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The Effect of Test Anxiety on Hedonic Hunger and Nutritional Status in University Students

[1]Seda Çelikel Tasci and [2]Mehtap Akçil OK

[1]*Department of Nutrition and Dietetics, Faculty of Health Sciences. Bayburt University, Bayburt, Turkey*

[2]*Department of Nutrition and Dietetics, Faculty of Health Sciences. Baskent University, Ankara, Turkey*

Abstract

This study aimed to examine the effect of test anxiety on hedonic hunger and nutritional status in university students. The study was conducted with 80 students studying at Bayburt University between the ages of 18-26. The Exam Anxiety Scale and the Food Power Scale were administered to the students twice, at the beginning and at the end of the exam weeks and in addition to taking three-day food consumption records, waist circumference, body weight and body mass index measurements were taken once. It has been determined that caring about the opinions of others and concerns about the future related to test anxiety are more common in women than in men. It was determined that the nutritional power scale total score, food present, food availability and food taste subscale scores were higher in women than in men during the exam week and at the end of the exam. A negative, weak and statistically significant correlation was found between fat intake during the exam week and exam anxiety in women. In males, a negative correlation was found between carbohydrate intake and exam anxiety during the exam week and a positive, weak and statistically significant correlation was found between protein intake and hedonic hunger ($p<0.05$). A negative, weak and statistically significant correlation was found between energy intake and exam anxiety in men at the end of the exam ($p<0.05$). A negative, moderate and statistically significant correlation was found between protein intake and exam anxiety in men at the end of the exam ($p<0.01$). A negative correlation was found between protein intake and exam anxiety at the end of the exam in all students and a positive, weak and statistically significant correlation was found between protein intake and hedonic hunger ($p<0.01$). While there was a weak positive correlation between body mass index and test anxiety in female students ($p<0.05$), a positive, moderately statistically significant correlation was found in male students ($p<0.01$). According to the results of this study, it was determined that test anxiety was related to hedonic hunger and nutritional status.

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Key Words

Test anxiety, hedonic hunger, nutrition, anthropometric measurements

Corresponding Author

Seda Çelikel Tasci,
Department of Nutrition and Dietetics, Faculty of Health Sciences. Bayburt University, Bayburt, Turkey
sedacelikel@bayburt.edu.tr

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INTRODUCTION

Exam periods are important for university students as they determine their academic success. Exam periods can cause anxiety in students as well as academic difficulties. Exam anxiety., It is the experience of cognitive, affective and behavioral symptoms that occur during exam periods, cause negative emotions and tension and negatively affect the student's success[1]. Stress can affect individuals physically, emotionally, mentally and socially. Especially the emotional aspects of stress are one of the important factors affecting eating habits. If emotional eating patterns are affected, physical symptoms such as constipation, diarrhea and appetite changes are frequently observed[2]. Dietary changes as a method to avoid anxiety., It can lead to obesity, eating disorders, depression and hormonal problems[3]. While emotional states such as anxiety, anger and depression generally cause a decrease in appetite, these emotional states may lead to overeating behavior in some individuals[4]. High anxiety during exam periods can affect students' health as well as their nutritional status[5,6].

Appetite and food consumption are controlled by the homeostatic and hedonic system. While the homeostatic system is biological signals affected by the state of energy stores, the hedonic system is related to reward[7]. Delicious foods are known to stimulate reward processes. The pleasure of eating these foods increases the likelihood that individuals will consume them again[8]. Over time, this situation can lead to overweight and obesity[9].

Studies show that stress plays a role in deteriorating health and the development of obesity[10]. Results from both human and animal studies show that chronic stress interferes with both the homeostatic regulation of food intake and hedonic appetite control, leading to an increase in energy intake[11,12]. Therefore, several studies indicate that chronic stress is positively associated with eating frequency, consumption of palatable foods and binge and emotional eating[13,14]. This study aimed to evaluate the effect of test anxiety on the presence of hedonic hunger and nutritional status in university students.

MATERIALS AND METHODS

Sample Selection and Data Collection: The ethics committee decision of the study was taken from Baskent University Medicine and Health Sciences Research Board Non-Interventional Clinical Research Ethics Committee this study was conducted with a total of 80 undergraduate students between the ages of 18-26 who were studying at Bayburt University and agreed to participate in the study. In order to see the effect of gender on anxiety, equal numbers of male and female students were included in the study. Before the study, all students were interviewed about the study content and their permission was obtained through the Informed Volunteer Consent Form for Scientific Research. In order to collect data, a survey form questioning their personal information, Power of Food Scale (PFS), Test Anxiety Scale (TAS) was applied to all students participating in the study on the first day of the exam week and anthropometric measurements were taken. The day after the end of the exams, PFS and TAS scales were applied to the same students again. In order to evaluate the nutritional status of the students, 3-day food consumption records were taken twice, at the beginning of the exam week and once at the weekend following the end of the exams.

Power of Food Scale: Hedonic hunger, it was evaluated with PFS. The Turkish validity and reliability study of the scale was conducted by Akçil Ok and Hayzaran[15]. The scale, consisting of 15 items, was evaluated with 3 sub dimensions: food accessibility, food availability and food taste. An increase in the total score of the scale indicates a greater tendency to hedonic hunger.

Test Anxiety Scale: The anxiety level of the students was evaluated with the TAS, which consists of 34 items. Subdimensions of the scale., The opinions of others, your own opinion, concerns about the future, concerns about preparation and general exam anxiety, mental and physical reactions. The lowest score to be obtained from the scale is 34 and the highest score is 170.

Evaluation of Nutritional Status: In order to evaluate the nutritional status of the students, some anthropometric measurements (weight, height, body mass index, waist circumference) and 3 days food consumption records were taken. Anthropometric measurements of all students participating in the study were taken on the first day of their exams. The weight measurements of the students were taken on the Tanita BC-418, Tokyo, JAPAN device, with light clothes, bare feet, in the morning and after defecation. Before measuring body weights, heavy clothing such as jackets and cardigans and accessories such as belts, necklaces, earrings and watches were removed and measurements were carried out in the lightest possible clothing, without shoes or socks. While measuring the height of the students, care was taken to ensure that the students stood with their heads on the Frankfort plane, without shoes, with their feet together, with their heels, back, shoulders and the back of the head touching the wall. Body mass index (BMI) was calculated by dividing body weight (kg) by height (m) squared (m^2) (BMI (kg/m^2) = body weight (kg)/height (m^2)). To measure waist circumference, the midpoint

between the lowest rib and the cristailiac was found, making sure that the feet were together and the arms were at the sides and the circumference was measured. Measurement results were recorded on the survey form. To evaluate the nutritional intake of the students, 3 day food consumption records were taken from all students twice. The first one is planned at the beginning of the exam weeks, the second one after the exam weeks, two days on weekdays and one day on the weekend. Food consumption was examined and the total amount of energy (kcal), protein (g), carbohydrate (g) and fat (g) consumed during the exam week and at the end of the exams was calculated.

Statistical Analysis of Data: The evaluation of the data was made in the SPSS 26.0 (Statistical Package for the Social Sciences) package program. It was evaluated whether the data were normally distributed or not by the Skewness and Kurtosis coefficients being in the range of (-1)-(+1). Numbers, percentages and mean (X^-) and standard deviation (SD) values were used for descriptive statistics. Since the data were normally distributed, parametric tests were applied. Paired Samples Test was used to compare the students' average scores during the exam week and at the end of the exams. $p<0.001$ and $p<0.05$ significance levels were used as statistical significance values.

RESULTS AND DISCUSSION

This study was planned and conducted to evaluate the effect of test anxiety on hedonic hunger and nutritional status in university students. The average age of the students participating in the study was 22.0±1.68 years, 50% were female (n = 40) and 50% were male (n = 40).

(Table 1) shows the comparison of TAS scores of male and female students during the exam week and at the end of the exams. It was determined that female students received an average of 113.97±16.72 points from TAS during the exam week and 108.85±19.93 points at the end of the exams. It was determined that male students received 114.72±16.72 points from the scale, with an average score of 114.90±16.54. It was determined that there was a statistically significant difference in the scores of female students regarding the opinion of others and concerns about the future, which are sub-dimensions of the TAS, during the exam week and at the end of the exams ($p<0.05$). This shows that caring about the opinions of others and concerns about the future related to test anxiety are more common in women than in men. When these two sub-dimensions are examined in all students participating in the study, there is a statistically significant difference ($p<0.05$).

(Table 2) shows the comparison of male and female students PFS scores during the exam week and at the end of the exams. Although the PFS total score, food accessibility, food availability and food taste subscale scores were higher in women than in men during the exam week and at the end of the exam, it was determined that the difference between genders was not statistically significant ($p>0.05$). According to this result, no hedonic hunger was detected in the students due to the exam week. In a study examining hedonic hunger and stress levels in university students, it was found that food availability, one of the sub dimensions of the nutrient power scale, had a greater impact on food consumption. Most students were found to have moderate or high levels of stress. It has been found that people with high stress levels have the habit of consuming delicious foods to cope with stress. A positive and statistically significant correlation was found between the nutritional power scale and stress scale scores[16]. In a study conducted on high school students, it was observed that hedonic hunger behavior increased after one year in individuals with high levels of anxiety and emotional disorders[17].

The relationship between students' 3-day food consumption during the exam week and at the end of the exams and their TAS scores is given in (Table 3). A negative, weak and statistically significant correlation was found between fat intake (g) and TAS during the exam week in women ($p<0.05$). A negative, weak and statistically significant correlation was found between carbohydrate intake (g) and TAS during the exam week in men ($p<0.05$). A negative, weak and statistically significant correlation was found between energy intake (kcal) and TAS at the end of the exam in men ($p<0.05$). A negative, moderate and statistically significant correlation was found between protein intake (g) and TAS at the end of the exam in men ($p<0.01$). A negative, weak and statistically significant correlation was found between protein intake (g) and TAS at the end of the exam in all students ($p<0.01$). These findings show that there is a relationship between test anxiety and nutritional pattern. Increased cortisol in situations of stress and anxiety can lead to increased food intake and consumption of delicious foods. Food intake may also affect the occurrence of hedonic hunger[18,19].

The relationship between students' food consumption and PFS scores during the exam week and at the end of the exams is given in (Table 4). A positive, weak and statistically significant correlation was found between protein intake (g) and PFS in male students during the exam week ($p<0.05$). A positive, weak correlation was detected between protein intake (g) and PFS during the exam week in all students ($p<0.01$). This explains that the presence of hedonic hunger affects the eating pattern. In a study conducted on nursing students, it was stated that emotional

Table 1. Comparisons of test anxiety scale scores of male and female students during the exam week and at the end of the exams

		Female students (n=40) X¯±SS	p	Male students (n=40) X¯±SS	p	Total (n=80) X¯±SS	p
TAS-The Opinion of Others	During exam week	48.60±11.27		46.62±8.85		47.61±10.12	**0.44**
	At the end of the exams	45.55±10.60	**0.039**	45.95±8.64	0.579	45.75±9.61	
TAS-Your Own Opinion	During exam week	22.62±6.96	0.947	25.75±5.88	0.230	24.18±6.59	0.667
	At the end of the exams	22.55±7.30		26.35±5.64		24.45±6.76	
TAS-Concerns About the Future	During exam week	21.675±3.54	**0.020**	21.75±3.80	0.362	21.71±3.65	**0.018**
	At the end of the exams	20.42±4.04		21.32±3.22		20.87±3.66	
TAS- Worries about Preparing and General Exam Anxiet	During exam week	10.80±1.92	0.298	10.22±1.62	0.072	10.51±1.79	0.527
	At the end of the exams	10.52±1.72		10.75±1.27		10.63±1.51	
TAS- Mental and Physical Reactions	During exam week	10.27±2.20	0.252	10.37±1.68	0.555	10.32±1.95	0.502
	At the end of the exams	9.80±1.87		10.52±1.76		10.16±1.84	
Total TAS	During exam week	113.97±16.72	0.074	114.72±16.72	0.930	114.35±17.60	0.155
	At the end of the exams	108.85±19.93		114.90±16.54		111.87±18.45	

Table 2. Comparison of nutritional power scale scores of male and female students during the exam week and at the end of the exams

		Female students (n=40) X¯±SS	p	Male student (n=40) X¯±SS	p	Total (n=80) X¯±SS	p
PFS- Food Availability	During exam week	17.52±5.10	1.00	17.07±4.31	0.606	17.30±4.70	0.734
	At the end of the exams	17.52±5.26		17.37±4.40		17.45±4.82	
PFS- Food Present	During exam week	13.97±3.40	0.223	12.6±3.86	0.275	13.28±3.68	0.099
	At the end of the exams	13.47±3.35		12.17±3.24		12.82±3.34	
PFS- Food Taste	During exam week	18.75±4.05	0.083	15.15±4.53	0.524	16.95±4.64	0.105
	At the end of the exams	18.0±3.85		14.82±4.11		16.41±4.27	
Total PFS	During exam week	50.25±10.38	0.322	44.82±11.31	0.709	47.53±11.12	0.325
	At the end of the exams	49.0±10.98		44.37±10.60		46.68±10.97	

Table 3. The relationship between food consumption and test anxiety scale scores of male and female students during the exam week and at the end of the exams

Energy and Nutrients	Female students				Male students				Total			
	During exam week		At the end of the exams		During exam week		At the end of the exams		During exam week		At the end of the exams	
	r	p	r	p	r	p	r	p	r	p	r	p
Energy	-0.035	0.828	0.045	0.784	-0.184	0.255	-0.326	0.040*	-0.094	0.408	-0.089	0.435
Protein	-0.170	0.293	-0.159	0.327	-0.034	0.835	-0.473	0.002**	-0.100	0.376	-0.312	0.005**
Carbohydrate	0.149	0.359	-0.043	0.794	-0.354	0.025*	-0.254	0.113	-0.064	0.570	-0.094	0.407
Fat	-0.332	0.036*	0.069	0.670	0.117	0.471	-0.285	0.074	-0.130	0.249	-0.106	0.351

*. Correlation is significant at the 0.05 level (2-tailed).**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. The relationship between the nutritional consumption of male and female students and their nutritional power scale scores during the exam week and at the end of the exams

Energy and Nutrients	Female students				Male students				Total			
	During exam week		At the end of the exams		During exam week		At the end of the exams		During exam week		At the end of the exams	
	r	p	r	p	r	p	r	p	r	p	r	p
Energy	-0.094	0.565	-0.162	0.318	0.290	0.069	-0.074	0.650	0.162	0.151	-0.153	0.175
Protein	0.266	0.097	0.050	0.758	0.390	0.013*	0.115	0.481	0.352	0.001**	0.089	0.433
Carbohydrate	0.158	0.330	-0.049	0.360	0.165	0.310	-0.004	0.980	0.127	0.260	-0.123	0.276
Fat	0.066	0.686	0.100	0.538	0.266	0.098	-0.063	0.697	0.183	0.104	0.035	0.758

*. Correlation is significant at the 0.05 level (2-tailed).**. Correlation is significant at the 0.01 level (2-tailed).

Table 5. The relationship between anthropometric measurements of male and female students and test anxiety scale and nutritional power scale scores during the exam week

Anthropometry	Female students				Male students				Total			
	PFS		TAS		PFS		TAS		PFS		TAS	
	r	p	r	p	r	p	r	p	r	p	r	p
Body weight	0,390	0.013*	0.320	0.044*	0.274	0.087	-0.100	0.541	0.264	0.018*	-0.099	0.382
BMI	0.375	0.017*	0.220	0.172	0.453	0.003**	0.105	0.519	0.395	0.000**	0.063	0.581
Waist circumference	0.359	0.023*	0.044	0.787	0.443	0.004**	-0.072	0.657	0.296	0.008**	-0.185	0.101

*. Correlation is significant at the 0.05 level (2-tailed).**. Correlation is significant at the 0.01 level (2-tailed).

eating behavior was effective on the nutritional patterns of 73% of the students[20]. The relationship between the students' anthropometric measurements and their PFS and TAS scores during the exam week is given in (Table 5). A significant, positive and weak relationship was found between body weight (kg) and both PFS and TAS in female students ($p<0.05$). A significant, positive and weak relationship was found between body weight (kg) and TAS in all students ($p<0.05$). While there was a weak positive correlation between BMI and TAS in female students ($p<0.05$), a positive, moderately statistically significant correlation was found between BMI levels and TAS in male students ($p<0.01$). A positive and weak correlation was found between BMI and TAS in all students participating in the study ($p<0.01$). A positive and weak

relationship was found between waist circumference (cm) and TAS in women ($p<0.05$). In men, a positive and moderate relationship was found between waist circumference (cm) and TAS ($p<0.01$). A positive and weak correlation was found between waist circumference (cm) and TAS in all students ($p<0.01$). In a study evaluating students BMI, test anxiety and eating attitudes according to gender, female students test anxiety and eating attitude total and sub factor scores were found to be higher than male students ($p<0.001$). The average BMI value of men was higher than that of women and it was found that the total test anxiety scale score of all students differed between the groups created according to BMI ($p<0.05$). It was determined that the test anxiety and sub-factor scores of individuals with normal BMI values were higher than those who were slightly obese. In another study, it was found that waist circumference, body weight and BMI values were negatively related to test anxiety score[21].

CONCLUSIONS

According to the results of this study, female university students have higher test anxiety than males, both during the exam week and at the end of the exam. Although not statistically significant, the total score of the nutritional power scale used to evaluate hedonic hunger, food present, food availability and food taste subscale scores were found to be higher in women than in men during the exam week and at the end of the exam. It has been determined that there is a relationship between exam anxiety and the presence of hedonic hunger and nutritional patterns. A relationship has been determined between test anxiety and body weight, BMI and waist circumference. For this reason, the importance of anxiety and nutritional status should be taken into consideration in order to protect the health of university students during exam weeks.

Conflicts of Interest: The authors declare no conflicts of interest.

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