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Stress levels and eating behavior among university students in Jordan: A cross-sectional study

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Abstract:

BACKGROUND: Increased body weight is common among university students; transitioning from high school to university may increase perceived stress levels, thus changing dietary habits and metabolism to promote overweight or obesity. The current study investigates the association between stress and dietary habits among university students in Jordan.

MATERIALS AND METHODS: A cross-sectional study was conducted among 221 university students aged between 20 and 25 at Applied Science Private University [ASU]. A self-reported questionnaire was distributed to university students. The questionnaires were divided into three sections: the first was about general characteristics, body weight, change in body weight, and stress eating.

RESULT: The survey of 208 participants showed that 64.3% were females, and 84.2% of students lived with their families. Results showed that more than half [51.1%] of the respondents were dissatisfied with their eating habits. Females [57.7%] monitored their food intake more than males did. However, most males [77.2%] reported less eating during stress compared to females. In addition, the data analysis revealed that those who ate more were less likely to monitor their food intake [χ^2 =9.734, *df* = 1, *P* = .002] or quantity [χ^2 =16.704, *df* = 1, *P* < .001]. Only 20.8% of the participants preferred sports or hobbies as a stress reduction activity; 29.4% took showers, while 51.1% ignored what made them stressed. Finally, 56.3% of participants reported increased weight after starting university, and it was significantly correlated with stress eating while studying for exams [χ^2 =8.762, *df* = 2, *P* = .013]. Stress affects university students and can lead to unhealthy eating habits and health issues like obesity.

CONCLUSION: Many students face stress during their academic years, which affects their dietary choices. Policies promoting healthy eating habits and stress-reducing activities are important for university students.

Keywords:

Dietary intake, obesity, stress eating, university student

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Introduction

The prevalence of obesity is increasing dramatically in the world, more than a third of the population in the world is now classified as overweight or obese.[1] In general, a substantial proportion of young adults, in particular higher education students. Studies among university students show that approximately 30% of students were either overweight or obese, with rates higher for men than for women.[2,3] Special attention needs to be paid to university students, considering their influence on their family and their contribution to the nation's workforce.

Dietary habits developed and established in childhood may change during university resulting in decreasing parental influence.[4] A recent study found that most university

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students gain their body weight during the first year of university.[2] During the transition from high school to university, the student's failure to adjust to the new environment at university and associated stressors may lead to negative dietary habits and stress-related under- or over-eating.[5]

Stress disturbs one's "physiological homeostasis or psychological well-being."[2] Studies showed that stress can impact people who choose such as "unhealthy food" [high-calorie, high-fat food, and sugary food, rather than healthy food].[5,6] Nonetheless, the associations between eating behaviors and stress are inconclusive. Stress increased food intake in some individuals, while others displayed decreased food intake.[7,8] While studies in areas concerning stress among university students and its impact on food consumption have gained attention in various countries such as the United Kingdom, Australia, Canada, and Germany.[5,9,10] Little has been done in the Middle East such as Saudi Arabia[5] to investigate these variables among university students, also to the best of our knowledge, no study has explicitly considered the association between food intake and stress in Jordan. Thus, this study was carried out to investigate the relationship between stress and food intake among university students in Jordan.

Materials and Methods

Study design and setting

This cross-sectional study was conducted at Applied Science Private University [ASU], Amman, Jordan, from April to August 2023. The ASU is composed of 10 Faculties, and the sample was chosen randomly from students studying inside the main campus, which harbors 10 Faculties [Allied Medical Sciences, Art and Science, Pharmacy, Engineering and Technology, Nursing, Business, Information Technology, Law, Art and Design, Sharia and Islamic studies].

Study participants and sampling

The sample size was determined using G*power software for sample size calculation, parameters of 0.5 effect size, 5% margin of error, and power 0.8, 200 respondents were required. Inclusion criteria were undergraduate students aged between 18–25 years and non-smokers.

Ethical consideration

The study protocol was reviewed, and ethical clearance was obtained from the Institutional Review Board of the Applied Science Private University Ethics Committee [2023-PHA-20]. The Informed Consent Form was digitally signed by one of his/her guardians, when necessary. During the consent process, the participants were confident that all data would only be used for research purposes and were not allowed to provide any information to contact information. In addition, participants could stop participating in the study and leave the questionnaire at any stage before the end of the process.

Data collection tool and technique

Participants were asked to complete a self-administered questionnaire containing three sections, the first section included demographic characteristics including age, gender, name of the university, academic year, and residence status. The second section includes body weight and change in body weight, and the last section includes the habits during stress such as preferences for eating [sweets, fast food, and fruits/vegetables].

Statistical analysis

The statistical analysis was conducted using SPSS following the coding of data, wherein nominal variables were assigned values of − 1 for negative responses, 0 for neutral responses, and 1 for positive responses. Descriptive analysis encompassed calculating the frequency of categorical variables and determining the mean, standard deviation, and range for continuous variables. Subsequently, inferential statistics were employed, employing the Chi-square test to assess associations among categorical variables. Additionally, independent samples *t*-tests and a robust test of equality of means, based on Welch's statistics, were conducted to explore associations between categorical and continuous variables. A comprehensive exploration of all possible variable combinations was undertaken, and we present results specifically where statistically significant associations were observed.

Results

The questionnaire was filled out by 221 respondents for the investigation. The gender distribution among respondents showed that 64.3% were females. The academic year distribution varied, with 14.0% in the first year, 13.6% in the second year, 23.1% in the third year, 28.5% in the fourth year, and 20.8% in the fifth or sixth year. A total of 84.2% of the respondents reported living with their family, only 10.0% lived in a dorm or with roommates, and 5.9% lived alone. Regarding managing exam stress through eating, 35.7% of respondents reported that they did not feel the need to reduce their stress by eating when studying. A total of 43.0% felt neutral, and 21.3% felt the urge to eat under stress as shown in Table 1. Among those who felt the urge, preferences for stress eating revealed that 47.1% had no specific preference, 27.6% preferred sweets, 8.1% opted for fast food, and only 3.2% chose fruits and vegetables. Worth mentioning that 36.7% of the respondents reported having an urge to eat more when feeling down or depressed as shown in Table 1.

Regarding eating habits, 51.1% were unsatisfied with their eating habits, 39.8% were satisfied as they loved food, and 9.0% were satisfied as they did not like food, 52.5% of respondents reported the need to monitor the quantity of food they eat. A greater percentage of female participants [57.7%] reported monitoring their food quantity than their male counterparts. When stressed, 33.9% of the participants reported tended to eat more than usual. In comparison, only 25.3% of participants attempted to eat through stressful situations. Based on gender differences, the analysis reveals that a greater proportion of female participants [40.1%] tend to eat more during stress.

In comparison, males [77.2%] tend to eat less than they usually do during stress. These results suggest that gender plays a significant role in the participants' eating habits, particularly their ability to monitor their food quantity and stress response. During exams, 63.3% of stressed participants monitor food intake.

However, 20.8% of participants preferred to engage in sports or hobbies, 29.4% took showers, and 51.1% had no specific activity and only focused on ignoring what made them stressed. Observed frequencies underscore that [85.2%] of females do not practice sports or hobbies to reduce stress. In comparison, males [68.4%] are likelier to engage in different activities for stress relief.

The study revealed that the participants' weight ranged from 45.00 kg to 103.00 kg, with an average weight of 70.42 kg and a standard deviation of 13.39 kg. Figure 1 illustrates the distribution of weight among the students. Before university, students' weights ranged from 45.00 kg to 125.00 kg, with a mean of 68.62 kg and a standard deviation of 15.6 kg. The study also found that weight changes after starting university varied from a decrease of 25.00 kg to an increase of 25.00 kg, with an average change of 1.81 kg and a standard deviation of 9.16 kg. Figure 2 depicts that the weight change followed a normal distribution. Among the 208 respondents, 56.3% reported an increase in weight, 37.0% experienced a decrease in weight, and 6.7% reported no change in weight. Among those with a weight increase, 75.6% reported monitoring eating during exams to reduce stress, compared to 24.4% of those without a weight increase. Notably, the analysis of weights considered valid data from 208 respondents as data for the remaining respondents was missing.

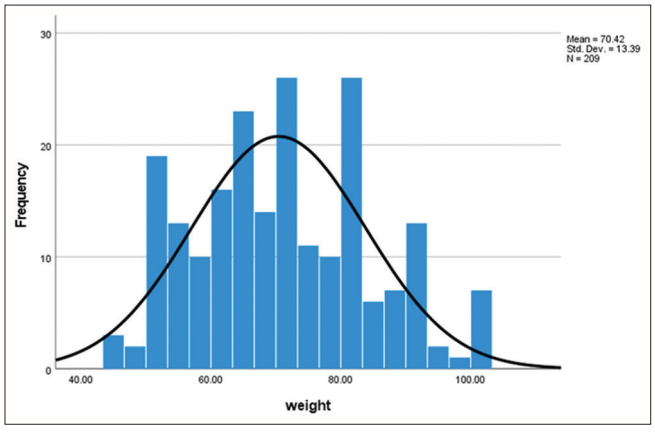

Figure 1: The current weights of participants, with the black curve, is the normal distribution curve for reference

The results of the Chi-square test reveal statistically significant associations between several variables. Concerning gender influence, a significant association is identified between the monitoring of the food quantity eaten and gender [χ^2 =4.403, df = 1, P = .036]. In addition, a statistically significant connection is observed between the tendency to eat during stress and gender [χ^2 =6.820, df = 1, P = .009], which indicates a substantial difference in response distribution between male and female participants. However, sports or hobbies significantly influenced stress reduction among females than males [χ^2 =8.751, df = 1, P = .003]. Another highly significant finding involves the association between stress-related eating behaviors and depression-related eating urges [χ^2 =50.515, df = 2, P = 0.000], which is shown in the results as the vast majority [89.9%] of respondents who do not eat when stressed reported no urge to eat more when feeling down. In contrast, 72.3% of those who eat to reduce stress during exams expressed a corresponding urge to eat more when feeling down.

Regarding monitoring food quantity, a significant association is noted with stress-related eating [χ^2 =10.110, df = 2, P = 0.007]. Only 34% of those who eat more when stressed monitor food intake [χ^2 =9.734, df = 1, P = 0.002] or the quantity of food [χ^2 =16.704, df = 1, P < 0.001]. Moreover, a significant association was reported between satisfaction with eating habits and monitoring food [χ^2 =7.514, df = 2, P = 0.023], eating under stress conditions [χ^2 =6.410, df = 2, P = 0.041], and weight decreased after starting university[χ^2 =6.828, df = 2, P = 0.033]. Weight

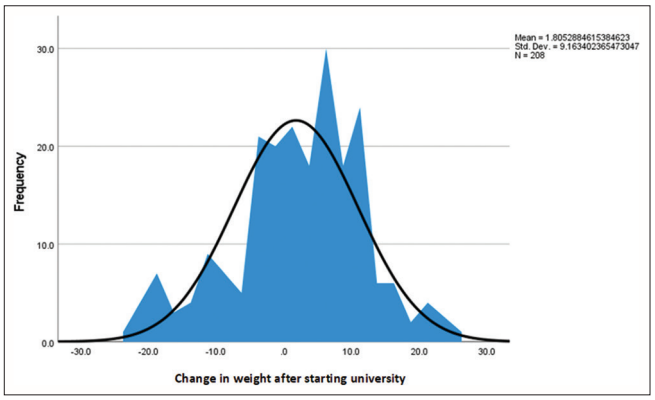

Figure 2: The change in weight after starting university

gain after starting university and stress eating while studying for exams are significantly correlated [χ^2 =8.762, df = 2, P = 0.013].

Furthermore, standardized residuals analysis showed that respondents monitoring food quantity have varied satisfaction levels: 45.7% were unsatisfied, 40.5% were satisfied as they enjoy food, and 13.8% were satisfied as they do not like food much. Conversely, among those not monitoring food quantity, 57.1% are unsatisfied, 39.0% are satisfied as they enjoy food, and 3.8% are satisfied as they do not like food much. Observed frequencies reveal notable patterns: those not satisfied with their eating habits are more likely to eat less than usual when stressed [61.1%], and those satisfied as they enjoy food are also more likely to eat less than usual [67.0%]. At the same time, those who are satisfied and do not like food are more likely to eat less than usual when stressed [90.0%]. Interestingly, for those dissatisfied with their eating habits, only 28.6% experienced weight reduction, while among those satisfied as they enjoyed food, 47.0% experienced weight loss, and for those satisfied as they did not like food, 60.0% experienced weight loss.

Table 1: Responses to the different questions in the questionnaire

Category	Frequency [%]
Gender	
Female	142 [64.3]
Male	79 [35.7]
Academic Year	
First Year	31 [14.0]
Second Year	30 [13.6]
Third Year	51 [23.1]
Fourth Year	63 [28.5]
Fifth/Sixth Year	46 [20.8]
Living Arrangements	
Alone	13 [5.9]
Dorm/Roommate	22 [10.0]
With Family	186 [84.2]
Managing Stress by Eating	
No, I don't	79 [35.7]
Neutral	95 [43.0]
Yes, I do	47 [21.3]
Preferences for Eating [Sweets, Fast Food, and Fruits/Vegetables]	
Sweets	No: 132 [59.7], Yes: 89 [40.3]
Fast Food	No: 178 [80.5], Yes: 43 [19.5]
Fruits/Vegetables	No: 201 [91.0], Yes: 20 [9.0]
Weight and eating habits	
Do not monitor quantity	No: 116 [52.5], Yes: 105 [47.5]
Tend to eat more/less than usual	More: 75 [33.9], Less: 146 [66.1]
Attempt to reduce stress by eating	No: 165 [74.7], Yes: 56 [25.3]
Activates and hobbies'	
Sports/Hobbies	No: 175 [79.2], Yes: 46 [20.8]
Shower	No: 156 [70.6], Yes: 65 [29.4]
Forget and do anything	No: 108 [48.9], Yes: 113 [51.1]
Satisfaction and weight changes	
Satisfaction	No: 113 [51.1], Yes, I love food: 88 [39.8], Yes, I do not like food: 20 [9.0]
Weight increased	No: 91 [43.8], Yes: 117 [56.3]
Weight decreased	No: 131 [63.0], Yes: 77 [37.0]
Weight the Same	No: 194 [93.3], Yes: 14 [6.7]

The independent samples t-test was conducted to assess whether there is a significant difference in the average weight change between males and females before and after starting university. Although the mean change in weight for males and females was 0.82 and 2.34, respectively, the analysis revealed no statistically significant difference in weight change [t = -1.035, df = 114, P = 0.303]. Additionally, there was a significant difference in weight change for those who did not eat to reduce their stress compared to those who did, the mean change in weight being 1.08 and 4.04 for the two groups, respectively [t = –2.017, df = 206, P = 0.045, 95% CI [–5.85, –0.67]].

Finally, a robust test of equality of means was conducted to examine differences in the change in weight after starting university between the groups of students who were not satisfied with their dietary habits, satisfied with their dietary habits as they liked food, or satisfied with their dietary habits as they did not like food. Based on the Welch statistic [Welch's F[2, 50.941] =2.034, P = .141], the test revealed no statistically significant differences among these groups. Table 2 shows the correlation between stress eating and an increase in weight based on gender, academic year, and way of living. Table 3 illustrates the correlation between stress eating preference and gender, academic year, and way of living for university students.

Discussion

Stress can alter eating patterns, develop hyperphagia strategies for unhealthy stress-related eating patterns, and increase the craving for hyper-palatable sugar-rich foods [Kaiser *et al*., 2022].[10] A study was conducted on 27,343 university students in China, revealing that 23% experienced high levels of academic stress, and 91% faced at least one negative learning outcome in six months, especially for female students, undergraduates, and students majoring in social science subject and humanities [Chen *et al*., 2020].[7] Another study analyzed data from 742 students with an average age of 21.24, of which 79.4% were women. Among these women, 34.4% exercised more than 4 h per week. The results showed a correlation between consuming "unhealthy" foods that exceeded the population's recommended intake and academic stress [Monserrat-Hernández *et al*., 2023].[8] Our

Table 2: The correlation between university students' stress, eating, and weight gain with gender, academic year, and way of living

	I don't watch the quantity of food I eat					When I am stressed out, I tend to eat					I try to reduce my stress through eating					Weight increased after starting university?				
	No		Yes		*P*	More than usual		Less than usual		*P*	No		Yes		*P*	No		Yes		*P*
	n	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%	
Gender																				
F	82	57.7%	60	42.3%	0.036	57	40.1%	85	59.9%	0.009	103	72.5%	39	27.5%	0.330	57	42.2%	78	57.8%	0.546
M	34	43.0%	45	57.0%		18	22.8%	61	77.2%		62	78.5%	17	21.5%		34	46.6%	39	53.4%	
Academic year																				
First year	17	54.8%	14	45.2%	0.008	7	22.6%	24	77.4%	0.366	25	80.6%	6	19.4%	0.143	20	69.0%	9	31.0%	0.049
Second year	16	53.3%	14	46.7%		10	33.3%	20	66.7%		23	76.7%	7	23.3%		13	46.4%	15	53.6%	
Third year	25	49.0%	26	51.0%		15	29.4%	36	70.6%		42	82.4%	9	17.6%		17	36.2%	30	63.8%	
Fourth year	43	68.3%	20	31.7%		23	36.5%	40	63.5%		47	74.6%	16	25.4%		24	40.7%	35	59.3%	
Fifth/sixth year	15	32.6%	31	67.4%		20	43.5%	26	56.5%		28	60.9%	18	39.1%		17	37.8%	28	62.2%	
Way of Living																				
Alone	8	61.5%	5	38.5%	0.783	2	15.4%	11	84.6%	0.343	12	92.3%	1	7.7%	0.293	8	72.7%	3	27.3%	0.095
In dorm/with a roommate	11	50.0%	11	50.0%		8	36.4%	14	63.6%		17	77.3%	5	22.7%		7	33.3%	14	66.7%	
With family	97	52.2%	89	47.8%		65	34.9%	121	65.1%		136	73.1%	50	26.9%		76	43.2%	100	56.8%	

Table 3: Correlation between stress eating preference and gender, academic year, and way of living for university students

	when I am stressed, I prefer eating…																			
	Fast food					Sweets					Fruits and vegetables					Do not feel like eating anything				
	No		Yes		*P*	No		Yes		*P*	No		Yes		*P*	No		Yes		*P*
	n	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%	
Gender																				
F	119	83.8%	23	16.2%	0.101	82	57.7%	60	42.3%	0.421	131	92.3%	11	7.7%	0.365	76	53.5%	66	46.5%	0.817
M	59	74.7%	20	25.3%		50	63.3%	29	36.7%		70	88.6%	9	11.4%		41	51.9%	38	48.1%	
Academic year																				
First year	26	83.9%	5	16.1%	0.261	23	74.2%	8	25.8%	0.229	27	87.1%	4	12.9%	0.587	12	38.7%	19	61.3%	0.438
Second year	27	90.0%	3	10.0%		18	60.0%	12	40.0%		29	96.7%	1	3.3%		16	53.3%	14	46.7%	
Third year	39	76.5%	12	23.5%		32	62.7%	19	37.3%		47	92.2%	4	7.8%		28	54.9%	23	45.1%	
Fourth year	53	84.1%	10	15.9%		37	58.7%	26	41.3%		58	92.1%	5	7.9%		33	52.4%	30	47.6%	
Fifth/sixth year	33	71.7%	13	28.3%		22	47.8%	24	52.2%		40	87.0%	6	13.0%		28	60.9%	18	39.1%	
Way of Living																				
Alone	13	100.0%	0	0.0%	0.134	9	69.2%	4	30.8%	0.296	12	92.3%	1	7.7%	0.727	5	38.5%	8	61.5%	0.348
In dorm/with a roommate	16	72.7%	6	27.3%		10	45.5%	12	54.5%		19	86.4%	3	13.6%		14	63.6%	8	36.4%	
With family	149	80.1%	37	19.9%		113	60.8%	73	39.2%		170	91.4%	16	8.6%		98	52.7%	88	47.3%	

study revealed that around 36% of participants did not feel much stressed during studying, 21% felt the urge to eat, and 37% of the respondents reported having the urge to eat more. Of those who reported stress eating, 47.1% had no specific preference, 27.6% preferred sweets, and only 3% preferred fruits and vegetables. These results are consistent with literature on craving for hyper-palatable sugar-rich foods, as only a small percent of participants preferred vegetables and fruits.

Throughout exam season, it is common for students to change their eating and exercise habits. Some may turn to high-calorie, sugary, and spicy foods in response to stress, while others may demonstrate hypophagia[11,12] With time, the unhealthy pattern can trigger neurobiological adaptations that promote compulsive behavior and metabolic changes that increase weight gain and body fat mass. Chronic stress can affect factors such as hormones, glucose metabolism, and brain regions involved in stress/motivation circuits [Yau and Potenza, 2013][17] which results in hypothalamic-pituitary-adrenal [HPA] axis dysfunction and insulin resistance.[13,14] In addition, many university students have recently become vulnerable due to COVID-19 and face academic stress, which affects their

mental health regardless of demographics. Therefore, we must address academic stress for students' well-being and appropriate strategies to reduce academic-related stress.[15] In contrast, proper food selection and nutrition education are essential to prevent health problems.[12,16]

A six-year longitudinal cohort of medical students found that the proportion of healthy patterns decreased from 56% to 30% before increasing to 44%. In comparison, the proportion of burnout-related risk patterns rose from 9% to 16% but eventually decreased to 7%. The unambitious pattern increased steadily from 13% to 40%. Female students were more vulnerable to stress, anxiety, and depression, with lower health and higher risk patterns for overexertion and burnout.[17] Generally, in our study, more than half of females reported monitoring their food intake compared to the males [43.0%]. Nevertheless, the study showed a significant correlation between gender and eating habits during stress [χ^2 =6.820, df = 1, P = 0.009], where females consume more food than males. Half of the students were dissatisfied with their eating habits, highlighting the need for targeted interventions to promote healthier eating and manage stress levels by health professionals and policymakers across genders.

A 30-year longitudinal study on weight, body image, dieting, and eating disorders in men and women from late adolescence to mid-life revealed that men's risk associated with the drive for thinness decreased but remained stable in women as they aged.[13] Men tend to consume more calories than women and have different eating habits. Women, however, face more food-related conflicts as they tend to prefer high-calorie foods than men due to societal manners.[18] According to a study by Barrington e*t al*., people who experience higher stress levels tend to consume more calories from fatty foods and snacks while consuming fewer calories from carbohydrates (with all P values for the trend being less than or equal to 0.002). The study did not find any significant evidence to suggest that gender or BMI impacted these associations between perceived stress and diet.[19] Our study found that over half of the female participants were more concerned with controlling their weight than the male participants and did so by monitoring their food intake.

According to a study conducted on 268 students at University College London, weight change during the first year of university was examined, revealing that 55% of participants reported weight gain, with a significant increase of 1.53 kg ± 2.70 [P < 0.001]. Meanwhile, 12% of the participants reported weight loss, while 33% remained stable during their first year at university [Serlachius *et al*., 2007].[14] The study also found that perceived academic stress was linked to an increased risk of being overweight and obese [OR = 1.05, 95%CI: 1.00–1.10], students from subordinate universities [OR = 1.13, 95%CI: 1.01–1.26], undergraduates [OR = 1.06, 95%CI: 1.00–1.11], and male students [OR = 1.09, 95%CI: 1.03–1.15].[20] However, a systematic review identified 25 observational studies investigating the relationship between anxiety or stress and BMI or weight change. Of these, 11 studies found no association between stress and BMI or weight change, while five found no significant association between anxiety and BMI. The remaining studies showed that stress and anxiety could be linked to higher and lower weight status, suggesting that stress can either increase or decrease weight, implying that BMI may be influenced in both directions.[21] Overall, our analysis revealed that more than 50% of the participants gained weight, while 37.0% lost weight and 6.7% remained the same after starting university.

Regarding stress management, a study by Said Can *et al*. showed that a biological system could suggest the most fitting relaxation technique by detecting stress levels and analyzing physical activity-based contextual information. The study indicates that mobile relaxation methods may be more appropriate when physical activity is limited [Can *et al*., 2020].[6] Another systematic review by Stillwell *et al*. revealed that stress management interventions for graduate students vary greatly, including stress management courses and mind-body-stress-reduction practices such as breath-work, yoga, meditation, and mindfulness [Stillwell *et al*., 2017].[15] Our research shows that 25.3% of students try to reduce stress by eating, while 20.8% engage in sports or hobbies, especially males, and approximately 30% prefer showers. However, 51.1% of students do not have any specific activity to reduce stress and only try to forget what was causing it.

Limitations and recommendation

This study has noteworthy strengths. The study included students from different academic levels, which helped to compare the effect of stress on eating behavior across these levels. Additionally, the study investigated the correlation between perceived stress levels and academic levels, where stress decreases as students adapt to the university environment through the years.

Despite these strengths, the study has several limitations that must be addressed in future research. Firstly, the study was cross-sectional and relied on self-reported questionnaires, making it difficult to establish a causal relationship between stress and eating behavior. Secondly, the study was conducted at a single university campus in Jordan, which limits its geographical scope. Furthermore, most participants lived with their families, which could have influenced the results, as findings could differ if independent students were included. Finally, the study did not consider the amount of food consumed or its caloric content. Also, future research should include various food behaviors to detect dietary habits more accurately.

Conclusions

Stress is a significant aspect that negatively affects university students and can lead to unhealthy eating patterns and health problems, such as obesity. Our study aimed to explore the correlation between stress and eating habits among university students. The study was conducted on 221 students, half of third- and fourth-year students, and most sample were females. Our findings reveal that over half of the students were dissatisfied with their eating habits and reported being mandated to monitor food quantity. Almost 60% of the students exposed to stress tended to consume unhealthy foods, particularly sweets and gained weight after joining the university. Additionally, approximately 40% of the students experienced an increased desire to eat when under stress.

Furthermore, the study revealed that only about 20% of the students attempted to manage their stress by engaging in activities and hobbies, particularly during exams.

In conclusion, our study highlights the importance of acknowledging the connection between stress and unhealthy eating habits among university students. The findings emphasize the need to develop strategies that address the dietary patterns of university students—encouraging them to participate in stress-reducing activities, focusing more positively on healthy eating patterns, and avoiding stress eating. The main recommendation is for universities to establish policies that promote healthy eating habits and stress-reducing activities to promote students' overall well-being.

Ethics approval

The study was approved by the Institutional Board Review Committee reviewed and approved the survey protocol at the Applied Science Private University Ethics Committee (2023-PHA-20).

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Nil.

Conflicts of interest

There are no conflicts of interest.

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