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Investigating perceptions of students receiving sports education towards eating habits and obesity

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Abstract

This study aims to investigate perceptions towards eating habits and obesity in students receiving sports education in Turkey. The sample consisted of 360 randomly chosen students, who received sports education at Firat University, Agri Ibrahim Cecen University, Ardahan University and Mugla Sitki Kocman University. The sample was formed by adopting the convenience sampling method. For data collection, the 'Three-factor eating questionnaire' was used. The data were analysed for normality distribution in terms of the questionnaire and its subscales, which proved that the data provided a normality distribution. 'Independent samples t-test' was conducted to evaluate the level of differentiation in terms of the independent variables of gender and taking courses about nutrition and obesity. 'One-way Variance Analysis' was conducted to evaluate the level of differentiation in the variables of grade and the universities of the participants. The development level of the location where the students lived, income levels and cultural activities affected their eating.

Keywords: Education, sports, students, obesity, eating habits.

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1. Introduction

Although several reasons underlie the emergence of obesity, the primary reason for obesity is an immobile lifestyle. Hundreds of years ago, humankind used to conduct their practices by using their bodies. Now humankind loses their mobility more every day due to the opportunities presented by technology and accordingly, many negative elements are brought along, especially health problems (Ilhan, 2010).

Obesity is a disease that negatively affects human health in terms of hormonal, metabolic, physiologic, organic, systemic, aesthetic and social aspects in addition to reducing the quality of life (Cetinkaya & Imamoglu, 2018; Serra-Paya, Ensenyat, Hernandez, Castro-Vinuales & Mur, 2017). In the development of obesity, decreases in physical activity, disorders in eating habits, number of births in women, the process of quitting smoking and alcohol use results in significant impacts (Nazlican, Demirhindi & Akbaba, 2011). In addition to the genetic tendency, social, cultural, emotional and diet-based factors play important roles in the development of obesity (Geliebter & Aversa, 2003). While obese individuals deal with the complications brought along with excess weight, they also have to deal with the psychologic and sociologic problems resulting from the negative attitudes and behaviors of others. These individuals, due to the problems they face in work, education, health, and other areas and intentional or prejudiced behaviors, experience difficult times and push themselves away from society (Yilmaz & Dinc, 2010). In a study conducted by Werkhoven, Cotton & Dudley (2018), it was emphasised that educational institutions constitute suitable locations to implement health promotion strategies and courses on nutrition and health played notable roles in attitudes of students. However, in the study, it was further stated that the assumption that courses in schools would benefit the effort to raise awareness on obesity is not grounded well in practice and further research should be conducted on the subject to investigate its influence on perceptions and attitudes of individuals who are related to the matter.

Eating is an action that should be conducted consciously in order to enable growth, protect, maintain, and develop health, to improve the quality of life and to take the nutritional elements needed by the body at sufficient amounts and in time (Arli, Sanlier, Kucukkomurler & Yaman, 2017; Saygin et al., 2011). When nutritional elements cannot regulate the needs of the body and when improper cooking methods are used, nutritional elements cannot be utilised in the body, which results in improper nutrition. Excess or lacking consumptions of the nutritional elements needed by the body affect health negatively. Balanced and sufficient eating habits are effective for people in maintaining a healthy life, being protected from diseases and improving the quality of life, while imbalanced and insufficient eating habits result in weakening of the immunity, increased risk of diseases and threatening of continuation of life (Sanlier, 2012). For individuals to be fed sufficient, qualified and quality food should be consumed. To maintain healthy lives, individuals should have sound skills and motivation about nutrition to understand how to create a proper diet and to choose a good choice of menu (Wijesinha et al., 2014).

University students are among the risk groups in terms of nutritional problems. Because childhood and adolescence periods are periods when individuals gain healthy lifestyles and eating habits, these periods have special importance. When adolescents start their university education and leave the family environment that was accustomed to as well as being more open to external factors and the effects of their own free choices, a new term starts in terms of their nutrition. The significant properties of this term are that adolescents become vulnerable to external effects due to economic problems, difficulties in making an effort to adapt to a new order to be formed, communication with many people at various ages and genders, and entering into the learning process. Adolescents can exhibit various health behaviors, such as smoking, exercising, dieting constantly and consuming alcohol (Garibagaoglu, Budak, Oner, Saglam & Nisli, 2006; Ozyazicioglu, Gokdere, Buran & Ayverdi, 2009). Especially, it cannot be stated that the importance that adolescents in university place on their education is reflected in their nutrition. University students, who are placed in the period of transitioning from adolescence to young adulthood, attempt to perform the developmental duties

that are unique to the period while dealing with the problems brought by the university life (Altin, 2015). As the time university students spend outside increases, the habits of preparing food at home and the consumption of homemade food leave their place to fast food, which more practical, easily accessible and unhealthy (Arslan, 2018).

More than 30% of the individuals who live in Turkey are obese. It is known that numerous chronic diseases are related to obesity. Therefore, investigating the factors that cause obesity is important in terms of obesity and determining suitable treatments for the complications of obesity (Kirac, et al., 2015). Most university students leave the place where they live and move to the place where they will study for knowledge, abilities and skills. University students leave the lifestyle that was familiar and become obliged to maintain a new and different lifestyle. They become deprived of traditional and healthy eating opportunities due to various reasons. In Turkey, the students who receive sports education are involved the sports life due to their profession. In this study conducted within this framework, it was aimed to reveal eating habits related to obesity in students who receive sports education. Accordingly, the following research questions were investigated:

1. What are the participants' perceptions about eating habits?
2. Are there any differences in the participants' perceptions about eating habits according to taking education about nutrition?
3. Are there any differences in the participants' perceptions about eating habits according to taking education about obesity?
4. Are there any differences in the participants' perceptions about eating habits according to grade of education?
5. Are there any differences in the participants' perceptions about eating habits according to university of education?

2. Method

2.1. Study design and sample

This study was designed according to the descriptive research principles. The sample of the study consisted of 360 randomly chosen students, who received sports education at Firat University, Agri Ibrahim Cecen University, Ardahan University and Mugla Sitki Kocman University. The reason for creating this sample group from these four universities was convenience.

2.2. Data collection tools

Within the scope of the study, the 'Three-factor Eating Questionnaire' was used to collect the data from the sample group. This scale, which is known as the 'Three-factor Eating Questionnaire (TFEQ)' in the literature, measures the eating habits of individuals (Karlsson, Persson, Sjoestroem & Sullivan, 2000). In the study conducted by Kirac et al. (2015), the scale was adopted into Turkish and the validity and reliability of the scale were proven to be used in Turkey. It was stated that the scale was suitable to be used in Turkey to investigate eating habits. In the analysis conducted, it was determined that items 1, 7, 13, 14 and 74 measured the level of uncontrolled eating, while items 4, 5, 8, and 9 measured the level of susceptibility to hunger, Thus, it was reported that the scale had four different subscales and future studies can conduct their investigations in this way.

2.3. Data analysis

The collected data was analyzed by using the SPSS 22.0 package software. For the data obtained from 380 students, the normality test was first conducted to reveal whether the 'Three-factor eating questionnaire' and its subscales assumed a normality distribution and it was observed that the data provided a normality distribution. Then, frequency and percentage calculations were conducted to

reveal the distributions of the sample group in terms of individual variables. 'Independent samples *t*-test', which is one of the parametric tests, was conducted to evaluate the level of differentiation in terms of the independent variables of gender, eating and taking courses related to obesity. 'One-way Variance Analysis', which is one of the parametric tests, was conducted to evaluate the level of differentiation in terms of the variables of grade and the university where the participants received sports education. The level of statistical significance (α error level) was regarded as $p < 0.05$. To reveal the significant differences between the variables, the LSD test was conducted.

3. Results

Within the scope of the study, the findings obtained from the perceptions of the sample group were presented below.

Table 1. The results of the independent samples t-test conducted to reveal whether there were differences in the sample group in terms of gender

Scale	Gender	*N*	X	SD	*t*-value	*p*-value
Three-factor Eating Questionnaire	Female	124	2.577	0.440	−0.996	0.320
	Male	256	2.622	0.397		
Disinhibition of Eating Control	Female	124	2.327	0.416	0.566	0.572
	Male	256	2.300	0.454		
Emotional Eating	Female	124	2.833	0.950	−2.771	**0.006***
	Male	256	3.095	0.817		
Cognitive Restraint of Eating	Female	124	2.594	0.525	0.121	0.904
	Male	256	2.587	0.515		
Susceptibility to Hunger	Female	124	2.673	0.901	−0.552	0.581
	Male	256	2.723	0.796		

*$p < 0.05$.

When Table 1 was investigated, it was determined that there were no statistically significant differences in the 'Three-factor Eating Questionnaire' ($t = 0.996$), 'Disinhibition of Eating Control' ($t = 0.566$), 'Cognitive Restraint of Eating' ($t = 0.121$) and 'Susceptibility to Hunger' ($t = -0.552$) results of the students, who received sports education, in terms of gender ($p > 0.05$). However, statistically significant differences were observed in the 'Emotional Eating' ($t = -2.771$) at a significance level of $p < 0.05$.

Table 2. The results of the independent samples t-test conducted to reveal whether there were differences in the sample group in terms of taking courses about nutrition

Scale	Nutrition courses	*N*	$\overline{X}$	SD	*t*-value	*p*-value
Three-factor Eating Questionnaire	Yes	134	2.549	0.376	−2.033	0.043*
	No	246	2.639	0.427		
Disinhibition of Eating Control	Yes	134	2.249	0.432	−1.949	0.052
	No	246	2.341	0.445		
Emotional Eating	Yes	134	3.000	0.815	−0.159	0.874
	No	246	3.014	0.901		
Cognitive Restraint of Eating	Yes	134	2.506	0.527	−2.325	0.021*
	No	246	2.634	0.508		
Susceptibility to Hunger	Yes	134	2.653	0.783	−0.939	0.349
	No	246	2.736	0.856		

*$p < 0.05$.

When Table 2 was investigated, it was determined that there were statistically significant differences in 'Three-factor Eating Questionnaire' ($t = -2.033$) and 'Cognitive Restraint of Eating' ($t = -2.325$) results of the students, who received sports education, in terms of taking lessons about

nutrition ($p < 0.05$). However, no significant differences were observed in the 'Disinhibition of Eating Control' ($t = -1.949$), 'Emotional Eating' ($t = -0.159$), and 'Susceptibility to Hunger' ($t = -0.939$) results of the students at a significance level of $p < 0.05$.

Table 3. The results of the independent samples t-test conducted to reveal whether there were differences in the sample group in terms of taking courses about obesity

Scale	Obesity Courses	*N*	X	SD	*t*-value	*p*-value
Three-factor Eating Questionnaire	Yes	75	2.577	0.431	−0.720	0.472
	No	305	2.615	0.407		
Disinhibition of Eating Control	Yes	75	2.325	0.490	0.358	0.721
	No	305	2.304	0.430		
Emotional Eating	Yes	75	3.000	0.818	−0.107	0.915
	No	305	3.012	0.884		
Cognitive Restraint of Eating	Yes	75	2.497	0.574	−1.715	0.087
	No	305	2.612	0.501		
Susceptibility to Hunger	Yes	75	2.693	0.676	−0.161	0.872
	No	305	2.710	0.866		

*$p < 0.05$.

When Table 3 was investigated, it was determined that in terms of taking lessons about obesity, there were no statistically significant differences in 'Three-factor Eating Questionnaire' ($t = 0.720$), 'Disinhibition of Eating Control' ($t = 0.358$), 'Emotional Eating' ($t = -0.107$), 'Cognitive Restraint of Eating' ($t = -0.107$), and 'Susceptibility to Hunger' ($t = -0.161$) results of the students, who received sports education, at a significance level of $p < 0.05$.

Table 4. The results of the one-way variance analysis conducted to reveal whether there were differences in the sample group in terms of grade

Scale	Grade Level	*N*	Mean	SD	*F*	*p*-value	LSD
Three-factor Eating Questionnaire	(a) 1st Grade	132	2,721	0.407	12.390	**0.000***	a>b, c d>a, c b, c
	(b) 2nd Grade	107	2.448	0.339			
	(c) 3rd Grade	106	2.677	0.406			
	(d) 4th Grade	35	2.452	0.461			
Disinhibition of Eating Control	(a) 1st Grade	132	2.359	0.455	2.773	**0.041***	b> a, c
	(b) 2nd Grade	107	2.211	0.373			
	(c) 3rd Grade	106	2.354	0.471			
	(d) 4th Grade	35	2.280	0.463			
Emotional Eating	(a) 1st Grade	132	3.214	0.842	6.784	**0.000***	a>b, d c>b, d
	(b) 2nd Grade	107	2.797	0.846			
	(c) 3rd Grade	106	3.078	0.833			
	(d) 4th Grade	35	2.676	0.951			
Cognitive Restraint of Eating	(a) 1st Grade	132	2.697	0.511	6.128	**0.000***	a>b, d c>b, d
	(b) 2nd Grade	107	2.448	0.473			
	(c) 3rd Grade	106	2.646	0.530			
	(d) 4th Grade	35	2.442	0.528			
Susceptibility to Hunger	(a) 1st Grade	132	2.842	0.873	5.295	**0.001***	a>b, d c>b, d
	(b) 2nd Grade	107	2.483	0.763			
	(c) 3rd Grade	106	2.827	0.790			
	(d) 4th Grade	35	2.514	0.837			

*$p < 0.05$.

As can be seen in Table 4, one-way analysis of variance (ANOVA) was conducted to determine whether the eating habits of students, who received sports education, differed in terms of their grade levels. As a result of the analysis, statistically significant differences were determined in the 'Three-Factor Eating Questionnaire' (F = 12.390; p < 0.05). It was also determined that there were statistically significant differences in all of the subscales, 'Disinhibition of Eating Control' (F = 2.773; p < 0.05), 'Emotional Eating' (F = 6.784; p < 0.05), 'Cognitive Restraint of Eating' (F = 6.128; p < 0.05) and 'Susceptibility to Hunger' (F = 5.295; p < 0.05).

Table 5. The results of the one-way variance analysis conducted to reveal whether there were differences in the sample group in terms of the universities where they received education

Scale	University	*N*	Mean	SD	*F*	*p*-value	LSD
Three-factor Eating Questionnaire	(a) Mugla University	87	2.596	0.400	9.567	**0.000***	a>c, d c>b, d
	(b) Ardahan University	73	2.568	0.368			
	(c) Agri Ibrahim Cecen University	114	2.761	0.420			
	(d) Firat University	106	2.479	0.393			
Disinhibition of Eating Control	(a) Mugla University	87	2.321	0.460	3.539	**0.015***	c>b, d
	(b) Ardahan University	73	2.265	0.415			
	(c) Agri Ibrahim Cecen University	114	2.407	0.460			
	(d) Firat University	106	2.222	0.408			
Emotional Eating	(a) Mugla University	87	2.896	0.939	6.278	**0.000***	c>a, b, d
	(b) Ardahan University	73	2.958	0.890			
	(c) Agri Ibrahim Cecen University	114	3.292	0.730			
	(d) Firat University	106	2.833	0.875			
Cognitive Restraint of Eating	(a) Mugla University	87	2.682	0.509	2.463	0.062	-
	(b) Ardahan University	73	2.579	0.550			
	(c) Agri Ibrahim Cecen University	114	2.619	0.521			
	(d) Firat University	106	2.487	0.487			
Susceptibility to Hunger	(a) Mugla University	87	2.586	0.850	8.304	**0.000***	c>a, b, d
	(b) Ardahan University	73	2.637	0.781			
	(c) Agri Ibrahim Cecen University	114	3.017	0.786			
	(d) Firat University	106	2.521	0.814			

*p < 0.05.

As can be seen in Table 5, one-way ANOVA was conducted to determine whether the eating habits of students, who received sports education, differed in terms of the universities where they received their education. As a result of the analysis, statistically significant differences were determined in the 'Three-Factor Eating Questionnaire' (F = 9.567; p < 0.05). It was also determined that there were statistically significant differences in the subscales of 'Disinhibition of Eating Control' (F = 3.539; p < 0.05), 'Emotional Eating' (F = 6.278; p < 0.05) and Susceptibility to Hunger (F = 8.304; p < 0.05). Furthermore, it was discovered that the students who received sports education in Agri Ibrahim Cecen University had negative eating habits. It was further discovered that the eating habits of the students constituted no statistically significant difference in the subscale of 'Cognitive Restraint of Eating' in terms of the universities where the students received their sports education (F = 2.463; p > 0.05).

4. Discussion, conclusion and recommendations

No significant difference was discovered in the three-factor eating questionnaire in terms of gender. However, significant differences were determined in the emotional eating subscale in favor of the male participants. While it was expected to observe high levels of emotional eating in women due to being filled with emotions, the results of the study revealed that male students had higher levels of

emotional eating. In fact, in the study conducted by Nalcaci (2019) and Deveci, Deveci & Avcikurt (2017), contrary to our study, it was reported that the difference between the eating habits of males and females was due to the greater tendencies of women to experience depression and anxiety disorders. The emotional status of female participants may cause more changes in their eating habits compared to male participants. This is explained by the fact that hormonal changes are more common in females compared to males, the higher incidence of depression cases in females and females' susceptibility to stressful situations compared to males (Ugur, 2008). It can be stated that female and male students have similar eating habits in terms of disinhibition of eating control, cognitive restraint of eating and susceptibility to hunger levels in addition to the fact that students who received sports education have parallel thoughts.

Significant differences were determined in the status of taking courses about nutrition in terms of the three-factor eating questionnaire according to the perceptions of the students who received sports education. Similarly, significant differences were observed in the cognitive restraint of eating factor. Because the eating styles of individuals do not only result from their knowledge about nutrition, they do not result in differences in other subscales. However, it can be stated that the students who do not take courses about nutrition and who do not have sufficient knowledge about nutrition experienced excessive restraint of eating. Receiving sufficient and correct information about nutrition will help the students, both while practicing sports activities and in other phases of life. Individuals who constantly restrain their nutritional intake may exhibit excessive eating behaviors after a certain while (Atabek, 2020; Serin and Sanlier, 2018), which may result in increases in weight (Nalcaci, 2019). In the study conducted by Urer (2005), it was revealed that the knowledge of students about nutrition was insufficient; however, there were small differences between the students who received courses about nutrition and the students who never took courses about nutrition in terms of their knowledge and eating habits. In the study conducted by Yildirim, Yildirim, Tortop & Poyraz. (2011), it was reported that 28.8% of the students received courses about nutrition; however, the rate of those who believed their knowledge about nutrition was at a sufficient level was 38%. The fact that the rate of the students who believed they had sufficient levels of knowledge about nutrition was higher than the rate of the students who received courses about nutrition indicated that the students developed themselves about nutrition education under their conditions. It was determined that the students who believed they had sufficient levels of nutritional knowledge had breakfast more regularly. Nutritional education starts at a young age in the family and it can be received by individuals under their conditions via panels, conferences, etc. as well as from formal and informal educational institutions. Additionally, the significant relationship between increases in the education level and the decreases in the frequencies of eating fries, and the relationship between the department of education and drinking cola and fizzy drinks demonstrates the importance of education in terms of eating habits, as well as any other subject (Saygin et al. 2011). In the study conducted by Erten (2006), it was reported that 27.7% of the students received courses about nutrition and the students who received the education were more careful in terms of their nutrition and number of meals. As the amount of education received about nutrition and sports increases, the students who received sports education become more careful about the food they consume, prefer healthy food more, and turn towards the regular intake of food.

No significant difference was determined in the subscales of the three-factor eating questionnaire in terms of taking courses about obesity. However, it can be interpreted that the perceptions of the students who receive courses about obesity were more positive in the subscales. Because the nature of problems about eating and obesity demands multidisciplinary approaches, it can be stated that it is impossible to deal with problems related to obesity based on information only is reflected in the perceptions of the students.

Significant differences were determined in the three-factor eating questionnaire and its subscales according to the grade level variable of the students, who received sports education. It can be stated that the students adopted a healthier, more regular and scientific eating approach, especially during the second and fourth grades at which they receive courses about nutrition. In the study conducted by

Kucuk and Agopyan (2017), it was reported that the first-grade students demonstrated lower levels of a healthy lifestyle compared to students at other grade levels, which led the researchers to emphasise the fact that the courses about health in the curriculum of the faculty of sports sciences were positively reflected after the second year of their education, which is a total of 4-year-long education.

Statistically significant differences were determined in the three-factor eating questionnaire and its subscales according to the perceptions of the students who received sports education in Mugla, Ardahan, Agri Ibrahim Cecen and Firat Universities. It was observed that the students who received sports education in Agri Ibrahim Cecen University had negative eating habits. Contrarily, it can be stated that the perceptions of the students who received sports education at Firat University were positive. It can be stated that the eating style and socioeconomic status of the cities where the universities are located in addition to the income levels of the students affect their eating habits. In fact, in the study conducted by Kucuk and Agopyan (2017), it was reported that the size of the city where the students received their university education and factors, such as transportation, the convenience of accommodation and financial conveniences, could affect students who lived in metropolitan cities.

In conclusion of the study conducted with students who receive sports education, males were more careful about their eating habits related to obesity compared to females, while the participants increased their tendencies towards consuming healthy food, gained regular eating habits and developed ideas against obesity when they were informed about obesity. The development level of the location where the students lived, income levels and cultural activities affected their eating. Within this scope, the following suggestions were presented:

- For students, informative videos about obesity and the importance of a healthy diet should be prepared and presented as public service practices.
- The significance of the problem of obesity should be emphasised further in curriculums and related educational programs.
- Future studies should pay the most attention to the income levels of students and the place where the students live (rural and urban).
- Future studies should be conducted with students who receive sports education and those who do not receive courses about nutrition and obesity.
- Studies should be conducted on the eating habits related to obesity with students who actively do sports and students who do not do sports.
- In conclusion of the study, positive differences were determined in the eating attitudes and habits of the individuals who received information about nutrition and obesity. Thus, information about nutrition should be presented to all of the students who study in universities.
- To ensure the adoption of healthy and regular eating habits in students, healthy food should be provided in dormitories and school campuses for students while developing strategies for students to consume this food.

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