



Please cite this article as: Ilias, N., Abdul Rahim, N. A., Mohd Naw, S. N. A., Sairuni, N. A., Mukhtar, I. A., Hassan Basri, N., & Ramli, M. S. (2023). Perceived academic stress among TESL students in Kolej Poly-Tech MARA Ipoh. *The Asian Journal of Professional & Business Studies*, 4(2), 121–130. <https://doi.org/10.61688/ajpbs.v4i2.127>

PERCEIVED ACADEMIC STRESS AMONG TESL STUDENTS IN KOLEJ POLY-TECH MARA IPOH

Nurulhayati Ilias*, Nazirul Azwan Abdul Rahim, Siti Noor Azilah Mohd Naw, Nurul Aini Sairuni,
Ily Athirah Mukhtar, Nasrah Hassan Basri, Mohamad Shafiq Ramli
Kolej Poly-Tech MARA Ipoh,
Corresponding Author*: nurulhayati@gapps.kptm.edu.my

Received 31 October 2023, Revised 20 November 2023, Accepted 30 November 2023, Published 31 December 2023

ABSTRACT

The upcoming generation of leaders, represented by students, plays a crucial role in governing the country. However, their tertiary education is significantly influenced by academic and social pressures, which can lead to stress. This stress may have severe consequences, such as suicidal thoughts, drug addiction, and dropping out of college. Academic stress, arising from factors such as lecturers, assignments, and peer interactions, is a key contributor to more profound issues, such as depression and anxiety. This study assessed the level of academic stress among 421 future Diploma in TESL students at Kolej Poly-Tech MARA Ipoh. Survey results were analysed to gauge stress levels associated with different stressors. The findings indicate that students predominantly experience heightened academic stress linked to outcomes, tests, peer interactions, and self-imposed pressure. These results offer insights for students, educators, and universities to help them identify and address academic stress, with implications for future research.

Keywords: Academic stress, environmental stress, peer interaction stress, self-inflicted stress

1. INTRODUCTION

Stress is a complex phenomenon that has persisted throughout history. From a medical perspective, stress is a physical, mental, or emotional factor that causes physical or mental tension. This can lead to mental disorders, posing a threat to mental well-being. It is a universal experience, affecting individuals irrespective of age, gender, education, or socio-economic status (WHO, 2023)

It is crucial to understand that stress can affect individuals in both positive and negative ways. Stress might impede performance on difficult tasks; however, it can also trigger healthy and adaptive responses. For instance, a realistic fear of threats can motivate individuals to confront or avoid them (Yikealo et al., 2018). In a medical or biological context, stress is a physical, mental, or emotional factor that causes bodily or mental tension, which can initiate the “fight or flight” response

With the primary aim of building a strong, developed country, Malaysia requires skilled human resources in their respective fields who are dedicated to seeking creative solutions. Certainly, students at higher education institutions are the pillars of hope in turning the country’s vision and mission into reality. However, it cannot be denied that the transition period between adolescence and adulthood, coupled with the challenges of completing their education, leads students at higher education institutions to experience academic and environmental stress (Buchanan, 2012). The authors point out that five domains contribute to academic and environmental stress: physiological, social, environmental, psychological, and academic. Marlissa et al. (2019) argue that the goal of achieving a high cumulative grade point average (CGPA) for better job prospects adds continuous academic pressure to these students, and identifying the cause factor of academic stress among students in Malaysian higher education institutions is deemed important in offering solutions and reducing the likelihood of more students encountering this issue (Marlissa et al., 2019). Therefore, this study aims to investigate academic stress levels among future holders of a Diploma in TESL at KPTM Ipoh by addressing the following research question:

1. What was the extent of academic stress among KPTM students based on the sources of academic stress?
2. What is the level of academic stress among KPTM students according to the year of study?

2. LITERATURE REVIEW

2.1 Academic Stress

Students’ mental well-being has emerged as a significant concern in public health, primarily due to academic stress. Stress can be characterised as the body’s response to life changes, which is observable both neurologically and physiologically as it adapts to new conditions (Franken, 1994). Academic stressors have long been linked to detrimental outcomes, such as moderate academic performance, mental health issues, and dropouts. This has led to the development of stress intervention programs for university students to help them manage stress (Conley, 2015).

Although the impact of stressors varies among students, and stress levels fluctuate throughout the study period, previous research indicates that the first year of university life is a particularly vulnerable period for students (Abdallah & Gabr, 2014). This vulnerability stems from the adjustment to a new university environment, distinct from the previous school setting, and the concurrent quest for a new identity during the transitional phase. Another study evaluating the correlation between the period of study and stressors reported that strain levels were high in the first semester and declined significantly by the second semester (Bewick, 2010). Ironically, a contradictory result has also been reported: a stable level of stress has been observed throughout the first academic year (Barker et al., 2018). These conflicting results may indicate that students’ stress levels also depend on various academic stressors, which can be interpersonal or intrapersonal (Pitt et al., 2018).

Interpersonal stressors encompass challenges in dealing with peers, university staff, faculty relationships, and roommates, arising from the pressure of studying and emotional exhaustion during the adaptation period to university life. In contrast, intrapersonal stressors stem from students' perceptions of coping with stress. Lecturer-related stressors, particularly expectations placed on students without regard for their transitional phase, contribute significantly to stress. Intense competition among students for recognition and favouritism from lecturers can exacerbate this situation. While peer and relationship stressors may appear less prevalent, issues of homophily and belongingness can lead to disengagement among demotivated students (Yikaelo et al., 2018).

2.2 Effects of Academic Stress

According to Ramachandiran and Dhanapal (2018), 88% of respondents attributed their increasing academic stress to their studies, with 78% reporting moderate stress. While academic stress can help promote learning among students, it may also lead to anxiety and helplessness, which could adversely affect students' lives and academic performance, gradually affecting social interactions with peers and authorities (Zhao et al., 2015).

Academic stress can also impact health, leading to issues such as lack of energy, loss of appetite, headaches, insomnia, and gastrointestinal problems among individuals with high-stress levels. Ramachandiran and Dhanapal (2018) found that 54% of their respondents experienced sleep disorders. Moreover, high levels of academic stress may contribute to mental health challenges, such as anxiety, depression, and suicidal thoughts. Addressing these issues is crucial, given the alarming number of students struggling to cope with academic life. Parental expectations, peer competition, and demanding syllabi have been cited as reasons for these challenges. Therefore, raising awareness of academic stress among higher education students is essential to reduce the prevalence of high levels of academic stress, foster a healthy academic lifestyle, and ensure a promising future.

3. METHODOLOGY

This investigation employs a quantitative approach, following the methods used by prior researchers in the field (Yikaelo et al., 2018). The study employs a research instrument comprising a questionnaire adapted from the Academic Stress Inventory developed by Lin and Chen (2019). A total of 421 participants, spanning first- to third-year students, were included in the study; Table 1 presents the total number of respondents by academic year.

Table 1

Total Number of Respondents

Year Of Study	No. Of Students
1	145
2	140
3	136
Total	421

This study utilised a questionnaire designed to assess students' levels of academic stress. The questionnaire comprised 33 items categorised into seven constructs derived from the Academic Stress Inventory. These constructs encompass stress that may stem from a few state constructs, such as lecturers, result-related stress, test-related stress, group study-induced stress, peer-related stress, time management-related stress, and self-inflicted stress. Descriptive statistics were used to analyse the results and determine the mean score for each construct. The obtained average mean scores were then interpreted using the mean interpretation level, as outlined in Table 2 (Marlissa et al., 2019).

Table 2.
Mean Interpretation Level Score

AVERAGE MEAN	INTEPRETATION
3.50 – 4.00	Very High
3.00 – 3.49	High
2.00 – 2.99	Average
1.50 – 1.99	Low
1.00 – 1.49	Very Low

4. FINDINGS AND DISCUSSION

4.1 Academic Stress Levels among TESL Students of Kolej Poly-Tech MARA Ipoh Based on Sources of Academic Stress

This survey was conducted to examine the extent of academic stress experienced by students enrolled in the Teaching as a Second Language (TESL) program at Kolej Poly-Tech MARA Ipoh. The purpose of this survey was to provide insights into the nature of academic stress and raise awareness of its causes and potential repercussions. A total of 421 students from Semesters 2 to 6 (Years 1 to 3) who enrolled in the Faculty of Teaching English as a Second Language (TESL) participated in an online survey. As this survey was conducted at the beginning of the new semester, Semester 1 students were excluded. Furthermore, students in Semester 7 who were undergoing teaching practicum were excluded due to geographical constraints, as they were not on campus. However, they were located in different schools within the district where they conducted their teaching practices.

The primary objective of the initial segment of this study was to explore the levels of academic stress among KPTM Ipoh students from various sources. Seven stressors were selected: stress from lecturers, stress from academic results, stress from tests, stress from group study, stress from peers, stress from time management, and self-inflicted stress (Lin & Chen, 2019). The results were analyzed using the Statistical Package for the Social Sciences (SPSS) and are presented as the mean (M) and standard deviation (SD), summarized in the tables below.

Table 3 presents the mean scores for items under the stress subconstruct of the first construct, namely, lecturers. The elements constituting this construct include difficulties with exercises, lecturer explanations, excessive time spent on data research, language barriers, teaching methods, and the pace of lecturer instructions. Within this category, item L3, which represents *‘I feel that I cannot understand the contents delivered by some of the lecturers’*, received the highest mean score of 2.54. In contrast, item L1, which represents *‘I feel that some of the lecturers give extraordinarily difficult assignments,’* attained the lowest mean score of 2.31.

Table 3.
Mean Scores for Stress from Lecturer Items

NO	ITEMS	MEAN	STD. DEVIATION
L1.	I feel that some lecturers give extraordinarily difficult assignments.	2.31	0.717
L2.	I feel that some lecturers give too many assignments.	2.38	0.786
L3.	I feel that I cannot understand the contents delivered by some of the lecturers	2.54	0.779
L4.	I feel that I cannot adapt to some of the lecturers’ methods of instruction.	2.36	0.812

Table 4 presents the average stress level scores derived from the second construct – results. The components include parental expectations, differentiation of outcomes from high school, and imperfect results. Specifically, Item A48, which reads, “I worry that my academic results will not meet my parents’ expectations,” had a higher mean score (M = 3.12, SD = 0.973). In contrast, Item A46, which reads, “Due to my academic performance, I have conflicts with my parents’, recorded the lowest mean scores (M=1.72, SD=0.878). Nevertheless, students’ past school results were also found to add pressure to their learning journey, with an average score of 2.86 (M) and a standard deviation (SD) of 0.965 for Item A47, which represents, “I feel that there is a significant difference between my current and high school results.” This indicates that underperformance at the higher-education level leads to greater stress.

Table 4. Mean Scores for Stress from Results Items

NO.	ITEMS	MEAN	STD. DEVIATION
A5.	I feel that my parents think that I did not take my studies seriously	1.97	1.015
A6.	Due to my academic performance, I have conflicts with my parents.	1.72	0.878
A7.	I feel that there is a significant difference between my current and high school results.	2.86	0.965
A8.	I am worried that my academic performance will not meet my parents’ expectations.	3.12	0.973

Table 5 presents the average scores for stress derived from the third construct,” various tests. The components of the measurement, such as staying up late, concerns about failure, and test content, contribute to this construct. The highest mean score within this construct is associated with item T11, “I worry that I have to retake the core subjects which I failed, ” with a mean score of 3.11. Conversely, the lowest mean score refers to item T12, where respondents express, “I feel that the course syllabus and test outlines are not clear to help me to prepare effectively,” with a mean score of 2.33. This result yields significant information; students who burden themselves with excessive pressure often experience anxiety regarding test outcomes, worrying about the possibility of failure or obtaining lower scores compared to their peers. Nevertheless, excessive self-imposed pressure inevitably leads to academic stress.

Table 5. Mean Scores for Stress from Test Items

NO.	ITEMS	MEAN	STD. DEVIATION
T9.	I often cannot sleep at night, worrying about the exam.	2.63	0.952
T10.	I often go to bed late because I am studying for exams.	2.83	0.850
T11.	I am worried that I have to retake the core subjects in which I failed.	3.11	0.979
T12.	I feel that the course syllabus and test outlines are not clear enough to help me prepare effectively	2.33	0.812

Table 6 presents the average scores related to stress arising from the fourth construct, study group. The elements of this construct involve the challenges of sharing work when there are insufficient competent team members. The

The highest mean score is associated with item GW15, which addresses “*I worry that my group members will not complete their part in completing a group-work assignment,*” with a mean score of 2.97. Conversely, the lowest mean score is for item GW13, which reads “*I often find it hard to distribute tasks fairly with my classmates in completing group assignments,*” with a mean score of 2.34. Students exhibiting apprehension toward collaborative efforts may find themselves easily frustrated, leading to self-imposed stress as they strive to meet their personal standards.

Table 6.
Mean Scores for Stress from Studying in Group Items

No.	Items	Mean	Std. Deviation
GW13.	I often find it difficult to distribute tasks fairly with my classmates when completing group assignments.	2.34	0.887
GW14.	I worry that I could not find the right group members for group assignments	2.75	0.966
GW15.	I worry that my group members will not complete their part of the group work assignment	2.97	0.932

Table 7 presents the average stress scores from the fifth construct, peers. This construct comprises elements such as disturbance from the class environment and the perceived inability to achieve satisfactory results compared to peers. Among the items, item P16, “*I always feel nervous when I need to make a speech or give a presentation in front of my peers,*” has the highest mean score of 3.14. In contrast, item P19, “*I am stressed because my academic results are not as good as my classmates,*” records the lowest mean score of 2.57. These figures indicate that students must be cognizant of the underlying causes of their stress and anxiety, enabling them to gain a deeper understanding and explore strategies to mitigate and prevent these challenges. Students’ stress levels are often high in performance-based settings (e.g., presentations) where their competence is measured by instructors (lecturers) and observed by peers (classmates).

Table 7.
Mean Scores for Stress from Peers Items

NO.	ITEMS	MEAN	STD. DEVIATION
P16.	I always feel nervous when I need to make a speech or give a speech a presentation to peers.	3.14	0.918
P17.	I worry that my classmates will laugh at my inability to perform well when I give speeches or presentations.	2.97	1.015
P18.	I often find it difficult to focus on studying alone when my friends are being noisy.	2.80	0.963
P19.	I am stressed because my academic results are not as good as as my classmates’.	2.57	0.999

Table 8 presents the average scores for the sixth construct, time management, which reflects the challenges of balancing social activities and academic responsibilities. The highest mean score is for item T20, “*I often struggle to balance my academic and social activities effectively,*” with a mean of 2.32. In contrast, the lowest mean score is associated with item T21, “*My academic work is always impacted by my social activities and students’ association,*” with a mean score of 1.97. The findings suggest that students who believe they effectively allocate

They exhibited higher satisfaction levels in both their academic and personal lives. Moreover, those who feel in control of their time experience lower stress and pressure levels.

Table 8.
Mean Scores for Stress Due to Time Management Items

NO.	ITEMS	MEAN	STD. DEVIATION
T20.	I often struggle to balance my academic and social life activities effectively.	2.32	0.877
T21.	My social activities always impact my academic work and the students' association	1.97	0.766

Table 9 presents the average scores gained from the final construct, self-induced stress. This construct encompasses participants' confidence in their learning performance, their interest in subjects, and the challenges they face in keeping up with courses. The items contributing to this construct include statements about participants' confidence in learning, interest in subjects, and difficulty keeping up with coursework. The item S22, representing "*I feel that my study skill is not as good compared to my peers*", received the highest mean score of 2.82; the lowest mean score is associated with the item S24, which states "*I feel that I have no interest in some courses in academics*", with a mean score of 2.22. These findings suggest that students frequently experience a lack of interest in their courses, raising questions about the factors motivating their enrolment, such as potential family pressure or other undisclosed reasons.

Table 9.
Mean Scores for Self-Inflicted Stress Items

NO.	ITEMS	MEAN	STD. DEVIATION
S22.	I feel that my study skills are not as good as my peers.	2.82	0.925
S23.	I feel that I have so many courses that are beyond my capability.	2.27	0.817
S24.	I feel that I have no interest in certain academic courses.	2.22	0.882
S25.	I felt that my performance was not as good as I had expected after I entered university,	2.27	0.962

The final phase of this article reveals the average minimum scores for each identified source of stress in this study. The data indicate that peer pressure had the highest minimum score of 2.87, followed by test-related stress at 2.72 and group work-related stress at 2.69. This was followed by achievement-related stress (mean 2.42), stress related to pressure from lecturers (mean 2.40), and time management-related stress (minimum score 2.14). The conclusion drawn from this data is that peer assessment is the largest contributor to student stress. In contrast, the smallest contributor was the failure to manage time effectively. A summary of these details is presented in Table X.

Table 10

Total Average Mean Scores

NO.	SOURCES OF STRESS	AVERAGE MEAN SCORES	LEVEL OF STRESS
1.	Stress from Lecturers	2.40	Average
2.	Stress from Achievements	2.42	Average
3.	Stress from Tests	2.72	Average
4.	Stress from Groupwork	2.69	Average
5.	Stress from Peers	2.87	Average
6.	Stress due to Time Management	2.14	Average
7.	Self-inflicted Stress	2.40	Average
Total Average Mean		2.21	AVERAGE

3.1 Academic stress levels among TESL students of Kolej Poly-Tech Mara Ipoh by year of study

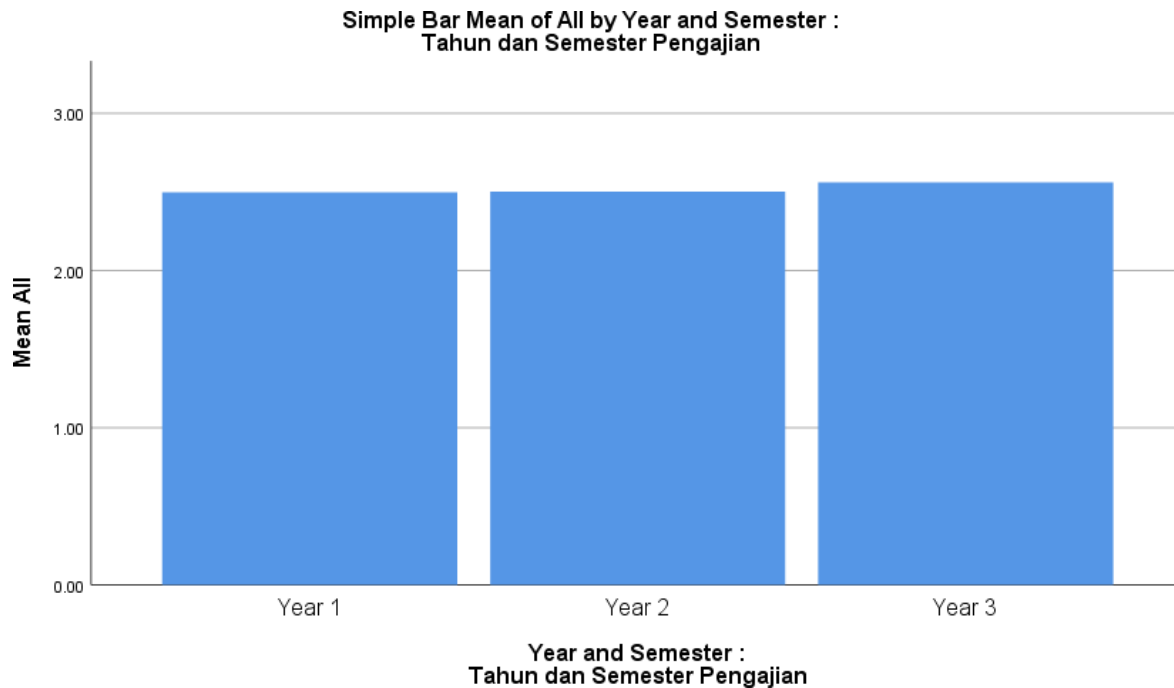
The subsequent section of the findings focuses on the second research question, examining academic stress levels among KPTM Ipoh's TESL students by year of study. The data presented in Figure 11 illustrate comparisons of average mean scores across various academic years.

Table 11.

Average Mean Scores Based on Year of Study

NO.	YEAR	AVERAGE MEAN SCORES	LEVEL OF STRESS
1.	Year 1 (Semester 2)	2.50	Average
2.	Year 2 (Semester 3 & 4)	2.50	Average
3.	Year 3 (Semester 5 & 7)	2.56	Average

Figure 1.
Comparisons of Average Mean Scores Based on Year of Study (Graph)



As depicted in Figure 1, a subtle yet noteworthy distinction is observed between the mean scores of students in Year 1 compared to those in Years 2 and 3. The study's mean scores indicate that students in Year 3 had the highest mean score (2.56), followed by Years 1 and 2, which recorded a lower mean score of 2.5. These findings suggest that students in Year 3 experienced higher perceived academic stress than their counterparts in Years 1 and 2.

In contemporary society, stress has become a prevalent challenge affecting individuals at every stage of life. Stress, a common part of daily life, poses an ongoing challenge, particularly in maintaining healthy mental well-being. Psychologists say that stress occurs when the body remains tense for a long time and affects how well one can do things. Stress can manifest as physical and mental symptoms arising from work-related pressures or individual lifestyle issues.

This study employed a quantitative research design and survey approach to investigate academic stress among students in the Faculty of Teaching English as a Second Language (TESL) at Kolej Poly Tech Mara Ipoh. Numerous studies have explored the causes, effects, and solutions to stress problems in higher education; however, stress persists among students. Stress is now recognised as a lifestyle crisis affecting individuals across all developmental stages, challenging the notion that studying should not be stressful.

University students are often at risk of stress because they have many responsibilities. Being unable to control a situation is a major source of stress. Even though there are unavoidable commitments, such as deadlines and exams, students can reduce stress by managing their time well and avoiding last-minute studying. Many students do not get enough sleep, which is linked to lower grades and more stress.

Although people may react to stress in similar ways, the causes of stress can differ. Common stressors in college include unnecessary activities, poor time management, social issues, and problems with peers. Taking care of

Taking care of yourself with things like exercise, getting good sleep, and eating a healthy diet is important for managing stress and staying focused during classes and study times.

Stress can be either positive or negative. Managing stress well can have many benefits, but not managing it can lead to problems, such as anxiety. Students need to learn how to handle stress, knowing that they can control it and use it to help them. Growing up often involves stress, and people should learn to handle it when it occurs.

5. CONCLUSION

In conclusion, the pervasive nature of stress in contemporary society, especially among university students, highlights the need for a nuanced understanding and effective management strategies. The study on academic stress among teaching English as a second language (TESL) students at Kolej Poly-Tech Mara Ipoh sheds light on the persistent challenges faced by individuals in higher education. To navigate the complexities of academic life, individuals must recognise their ability to influence and control stressors, viewing stress not only as a challenge but also as an opportunity for personal growth. Education on stress management should be an integral part of the developmental process, empowering individuals to handle stress constructively as they navigate the inevitable challenges of growth and life transitions.

Ultimately, fostering resilience and coping skills is essential for individuals to thrive in environments where stress is an inherent part of the human experience.

6. ACKNOWLEDGEMENT

The authors express their sincere gratitude to **Kolej Poly-Tech MARA Ipoh** for providing the necessary resources and support to complete this study. We also thank all the participants for contributing their time and insights to this study. Special appreciation is extended to the colleagues and peers who offered valuable feedback during the development of this manuscript.

REFERENCES

- Abdallah, A. R., & Gabr, H. M. (2014). Depression, anxiety, and stress among first-year medical students in an Egyptian public university. *International Research Journal of Medical Sciences*, 2(1), 11–19.
- Ali, M., Asim, H., Edhi, A. I., Hashmi, M. D., Khan, M. S., Naz, F., & Jehan, I. (2015). Does the type of academic assessment system affect levels of academic stress among medical students? A cross-sectional study from Pakistan. *Medical Education Online*, 20(1), 27706. <https://doi.org/10.3402/meo.v20.27706>
- Barker, E. T., Howard, A. L., Villemaire-Krajden, R., & Galambos, N. L. (2018). The rise and fall of depressive symptoms and academic stress in two samples of university students. *Journal of Youth and Adolescence*, 47, 1252–1266. <https://doi.org/10.1007/s10964-018-0822-9>
- Bewick, B., Koutsopoulou, G., Miles, J., Slaa, E., & Barkham, M. (2010). Changes in undergraduate students' psychological well-being as they progress through university. *Studies in Higher Education*, 35(6), 633–645. <https://doi.org/10.1080/03075070903216643>
- Buchanan, J. L. (2012). Prevention of depression in the college student population: A review of the literature. *Archives of Psychiatric Nursing*, 26(1), 21–42. <https://doi.org/10.1016/j.apnu.2011.03.003>

- Conley, C. S., Durlak, J. A., & Kirsch, A. C. (2015). A meta-analysis of universal mental health prevention programs for higher education students. *Prevention Science, 16*(4), 487–507. <https://doi.org/10.1007/s11121-015-0543-1>
- Franken, R. (1994). *Human motivation* (3rd ed.). Brooks/Cole Publishing Company.
- Lin, Y. M., & Chen, F. S. (2009). Academic stress inventory of students at universities and colleges of technology. *World Transactions on Engineering and Technology Education, 7*(2), 157–162.
- Omar, M. (2019). Perceived academic stress among students in Universiti Teknologi Malaysia. *Advances in Social Science, Education and Humanities Research, 470*. <https://doi.org/10.2991/assehr.k.200921.021>
- Pitt, A., Oprescu, F., Tapia, G., & Gray, M. (2018). An exploratory study of students' weekly stress levels and sources of stress during the semester. *Active Learning in Higher Education, 19*(1), 61–75. <https://doi.org/10.1177/1469787417731194>
- Ramachandiran, K., & Dhanapal, S. (2018). Academic stress among university students: A quantitative study of Generation Y and Z's perception. *Pertanika Journal of Social Sciences and Humanities, 26*(T), 211–226.
- World Health Organization (WHO). (2023). *Stress*. <https://www.who.int/news-room/questions-and-answers/item/stress>
- Yikealo, D., Yemane, B., & Karvinen, I. (2018). The level of academic and environmental stress among college students: A case in the College of Education. *Open Journal of Social Sciences, 6*(11), 40–57. <https://doi.org/10.4236/jss.2018.611004>
- Zhao, X., Selman, R. L., & Haste, H. (2015). Academic stress in Chinese schools and a proposed preventive intervention program. *Cogent Education, 2*(1), 1000477. <https://doi.org/10.1080/2331186X.2014.1000477>
- Marlissa Omar (2019). Perceived Academic Stress Among Students in Universiti Teknologi Malaysia. *Advances in Social Science, Education and Humanities Research, 470*. DOI:10.2991/assehr.k.200921.021
- Pitt, A., Oprescu, F., Tapia, G. & Gray, M. (2018). An exploratory study of students' weekly stress levels and sources of stress during the semester. *Active Learning in Higher Education, 19*, 61–75.
- World Health Organization, 2023. <https://www.who.int/news-room/questions-and-answers/item/stress>
- Yikealo, D., Yemane, B. & Karvinen, I. (2018). The Level of Academic and Environmental Stress Among College Students: A Case in the College of Education. *Open Journal of Social Sciences, 6*, 40–57. <https://doi.org/10.4236/jss.2018.611004>
- Zhao, X., Selman, R. L., & Haste, H. (2015). Academic stress in Chinese schools and a proposed preventive intervention program. *Cogent Education, 2*(1), 1000477.