

Relationship Between Obesity Awareness and Nutrition Attitude: A Sectional Study Among Secondary School Students

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Abstract

This study was **aimed** to identify the relationship between obesity awareness and nutrition attitudes among secondary school students.

Methods. This descriptive research was conducted between April and June 2022 and involved 625 secondary school students of a province in Eastern Turkey. The data were collected using a question form consisting of a questionnaire, the Obesity Awareness Scale (OAS), and the Attitude Scale for Healthy Nutrition (ASHN). One-way ANOVA, independent sample t-test, Pearson correlation, and regression analysis were used to interpret the data.

Results. There was a balanced distribution of descriptive characteristics among the study population. In this study, age and grade level were effective on the ASHN and OAS. Additionally, there were significant differences in the OAS score only by gender; however, the ASHN value significantly depended on weight assessment status, regular eating, and body mass index variables. Although there was a considerable deviation observed within the assessed sample regarding unhealthy behaviors, average time spent per day on the computer, phone, or television was approximately one hour. Although the study population had a positive attitude towards healthy eating and a high awareness of obesity, it was seen that students consumed junk food twice per day and fast food once a week on average. A regression analysis revealed a significant negative impact of time spent per day on the phone and junk food consumption on the ASHN; however, regular eating and OAS had positive effects.

Conclusions. As students' attitudes towards healthy nutrition increased, their levels of obesity awareness increased as well. Unhealthy lifestyle factors such as phone usage and junk food intake negatively affected healthy eating attitudes.

Keywords

Obesity; Nutrition; Health Education; Body Mass Index; Lifestyle

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Introduction

Obesity is defined as a body mass index (BMI) ≥ 30 and is considered as one of the fastest growing health concerns in the modern world [1]. Although obesity has health consequences primarily in adulthood, the underlying causes of the disease can often be traced back to childhood [2]. Obesity in childhood increases the risk of hypertension,

cardiovascular diseases, diabetes mellitus, lung function impairment, and mental health problems in adulthood [3]. Globally, the number of overweight and obese children and adolescents (aged 5 to 19 years) has increased tenfold in the past four decades [4]. According to a systematic study of the Global Burden of Disease, obesity prevalence has doubled in more than 70 countries since 1980, and 107.7 million children were estimated to be obese in 2015 [5]. According to the 2019 Turkey Nutrition and Health Survey (TBSA) results, the prevalence of obesity in Turkey was found to be 31.5% in individuals aged 15 years and over [6].

The increasing prevalence of childhood obesity is associated with the development of many serious obesity-related comorbidities over time, posing a substantial bur-

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den on the healthcare system [7]. The majority of obese adolescents remain obese as they transition into adulthood, resulting in an increased risk of morbidity and mortality later in life [8].

There are a lot of risk factors for obesity in children and adolescents, and one of them is the individual's attitude towards healthy eating [9]. A healthy nutrition in childhood can be one of the most determining factors in human health and is a well-known growth and development promoter [10]. The goal of healthy nutrition is to provide adequate and balanced nutrition [11]. It has been determined that children and adolescents consume more snacks, sugar-sweetened beverages, fast food, eat while watching TV, skip breakfast, have less time to eat with their families, and have less daily milk, fruit, and vegetable intake [12, 13]. Healthy eating is defined as a diet that is low in fat, high in fiber, fruit, and vegetable consumption, that meets all the nutrients needed in adequate amounts, considering the age, gender, and physiological condition of the individual [10]. However, with the idea of being free, adolescents may exhibit unhealthy eating attitudes resulting from resisting family recommendations, economic problems, skipping main meals, perceiving feeding as nutrition, and thin appearance as synonymous with looking beautiful [14].

Attitude is generally defined as the possible behavior that a person is expected to display in the face of a phenomenon, event, or situation [15]. Nutritional attitudes are emotional, motivational, perceptual, and cognitive beliefs that affect an individual's behavior [16]. Nutritional knowledge and attitudes are important determinants of overweight and obesity. There are limited studies on the relationship between obesity awareness and obesity among adolescents. However, the assessment of the knowledge, attitude, and awareness levels of this focus group regarding both nutrition and obesity is essential for the implementation of health policies aimed at reducing the prevalence of obesity [9, 17].

Therefore, **the purpose of this study** was to determine the relationship between obesity awareness and nutrition attitudes among secondary school students.

Materials and Methods

Study Design and Population

This descriptive study was carried out between April and June 2022 and involved population of 751 students attending Müşir Zeki Secondary School affiliated to the Erzincan Provincial Directorate of National Education. Inclusion criteria were as follows: to be a student of the school where the research is conducted; to participate in the research voluntarily with written consent forms from the participants and their parents; no history of chronic diseases; no regular use of medications; age of 10 to 14 years. A total of 625 students who met the study inclusion criteria were finally included in the sample on the day the data collection forms were distributed.

Data Collection Tools

Question Form

As part of this form, participants were asked to answer questions regarding their grade, age, gender, weight assessment status, current status of weight loss attempts, regularity of eating, time spent per day on the computer (min), time spent per day on the phone (min), time spent per day on television (min), amount of junk food consumed per day, amount of fast food consumed per week (hamburger, pizza, etc.)

Attitude Scale for Healthy Nutrition (ASHN)

The scale was developed to assess students' attitudes towards healthy nutrition [14]. As a five-point Likert-type scale, it includes 21 items and four sub-dimensions: "Information on Nutrition", "Emotion for Nutrition", "Positive Nutrition", and "Malnutrition". On the scale, the lowest score obtained is 21 and the highest score is 105. The students' attitudes towards healthy nutrition were categorized as follows: 21 points for "very low", 23-42 points for "low", 43-63 points for "medium", 64-84 points for "high", and 85-105 points for "ideally high". The 6-11th and 17-21th items of the scale were coded reversely. Cronbach's alpha coefficient values were determined to be 0.90 for the Information on Nutrition (IN) factor, 0.84 for the Emotion for Nutrition factor (EN), 0.75 for the Positive Nutrition (PN) factor, and 0.83 for the Malnutrition (MP) factor [14]. In this study, Cronbach alpha coefficient values were found to be 0.88 for the IN, 0.70 for the EN, 0.79 for the PN, and 0.74 for the MP.

Obesity Awareness Scale (OAS)

The scale consisting of 21 items and three sub-dimensions was developed to assess participants' awareness of obesity [18]. As part of this scale, three sub-dimensions were included: "Obesity Awareness" (1st, 3rd, 4th, 6th, 7th, 9th, 10th, 20th, and 21st items), "Nutrition Awareness" (2nd, 5th, 8th, 11th, 12th, and 14th items), and "Physical Activity Awareness" (13th, 16th-19th items). Cronbach alpha value of the scale was found to be 0.87 [18]. In this study, Cronbach alpha coefficient was determined to be 0.88.

Ethical Principles of the Study

Prior to conducting the research, ethics approval dated March 25, 2022 and numbered 03/07 was obtained from the Human Research Ethics Committee. Then, the institutional permission dated April 20, 2022 and numbered E-162997 was obtained from the Provincial Directorate of National Education. Written and verbal consent was obtained from all participants as well as their parents, ensuring compliance with the Informed Consent Principle. Once the students who participated in the study were informed about the research, it was explained that they were free to participate or not and that their personal information would not be disclosed to others and used anywhere else, and that they had the right to withdraw from the study at any time.

Data Collection

Upon obtaining approval from the Ethics Committee and the institution, the informed consent was distributed among

parents. Data collection took place in a face-to-face classroom environment after explaining the research's purpose, data protection, and voluntary participation, and receiving informed consent from parents and students. Initially, anthropometric data (height and weight) were recorded, followed by the completion of questionnaires. The entire process took an average of 10-15 minutes and adhered to the schedule developed by the school administrator.

Height Measurement

Using a fixed stadiometer measuring with 0.5 cm precision, students were measured standing upright and looking forward, paying particular attention to their head in the Frankfort plane, without shoes and heels touching the wall.

Body Weight Measurement

Weight measurements were performed with a scale (DENSI-S200) measuring with a sensitivity of 0.1 kg, paying special attention to the flat and hard surfaces on which the weighing instrument was to be placed. Special attention was paid to ensuring that students wore the bare minimum of clothing. As part of the measurement, the student was in an upright and immobile position, without taking any force from anywhere and leaning on any surface, taking care to place the weighing instrument on a flat and hard surface.

Body Mass Index (BMI)

BMI values were calculated by dividing the weight (kg) by the square of the height (cm). The values obtained were evaluated with reference to the World Health Organization z-score classification. According to the Nelson classification, BMI is categorized as follows: < 5th percentile – “very weak”; ≥ 5th - < 15th percentile – “weak”; ≥ 15th - < 85th percentile – “normal”; ≥ 85th - < 95th percentile – “overweight”, or “slightly obese”; ≥ 95th percentile – “obese” [19].

Statistical Analysis

The data were analyzed using SPSS 25.0 software package. Data distribution normality was assessed using the Shao's method. Descriptive parameters were expressed as percentages or means ± standard deviation (Mean ± SD) depending on the data type. Statistical assessments included sample t-tests, one-way ANOVA, Pearson correlation, and regression analysis. The Tamhane's and Bonferroni tests were conducted to identify the group responsible for significant differences resulting from the one-way ANOVA test. The level of statistical significance for all tests was set at 0.05.

Results

A summary of the students' descriptive characteristics is presented in Table 1. There was a balanced distribution of age, gender, and grade level among the sample of secondary school students included in the study. The majority of students (68.8%) were categorized as having normal weight, and a significant proportion reported that they were not trying to lose weight (68.3%) and were eating regularly (61.0%). In this study, it was found that the descriptive features (age, grade level, weight assessment status,

and regular eating), and BMI variables were effective on the mean ASHN score, while age, gender, and grade level were effective variables on the mean OAS score. In addition, average time spent per day on the computer, phone, or television was approximately one hour, although there was a considerable deviation observed within the assessed sample. The students included in the study had a positive attitude towards healthy eating and a high awareness of obesity; it was, however, seen that they consumed junk food twice per day and fast food once a week on average.

The mean and total ASHN and OAS scores as well as their respective sub-dimensions are presented in Table 2. On the ASHN scale, students achieved the highest mean score on the “Information on Nutrition” subscale and the lowest score on the “Emotion for Nutrition” subscale. On the OAS scale, the highest mean score was observed on the “Obesity Awareness” subscale, followed closely by the “Nutrition Awareness” subscale, while the lowest score was recorded on the “Physical Activity” sub-dimension.

The results of the Pearson correlation analysis for the relationship between the students' ASHN, OAS mean scores and some parameters are presented in Table 3. There were no significant correlations between the OAS and assessed unhealthy daily activities and habits. However, the ASHN showed weak positive correlations with the OAS and weak negative associations with unhealthy eating habits and time spent per day on the phone, while the amount of weekly consumed fast food did not significantly correlate with time spent per day on television.

According to the regression analysis results (Table 4), the assessed descriptive characteristics explained 18.1% of the variation in the ASHN scores. However, only regular eating, time spent per day on the phone (min), amount of junk food consumed per day, and OAS score had statistically significant influence on the ASHN score ($p < 0.05$). The established model had no autocorrelation issue. Durbin W value was between 1.5 and 2.5.

Discussion

The purpose of this study was to determine the relationship between obesity awareness and nutritional attitude among secondary school students and the findings were discussed in the context of the relevant literature.

As students' age and grade level increase, their awareness of healthy eating attitudes and obesity decreases. The results of a study conducted with adolescents in Turkey indicate that positive eating attitudes decrease with age [17]. A study conducted in the Philippines has found that attitudes towards healthy eating decrease as age and grade level increase [20]. Although parents determine their children's nutrition, adolescence is a time during which the sense of autonomy increases and a sense of parental control over the choice of food decreases. Furthermore, adolescents' exposure to peer attitudes and media pressure affects their eating behaviors. Therefore, restaurants serving fast food items that contribute to obesity are more popular [21].

According to the study, female students had a higher awareness level of obesity than male students. However, a study by Yıldırım *et al.* (2022) among high school stu-

Table 1. Descriptive characteristics of students.

		n	%	ASHN		OAS	
				Mean ± SD	p	Mean ± SD	p
Age, years	11 ^a	156	25	74.23±11.98	p<0.001 a>c, d	58.07±9.40	p<0.001 d<a, b, c
	12 ^b	171	27.3	71.76±11.42		57.99±9.77	
	13 ^c	187	29.9	70.99±11.09		57.12±10.81	
	14 ^d	111	17.8	67.54±10.36		52.52±13.45	
Gender	Female	299	47.8	72.06±11.95	p=0.165	58.39±8.83	p=0.001
	Male	326	52.2	70.79±10.98		55.30±12.33	
Grade	Grade 5 ^a	164	26.3	73.78±11.80	p=0.001 a>c, d	57.78±8.99	p=0.002 a, b>d
	Grade 6 ^b	150	24.0	72.48±11.66		58.35±10.10	
	Grade 7 ^c	157	25.1	70.14±10.88		56.95±11.14	
	Grade 8 ^d	154	24.6	69.10±10.98		54.01±12.70	
Weight assessment status	Underweight ^a	112	17.9	70.64±11.07	p=0.018 b>c	57.46±11.87	p=0.156
	Normal ^b	430	68.8	72.17±11.33		56.25±10.62	
	Overweight ^c	83	13.3	68.43±12.27		58.59±10.86	
Current status of weight loss attempts	Yes	198	31.7	70.36±11.80	p=0.124	56.99±10.43	p=0.742
	No	427	68.3	71.88±11.29		56.68±11.12	
Regular eating	Yes	381	61.0	73.07±11.92	p<0.001	57.43±11.17	p=0.061
	No	244	39.0	68.78±10.20		55.76±10.40	
BMI percentile	Too Underweight ^a	32	5.1	70.09±10.36	p=0.029 e<d<c<b	56.06±7.76	p=0.273
	Underweight ^b	200	32.0	72.64±10.76		57.92±9.72	
	Normal ^c	297	47.5	71.64±12.01		55.92±11.35	
	Overweight ^d	85	13.6	69.04±10.68		57.65±12.29	
	Obese ^e	11	1.8	64.27±14.03		54.54±14.27	
						Min-Max	Mean ± SD
Time spent per day on the computer (min)						0-600	57.44±81.05
Time spent per day on the phone (min)						0-600	104.15±92.16
Time spent per day on television (min)						0-360	70.90±65.37
Amount of junk food consumed per day						0-17	2.37±2.16
Amount of fast food consumed per week (hamburger, pizza, etc.)						0-17	1.58±1.81

Notes: BMI – Body Mass Index; OAS – the Obesity Awareness Scale; ASHN – the Attitude Scale for Healthy Nutrition; the expressions in the p-value column reflect the outcomes of the post-hoc analysis.

dents found that although there were no differences in obesity awareness levels by gender, female students had higher levels of awareness than male students [22]. Sümen *et al.* determined that female students had a greater awareness of obesity than male students [17]. In a study conducted by Pencil *et al.* among secondary school students, there was no difference in obesity awareness levels by gender; however, female students had higher awareness levels [23]. Based on a study conducted by Tozoğlu *et al.*, a stronger relationship existed between obesity bias and body perception in females than in males [24]. Thus, our results can

be interpreted by the fact that female students pay more attention to their external appearance and have a strong desire to be liked during their adolescence [17, 23, 24].

An unhealthy diet is an important health risk factor, especially for adolescents who are in the period of rapid physical growth. The study found that positive attitudes were higher among students who rated their weight as normal compared to those who rated their weight as overweight. According to a study conducted by Sümen *et al.*, 49.9% of students perceived their weight as normal [17]. Those who perceived their weight as normal had a more positive

Table 2. Total and mean sub-dimension scores on the Attitude Scale for Healthy Nutrition and Obesity Awareness Scale.

Scale	Min-Max	Mean ± SD	Skewness	Kurtosis
ASHN total score	37-103	71.40±11.47	-0.074	-0.146
Information on Nutrition	5-25	19.11±5.04	-1.028	0.675
Emotion for Nutrition	6-30	16.91±5.08	0.255	-0.1
Positive Nutrition habit	5-25	17.72±4.89	-0.584	-0.153
Malnutrition habit	5-25	17.65±4.75	-0.564	-0.157
OAS total score	20-80	56.78±10.90	-0.818	1.482
Obesity Awareness	9-39	24.56±5.03	-0.355	0.826
Nutrition Awareness	6-24	17.73±3.94	-0.837	0.726
Physical Activity	5-20	14.47±3.31	-0.66	0.503

Notes: OAS – the Obesity Awareness Scale; ASHN – the Attitude Scale for Healthy Nutrition.

Table 3. Correlation analysis of students’ scores on the Attitude Scale for Healthy Nutrition, Obesity Awareness Scale, and lifestyle factors.

	ASHN	OAS	Time spent per day on the computer	Time spent per day on the phone	Time spent per day on television	Amount of junk food consumed per day
OAS	0.304*	1				
Time spent per day on the computer	-0.076	-0.003	1			
Time spent per day on the phone	-0.218*	-0.025	0.216*	1		
Time spent per day on television	0.032	0.031	0.060	0.074	1	
Amount of junk food consumed per day	-0.179*	-0.053	0.218*	0.183*	0.122*	1
Amount of fast food consumed per week	-0.105*	-0.068	0.174*	0.192*	0.013	0.298*

Notes: * – correlation is significant at the 0.01 level (Pearson correlation; 2-tailed); ASHN – the Attitude Scale for Healthy Nutrition; OAS – the Obesity Awareness Scale.

Table 4. Multiple regression results of the effect of descriptive characteristics and the Obesity Awareness Scale on the Attitude Scale for Healthy Nutrition (n=625).

Model	B	Std. Error	Beta	t	p	VIF	95% CI	
							Lower	Upper
Constant*	70.173	14.768		4.752	<0.001		41.171	99.175
Age, years	-1.406	1.037	-0.128	-1.355	0.176	6.837	-3.443	0.631
Gender								
= Female	0.839	0.876	0.037	0.958	0.338	1.109	-0.88	2.559
= Male	Ref.							
Grade								
= Grade 5	-0.417	2.972	-0.016	-0.140	0.888	9.911	-6.254	5.419
= Grade 6	-0.881	2.139	-0.033	-0.412	0.68	4.838	-5.081	3.319
= Grade 7	-0.537	1.532	-0.020	-0.351	0.726	2.560	-3.546	2.471
= Grade 8	Ref.							
Weight assessment status								
= Underweight	0.327	1.803	0.011	0.181	0.856	2.774	-3.215	3.868
= Normal	2.158	1.431	0.087	1.508	0.132	2.549	-0.652	4.969
= Overweight	Ref.							
Current status of weight loss attempts								
= Yes	-1.552	1.012	-0.063	-1.533	0.126	1.286	-3.539	0.436
= No	Ref.							
Regular eating								
= Yes	3.042	0.885	0.129	3.437	0.001	1.081	1.304	4.779
= No	Ref.							
BMI percentile								
= Group 1	1.469	3.971	0.028	0.370	0.712	4.442	-6.330	9.267
= Group 2	3.347	3.509	0.136	0.954	0.341	15.534	-3.544	10.238
= Group 3	3.255	3.402	0.142	0.957	0.339	16.738	-3.426	9.936
= Group 4	1.693	3.460	0.051	0.489	0.625	8.155	-5.101	8.487
= Group 5	Ref.							
Time spent per day on the computer (min)	0.002	0.006	0.012	0.312	0.755	1.154	-0.009	0.013
Time spent per day on the phone (min)	-0.019	0.005	-0.149	-3.719	<0.001	1.218	-0.028	-0.009
Time spent per day on television (min)	0.007	0.007	0.041	1.085	0.279	1.104	-0.006	0.020
Amount of junk food consumed per day	-0.69	0.211	-0.13	-3.264	<0.001	1.212	-1.105	-0.275
Amount of fast food consumed per week (hamburger, pizza, etc.)	-0.075	0.248	-0.012	-0.304	0.761	1.170	-0.563	0.412
OAS total score	0.281	0.04	0.267	7.083	<0.001	1.086	0.203	0.359

Notes: Dependent Variables: ASHN – the Attitude Scale for Healthy Nutrition; R² – 0.206; Adjusted R² – 0.181; p<0.001; Durbin-Watson – 1.889. CI – Confidence Interval; OAS – the Obesity Awareness Scale.

attitude towards healthy eating than those who perceived themselves as overweight or underweight [17]. As a result of studying the way students perceived their weight, 6.1% of students were overweight and obese, while 13.3% of students believed to be overweight. The results revealed

that students perceived themselves to be underweight based on their weight perception.

A consistent meal pattern is part of a healthy diet [25]. In the study, 61% of students ate regularly, and those who ate regularly had more positive attitudes towards healthy

eating compared to those who did not. According to a study conducted by Sümen *et al.*, 66% of students ate regularly, and those who ate regularly exhibited a positive attitude towards healthy eating habits [17]. A study conducted in Finland on children between the ages of 9 and 14 years found that children with an unhealthy diet had irregular meals [25]. Based on the results of the study, three-fifths of students consumed food regularly and had a positive attitude towards healthy eating. The findings of this study confirmed that meal frequency and regularity were indicative of healthy eating.

The attitude towards healthy nutrition was to have a balanced and varied diet, including all nutrients in the amount needed in line with the individual's needs, low in fat, and maintaining an ideal body weight [14]. There was a high level of attitude towards healthy nutrition among students. A study conducted among Turkish high school students found that attitudes towards healthy nutrition were at a moderate level [17]. Another study conducted among university students revealed a high level of healthy eating attitudes among students [26]. In parallel with other studies conducted among different age groups, it can be interpreted that students have a healthy eating attitude in this study [17, 27].

A high level of obesity awareness was observed among the students under study. According to Sümen *et al.*, students had a high obesity awareness level [17]. A similar high level of obesity awareness was found in a study conducted among overweight students [9]. The results of another study evaluating the knowledge and attitude of adolescent students regarding obesity indicated that 93% of adolescents possessed below average knowledge and 16% had a negative attitude towards preventing obesity [28]. Considering the results of the study, even though the students demonstrated a high level of healthy eating attitudes and obesity awareness, they lacked the ability to convert these attitudes into behaviors. The reason for this was that 60% of students consumed junk food on average twice per day and ate regularly. To combat obesity, it was crucial to convert awareness and attitude into action.

Studies have identified a number of risk factors associated with obesity, despite the lack of a definitive cause [29–32]. These are some of them: easy access to high-calorie foods, an increase in the consumption of sugary drinks and sedentary lifestyles, more time spent on electronic devices, and a decrease in physical activity [33]. According to the study, as students spent more time on the computer, phone, and TV, they consumed more snacks and fast food. Similarly, screen time was associated with an increase in the consumption of energy-dense snacks, beverages, and fast foods in the literature [34–38]. The primary reasons for children spending lots of time on screens were electronic devices such as personal televisions, computers, laptops, and tablets in bedrooms. Lack of physical activity and energy expenditure reduced due to spending a considerable amount of time in front of a screen while indirect increases in food consumption affected food preferences as well. It could, therefore, be concluded that students were at risk of obesity.

According to the study, as students' awareness of obesity increased, their attitudes towards healthy nutrition improved as well. Obesity develops in childhood, particularly between the ages of 4 to 11 years, and two-thirds of obese adolescents remain obese during their adult life [39]. It was for this reason that the population under the study provided an ideal sample for determining healthy nutrition attitudes and obesity awareness levels. Having a positive attitude towards healthy nutrition was one of the key factors in students' knowledge of obesity, risky situations, and its complications.

Limitations

The study had a number of limitations. Firstly, the study sample consisted of students from a province located in the east of Turkey and it was not possible to generalize the study results to all the students due to living conditions and socio-cultural characteristics of the region. The study needed to be conducted with a larger sample size including individuals from different cultural backgrounds. Secondly, the scales used to collect study data were self-reported. The possibility that students may have hidden their true feelings should be considered. Thirdly, the results of the analyses were based on cross-sectional data and longitudinal studies were needed to obtain more robust results.

Conclusions

This study provides important evidence for the determination of the relationship between obesity awareness and nutrition attitude among secondary school students, especially since obesity develops in this age group and continues into adulthood. The majority of students with healthy eating attitudes, nutritional knowledge, feelings towards nutrition, awareness of obesity, positive nutrition, and high physical activity scores were found to have normal or weak BMI. There was a significant relationship between students' healthy eating attitudes and obesity awareness; as the students' healthy eating attitudes increased, their obesity awareness increased as well. In addition, increasing time spent per day on the phone and amount of junk food negatively influenced healthy eating attitude.

Ethical Statement

For this study, the approval of the Human Research Ethics Committee of Erzincan Binali Yıldırım University (Ethics Committee Approval No 03/07, dated March 25, 2022) and the institutional permission from the Provincial Directorate of National Education (E-162997, dated April 20, 2022) were obtained.

Informed Consent

Each child and his/her parents were informed about the study, and their written and verbal agreement to participate have been obtained.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of Interest

The authors report no actual or potential conflicts of interests.

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