $p < .01$ , two-tailed. This means that sex, respondents' department, and stress symptoms were negatively correlated to students' academic achievements. This means as one of them increases, the student's achievement will be decreased. On the other hand, there were statistically positive significant relationship between age and academic year, age and CGPA,  $r(268) = .31^{**}$ , and  $r(268) = .20^{**}$ ,  $p < .01$ , two-tailed. This means that the increment of one of these variables would result in an increment in students' academic achievement. However, there was a statistically significant negative relationship between age Vs respondents' department on students' academic achievement,  $r(268) = -.28^{**}$ ,  $p < .01$ , two-tailed. This is to conclude that age and respondents' department were negatively correlated to students' academic achievement. Furthermore, there was no a statistically significant negative relationship between age and stress symptoms on students' academic achievement,  $r(268) = -.12$ ,  $p < .01$ , two-tailed.

From the same table, it was identified that respondents' department and academic batch, and respondents' department, as well as students' CGPA, were found to be no statistically significant negative relationships,  $r(268) = -.02$  and  $r(268) = -.02$ ,  $p > .01$ , two-tailed. However, there was a statistically positive relationship between respondents' department and stress symptoms on students' academic achievements,  $r(268) = .23^{**}$ ,  $p < .01$ , two-tailed. Furthermore, there was a statistically significant positive relationship between the academic level of the students and their CGPA,  $r(268) = .43^{**}$ ,  $p < .01$ , two-tailed. However, there was a statistically significant negative relationship between CGPA and stress symptoms,  $r(268) = -.20^{**}$ ,  $p < .01$ , two-tailed. These indicate that as the symptoms of academic stress increase or rise, the student's cumulative grade point average decreases. In supporting these findings, Yang et al (2023) concluded that high levels of symptoms of academic stress during the first year of college forecast lower levels of overall adjustment and can make the students more susceptible to many social and academic problems, thus leading to a lower grade point

average (GPA) in the final year. As supported by Dallum et al (2022) as soon as students enter tertiary educational institutions, they are unaware of how the quizzes, tests, and assignments will be held throughout the semester which contributes to their overall stress levels but not the final grades because they still think that final exams are the most important stage where they can make up their grades. The academic stress experienced by tertiary students impacts their mental and physical health and leads to a range of academic problems. Good stress-management skills have the potential to benefit young people in an ongoing manner throughout their lives, given that many long-term health-related behaviours and patterns, both positive and negative, are established during adolescence and early adulthood (Yang et al., 2023). Therefore, providing opportunities to improve young people's academic stress-coping abilities during this highly academically stressful, crucial period of development is an important target (OECD, 2015).

Table 11

Total variance explained for factor analysis

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.82	56.83	56.83	6.82	62.63	56.83	5.95	56.24	56.83
2	1.54	12.83	69.66	1.54	12.83	69.66	1.52	30.02	69.66
3	1.25	10.42	80.08	1.25	10.42	80.08	1.23	22.86	80.08
4	1.08	9.00	89.08	1.08	9.00	89.08	1.04	17.67	89.08
5	1.01	8.42	97.50	1.01	8.42	97.50	1.02	12.87	97.50

Extraction Method: Principal Component Analysis.

As Table 11 shows, the total variance explained through factor analysis was indicated by the eigenvalues for the 12 new components. The column called Initial Eigenvalues notices the value of 6.82 for Component 1. This eigenvalue (6.82) is equivalent to 56.83% of the total variance when all 12 stress symptoms are considered. The next row shows an eigenvalue of 1.54 for Component 2, which means that it accounts for 12.83% of the total variance for all stress symptoms. The next row shows an eigenvalue of 1.25 for Component 3, which means that it accounts for 10.42% of the total variance for all stress symptoms. The next row shows an eigenvalue of 1.08 for Component 4, which means that it accounts for 9.00% of the total variance for all stress symptoms. Finally, the next row shows an eigenvalue of 1.01 for Component 5, which means that it accounts for 8.42% of the total variance for all stress symptoms. This percentage is not related to the variance of the first, second, third, and fourth components; therefore, the five components taken together (56.83% + 12.83% + 10.42% + 9.00% + 8.42%) can account for 97.50% of the variance for all variables. Since the eigenvalues for the rest variables are much less than 1, they were not considered as the major factors even though they contributed 2.50% of the variance to students' cumulative grade point average (CGPA). From this factor analysis, one can conclude that the first five components (unable to be reasonably happy-56.83%, loss of sleep over worry-12.83%, constantly under strain at any time - 10.42%, feeling unhappy and depressed-9.00%, and unable to concentrate-8.42%) of the variances were contributed 97.50% to students' cumulative grade point average (CGPA) variations.

### Risky Behaviours as a Result of Stress

For many students, the transition to college or university, with its new relationships and more demanding challenges, proves stressful. Their favorite campus organization needs a volunteer, but they are already overbooked. Smoldering over a roommate or family conflict, they feel tense. Anxious over a big exam or a class presentation, they find themselves running to the bathroom. If such stress

endures, it can also bring on (in those of us who are physiologically predisposed) skin rashes, asthma attacks, or high blood pressure (hypertension). It can also increase our risk of serious illness and death.

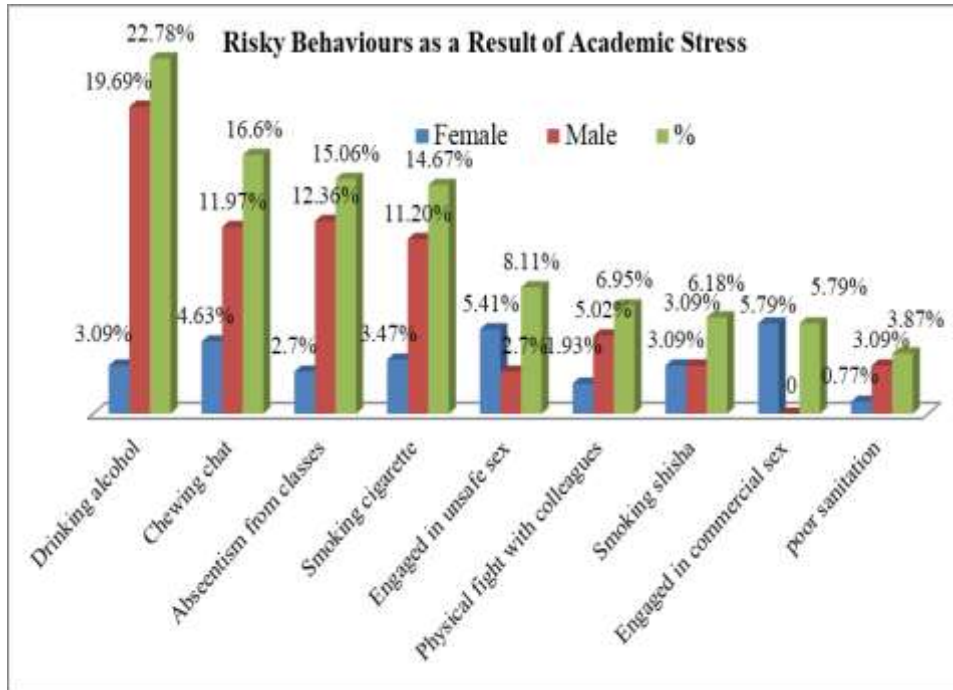


Figure 1  
Risky behaviours as a result of stress

As it has been seen in Figure 1, 69.11% of the respondents respectively were accustomed to drinking alcohol, chewing khat (a stimulant plant), frequent absenteeism from the classrooms, and smoking cigarettes as a result of stress. The reason that they used to practice these risky behaviors was to get themselves free from these stressors for the time being. These are the first four dominant risky behaviors or unhealthy behaviors that respectively accounted for 69.11%. Moreover, 30.89% of the respondents were practicing these risky behaviors (engaging in unsafe sex, physical fights with colleagues, smoking shisha, engaging in commercial sex, and poor personal sanitation). These are the second five dominant risky behaviors that have been practiced by the respondents in the study. Of these respondents, 14.28% were female respondents who were regularly accustomed to practicing these risky behaviours (engaging in unsafe sex, physical fights with colleagues, smoking shisha, engaging in commercial sex, and poor personal sanitation) as a result of academic stress. From this analysis, it can easily be understood that female students were highly exposed to these risky behaviors particularly engaging in commercial and unsafe sex which is more serious to females than their counterparts' males. This is not a matter of small numbers or percentages, but it is a matter of the seriousness and nature of the risky behaviours that they have been engaging. As a result of these risky behaviors, females have been exposed to unwanted pregnancy and unsafe abortions illegally; withdrawal and dismissal for good from their education, and disease related to unsafe sexually transmitted diseases such as HIV/AIDS. These in turn affect the social wellbeing of the society and the university in general and the family from which these females come in particular.

The rest 16.61% were males who were regularly accustomed to practicing these risky behaviours (engaging in unsafe sex, physical fights with colleagues, smoking shisha, engaging in commercial sex,

and poor personal sanitation) as a result of academic stress. From this descriptive analysis, it can be implied that male respondents seemed to be more exposed to these risky behaviors than their female counterparts even if the seriousness and nature of the behavior they have been involved in is not as dangerous as their female counterparts. This does not mean that these risky behaviors do not affect male respondents, but the degree of seriousness was more serious in females than males. Otherwise, both sexes can be affected by these risky behaviors in terms of health, economy, social, moral, emotional, and educational values that have been expected of them as a generation succession of the nation. These again in turn affect the socio-economic and quality education of the country in general and Haramaya University, College of Education and Behavioral Sciences in particular.

In supporting these findings, it was indicated that the links between the experience of stressful life events and internalizing problems or stresses are mediated by several factors such as the individual's coping behaviors, abilities, and social supports when events are experienced. The individual's assessment of the importance of the event, the assessment of how negative the event is or what effect it has on other areas of the individual's life, and whether the event is controllable or uncontrollable are all factors in whether stressful events are associated with increased internalizing problems or stresses (OECD, 2015; Rickwood, 2016; Shinto, 2018; CASA, 2016; Smith, 2017). Moreover, Yang et al (2023) in support of the above findings report that major events in an academy tended to increase the number of minor stressful events or daily hassles, for learners, and more such events led to increased behavior problems among young adolescents and adults; thus, events in the broader context of an adolescent's life as well as immediately experienced events may be salient to developing internalizing symptoms. Furthermore, individual differences in terms of how events are interpreted or processed cognitively have been linked to the onset and maintenance of internalizing problems.

Table 12  
Copying strategies to academic stresses ( n = 270)

No	Coping strategies	Females	Males	Total	Sample	100%	Rank
1.	Good Time Management	76	189	265	270	98.15	1
2.	Good Planning and Academic Work Schedule	80	180	260	270	96.30	2
3.	Surf the Internet	90	170	260	270	96.30	2
4.	Watch TV or Videos	70	180	250	270	92.59	4
5.	Share Problems with Friends	75	175	250	270	92.59	4
6.	Discussions Academic Concerns with Teachers	65	132	197	270	72.96	6
7.	Physical Exercises	25	155	180	270	66.67	7
8.	Keep Problems for Me	50	120	170	270	62.96	8
9.	Ask the Advice of Parents/ Friends/Classmates	40	106	146	270	54.07	9
10.	Keep Self Busy	23	100	123	270	45.56	10
11.	Try to Handle Things on my way	34	87	121	270	44.81	11
12.	Set Healthy Academic goal	25	80	105	270	38.89	12
13.	Be more Spiritual	25	75	100	270	37.04	13
14.	Make Time for Relaxation	15	54	69	270	25.56	14
15.	Stay up Finishing Homework until Midnight	5	25	30	270	11.11	15
16.	Stop Caring about schoolwork	3	12	15	270	5.56	16
17.	Chewing Khat (A stimulant Plant)	0	15	15	270	5.56	16
18.	Drinking Alcoholic Beverages	0	5	5	270	1.85	18

Table 12 presents the specific objective of number four of the study about how the students are coping with academic stresses. Most respondents copied with their academic stress through good time management (98.15%), good planning & academic work schedule (96.30%), surfing the Internet (96.30%), watching TV or videos (92.59%), sharing problems with friends (92.59%), discussing academic concerns with teachers (72.96%), practicing physical exercises (66.67%), keeping problems for themselves (62.96%), and asking the advice of parents/ friends/classmates (54.07%). These are the

first nine best strategies that have been used by the students to cope with their academic stress. On the other hand, keeping self-busy (45.56%), trying to handle things on their way (44.81%), setting healthy academic goals (38.89%), being more spiritual (37.04%), making time for relaxation (25.56%), staying up finishing homework until midnight (11.11%), stop caring about schoolwork (5.56%), chewing Khat (A Stimulant Plant) (5.56%), and drinking alcoholic beverages (1.85%). These were most students preferred doing something to eliminate their academic stressors rather than turning away from them. But, the reality on the ground is different from what they have responded. Most of them have been engaged in very risky behaviours like drinking alcoholic beverages, chewing khat, and smoking cigarettes and shisha as coping strategies to escape from frustration as a result of academic stress.

The study revealed that most students coped with their stress by nine coping strategies as it was indicated in the table. This means that most students prefer to employ positive coping mechanisms in response to the stress they are experiencing. This is consistent with previous research that positive coping strategies were very helpful in combatting academic stress and could lessen suicidal thoughts (Heffer & Willoughby, 2017; Pariat, Rynjah, Joplin, & Kharjana, 2014; Jain & Verma, 2016). Furthermore, Sam, Muttusamy, Yee, Ayapanaido, and Parasuraman (2016) state that positive coping also prepares students for future stressful situations. As reflected in the results, in students' top nine, where the median of the distribution of the data outcomes was 49.81% coping mechanisms were being entertained, so they sought something to free them. The students also deeply cared about their studies because they set academic goals to improve their situation.

### **CONCLUSIONS, DISCUSSIONS AND SUGGESTIONS**

The study concluded that academic stress resulted in college students' dropout which has been associated with a lifelong reduction in earning capacity and secure employment. Individuals with lower education levels report having poorer mental health and more illness than those with higher levels of education. Early dropout from college as the result of academic stress has been reported to contribute to intergenerational issues including unemployment, poverty, and less academic achievement. Similarly, academic stress has been shown to be associated with increased appetite and higher body weight. Therefore, it can contribute to the development of health issues, including chronic non-communicable diseases due to a decrease in physical activity and increases in unhealthy lifestyle habits which will be resulted in risky behaviours. The findings of the study reflected upon the correlation between academic stress, sex, age, departments, CGPA, stress symptoms, and students' academic achievement measured by CGPA were analysed. It holistically highlights the relationship between academic achievements and stressful life events experienced by the students' community in the institution was very common. The results affirmed that there was a significant negative relationship between stress and academic achievements. Moreover, the gender of the students also shows a significant negative relationship with the academic stress level of the students. Besides, female and male responses were significantly different in the frequency of stresses in their daily life. Students believe that academic stress has a big effect in their achievement.

It leads to absenteeism in class, reduced academic morale, and failure to complete assignments on time. Hence, it has an inverse relationship with students' achievement. The more academic stress, the less the student will perform at college. Furthermore, the study indicated that educating students on how to manage academic stress, staying focused, having enough rest, exercising a lot and effective time management can help them manage academic stress to enhance students' academic achievement. The study revealed that most students coped with their academic stress through good time management, a good planning & academic work schedule, surfing the Internet, watching TV or videos, sharing problems with friends, discussing academic concerns with their teachers, practicing physical exercises regularly, keeping problems for themselves, and asking the advice of parents/friends/classmates. Having concluded that academic stress has a negative effect on students' academic

achievement, it is also pertinent to make certain recommendations and suggestions to help students reduce academic stress. Based on the results of the study, the following recommendations have been made. College and department authorities should ensure a good academic environment for the students and ensure to minimize academic stress, measures appropriate course load, appropriate lecture hours, proper lecture schedule, non-congested lecture halls, and reduce the load on assignment. Guidance programs such as seminars and public lectures on academic stress awareness should be organized periodically for students so that they can be adequately equipped with the needed skills to handle issues related to academic stress.

Students should be encouraged to make use of the counselling centres provided by the university to help them build a positive perception of academic stress. Lecturers and educators should focus on intrinsic motivation which will have a greater impact on students in achieving high academic achievement amidst academic stress. Finally, sports competitions like football, volleyball, and tennis and other social activities like picnics, talent shows, etc. should be organized for students in order to release them from distress and enhance their academic achievement. The findings of this study will help the students, intellectuals, teaching staff, career and counselling centres, and the university administrations to put in place all those mechanisms that can lessen the effects of academic stress on the students' academic achievements. The finding spurs intellectual forums on the issue of academic stress among students in public universities and helps the readers peep into the actual causes of poor academic achievement as an effect of stress.

## REFERENCES

- Black, R. (2017). *Crossing the bridge: overcoming entrenched disadvantage through student-centered learning*. Melbourne: Education Foundation Australia.
- Block, J., & Robins, R. (2014). A longitudinal study of consistency and change in self-esteem from early adolescence to early adulthood. *Child Development, 64*, 909-923.
- Bluman, A.G. (2017). *Elementary statistics: A step-by-step approach (10<sup>th</sup> Edition)*. New York: McGraw-Hill Education
- Bryne, B. M. (2016). Academic self-concept: Its structure, measurement, and relation to academic achievement. In B.A. Bracken (Eds.) *Handbook of self-concept* (pp. 287-316). New York: John Wiley & Sons, Inc.
- Compas, B. E., Howell, D. C., Ledoux, N., Pares, V., & Williams, R. A. (1989). Parent and child stress and symptoms: An integrative analysis. *Developmental Psychology, 25*, 550–559.
- Creswell, J. (2018). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. New Jersey: Pearson: Merrill Prentice Hall.
- Chua, R. Y., Ng, Y. L., and Park, M. S. A. (2018). Mitigating academic distress: The role of psychological capital in a collectivistic Malaysian university student sample. *Open Psychol. J. 11*, 171–183. doi: 10.2174/1874350101811010171.
- Dallman, M. F., Strack, A. M., Akana, S. F., Bradbury, M. J., Hanson, E. S., Scribner, K. A., & Smith, M. (2022). Feast and famine: Critical role of glucocorticoids with insulin in daily energy flow. *Frontiers in Neuroendocrinology, 144*, 303–347. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/8258378>.
- Fairbrother, K. & Warn, J. (2016). Workplace Dimensions, Stress, and Job Satisfaction. *Journal of Managerial Psychology, 18*(1): 8-21.
- Heffer, T., & Willoughby, T. (2017). A count of coping strategies: A longitudinal study investigating an alternative method to understanding coping and adjustment. *PloS one, 12*(10), e0186057.

- Hess, R. S., & Copeland, E. P. (2020). Students' stress, coping strategies, and school completion: A longitudinal perspective. *School Psychology Quarterly*, 34(4), 389-404.
- Jain, A., & Verma, S. (2016). Prevalence of stress and coping strategies among college students. *Journal of Advanced Medical and Dental Sciences Research*, 4(6), 95.
- Jun, S., and Choi, E. (2015). Academic stress and Internet addiction from general strain theory framework. *Comput. Hum. Behav.* 49, 282–287. doi: 10.1016/j.chb. 2015.03.001.
- Kotter, T., Wagner, J., Bruheim, L., & Voltmer, E. (2017). Perceived Medical School stress of undergraduate medical students predicts academic achievement: An observational study. *BMC Medical Education*, 171, p 256. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/2924623>.
- Lackovic-Girgin, K., & Dekovic, M. (2015). The contribution of significant others to adolescents' self-esteem. *Adolescence*, 25, 839-846.
- Lamb, S., & Huo, S. (2017). *Counting the costs of lost opportunity in Australian education*. Melbourne, Australia: M. Institute. Retrieved from <http://www.mitchellinstitute.org.au/reports/costs-of-lost-opportunity/>
- Liu, Y. Y. (2015). The longitudinal relationship between Chinese high school students' academic stress and academic motivation. *Learning and Individual Differences*, 38, 123–126. Retrieved from <Go to ISI>://WOS:000352041000016
- Liu, Y. Y., & Lu, Z. H. (2017). The Chinese high school student's stress in the school and academic achievement. *Educational Psychology*, 311, 27–35. Retrieved from <Go to ISI>://WOS:000294203900002.
- Lotz, C., and Sparfeldt, J. R. (2017). Does test anxiety increase as the exam draws near? – Students' state test anxiety recorded over the course of one semester. *Pers. Individ. Dif.* 104, 397–400. doi: 10.1016/j.paid.2016.08.032.
- Muir, K., Family, S., Maguire, A., Slack-Smith, D., & Murray, M. (2013). *Youth unemployment in Australia: A contextual, governmental and organisational perspective: A report by the Smith family for the AMP foundation*. Camperdown: The Smith Family.
- National Centre on Addiction and Substance Abuse at Columbia University (CASA) United States of America. (2013). *Depression, substance abuse and college student engagement: A review of the literature*. New York: National Ctr on Addiction and Substance Abuse at Columbia University (CASA).
- Noble, T., Wyatt, T., McGrath, H., Roffey, S., & Rowling, L. (2018). *A scoping study into approaches to student wellbeing - final report*. Brisbane, Australia. Retrieved from <https://docs.education.gov.au/documents/scoping-studyapproaches-student-wellbeing-final-report>.
- OECD. (2015). *PISA 2015 Results (Volume III)*. Paris, France.
- Pariat, L., Rynjah, A., Joplin, M., & Kharjana, M. (2014). Stress levels of college students: Interrelationship between stressors and coping strategies. *Journal of Humanities and Social Science*, 19(8), 40-46.
- Park, S., Park, S. Y., Jang, S. Y., Oh, G., and Oh, I. H. (2020). The neglected role of physical education participation on suicidal ideation and tress in high school adolescents from South Korea. *Int. J. Environ. Res. Public Health* 17:2838. doi: 10.3390/ijerph17082838.



- Pervanidou, P., & Chrousos, G. P. (2021). Metabolic consequences of stress during childhood and adolescence. *Metabolism*, *615*, 611–619. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/2214609>
- Reschly, A. L., Huebner, E. S., Appleton, J. J., & Antaramian, S. (2018). Engagement as flourishing: The contribution of positive emotions and coping to adolescents' engagement at school and with learning. *Psychology in the Schools*, *455*, 419–431. Retrieved from <Go to ISI>://WOS:000255144300005.
- Rickwood, D., Telford, N., O'Sullivan, S., Crisp, D., & Magyar, R. (2016). *National Tertiary Student Wellbeing Survey 2016*.
- Rosenberg, M. & Simmons, A. (1975). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Sam, A. T., Muttusamy, B., Yee, S. M., Ayapanaido, T., & Parasuraman, S. (2016). Investigation of stressors affecting a sample of pharmacy students and the coping strategies employed using modified academic stressors scale and brief cope scale: A prospective study. *Journal of Young Pharmacists*, *8*(2), 122.
- Sang, B., Pan, T., Deng, X., and Zhao, X. (2018). Be cool with academic stress: The association between emotional states and regulatory strategies among Chinese adolescents. *Educ. Psychol.* *38*, 38–53. doi: 10.1080/01443410.2017.1309008.
- Shinto, T. (2018). Effects of academic stressors and coping strategies on stress responses, feeling of self-growth and motivation in junior high school students. *Japanese Journal of Educational Psychology*, *464*, 442–451. Retrieved from <Go to ISI>://WOS:000078387500009.
- Smith, U. C. (2017). The effect of adolescence on self-esteem. Unpublished master's thesis. Truman State University: Missouri.
- Soares, D., and Woods, K. (2020). An international systematic literature review of test anxiety interventions 2011–2018. *Pastoral Care Educ.* *33*, 311–334. doi:10.1080/02643944.2020.1725909.
- Stephens, T. W., Basinski, M., Bristow, P. K., Bue-Valleskey, J. M., Burgett, S. G., Craft, L., ... Heiman, M. (2017). Nature. The role of neuropeptide Y in the antiobesity action of the obese gene product. *Nature*, *387*(4), 89-109 Retrieved from: <https://www.ncbi.nlm.nih.gov/pubmed/7566151>.
- Sani, M., Mahfouz, MS., Bani I, Alsomily AH, Alagi D, Alsomily, NY. (2012). Prevalence of stress among medical students in Jizan University, Kingdom of Saudi Arabia. *Gulf Medical Journal*, *1*(1):19-25.
- Stewart, S. M., Lam, T. H., Betson, C. L., Wong, C. M., & Wong, A. M. (2019). A prospective analysis of stress and academic achievement in the first two years of medical school. *Medical Education*, *33*(4), 243–250. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/10336754>.
- Stults-Kolehmainen, M. A., & Sinha, R. (2014). The effects of stress on physical activity and exercise. *Sports Medicine*(Auckland, N.Z.), *44*(1), 81–121. Retrieved from:<https://www.ncbi.nlm.nih.gov/pubmed/24030837>.
- Tahir, P. (2016). Effectiveness of teaching stress on academic achievement of college teachers in Pakistan. *International Journal of Humanities and Social Science*, *1*(3). 12-25.
- Thornberg, H. D. & Jones, R. M. (2023). Social characteristics of early adolescents: Age versus grade. *Journal of Early Adolescence*, *24*, 229-230.

- Turrell, G., Stanley, L., de Looper, M., & Oldenburg, B. (2016). Health inequalities in Australia: Morbidity, health factors, risk factors, and health service use. Health Inequalities Monitoring Series No. 2. AIHW Cat. No. PHE 72. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare.
- Walburg, V. (2014). Burnout among high school students: A literature review. *Children and Youth Services Review*, 42, 28–33. Retrieved from <Go to ISI>://WOS:000337992700004.
- World Health Organisation. (2016). *Young people's health in context. Health behaviours in school-aged children study: International report from the 2001-2 survey*. Denmark.
- Wunsch, K., Kasten, N., and Fuchs, R. (2017). The effect of physical activity on sleep quality, well-being, and affect in academic stress periods. *Nat. Sci. Sleep* 9, 117–126. doi: 10.2147/NSS.S132078
- Xiang, Z., Tan, S., Kang, Q., Zhang, B., and Zhu, L. (2019). Longitudinal effects of examination stress on psychological well-being and a possible mediating role of self-esteem in Chinese high school students. *J. Happiness Stud.* 20, 283–305. doi: 10.1007/s10902-017-9948-9.
- Yang M, Viladrich, C. and Cruz, J. (2022). Examining the relationship between academic stress and motivation toward physical education within a semester: A two-wave study with Chinese secondary school students. *Front. Psychol.* 13: 965690. doi: 10.3389/fpsyg.2022.965690.
- Ye, L., Posada, A., and Liu, Y. (2019). A review on the relationship between Chinese adolescents' stress and academic achievement. *New Dir. Child Adolesc. Dev.* 2016, 81–95. doi: 10.1002/cad.20265.