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INVESTIGATION OF OBESITY AND PHYSICAL ACTIVITY ATTITUDES OF BOARDING AND REGULAR HIGH SCHOOL STUDENTS

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Abstract

Obesity is an increasing public health problem among young people as well as worldwide. Inadequate and unbalanced nutrition, lack of physical activity and unhealthy lifestyle choices are among the main causes of obesity. The aim of the study was to investigate the motivation of high school students to participate in balanced nutrition and physical activity. The study included n:178 students between the ages of 14-17 years who were studying at Hasan Aybaba Anatolian Teacher High School in Osmaniye province and who voluntarily agreed to participate in the study. The mean values of the students participating in the study were height 166.93±8.80 cm, body weight 59.02±11.80 kg and body mass index (BMI) 21.09±3.25. In addition to the personal information form, the Balanced Nutrition and Obesity Attitude Scale of High School Students (DBOTÖ) was developed by Kat Öztürk, (2021) and the Scale of Motivations to Participate in Physical Activity (FAKMÖ) was developed by Tekkurşun-Demir and Cicioğlu, (2018) for boarding (n=80) and non-boarding (n=98) students. In the evaluation of the data, the normality test was examined with the Kolmogorov Smirnov test with the SPSS programme. Since the data did not show normal distribution, Mann Witney U test was used for pairwise comparisons. There was no statistical difference in age and BMI between the demographic characteristics of boarding and non-boarding students in the study. The groups were similar. A statistically significant difference was observed in BMI, (DBOTÖ) Developing Negative Body Perception, Negative Attitudes Towards Balanced Nutrition and Obesity and Overall Total sub-dimensions according to the gender of the students ($p<0.01$). A statistically significant difference was observed in the sub-dimensions of individual reasons, environmental reasons, causelessness sub-dimensions and total scores of the scale of motivations for participation in physical activity ($p<0.01$). As a result, gender was found to be effective on body perception and nutrition attitudes. Therefore, it can be said that the concepts of nutrition and body perception are important considering the gender variable. Based on these findings, it can be said that attitudes about nutrition and obesity are shaped in different structures and these attitudes may change according to factors such as gender in the school environment. The body perception of the school administration and families, dietary patterns and healthy living behaviors emphasize the characteristics such as gender and boarding status. In boarding, a different eating habit can be developed depending on the regular diet and pathogens.

Keywords Obesity, physical activity, attitude.

JEL Codes: I12, I18, D91

INTRODUCTION

Obesity has emerged as a major public health concern worldwide (THSK, 2015). According to the World Health Organization (WHO), obesity is defined as "an abnormal or excessive accumulation of fat that poses a risk to health." Obesity is commonly assessed using the Body Mass Index (BMI), which is calculated by dividing weight by the square of height (kg/m²). Adults with a BMI above 30 are classified as obese, whereas individuals with a BMI between 25 and 30 are considered overweight (Akbaş & Özkan, 2025). Obesity is emphasized as a complex chronic condition associated with numerous adverse health outcomes that significantly increase the risk of mortality (Martínez-Vizcaíno et al., 2024). It is further underlined that obesity does not result from a single factor but rather from a complex interaction of various elements, including lifestyle, environment, and genetics (Raiman et al., 2023). The prevalence and rise of obesity observed across age groups is too substantial to be explained solely by genetic factors (Gedik, 2021). Among the primary causes of obesity are the failure to achieve adequate levels of physical activity or the lack of regular participation in such activities. Healthy nutrition and regular physical activity play a critical role in reducing the risk of obesity, and adopting these behaviors early in life creates a foundation for long-term health benefits (Şensoy & Kamuk, 2021). The ideal strategy to prevent obesity is to avoid individuals becoming overweight or obese in the first place. Such preventive measures help children adopt a healthy lifestyle (Davis et al., 2007).

Since the beginning of human existence, various methods have been developed to maintain health starting with hunting, imitating animal movements, or engaging in physical activities such as dance. With the Industrial Revolution, as the use of human labor decreased and daily life became easier, the importance of physical activity increased even further (Helvacı, 2023). Physical activity, which involves enabling movement of the human body, supports physical, emotional, social, motor, and cognitive development while maintaining energy balance and promoting a healthy life. Through participation in physical activity, individuals can enhance their quality of life and take important steps toward preventing diseases (Tekkurşun Demir, 2018).

The benefits of physical activity include supporting the musculoskeletal system (muscles, cartilage, bones, tendons, ligaments), strengthening cardiovascular and respiratory functions, increasing muscle strength and performance, boosting the immune system, and maintaining proper posture (Öztel, 2023). Today, as children's levels of physical activity decrease, sedentary lifestyles are becoming more prevalent. This highlights the importance of providing adolescents with an environment that promotes healthy living. However, this process requires a multifactorial approach that involves both children and their families (Yüksel & Akıl, 2019).

The aim of this study is to examine the attitudes of high school students both those attending boarding schools and those who do not toward obesity and physical activity. Boarding schools may provide different social dynamics compared to traditional schools, potentially influencing attitudes toward physical activity. The structure and support within educational environments can significantly shape students' willingness to participate in physical activities. Conversely, despite the challenges faced by obese adolescents, targeted interventions may effectively improve their attitudes and participation in physical activities, emphasizing the potential for positive change through supportive educational frameworks.

1. METHOD

1.1. Study Group

The population of this study consists of students enrolled at Osmaniye Hasan Aybaba Anatolian Teacher High School, which is affiliated with the Provincial Directorate of National Education in the central district of Osmaniye. The study group includes 9th, 10th, 11th, and 12th grade male and female students who voluntarily agreed to participate in the research. The study procedures were conducted in accordance with the approval of the Osmaniye Korkut Ata University Social Sciences Research and Publication Ethics Committee, dated 23.01.2024 and registered under decision number 2024/1/19 (E.157946).

1.2. Data Collection

A personal information form developed by the researchers was used as the data collection tool. This form included items regarding students' demographic characteristics, school type, whether they pay attention to their diet, BMI, and whether they actively engage in sports, among others. Informed consent forms were

obtained from the parents of all students included in the study. Additionally, the Balanced Nutrition and Obesity Attitude Scale for High School Students and the Physical Activity Participation Motivation Scale were administered.

Balanced Nutrition and Obesity Attitude Scale for High School Students (DBOTÖ) developed by Kat Öztürk (2021), the scale uses a five-point Likert-type rating: "Strongly Disagree," "Disagree," "Neutral," "Agree," and "Strongly Agree." The first factor was named "Developing Negative Body Image", with a reliability coefficient of α = 0.792, indicating high reliability. The second factor was labeled "Negative Attitudes Toward Balanced Nutrition and Obesity", with α = 0.721, also indicating high reliability. The third factor, named "Negative Behaviors in Weight Control", demonstrated high reliability with α = 0.702. In our study, reliability analysis (α=0.53) was found.

Physical Activity Participation Motivation Scale Items (FAKMÖ) are rated on a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." Items 3, 9, 13, 14, 15, and 16 are reverse-coded. Items 1–6 constitute the Individual Reasons subscale, items 7–12 form the Environmental Reasons subscale, and items 13–16 represent the Lack of Motivation subscale. The 16-item scale explains 54.69% of the total variance. The minimum possible score is 16 and the maximum is 80. Higher scores indicate stronger motivation to participate in physical activity. Accordingly, FAKMÖ scores between 1–16 indicate very low, 17–32 low, 33–48 moderate, 49–64 high, and 65–80 very high physical activity participation motivation. Spearman Brown's two-half reliability coefficients range from .76 to .89. (Tekkurşun Demir & Cicioğlu, 2018). In our study, reliability analysis (α=0.88) was found.

1.3. Data Analysis

IBM SPSS 26.0 software was used for data analysis. Raw data obtained from the questionnaire were first examined using descriptive statistics based on data types. To assess whether the data met the normality assumption, the Kolmogorov–Smirnov test was applied for analyses involving independent variables (Ş. Büyüköztürk, Çokluk, & Köklü, 2011). The results indicated that the data did not show a normal distribution. Therefore, the Mann–Whitney U test was employed for comparisons between two independent groups. Significance levels of 0.05 and 0.01 were used for evaluating the statistical test results.

2. FINDINGS

Of the participants, 70.8% were female (n = 126) and 29.2% were male (n = 52). Additionally, 44.9% (n = 80) attended a boarding school, while 55.1% (n = 98) attended a regular school.

Table 1. Demographic Characteristics of the Participants

Variables	Group	N	%
Gender	Female	126	70.8
	Male	52	29.2
School Type	Boarding	80	44.9
	Regular	98	55.1
Do you pay attention to your nutrition?	Yes	96	53.9
	No	82	46.1
BMI	Underweight	39	21.9
	Normal	112	62.9
	Overweight	23	12.9
	Obese	4	2.2

A total of 53.9% of the students (n = 96) reported paying attention to their diet, whereas 46.1% (n = 82) reported that they did not. Based on BMI classification, 21.9% (n = 39) were underweight, 62.9% (n = 112) were of normal weight, 12.9% (n = 23) were overweight, and 2.2% (n = 4) were classified as obese.

Table 2. Comparison of Physical Characteristics of Boarding and Non-Boarding Students

Variables	School Type	N	Mean Rank	Sum of Ranks	MWU	z	p
Age (years)	Boarding	80	84.89	6791.00	3551.0	-1.135	0.25
	Non-boarding	98	93.27	9140.00			
	Total	178					
Body Mass Index (BMI)	Boarding	80	95.29	7623.00	3457.0	-1.354	0.17
	Non-boarding	98	84.78	8308.00			
	Total	178					

$p < .05$ indicates a statistically significant difference; $p < .01$ indicates a highly significant difference. MWU = Mann–Whitney U.

As shown in Table 2, the mean rank for age was 84.89 among boarding students and 93.27 among non-boarding students. The Mann–Whitney U test revealed that this difference was not statistically significant. Regarding BMI, the mean rank was 95.29 for boarding students and 84.78 for non-boarding students. This difference was also not statistically significant. Overall, participants' age and BMI values did not show significant differences according to school type ($p > .05$).

Table 3. Comparison of BMI, DBOTÖ, and Its Subdimensions by Gender

Variables	Gender	N	Mean Rank	Sum of Ranks	MWU	z	p
BMI	Female	126	83.70	1054.50	2545.500	-2.337	0.019**
	Male	52	103.55	538.50			
	Total	178					
DBOTÖ – Negative Body Image Development	Female	126	97.45	1227.00	2274.000	-3.244	0.001**
	Male	52	70.23	365.00			
	Total	178					
DBOTÖ – Negative Attitudes Toward Balanced Nutrition and Obesity	Female	126	94.66	1192.50	2625.500	-2.094	0.036*
	Male	52	76.99	400.50			
	Total	178					
DBOTÖ – Negative Behaviors in Weight Control	Female	126	91.04	1147.50	3081.500	-0.650	0.516
	Male	52	85.76	445.50			
	Total	178					
DBOTÖ – Total Score	Female	126	96.65	1217.50	2374.500	-2.888	0.004**
	Male	52	72.16	375.50			
	Total	178					

$p < .05$ indicates a statistically significant difference; $p < .01$ indicates a highly significant difference. MWU = Mann–Whitney U.

According to Table 3, the mean rank of BMI scores was 83.70 for females and 103.55 for males. Male students had significantly higher BMI levels than female students, $U = 2545.50$, $z = –2.34$, $p = .019$.

For the DBOTÖ subdimension *Negative Body Image Development*, females (mean rank = 97.45) scored significantly higher than males (mean rank = 70.23), $U = 2274.00$, $z = –3.24$, $p = .001$.

In the subdimension *Negative Attitudes Toward Balanced Nutrition and Obesity*, female students (mean rank = 94.66) also scored significantly higher than male students (mean rank = 76.99), $U = 2625.50$, $z = –2.09$, $p = .036$.

For the subdimension *Negative Behaviors in Weight Control*, no significant gender difference was found, $U = 3081.50$, $z = –0.65$, $p = .516$.

In terms of the *DBOTÖ Total Score*, the mean rank for females was 96.65, whereas it was 72.16 for males. Female students scored significantly higher in overall attitudes compared to males, $U = 2374.50$, $z = –2.89$, $p = .004$.

Table 4. Comparison of BMI, FAKMÖ, and Its Subdimensions According to Students' Participation in Physical Activity

Variables	Physical Activity	N	Mean Rank	Sum of Ranks	MWU	z	p
	Yes	122	90.35	11022.50	3312.500	-0.324	0.746
BMI	No	56	87.65	4908.50			
	Total	178					
	Yes	122	101.83	12423.50	1911.500	-4.734	0.000**
FAKMÖ – Individual Reasons	No	56	62.63	3507.50			
	Total	178					
	Yes	122	99.56	12146.00	2189.000	-3.850	0.000**
FAKMÖ – Environmental Reasons	No	56	67.59	3785.00			
	Total	178					
	Yes	122	102.35	12486.50	1848.500	-4.954	0.000**
FAKMÖ – Lack of Motivation	No	56	61.51	3444.50			
	Total	178					
	Yes	122	103.90	12675.50	1659.500	-5.505	0.000**
FAKMÖ – Total Score	No	56	58.13	3255.50			
	Total	178					

Note. $p < .05$ indicates a statistically significant difference; $p < .01$ indicates a highly significant difference. MWU = Mann–Whitney U.

According to Table 4, no significant difference was found between individuals who engage in physical activity (mean rank = 90.35) and those who do not (mean rank = 87.65) in terms of BMI, $U = 3312.50$, $z = –0.32$, $p = .746$. However, individuals who participate in physical activity scored significantly higher than non-participants in all subdimensions of the Physical Activity Participation Motivation Scale as well as in its total score ($p < .001$), indicating more positive motivation levels among physically active students.

DISCUSSION AND CONCLUSON

The findings of this study provide important insights into the interaction between students' nutritional habits, body mass index (BMI), gender, school type, and nutritional awareness. Gender-based differences in nutritional behaviors were particularly evident. Female students more frequently reported paying attention to their diet (53.9%). Existing research similarly indicates that females are more likely to fall within the normal-weight range, whereas males demonstrate higher rates

of overweight and obesity (Behera & Gartia, 2023). Studies also show that students in boarding schools tend to have more structured meal times, which may contribute to healthier eating patterns (Kara, 2019). In the present study, 62.9% of students were classified as normal weight, 21.9% as underweight, and 15.1% as overweight or obese. These findings align with prior evidence suggesting that unhealthy dietary habits and sedentary lifestyles contribute to increasing obesity rates among adolescents (Aljuaid et al., 2020; Dekan et al., 2022).

A total of 178 students participated, including 80 boarding and 98 non-boarding students. The analysis showed that boarding students had a lower mean age rank (84.89) compared to non-boarding students (93.27). Similarly, their sum of ranks (6791.00 vs. 9140.00) was lower. However, the Mann–Whitney U test result ($U = 3551.0$, $z = –1.135$, $p = .25$) indicated that this difference was not statistically significant. Regarding BMI, boarding students had a slightly higher mean rank (95.29) than non-boarding students (84.78), but this difference was also not significant ($U = 3457.0$, $z = –1.354$, $p = .17$). Overall, no statistically significant differences emerged between boarding and non-boarding students in terms of age or BMI. The comparatively higher BMI ranking among boarding students may represent an area for future investigation. Subsequent research should aim to replicate these findings using more robust methodological approaches to better understand the health profiles of these student groups.

The analysis of gender differences in body image and related behaviors revealed meaningful distinctions, particularly in BMI and negative body image attitudes. Female students tended to report more negative perceptions regarding body image and nutrition than males. This outcome highlights the need for interventions that specifically address body image concerns among adolescent girls. Similar studies have shown that females generally report more negative attitudes toward body image and obesity compared to males, with significantly higher mean ranks across related scales (Jach & Kryston, 2021). In the current study, females scored substantially higher on the Negative Body Image Development subdimension (97.45 vs. 70.23), indicating a critical area for intervention. Although the differences in Negative Behaviors in Weight Control were not statistically significant, female students still reported more negative behaviors than males, consistent with past literature suggesting that girls may engage in more maladaptive weight control practices (Lee & Duck, 2011). These findings underscore the importance of implementing school-based programs aimed at improving body image and nutritional awareness among female students (Esin & Akgül, 2024). At the same time, although less frequently discussed, it is important to acknowledge that male students may also experience pressures related to body image.

The analysis of physical activity and BMI revealed patterns consistent with the broader literature. Numerous studies indicate that individuals who engage in regular physical activity tend to have lower BMI values, whereas those with sedentary lifestyles exhibit higher BMI levels (Churillave et al., 2018). Higher levels of physical activity are associated with lower BMI because insufficient movement contributes to increased risks of overweight and obesity (Ramadhania et al., 2024). Innovative methods for measuring physical activity, such as wearable devices and self-reports, continue to enhance our understanding of activity levels and their impact on BMI (Pavlovič et al., 2024). Evidence also shows significant BMI differences between active and inactive individuals, reinforcing the need for targeted interventions (Ramadhania et al., 2024).

Although the present study did not identify a statistically significant difference in BMI between physically active and inactive students, physical activity participation was strongly associated with higher motivation across all subdimensions of the Physical Activity Participation Motivation Scale. This suggests that students who are already physically active possess more favorable motivational profiles, which may support the adoption and maintenance of healthier lifestyles.

It is important to consider that BMI outcomes are influenced not only by physical activity but also by diet, genetics, and socioeconomic status. Therefore, comprehensive health promotion strategies should adopt a multidimensional approach. The broader literature consistently demonstrates that regular physical activity contributes to weight management, reduces the prevalence of chronic diseases, and enhances overall well-being. Cohort studies show that students who engage in recommended levels of physical activity experience improvements in BMI and general health outcomes (Faúndez-Casanova et al., 2024). Increased physical activity has also been linked to greater life satisfaction, highlighting its holistic benefits for both physical and mental health (Faúndez-Casanova et al., 2024). Conversely, the rising trend of sedentary

behavior among adolescents presents a significant challenge and underscores the need for targeted interventions to promote active lifestyles, particularly in youth populations, in order to combat obesity and enhance overall well-being.

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