ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

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Emotional Eating Behavior and Obesity Status of Medical Students in a University in Ankara

Ankara'da Bir Üniversitede Tıp Öğrencilerinin Duygusal Yeme Davranışı ve Obezite Durumu

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ABSTRACT Objective: Emotions are the basic elements of daily life that direct physiological changes and the formation of behavior by influencing cognition. Nutritional behavior is mainly shaped by emotional status. Unstable emotional states of medical students due to social and psychological factors affect their nutritional behaviors. Medical students may cope with physical and emotional difficulties such as emotional eating behavior leading to obesity. The aim of this study is to determine the emotional eating behavior and obesity status of medical students. **Material and Methods:** Data about sociodemographic characteristics and nutritional habits were collected via a questionnaire by face to face interview method by a dietitian. Anthropometric measurements (body weight, height, waist circumference, hip circumference, waist/hip ratio, waist/height ratio) of 256 medical students which was calculated via power analysis were taken by a trained dietitian. Three-factor Eating Questionnaire-R18 (TFEQ-R18) and Emotional Appetite Questionnaire (EMAQ) scales were applied to assess the eating behavior. The analysis of the data was made in the SPSS Statistics 21 package program, and the obtained results were interpreted as the value $p<0.05$ was considered statistically significant. **Results:** This study consisted of 88 (34.4%) male and 168 (65.6%) female students. The prevalence of overweight and obesity among students were 18.0% and 3.9%, respectively. Negative EMAQ scores of overweight group [61.5 (29.0-126.0)] was higher than underweight group [47.0 (31.0-97.0)] ($p=0.007$). There was no significant difference between underweight, normal weight, overweight and obese groups in terms of uncontrolled eating and emotional eating scores ($p=0.311$, $p=0.185$; respectively). Cognitive restraint scores of normal [37.5 (0.0-75.0)] and overweight groups [33.3 (8.3-62.5)] were higher than underweight group [20.8 (4.2-62.5)] ($p=0.002$). **Conclusion:** Medical students are at a high risk of obesity development. Health education programs and health promotion activities should be recommended to prevent obesity.

Keywords: Emotional eating; obesity; medical students

ÖZET Amaç: Duygular, bilişi etkileyerek fizyolojik değişimlere ve davranış oluşumuna yön veren günlük yaşamın temel unsurlarıdır. Beslenme davranışı esas olarak duygusal durumla şekillenir. Tıp öğrencilerinin sosyal ve psikolojik faktörlere bağlı değişken duygu durumları beslenme davranışlarını etkileyebilmektedir. Tıp öğrencileri, obeziteye neden olan duygusal yeme davranışı gibi fiziksel ve duygusal zorluklarla karşılaşabilirler. Bu çalışmanın amacı, tıp öğrencilerinin duygusal yeme davranışı ve obezite durumlarını belirlemektir. **Gereç ve Yöntemler:** Sosyodemografik özellikler ve beslenme alışkanlıkları ile ilgili veriler, yüz yüze görüşme yöntemi ile diyetisyen tarafından anket aracılığıyla toplanmıştır. Power analiz sonucu belirlenen 256 tıp öğrencisinin antropometrik ölçümleri (vücut ağırlığı, boy uzunluğu, bel çevresi, kalça çevresi, bel/kalça oranı, bel/boy oranı) eğitimli bir diyetisyen tarafından alınmıştır. Üç Faktörlü Beslenme Anketi ve Duygusal İştah Anketi (DİA) ölçekleri yeme davranışını değerlendirmek için uygulanmıştır. Verilerin analizi, SPSS İstatistik 21 paket programında yapılmış, $p<0.05$ değeri istatistiksel olarak anlamlı kabul edilmiştir.. **Bulgular:** Bu çalışma, 88 erkek (%34,4) ve 168 kız (%65,6) öğrenciden oluşmaktadır. Öğrenciler arasında fazla kiloluluk ve obezite görülme sıklığı sırasıyla %18,0 ve %3,9'dur. Fazla kilolu grubun olumsuz DİA puanı [61,5 (29,0-126,0)] zayıf olan gruba [47,0 (31,0-97,0)] göre daha yüksektir ($p=0,007$). Kontrolsüz yeme ve duygusal yeme puanları açısından zayıf, normal kilolu, fazla kilolu ve obez gruplar arasında anlamlı fark bulunmamıştır (sırasıyla $p=0,311$, $p=0,185$). Bilişsel yeme kısıtlaması puanı normal [37,5 (0,0-75,0)] ve fazla kilolu [33,3 (8,3-62,5)] olan gruplarda zayıf gruba [20,8 (4,2-62,5)] göre daha yüksektir ($p=0,002$). **Sonuç:** Tıp öğrencileri, obezite gelişimi açısından yüksek risk altındadır. Obezitenin önlenmesi için sağlık eğitim programları ve sağlığı geliştirme faaliyetleri önerilmelidir.

Anahtar Kelimeler: Duygusal yeme; obezite; tıp öğrencileri

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Obesity is a multifactorial disease with an increasing prevalence and is affected by environmental and genetic factors. Nowadays, obesity influences more than 650 million people and it is a risk factor for mortality and metabolic and cardiovascular diseases. Nutritional habits and physical inactivity are among the environmental risk factors of obesity.[1]

University students may struggle with numerous difficulties that cause stress, such as adjusting to a new environment and people, academic pressure to succeed, and financial problems.[2] Especially medical students experience a stressful training.[3] Medical education may bring about certain changes in psychological and physical health of students at different stages.[4] These changes are mostly experienced with information overload, the restriction of social life, and difficulties in applying theoretical knowledge in practical life, which leads to psychological stress.[3]

Emotions are the basic elements of daily life that direct physiological changes and the formation of behavior by influencing cognition.[5] Moreover, nutritional behavior is mainly shaped by emotional status.[6] Emotional eating is managed by the presence of several emotions.[7] Emotional eating behavior is a psychological condition characterized by an excessive desire to eat due to sentimental changes such as depression and anxiety.[8] This behavior is a psychological support in coping with the negative emotional state of the individual.[9] Emotional eating behavior may lead to increased BMI and eating disorders.[10] Macht and Simons demonstrated that the motivation of female university students to eat increased with negative emotions (anger, tension, fear) rather than positive emotions (joy).[11]

Emotional status of university students may vary due to various psychosocial factors. It is thought that there is a relationship between increased stress levels and weight gain in the transition period from high school to college. Obesity prevalence is found to be higher in the later terms of college. For this reason, unstable emotional states of medical students due to social and psychological factors also affect their nutritional behaviors.[12] In a study conducted with the students of the Faculty of Medicine, 12% of them were overweight or obese, and negative mood was found to be effective on their eating habits.[13] Wilson et al. studied the stress levels and emotional eating status of college students, concluding that stress related emotional eating status was associated with ≥25 body mass index (BMI) in female students.[14] Obesity caused by nutritional habits of college students may lead to increased chronic and metabolic diseases. Therefore, in this study, it was aimed to determine the emotional eating behavior and obesity status that accompany the emotional states of medical students.

MATERIAL AND METHODS

DESIGN

This study was conducted to evaluate the emotional eating behavior and obesity status of voluntary students at Ankara Yıldırım Beyazıt University, Faculty of Medicine from December 2018 to April 2019 in Ankara, Turkey. With respect to preliminary study data; as a result of the power analysis using the G* Power 3.0.10 program, at least 256 samples in total were found to be sufficient with 90% power, 5% margin of error and d=0.2035 effect size (n=256). A questionnaire form consisting of two sections (8 items for demographic characteristics, 4 items for nutritional habits) was applied to the participants by face-to-face interview method by a dietitian. The study was approved by the Institutional Review Board and Ethics Committee of Ankara Yıldırım Beyazıt University (No: 2018-393, Date: 21.11.2018), and all the subjects were given written consents in accordance with the Declaration of Helsinki.

THREE-FACTOR EATING QUESTIONNAIRE-R18

The Three-factor Eating Questionnaire-R18 (TFEQ-R18) was developed to determine the degree of uncontrolled eating (9 items), emotional eating (3 items), and cognitive restraint (6 items).[15] Each of the 18 items was scored from 1 to 4, and the scores were summed for each category. The final scores were calculated as:

[(Raw score-Lowest possible raw score)/Possible raw score range] x 100

The reliability and validity of the TFEQ-R18 scale was conducted by Kıraç et al. in Turkey.[16]

EMOTIONAL APPETITE QUESTIONNAIRE

The Emotional Appetite Questionnaire (EMAQ) identifies the tendency to eat in positive and negative emotions and situations. The questionnaire, which consists of 14 positive and negative emotions and 8 positive and negative situations, was developed by Nolan et al.[6] The total EMAQ-positive score is obtained by summing the scores of positive emotions and situations and the total EMAQ-negative score is obtained by summing the scores of negative emotions and situations. The scale does not have any cutoff points about emotional eating. The reliability and validity of the EMAQ scale was conducted by Demirel et al. in Turkey.[17]

ANTHROPOMETRIC MEASUREMENTS

Anthropometric measurements (body weight, height, waist circumference, hip circumference) were taken by a trained researcher. The participants were weighed wearing light clothes without socks and shoes on a body composition analyzer. Height was measured with a stadiometer while participants standing barefoot in an upright position and the head in horizontal Frankfort plane. The waist circumference of the participants was measured from the bottom of the costal cartilage to the anterior superior iliac spine. Hip circumference measurement was taken around the widest portion of the buttocks. World Health Organization (WHO) criteria were used categorizing the waist circumference and waist/hip ratio. The BMI was calculated as 'weight (kg)/height x height (m^2)' and categorized according to the WHO criteria.[18-20]

STATISTICAL ANALYSIS

Descriptive statistics were used to determine the group included in the study. The normal distribution assumption was checked before the analysis of group differences was performed. As the results of the tests did not comply with the normal distribution, non-parametric tests were found suitable. The Kruskal-Wallis test was used for group comparisons. The Bonferroni correction was used for multiple comparisons of the variables found to be significant in the Kruskal-Wallis test. The Spearman correlation coefficient was used to examine the relationship between two non-normally distributed quantitative variables. Data analysis was performed using SPSS (The Statistical Package for Social Sciences) version 21.0.

RESULTS

This study was conducted with 88 male (34.4%) and 168 female (65.6%) medical students. The participants declared that 17.2% were current smokers and 23.4% consumed alcohol. The ratio students who had obesity in first-degree relatives were found to be 21.9%. Moreover, 57.8% of the participants stated that they were physically inactive. The frequency of eating meals and snacks three times a day was 69.9% and 11.7%, respectively. The prevalence of overweight and obesity was found to be 18.0% and 3.9%, respectively (Table 1). Additionally,

TABLE 1: Sociodemographic characteristics, health status, and nutritional habits of the participants (n=256).

	n	%
Gender		
Male	88	34.4
Female	168	65.6
Smoking status		
Current smoker	44	17.2
Non-smoker	194	75.8
Former smoker	18	7.0
Alcohol consumption		
Drinkers	60	23.4
Non-drinkers	175	68.4
Former drinkers	21	8.2
Obesity in 1st degree relatives		
Yes	56	21.9
No	200	78.1
Physical activity		
Yes	108	42.2
No	148	57.8
Body mass index		
Underweight	19	7.4
Normal	181	70.7
Overweight	46	18.0
Obese	10	3.9
Meal frequency		
Less than 3 times/day	73	28.5
3 times/day	179	69.9
More than 3 times/day	4	1.6
Snack frequency		
Less than 3 times/day	222	86.7
3 times/day	30	11.7
More than 3 times/day	4	1.6

TABLE 2: Mean ($\bar{X}$±SD) and median (minimum-maximum) age and anthropometric measurements of the students.

	Male (n: 88)					Female (n: 168)				
	$\bar{X}$	±SD	Median	Minimum	Maximum	$\bar{X}$	±SD	Median	Minimum	Maximum
Age (year)	22.19	2.07	22.0	18.0	28.0	21.67	2.04	21.0	18.0	27.0
Weight (kg)	79.50	14.02	77.5	50.0	130.0	60.25	9.89	58.8	43.0	100.0
Height (m)	1.80	0.06	1.8	1.67	1.98	1.66	0.05	1.67	1.56	1.80
BMI (kg/m^2)	24.58	3.885	24.1	16.9	39.2	21.90	3.51	21.3	16.8	38.3
Waist circumference (cm)	84.51	11.48	84.0	65.0	120.0	70.49	7.56	70.0	55.0	95.0
Hip circumference (cm)	101.84	12.64	103.5	70.0	132.0	93.67	8.32	94.0	65.0	125.0
Waist/hip ratio	0.83	0.07	0.8	0.7	1.0	0.75	0.07	0.8	0.6	1.0
Waist/height ratio	0.47	0.06	0.5	0.4	0.7	0.43	0.05	0.4	0.3	0.6

SD: Standard deviation; BMI: Body mass index.

breakfast was the most skipped meal (16.8%) of the day as compared to lunch and dinner (10.9% and 2.0%, respectively). Most of the students (84.4%) did not have any coexistent diseases such as diabetes, thyroid disorders, asthma, anemia, reflux, etc. (unshown data).

The median age of the medical male students was 22.0 (18.0-28.0) years and female students' was 21.0 (18.0-27.0) years. Median BMI was found to be 24.1 (16.9-39.2) kg/m^2 for male and 21.3 (16.8-38.3) kg/m^2 for female students. Waist circumference of male students was 84 (65.0-120.0) cm and female students' was 70.0 (55.0-95.0) cm. The median waist/hip ratio of the male participants was 0.8 (0.7-1.0) and 0.8 (0.6-1.0) for female students. Median waist/height ratio was found to be 0.5 (0.4-0.7) for men and 0.4 (0.3-0.6) for women (Table 2).

As waist circumference was classified, 20.5% of male students and 7.1% of female students were found to be at risk for obesity. Waist/hip ratio classification revealed that 17.1% of male students and 6.5% of female students were at risk for obesity. Waist/height ratio results showed that 31.8% of men and 7.7% of women should consider action in the prevention of obesity (Table 3).

Negative EMAQ score was found significantly different in terms of BMI classes (p=0.049). There was a significant difference between underweight and overweight groups (p=0.007). Negative EMAQ score of overweight group [61.5 (29.0-126.0)] was significantly higher than underweight group [47.0 (31.0-97.0)]. A significant difference was found for

TABLE 3: Classification of anthropometric measurements according to gender.

	Male (n: 88)		Female (n: 168)	
	n	%	n	%
Waist circumference				
Normal (M: <94; F: <80)	65	73.9	150	89.3
Risk (M: ≥94; F: ≥80)	18	20.5	12	7.1
High risk (M: ≥102; F: ≥88)	5	5.6	6	3.6
Waist/hip ratio				
Normal (M: <0.90; F: <0.85)	73	82.9	157	93.5
Risk (M: ≥0.90; F: ≥0.85)	15	17.1	11	6.5
Waist/height ratio				
Take care (<0.40)	8	9.1	44	26.2
Normal (0.40-0.50)	51	58.0	111	66.1
Consider action (0.50-0.60)	28	31.8	13	7.7
Take action (>0.60)	1	1.1	-	-

cognitive restriction score in terms of BMI classes (p=0.025). There was a significant difference between underweight and normal, overweight groups (p=0.002). Cognitive restraint score of normal [37.5 (0.0-75.0)] and overweight group [33.3 (8.3-62.5)] was higher than underweight group [20.8 (4.2-62.5)] (Table 4).

The EMAQ-positive score was positively associated with uncontrolled eating (r=0.222; p<0.001) and negatively associated with emotional eating (r=-0.149; p=0.017) and cognitive restraint (r=-0.264; p<0.001). The EMAQ-negative score was positively associated with uncontrolled eating (r=0.309; p<0.001) and emotional eating (r=0.601; p<0.001) (Table 5).

TABLE 4: The EMAQ and TFEQ-R18 scores of the participants according to BMI.

	Underweight (n: 19)	Normal (n: 181)	Overweight (n: 46)	Obese (n: 10)	p value
EMAQ					
Positive score	47.0 (36.0-70.0)	44.0 (8.0-72.0)	42.0 (12.0-68.0)	43.5 (36.0-62.0)	0.121
Negative score	47.0 (31.0-97.0)	56.0 (14.0-122.0)	61.5 (29.0-126.0)	59.5 (22.0-73.0)	**0.049***
TFEQ-R18					
Uncontrolled eating	25.0 (2.8-61.1)	33.3 (0.0-75.0)	36.1 (0.0-75.0)	33.3 (10.4-55.6)	0.311
Emotional eating	16.7 (0.0-75.0)	33.3 (0.0-75.0)	29.2 (0.0-75.0)	29.2 (0.0-66.7)	0.185
Cognitive restraint	20.8 (4.2-62.5)	37.5 (0.0-75.0)	33.3 (8.3-62.5)	29.2 (16.7-45.8)	**0.025***

EMAQ: Emotional Appetite Questionnaire; TFEQ-R18: Three-Factor Eating Questionnaire-R18; BMI: Body mass index;
*:p<0.05 Kruskal-Wallis H test; The table is shown as a Median (Minimum-Maximum).

DISCUSSION

This study was conducted to investigate the relationship between emotional eating behavior and obesity status of medical students. Firstly, university students face with various difficulties leading to stress during their education, which drives them to some unhealthy behaviors such as smoking, alcohol drinking, physical inactivity, sleep disorders, and unbalanced eating habits.[2] A study found out that the prevalence of tobacco smoking was 18.6% and alcohol consumption was 13.8% in medical students.[21] Similarly, in our study, 17.2% of medical students were current smokers and 23.4% were alcohol consumers, which may be a result of psychological stress.

Obesity is a major problem caused by genetic or unhealthy lifestyle behaviors. To begin with, there are several genes associated with BMI, which is used to assess obesity.[22] Tayem et al. carried out a study with 553 university students and concluded that excess BMI was associated with a family history of obesity.[23] The results of our study showed that 21.9% of students had obesity in first-degree relatives and 18.0% of students were overweight, while 3.9% were obese. These findings may indicate that obesity is heritable and genetic factors play a major role in its development. In addition to this, physical inactivity is an unhealthy lifestyle behavior which contributes to the increased BMI. A physical activity questionnaire form was applied to 100 medical and 200 non-medical students, resulting that the prevalence of physical inactivity was 49% in medical students, whereas 35% of non-medical students were physically inactive.[24] Our results are similar to previous studies as 42.2% of the students declared a sedentary lifestyle.

TABLE 5: Correlation between the EMAQ and TFEQ-R18 scores.

	EMAQ-positive score		EMAQ-negative score	
TFEQ-R18	**r value**	**p value**	**r value**	**p value**
Uncontrolled eating	0.222	**<0.001**	0.309	**<0.001**
Emotional eating	-0.149	**0.017***	0.601	**<0.001**
Cognitive restraint	-0.264	**<0.001**	0.021	0.733

*:p<0.05.
EMAQ: Emotional Appetite Questionnaire;
TFEQ-R18: Three-factor Eating Questionnaire-R18.

Medical students deal with mental and emotional distress, which affects their lifestyle habits and BMI indirectly. Asghar et al. studied the prevalence of pre-obesity and obesity in medical students, which was found to be 33.2%.[25] In another study, it was found out that among 114 medical students, 17.5% of them were overweight and 3.4% of them were obese.[3] Additionally, a study demonstrated that the prevalence of obesity was 9.64%, overweight was 25.0%, and normal weight was 65.35%. Moreover, the study resulted that obesity was higher in final part-I followed by internship in terms of education level.[26] Goswami revealed a strong association between BMI and stress in medical students in India although the prevalence of overweight and obesity was not high (15.9% and 3.6%, respectively).[4] Likewise, our study results showed that overweight and obesity status was 18.0% and 3.9%, respectively. Although the prevalence was not higher than students with normal weight, an increased risk of obesity development was observed.

Healthy eating habits have a crucial role in the prevention of obesity and its complications. For this reason, an increased BMI caused by unhealthy dietary patterns in young medical students constitutes a global health problem. An adequate frequency of meals and snacks and a balanced composition of diet play a major role in obesity development.[27] Eating habit patterns of medical students were investigated in a cross-sectional study, which revealed that 60.4% of them did not have breakfast, which is the most skipped meal. The frequency of eating meals three times or higher was 43.3% and snacking between meals three times or higher was 12.3%.[2] A study was conducted to determine the nutritional status and its comparison with nutritional habits of medical students. The study results revealed that 50.5% of the underweight students and 64.5% of the students with normal weight had breakfast every day. On the contrary, obese I and obese II class groups had a lower prevalence (16.6% and 4.3%, respectively). Furthermore, 38.3% of the normal-weight students declared they had meals three times a day. Also, the underweight group had a higher (51.6%) and the obese I (23.8%) and obese II class (17.3%) had a lower prevalence in terms of having breakfast than the normal-weight group.[25] Yılmaz et al. showed that 67.7% of medical students had meals three times a day or higher and 35.0% of them skipped breakfast.[28] The results of the current study showed that 69.9% of the students had meals three times in a day and breakfast was found to be the most skipped meal of the day. Additionally, 11.7% of them declared to have snacks 3 times/day between meals. These results are similar to previous studies and bring to light that medical students are at a risk of increased BMI as unhealthy eating patterns are observed.

It was previously stated that emotions regulate food choices and eating behavior. They may lead to several eating conditions such as hunger, thirst, overeating, etc.[29] A study showed that emotional eating of college students increased with mainly stress in female students, whereas emotional eating was triggered in men due to boredom or anxiety.[30] Furthermore, in another study, stress was associated with desire to eat motives and hunger eating motives in youngsters.[7] Medical students deal with various changes in their emotional state, which may affect their body weight. Lazarevich et al. carried out a study with 1,453 Mexican college students, which indicated that negative emotions bring about an increase in food intake.[31] Depression was associated with emotional eating and emotional eating increased with BMI in men and women. A study conducted with 723 medical students showed that stress-induced eaters had a higher prevalence of overweight and obesity (22% and 5%, respectively) than non-stress-induced eaters (13.5% and 2.5%, respectively). Especially among female students, stress was a major factor that led to a higher BMI.[2] Moreover, another study conducted with individuals with different BMI values demonstrated that the eating behaviors of underweight individuals were more in negative emotions and less in positive emotions than the normal and overweight group.[32] On the other hand, a study carried out with undergraduate students in Bahrain demonstrated that the motivation to eat changed according to a high or low arousal of emotions, which may increase in either the positive or negative emotional state. Students tended to eat less in negative emotions such as fear, sadness, anger, stress, and depression, whereas loneliness and happiness triggered sustained (45.6% and 55.0%) or increased (32.0% and 39.6%) food intake. The study emphasized that negative emotions lead to decreased motivation to eat; however, positive emotions resulted in overeating.[33] In our study, the negative EMAQ score, which indicated emotional appetite, was higher in overweight medical students, whereas the positive EMAQ score was higher in underweight students than other groups. In addition, the emotional eating score in the TFEQ-R18 scale was higher in overweight [29.2 (0.0-75.0)] and obese students [29.2 (0.0-66.7)] and lower in underweight students [16.7 (0.0-75.0)]. The results of this study may be interpreted as that the negative emotional state results in increased food intake, while positive emotions indicate the behavior of eating less. Also, negative emotions lead to higher BMI, which is an indicator of obesity.

Emotional eating behavior also consists of uncontrolled eating and cognitive restraint. Obese people are expected not to control their eating and mind

in food intake in order to lose weight, which is defined as cognitive restraint. Yousif et al. studied eating behaviors among medical students in Sudan, demonstrating that 45.8% were uncontrolled eaters, 28.7% had conscious restraints, and 25.5% were emotional eaters.[34] Another study conducted with 120 university students revealed that cognitive restraint was associated with a higher BMI. The underweight group had a lower cognitive restraint score (25.2±16.1), whereas the overweight group had a higher score (47.2±22.6) in the TFEQ-R18 scale.[35] Our study showed similar results to previous studies and a significant difference was found between the groups with respect to cognitive restraint. Moreover, it was shown that the overweight group [33.3 (8.3-62.5)] had a higher cognitive restraint score than the underweight group [20.8 (4.2-62.5)]. These results may indicate that overweight students use this strategy to prevent weight gain, although this strategy, which aims to restrict food intake, is believed to be an unsuccessful attempt to lose weight as it may not have positive outcomes and is a result of weight dissatisfaction.

The strength of this study is that assessing medical students' nutritional status, nutritional habits, and eating behaviors is a considerable public health issue as they may be at a high risk of obesity development. Also, it is of great importance since they are potential health professionals who set an example for the society. Furthermore, two independent eating behavior scales were applied and correlated with each other. The limitation of the study is that the physical activity questionnaire form could be applied to assess certain activity levels.

CONCLUSION

Medical students are at a high risk of obesity development due to their unhealthy lifestyle habits. Daily stress and emotional changes during their education lead to emotional eating and a sedentary lifestyle. For this reason, it is of great importance that health education programs and health promotion activities about obesity should be emphasized for medical students. Further studies are needed to find out other possible risks in order to prevent obesity among medical students.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

All authors contributed equally while this study preparing.

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