ORIGINAL ARTICLE

Implication of eating behavior and some life habits in the academic stress of Moroccan university students

ABLA KOURISNA[1], AMINE ARFAOUI[2], MUSTAPHA ZGHAID[1], ALI QUYOU[3], YOUSSEF ABOUSSALEH[1]

[1]Biology and Health Lab, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco; [2]Interdisciplinary Laboratory of Sport Sciences, Institute of Sport Professions, Ibn Tofail University, Kenitra, Morocco; [3]Natural Resources and Sustainable Development Lab, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco.

ABSTRACT

Introduction: The objective of this study is to investigate the relationship between academic stress, eating behavior, and life habits among Moroccan university students.
Methods: A cross-sectional survey was conducted among students enrolled in Bachelor's degree programs at Ibn Tofail University. Data were collected through a questionnaire distributed both online and in paper form. The questionnaire included sections on dietary habits, lifestyle behaviors, and academic stress levels. A total of 200 students participated in the study. Statistical analysis was performed using SPSS software, and significance was determined at $p < 0.05$.
Results: The results showed that 62% of students experienced moderate to high levels of academic stress, with female students reporting higher stress levels than males. It was found that students who consumed fewer than three meals per day and those who frequently snacked had significantly higher stress levels. Awareness of the nutritional value of foods was also associated with higher stress levels. No significant relationships were found between academic stress and factors such as residence, body mass index, sleep duration, physical activity, health problems, smoking, or alcohol consumption.
Conclusion: This study highlights the strong association between academic stress and unhealthy eating behaviors among university students. These findings suggest the need for support and educational programs to help students manage stress and adopt healthier eating habits, ultimately contributing to their overall well-being and academic success.

Key words: academic stress, diet, eating behaviour, life habits, university students.

Introduction

Academic stress is a growing problem in the university environment (1). Students are faced with numerous demands and requirements, such as exams, assignments, group projects and time management, which can result in a high level of stress (2, 3). This stress can have a negative impact on the mental and physical well-being of students, including affecting their dietary habits (4, 5). Indeed, studies have shown that students suffering from high levels of stress tend to adopt unhealthy eating behaviors, such as overconsumption of high-fat and high-sugar foods, skipping meals, or irregular meal timing (6, 7). This type of behavior can lead to long-term health problems such as obesity, diabetes, and digestive disorders (8, 9). In this context, the present study aims to investigate the relationship between academic stress, eating behavior and life habits in Moroccan university students: case of Ibn Tofail university.

Subjects and methods

Population

This study concerns students enrolled in the Bachelor's degree program in the establishments belonging to Ibn Tofail University, including the Faculty of Science in Kenitra, the Faculty of Economics and Management in Kenitra, the Faculty of Legal and Political Sciences in Kenitra, the Faculty of Languages, Letters and Arts in Kenitra, the Faculty of Humanities and Social Sciences in Kenitra, the Higher School of Technology in Kenitra, the National School of Commerce and Management in Kenitra, the National School of Applied Sciences in Kenitra, the Higher School of Education and Training in Kenitra, and the National Higher School of Chemistry in Kenitra.

The inclusion criteria were:

- Students who expressed their consent to participate to the survey.

- Students enrolled in the Bachelor's degree program in one of the aforementioned establishments, at the time of the survey.

The exclusion criteria were:

- Students who did not express their consent to participate to the survey.
- Students who are not enrolled in Bachelor's degree program at the time of the survey.

Research tool and data collection

We chose the questionnaire as data collection tool. A first provisional version of the questionnaire, which had been validated by a commission of specialized university professors, was pretested during individual exploratory interviews with Bachelor's degree students at Ibn Tofail University. This pretest helped us verifying comprehension and relevance of items and adjusting the formulation of questions. The final version of the questionnaire consists of three parts. The first part concerns students' dietary behavior, the second addresses their eating habits, and the final part deals with stress. The questionnaire was designed in the form of multiple-choice questions and was sent to Ibn Tofail University students through the university's official electronic mails. The questionnaire was also distributed directly to a sample of 100 bachelor students from different establishment via a paper version. The questionnaire was posted online on the Google Forms© platform on November 18, 2022, and data were collected on December 31, 2022. Respondents were free to participate or not to the survey, hence the voluntary nature of this study.

Data analysis

We used the Statistical Package for Social Sciences software (SPSS) version 25.0 for statistical analysis of data. Descriptive statistics were presented using mean ± standard deviation, whereas Student t-test and Analysis of Variance test (Anova) were performed to compare means of stress score between different groups. Significance level was defined as $p < 0.05$.

Results

Sample description

Among the 200 participants in the present study, 52.5% were female, with a male to female sex-ratio of 0.9. In terms of age, 30% were between 18 and 20 years old, about 40% ranged from 20 to 24 years old and 30% were more than 24 years old. Regarding corpulence of participants, 10% had insufficient weight, 73% had normal weight whereas 17% were overweight or obese. It must be noted that around 80% of overweight or obese participants were female. Regarding their geographical origin, 70% were from Kenitra whereas 30% were from other cities. One third of students who are not from Kenitra lived with relatives from Kenitra. The others lived either in University campus or in rent. Furthermore, 43% of participants were bachelor first year student, 27% were in second year and 30% in third year.

Distribution of participants according to eating behavior

Concerning daily meal frequency, only one third of participants eat three meals per day. The other two thirds eat either less (57.5%) or more (8.5%). It must be noted that 15% of students eat only one meal a day. Moreover, 27% of students reported always or often eating snacks between meals.

In addition, 59% of students indicated that they do not attach much importance to the nutritional value of foods.

Distribution of students according to lifestyle habits and academic stress level

About 62% of study participants had normal sleep duration (6 to 8 hours). The other 38% sleep either too little (27%) or too much (11%). Around 25% of participants have sedentary life while 75% were physically active, 30% of whom practice sports. Furthermore, 30% of participants reported suffering from health problems, respiratory in 44%, digestive in 28% or cardiac in 10% of cases. Finally, 10% of students were smokers while 3% stated consuming alcohol. Regarding the academic stress, measuring results showed that 62% of students had a moderate to high stress level. Females displayed higher mean stress score compared to males with 2.9 ± 0.56 and 2.6 ± 0.51.

Analyzing some determining factors of academic stress

GENDER AND AGE:

It has been shown from the statistical analysis that the academic stress is significantly influenced by students' gender. Indeed, girls displayed significantly higher level of stress compared to boys ($p<0.001$). On the other hand, the statistical analysis showed that the age of student was significantly related to academic stress (Figure 1). In fact, older students, aged 24 years and more, displayed significantly lower stress level compared to younger ones with respective means of 2.50 ± 0.46 and 2.88 ± 0.55 ($p<0.001$).

STUDY LEVEL:

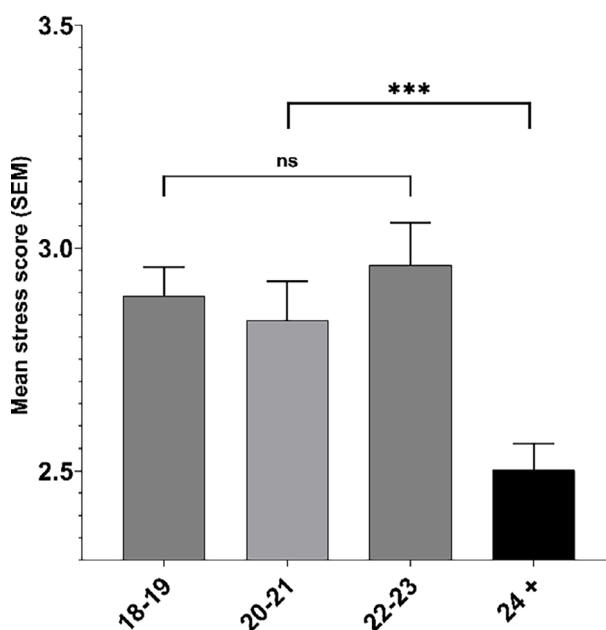As for study level, the comparison of mean stress score between study levels showed that stress

Figure 1. Comparison of Stress score according to age group.

significantly depends on study level (p=0.004). Indeed, students of third year were more stressed compared to those of lower study levels, with mean scores of 2.96 ± 0.56 and 2.68 ± 0.52 (Figure 2).

Daily meal frequency

Regarding daily meal frequency, the comparison of means revealed a significant association between academic stress and meal frequency (p=0.009). Student who consume less than three meals a day displayed significantly higher stress level compared to those who daily eat three meals or more with respective means of 2.85 ± 0.57 and 2.65 ± 0.50 (Figure 3).

Snacking frequency

Concerning snacking frequency, the statistical analysis also proved a significant association between academic stress and Snacking frequency (p=0.002). Student who eat snacks frequently (always or often) are likely to be significantly more stressed than those
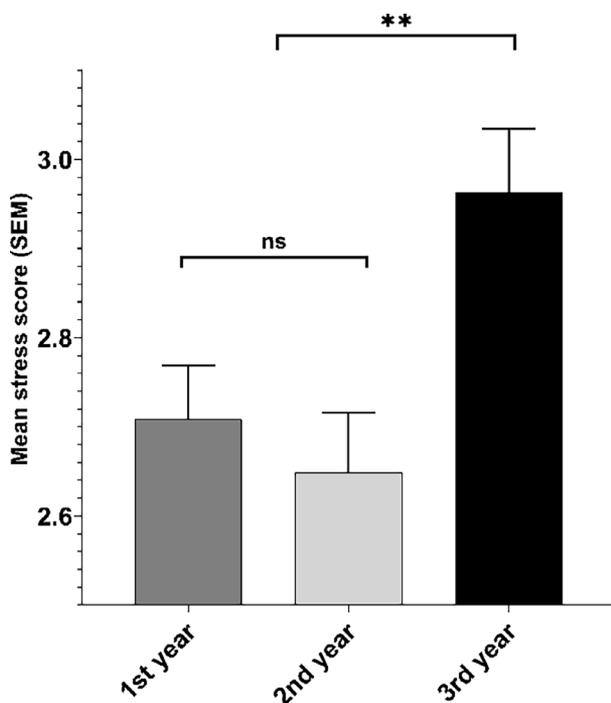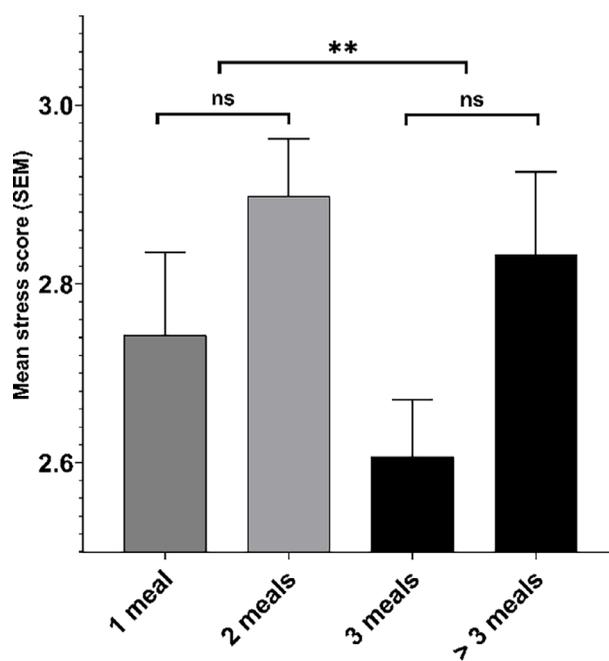
Figure 3. Comparison of Stress score according to daily meal frequency.

Figure 2. Comparison of Stress score according to study level.
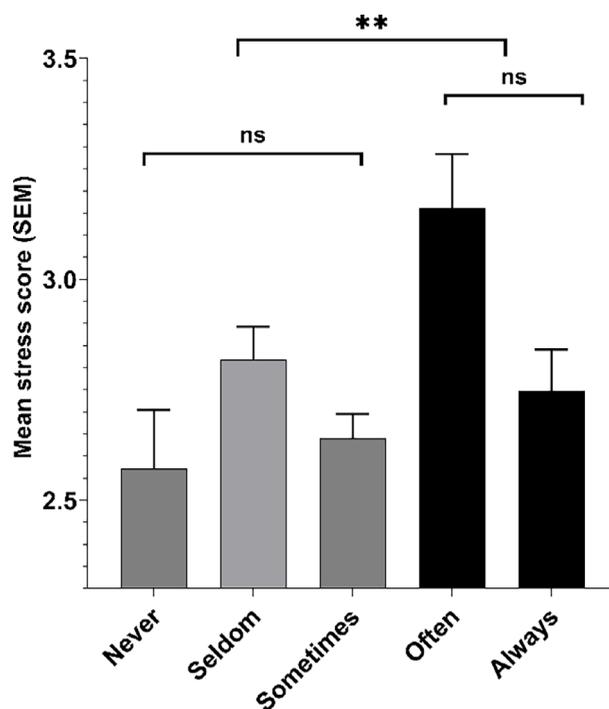
Figure 4. Comparison of Stress score according to snacking frequency.

who consume them less frequently, with means of 2.97 ± 0.61 and 2.69 ± 0.51 respectively (Figure 4).

Awareness of nutritional value of foods

The results revealed a statistical significant association between academic stress and awareness of nutritional value of foods (p=0.001), with higher stress level in aware student compared to unaware ones, with means of 2.88 ± 0.57 and 2.61 ± 0.49 respectively.

OTHER FACTORS:

The statistical analysis did not reveal any significant relationship between academic stress and other factors such as residence, body mass index, sleep duration, physical activity, health problems, smoking and alcohol consumption (Table 1).

Discussion

In the study conducted with 200 participants, a majority of women exhibited significantly higher stress levels compared to men. This finding aligns with previous research, particularly by El Morchid (10), which also observed a higher prevalence of stress among female students. This difference can be attributed to hormonal fluctuations, such as variations in estrogen and progesterone levels, which influence the reactivity of the hypothalamic-pituitary-adrenal (HPA) axis and increase the secretion of cortisol, the stress hormone (10). Regarding the impact of age on academic stress, it has been shown that older students, aged 24 and above, experience lower stress levels compared to younger students. Similar findings have been reported by Benjelloun (11), suggesting that older students who are more experienced manage their academic stress better than younger ones. Neurophysiologically, this can be explained by the maturation of the prefrontal cortex, essential in regulating emotions and stress (11). Additionally, third-year students showed higher stress levels compared to first and second-year students, which is consistent with the observations of Slaoui (12). This increase in stress may be related to growing academic demands and increasing pressure for successfully completing the training and obtaining the diploma. Indeed, sustained activation of the HPA axis leads to elevated cortisol levels, thereby impairing cognitive function (12). The study also revealed that students who consume fewer than three meals a day have higher stress levels.

Table 1. Comparison of mean academic stress score according some other variables.

Variables	Categories	Mean stress score	Standard deviation	Significance (p)
Residence	Kenitra	2,75	0,53	0,571
	Others	2,8	0,6	
Body Mass Index	Insufficient weight	2,56	0,46	0,171
	Normal weight	2,78	0,56	
	Overweight or obese	2,85	0,55	
Sleep duration	Normal (6 to 8 hours)	2,74	0,54	0,355
	Less than 6h or more than 8h	2,82	0,58	
Physical activity	Yes	2,76	0,5	0,692
	No	2,8	0,68	
Health problems	Yes	2,85	0,54	0,161
	No	2,73	0,56	
Smoking	Yes	2,77	0,61	0,996
	No	2,77	0,55	
Alcohol consumption	Yes	2,63	0,99	0,732
	No	2,77	0,54	

similar associations between dietary and mental health have been reported in the literature (13), highlighting the importance of regular meals for glycemic stability. Irregular eating disrupts blood glucose levels, affecting energy stability and brain functions, which can cause mood disorders and increase the perception of stress. Regarding snacking,students who frequently snack are more stressed than those who snack less.Similar associations between perceived stress and unhealthy snack consumption have been reported in previous research (14) found that emotional snacking is often a response to academic stress, which in the long term can exacerbate stress perception. Frequent consumption of sugary or fatty foods can lead to rapid fluctuations in blood glucose, contributing to mood instability and thereby increasing perceived stress (15). Lastly, students who are aware of the nutritional value of foods reported higher levels of academic stress compared to those who were less awar .this finging may reflect the additional cognitive and emotional load associated with making "healthy" food choices while managing academic responsibilities (16).

Conclusion

In summary, this study has highlighted the close links between the academic stress experienced by university students and their unhealthy eating behaviors. Faced with these concerning findings, it is essential to implement support and education programs to help students better manage their stress and adopt healthier dietary habits. By improving the well-being of students, higher education institutions can contribute significantly to their success and fulfillment.

References

1. American Psychological Association. Stress in America 2020: A National Mental Health Crisis. Washington, DC: American Psychological Association; 2020
2. Beiter R, Nash R, McCrady M, et al. The prevalence and correlates of depression, anxiety, and stress in a sample of college students. J Affect Disord 2015;173:90–06. doi:10.1016/j.jad.2014.10.054
3. Gallagher RP. Thirty years of the National Survey of Counseling Center Directors: A personal account. J Coll Student Psychother 2012;26(3):172–184. doi: 10.1080/87568225.2012.685852
4. Supa Pengpid, Karl Peltzer. Multiple health behaviours among university students from 26 low, middle and high income countries. Asian Pac J Cancer Prev 2015;24(4):744-52. doi: 10.6133/apjcn.2015.24.4.21
5. Serlachius A, Hamer M, Wardle J. Stress and weight change in university students in the United Kingdom. Physiol Behav 2007;92(4):548–553. doi:10.1016/j.physbeh.2007.04.032
6. Hamza M Abdulghani, Abdulaziz A AlKanhal, Ebrahim S Mahmoud, Gominda G Ponnamperuma, Eiad A Alfaris. Stress and its effects on medical students: a cross-sectional study at a college of medicine in Saudi Arabia. J Health Popul Nutr 2011;29(5):516–522. doi: 10.3329/jhpn.v29i5.8906
7. Langan E, Toner J, Blake C, Lonsdale C. Testing the effects of a self-determination theory-based intervention with youth gaelic football coaches on athlete motivation and burnout. Sport Psychologist 2015 Dec;29(4):293–301. doi:10.1123/tsp.2013-0107
8. Papier K, Ahmed F, Lee P, Wiseman J. Stress and dietary behaviour among university students in Australia: sex differences. Nutrition 2015;31(2): 324-330. doi: 10.1016/j.nut.2014.08.004
9. World Health Organization. Healthy diet. Geneva: WHO; 2018. Available from: https://www.who.int/news-room/fact-sheets/detail/healthy-diet
10. Kajantie E, Phillips DI. The effects of sex and hormonal status on the physiological response to acute psychosocial stress. Psychoneuroendocrinology 2006;31(2):151–178. doi:10.1016/j.psyneuen.2005.07.002
11. Lupien SJ, McEwen BS, Gunnar MR, Heim C. Effects of stress throughout the lifespan on the brain, behaviour and cognition. Nat Rev Neurosci 2009;10:434–445. doi:10.1038/nrn2639
12. Sandi C. Stress and cognition. Wiley Interdiscip Rev Cogn Sci 2013;4(3):245–261. doi:10.1002/wcs.1222
13. O'Neil A, Quirk SE, Housden S, et al. Relationship between diet and mental health in children and adolescents: A systematic review. Am J Public Health. 2014;104(10): e31–42. doi:10.2105/AJPH.2014.302110
14. Errisuriz VL, Pasch KE, Perry CL. Perceived stress and dietary choices: The moderating role of stress management. Eat Behav. 2016:22:211–216. doi:10.1016/j.eatbeh.2016.06.008

15. Dusselier L, Dunn B, Wang Y, Shelley MC, Whalen DF. Personal, health, academic, and environmental predictors of stress for residence hall students. J Am Coll Health 2005;54(1):15–24. doi:10.3200/JACH.54.1.15-24

16. Radjah ACL, Isaura ER, Nadhiroh SR. Association between food choice, consumption pattern, nutritiona l status, and stress among first-year university students in Surabaya. Media Gizi Kesmas 2022;11(1):210–217. doi:10.20473/mgk.v11i1.2022.210-217