JESPAR

Journal of Exercise Sciences
& Physical Activity Reviews

ORIGINAL ARTICLE

Investigation of the Relationship Between the Nutri-tional Habits of Primary School Students and the So-cio-Economic Status of Their Families

Muhammed Öniz[1] | **İshak Göçer**[2*]

[1]Sports Health Sciences, Kayseri, Türkiye
[2]Ministry of National Education, Kirikkale, Türkiye

ABSTRACT

This study was conducted to determine the eating habits of pre-adolescent students living in various cities in the Central Anatolia region of Turkey, and to investigate the relationship between these eating habits and the socioeconomic status of their families. This study used a survey method. 410 students between the ages of 9-14 residing in various cities in Central Anatolia participated in the study. To collect data for the study, the Attitudes Towards Healthy Eating Scale (ATHES), consisting of four sub-dimensions, was used to evaluate the families' so-cioeconomic data and measure the participants' attitudes toward healthy nutrition. Of the study partici-pants, 51 % (n = 209) were girls and 49% (n=201) were boys. The data were analyzed using the SPSS (V26) statistical program. Socioeconomic status had a significant impact on children's eating habits. Children from fami-lies with low socioeconomic status have limited access to healthy and balanced foods. In addition, par-ents' nutritional knowledge levels and attitudes were found to have an impact on children's eating habits. Digital media exposure has also emerged as a factor that increases children's interest in unhealthy snacks. As expected, this study revealed that there is no strong relationship between the nutritional habits of primary school students and the socioeconomic status of their families. Instead, it shows that some demographic factors such as the age and grade level of the students have more significant effects on their nutritional knowledge and attitudes. These findings emphasize that programs aimed at improving nutritional habits should consider broader factors, such as student age group and grade level, rather than solely focusing on socioeconomic factors. At the same time, it can be concluded that nutritional education is important for all students regardless of their economic status.

Keywords: Health, nutritional habits, pre-adolescent, socioeconomic status, student

***Corresponding:** İshak Gocer; ishakgocer71@gmail.com
Journal home page: www.e-jespar.com
Academic Editor: Dr. Mehmet Gülü
https://doi.org/10.5281/zenodo.14567093

ARTICLE HISTORY
Received: 20 November 2024
Accepted: 28 December 2024
Published: 29 December 2024

INTRODUCTION

In today's world, where technological developments are rapidly increasing, and social media and communication tools are rapidly spreading, there have been major changes in individuals' lifestyles (Özer, 2020). With this change, there has been a decrease in physical activity levels and changes in individuals' nutritional habits. As a natural result of this change, the prevalence of obesity in society has begun to increase rapidly (Gülü et al., 2023). Because of the magnitude of competition experienced on a global scale in the food industry, companies use advertisements on various communication tools such as television and social media to encourage individuals, especially children, to have inappropriate nutrition; as a result, children have begun to acquire a nutritional habit that is high in calories, low in nutritional value, and contains plenty of fried foods and carbonated drinks (Ural & Özmaden, 2022). In connection with such nutritional habits, the number of obese children in society has increased rapidly, and with the increase in unhealthy nutrition and obesity, there has also been a rapid increase in the risk of non-communicable diseases, such as type 2 diabetes and cancer in children (Bendor et al., 2020). Individuals who are obese during childhood are very likely to become obese in adulthood. In addition, the foundation of many diseases in adulthood is laid in childhood; therefore, the habits and behaviors acquired in childhood determine the risk of disease in adulthood (Hammond & Levine, 2010). It should not be forgotten that the foundation of a healthy society comprises of healthy individuals. The foundation of healthy individuals is a healthy child. Therefore, raising healthy children is necessary both for raising healthy individuals and for children born from those individuals (Coşkun & Karagöz, 2021). This situation shows us how critical childhood is. Therefore, it is possible to reduce the risk of many diseases that may occur at later ages by implementing preventive interventions during this period (Lari et al., 2019; Van et al., 2018). Studies have shown that the foundation of childhood eating habits is laid in the family, and that the socioeconomic status of the family is effective in determining children's eating habits (Choudhuri et al., 2020; Nair et al., 2017). Therefore, by raising awareness among families, children can be encouraged to eat healthier food (Akdoğan & Balcı, 2022; Gürol Ekinci, 2019). The current study aimed to investigate the relationship between children's eating habits and families' socioeconomic status. It is thought that our study results will contribute to raising the awareness of families on the subject and taking the necessary preventive measures for children.

MATERIALS AND METHODS

Participants and Protocol

This study aimed to analyze the relationship between nutritional habits and socioeconomic status of middle school students studying in the central districts of some provinces in the Central Anatolia Region (Kırıkkale, Ankara, Kayseri, Kırşehir). The study population consisted of students aged 9-14 years (adolescents and pre-adolescents) studying in the

4th, 5th, 6th, 7th, and 8th grades in the Central Anatolia Region of Turkey. The sample of the study consisted of 410 students (209 girls, 201 boys) selected from this population using the convenience sampling method (4th grade n=140 / 5th grade n=25 / 6th grade n=33 / 7th grade n=130 / 8th grade n=80). In the current study, the number of classes and gender distribution of the participants in each class were arranged equally between male and female students to ensure homogeneity in the study and obtain clearer results. The study was based on a survey model with a descriptive research design. The research data were collected simultaneously in the central districts of the provinces included in the study during the 2024-2025 academic years.

Data Collection Tools

In the study, the “Attitudes Towards Healthy Eating Scale (ATHES)” was used to analyze the relation-ship between the participants' eating habits and their socioeconomic status. In addition, a "Personal Infor-mation Form" was used to collect demographic information from the participants. To determine the sample size in scale studies, it is recommended to use five to ten times the number of items in the scale (Şahin, 1994; Aker et al., 2005). Within the scope of the current study, there were 21 items in the questionnaires presented to the volunteers. A total of 410 students (209 females, 201 males) participated in the study, which met the minimum number of participants recommended in scale studies.

Personal Information Form

It was developed to collect demographic data of the participants such as grade level, age, gender, height (cm), weight (kg), body mass index, body surface area, and family economic status.

Attitudes Towards Healthy Eating Scale (ATHES)

The Scale of Attitudes Towards Healthy Eating Scale (ATHES) was developed by Demir & Cicioğlu (2019) in 2019 and this scale is rated on a 5-point Likert-type scale. The rating of the positive items on the scale is "Strongly Disagree,” "Disagree,” "Undecided,” "Agree,” and "Strongly Agree.” The positive attitude items were scored as 1, 2, 3, 4, and 5, and the negative attitude items were scored as 5, 4, 3, 2, and 1. The ATHES consists of 4 sub-dimensions and 21 items. The question distributions of the sub-dimensions of the ATHES are as follows: 1st, 2nd, 3rd, 4th and 5th questions for the Knowledge About Nutrition Sub-dimension (KAN) (5 items), 6th, 7th, 8th, 9th, 10th and 11th questions for the Nutrition Emotion Sub-dimension (NE) (6 items), 6th, 7th, 8th, 9th, 10th and 11th questions for the Positive Eating Habits (PEH) (6 items). Questions, for PEH (5 items); 12th, 13th, 14th, 15th, and 16th questions and for Bad Eating Habits Subdimension (BEH) (5 items); 17th, 18th, 19th, 20th, and 21st questions. The 1st, 2nd, 3rd, 3rd, 4th, 4th, 5th, 12th, 13th, 14th, 15th, and 16th questions were positive statements in the scale, while questions 6th, 7th, 8th, 9th, 10th, 11th, 17th, 18th, 19th, 20th, and 21st questions are negative statements. The reliability of the ATHES scale applied in the current study was measured using Cronbach's alpha coefficient, and the re-sult was 0.64. According to Sekaran and Bougie (2010) and

Gorondutse and Hilman (2013), this value shows that the internal consistency of the scale is at an acceptable level and is reliable. The internal consis-tency coefficient of ATHES was calculated as 0.90 for KAN, 0.84 for NE, 0.75 for PEH, and 0.83 for BEH. When our research findings are examined, it is seen that the Skewness and Kurtosis values of our data are between +2 and -2 and exhibit a normal distribution (George and Mallery, 2011; Byrne, 2013).

Data Collection Process

The study was conducted with students studying in the Central Anatolia Region (central districts of Kırıkkale, Ankara, Kayseri, and Kırşehir provinces) during the 2024-2025 academic years. Before the data collection process, the necessary permissions were obtained from the schools where the survey was conduct-ed, preliminary interviews were held with the students' families, and information was provided. Voluntary participation of the participants was ensured and parental consent forms were obtained.

Dependent and Independent Variables

The dependent variable of this study was the attitude levels of the students towards healthy nutrition (ATHES scores). The independent variables were demographic factors, such as gender, age group, grade level, BMI, family income level, and body surface area.

Ethical Principles

The research was conducted in accordance with ethical principles. Participants were voluntarily includ-ed in the research, and their right to terminate their participation at any stage of the study was reserved. The data obtained were used only for the current research, and personal information was not shared with third parties and kept confidential.

Statistical Analysis

Statistical analyses were performed using SPSS (Statistical Package for the Social Sciences, IBM Inc., Chicago, IL, USA) (version 26) software. Before the statistical analysis, a normality test was performed on the data. " Kolmogorov-Smirnov and Shapiro-Wilk statistical tests were used to determine whether the data had a normal distribution, and since n>30, the Kolmogorov-Smirnov test was preferred (Ghasemi & Zahedi-asl, 2012; Razali & Wah, 2011). In large samples, the results may show significance, despite a very small deviation from the normal distribution. Therefore, the test results should be analyzed using skewness and kurtosis values (İslamoğlu & Alnıaçık, 2019). The skewness and kurtosis values of the data were used as the basis for the normality test. When the "Skewness" and "Kurtosis" coefficients were analyzed, it was seen that the coefficients were between "-2 and +2". The fact that the Skewness and Kurtosis coefficient values are within these ranges indicates that the data exhibits a normal distribution (George & Mallery, 2011; Byrne, 2013). Descriptive statistics, independent sample t-test, one-way analysis of variance (ANOVA), Pearson correlation, and regression analysis were preferred. Tamhane's T2 test, a post hoc test, was used to determine the source of the difference.

Data are expressed as the mean±standard deviation (x̄±SS). In the analysis, the confidence interval (CI) was chosen as 95%, and values below p<0.05 were considered statisti-cally significant. Table 2 presents the distribution of scale scores, Skewness and Kurtosis values.

RESULTS

In the present study, the results of the participants evaluated on the ATHES and its sub-dimensions, namely KAN, NE, PEH, and BEH, were analyzed according to age, sex, grade level, family economic sta-tus, body mass index, and body surface area. The research findings were analyzed in depth and are present-ed in detail below.

Demographic Information	Variable	*f*	%
Gender	Boys	201	49.0
	Girls	209	51.0
Ages	Age 9	84	20.5
	Age 10	68	16.6
	Age 11	37	9.0
	Age 12	114	27.8
	Age 13	90	22.0
	Age 14	17	4.1
Grade	4th grade	142	34,6
	5th grade	25	6,1
	6th grade	33	8,0
	7th grade	130	31,7
	8th grade	80	19,5
Economic Situation	Bad	25	6,1
	Moderate	192	46,8
	Good	193	47,1

Table 1. Demographic characteristics of the participants

When Table 1 is examined, it is seen that the majority of the participants are 12 years old (27.8%), female (51.0%), in the 4th grade (34.6%), and have a good economic situation (47.1%).

Sub-dimensions (N=410)	Number of items	Mean	SD	Skewness	Kurtosis	Min.	Max.
KAN	5	3,95	,79	-1,12	1,76	1.00	5.00
NE	6	2,99	,81	-,07	-,48	1.00	5.00
PEH	5	3,82	,87	-,84	,47	1.00	5.00
BEH	5	2,31	,83	,56	,05	1.00	5.00
ATHES (Total)	21	3,95	,79	-1,12	1,76	1.00	5.00

Table 2. Distribution of scale scores of healthy lifestyle behavior scale and its sub-dimensions

Table 2 shows the mean and standard deviation values as well as Skewness and Kurtosis coefficient values obtained from the participants' KAN (M=3.95, SD= .79, Skewness= -1.12, Kurtosis= 1.76), NE (M=2.99, SD= .81, Skewness= -.07, Kurtosis= -.48), PEH (M=3.82, SD= .87, Skewness= -.84, Kurtosis= .47), BEH (M=2.31, SD= .83, Skewness= .56, Kurtosis= .05) and ATHES (M=3.95, SD= .79, Skewness= -1.12, Kurtosis= -1.76). In the light of the data obtained, it is seen that the "Skewness" and "Kurtosis" co-efficients, which

we take as a basis for the normality assumption, are between "-2 and +2" and our data exhibits a normal distribution.

Sub-dimensions (N=410)	Gender	N	Mean	SD	t	p
KAN	Boys	201	3,97	,72	,403	,072
	Girls	209	3,94	,85		
NE	Boys	201	3,21	,74	5,368	,150
	Girls	209	2,79	,83		
PEH	Boys	201	3,81	,89	-,105	,814
	Girls	209	3,82	,86		
BEH	Boys	201	2,37	,81	1,406	,441
	Girls	209	2,25	,84		
ATHES (Total)	Boys	201	3,33	,43	3,531	,749
	Girls	209	3,18	,44		

Table 3. Comparison of the mean scores of the healthy lifestyle behavior scale and its sub-dimensions according to the gender variable

When Table 3 is examined, it is seen that there is no statistically significant difference in the total sco-re of the ATHES (F=3.531, p=.749) and the mean scores of the sub-dimensions KAN (F=.403, p=.072), NE (F=5.368, p=.150), PEH (F=-.105, p=.814), and BEH (F=1.406, p=.441) according to the gender va-riable of the participants (p>0.05). These results show that the gender variable does not have a decisive effect on attitudes towards healthy nutrition or the sub-dimensions of this attitude.

Sub-dimensions (N=410)	Grade	N	Mean	SD	F	p
KAN	4th grade[a]	142	4,03	,79	6,374	**,000*** a<b a>e b>d,e c>e
	5th grade[b]	25	4,47	,55		
	6th grade[c]	33	4,18	,74		
	7th grade[d]	130	3,85	,85		
	8th grade[e]	80	3,72	,65		
NE	4th grade[a]	142	3,95	,79	6,838	**,000*** e>a,c,d
	5th grade[b]	25	2,80	,76		
	6th grade[c]	33	2,93	,71		
	7th grade[d]	130	2,88	,85		
	8th grade[e]	80	3,01	,87		
PEH	4th grade[a]	142	3,37	,71	2,805	**,026*** a>e
	5th grade[b]	25	2,99	,81		
	6th grade[c]	33	3,90	,87		
	7th grade[d]	130	4,03	,71		
	8th grade[e]	80	3,98	,81		
BEH	4th grade[a]	142	3,80	,94	2,837	**,024*** b<e
	5th grade[b]	25	3,56	,78		
	6th grade[c]	33	3,82	,87		
	7th grade[d]	130	2,27	,83		
	8th grade[e]	80	2,07	,67		
ATHES (Total)	4th grade[a]	142	3,23	,41	,972	,423
	5th grade[b]	25	3,35	,41		
	6th grade[c]	33	3,30	,48		
	7th grade[d]	130	3,22	,50		
	8th grade[e]	80	3,31	,39		

Table 4. Comparison of the mean scores of the healthy lifestyle behavior scale and its sub-dimensions according to the class variable

No statistically significant difference was found in the total score values of the ATHES (F=.972, p=.423) according to the participants' grade variables (p>0.05) (Table 4).

However, statistically significant differences were observed in the mean values of the sub-dimensions of KAN (F=6.374, p=.000), NE (F=6.838, p=.000), PEH (F=2.805, p=.026), and BEH (F=2.837, p=.024) (p<0.05). These results show that grade level does not affect attitudes towards healthy nutrition in general but can create significant differences in the context of the sub-dimensions.

Sub-dimensions (N=410)	Age	N	Mean	SD	F	p
KAN	Age 9[a]	84	3,99	,80	3,142	**,009*** b>e
	Age 10[b]	68	4,20	,75		
	Age 11[c]	37	4,07	,82		
	Age 12[d]	114	3,93	,83		
	Age 13[e]	90	3,76	,72		
	Age 14[f]	17	3,69	,60		
NE	Age 9[a]	84	2,81	,72	4,985	**,000*** e>a,b
	Age 10[b]	68	2,82	,73		
	Age 11[c]	37	2,78	,98		
	Age 12[d]	114	3,03	,83		
	Age 13[e]	90	3,26	,80		
	Age 14[f]	17	3,41	,70		
PEH	Age 9[a]	84	3,89	,84	1,400	,223
	Age 10[b]	68	3,96	,89		
	Age 11[c]	37	3,91	,97		
	Age 12[d]	114	3,81	,89		
	Age 13[e]	90	3,64	,84		
	Age 14[f]	17	3,66	,68		
BEH	Age 9[a]	84	2,32	,83	1,737	,125
	Age 10[b]	68	2,15	,81		
	Age 11[c]	37	2,13	,73		
	Age 12[d]	114	2,30	,85		
	Age 13[e]	90	2,48	,83		
	Age 14[f]	17	2,47	,72		
ATHES (Total)	Age 9[a]	84	3,23	,40	,282	,923
	Age 10[b]	68	3,26	,43		
	Age 11[c]	37	3,20	,54		
	Age 12[d]	114	3,26	,47		
	Age 13[e]	90	3,28	,44		
	Age 14[f]	17	3,31	,25		

Table 5. Comparison of the mean scores of the healthy lifestyle behavior scale and its sub-dimensions according to the age variable

When Table 5 was examined, no statistically significant difference was found in the total score values of the ATHES (F=.282, p=.923) and the mean values in the sub-dimensions PEH (F=1.400, p=.223) and BEH (F=1.737, p=.125) according to the age variable of the participants (p>0.05). However, statistically significant differences were found in the mean values of the KAN (F=3.142, p=.009) and NE (F=4.985, p=.000) (p<0.05). These results show that the age variable does not affect attitudes towards healthy nutri-tion in general, but can create significant differences in certain sub-dimensions.

Sub-dimensions (N=410)	Economic situation	N	Mean	SD	F	p
KAN	bad[a]	25	4,00	,48	1,694	,185
	moderate[b]	192	3,88	,78		
	good[c]	193	4,02	,82		
NE	bad[a]	25	2,84	,90	2,503	,083
	moderate[b]	192	3,09	,76		
	good[c]	193	2,92	,84		
PEH	bad[a]	25	3,67	,76	2,654	,072
	moderate[b]	192	3,73	,83		
	good[c]	193	3,92	,92		
BEH	bad[a]	25	2,06	,71	1,221	,296
	moderate[b]	192	2,31	,79		
	good[c]	193	2,34	,87		
ATHES (Total)	bad[a]	25	3,13	,39	1,451	,235
	moderate[b]	192	3,24	,42		
	good[c]	193	3,28	,47		

Table 6. Comparison of the mean scores of the healthy lifestyle behavior scale and its sub-dimensions according to the economic status variable

When Table 6 is examined, it is seen that there is no statistically significant difference ($p>0.05$) in the total score of the ATHES ($F=1.451$, $p=.235$) and the mean scores of the sub-dimensions KAN ($F=1.694$, $p=.185$), NE ($F=2.503$, $p=.083$), PEH ($F=2.654$, $p=.072$), and BEH ($F=1.221$, $p=.296$) according to the economic status variables of the participants. These results show that the economic status variable does not have a decisive effect on the attitudes and subdimensions of healthy nutrition.

Sub-dimensions (N=410)	N	Mean	SD	F	p
KAN	410	3,95	,79	1,304	**,046***
NE	410	2,99	,81	1,091	,291
PEH	410	3,82	,87	1,194	,130
BEH	410	2,31	,83	1,199	,125
ATHES (Total)	410	3,26	,44	1,281	,058

Table 7. Comparison of mean scores of healthy lifestyle behavior scale and its sub-dimensions according to body mass index variable

When Table 7 is examined, it is seen that there is no statistically significant difference in the total sco-re of the ATHES ($F=1.281$, $p=.058$) and the mean scores of the sub-dimensions NE ($F=1.091$, $p=.291$), PEH ($F=1.194$, $p=.130$), and BEH ($F=1.199$, $p=.125$) according to the body mass index variable of the participants ($p>0.05$). However, there was a statistically significant difference in the mean values of the KAN ($F=1.304$, $p=.046$) sub-dimension ($p<0.05$). These results show that the body mass index variable does not affect attitudes towards healthy nutrition in general, but creates a significant difference in the knowledge about nutrition sub-dimension.

Sub-dimensions (N=410)	N	Mean	SD	F	p
KAN	410	3,95	,79	1,171	,162
NE	410	2,99	,81	,867	,791
PEH	410	3,82	,87	1,280	,062
BEH	410	2,31	,83	,988	,516
ATHES (Total)	410	3,26	,44	,946	,617

Table 8. Comparison of mean scores of healthy lifestyle behavior scale and its sub-dimensions according to body surface area variable

When Table 8 is examined, it is seen that there is no statistically significant difference in the total score of the ATHES (F=.946, p=.617) and the mean scores of the sub-dimensions KAN (F=1.171, p=.162), NE (F=.867, p=.791), PEH (F=1.280, p=.062), and BEH (F=.988, p=.516) according to the body surface area variable of the participants (p>0.05). These results show that the body surface area vari-able does not have a decisive effect on the attitudes and subdimensions of healthy nutrition.

		KAN	NE	PEH	BEH
KAN	Pearson Correlation	1	-,067	,597**	-,238**
	Sig. (2-tailed)		,176	,000	,000
	N	410	410	410	410
NE	Pearson Correlation	-,067	1	-,094	,352**
	Sig. (2-tailed)	,176		,057	,000
	N	410	410	410	410
PEH	Pearson Correlation	,597**	-,094	1	-,274**
	Sig. (2-tailed)	,000	,057		,000
	N	410	410	410	410
BEH	Pearson Correlation	-,238**	,352**	-,274**	1
	Sig. (2-tailed)	,000	,000	,000	
	N	410	410	410	410

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

Table 9. Correlation between total scores of healthy lifestyle behavior scale sub-dimensions

According to the Pearson correlation analysis results presented in Table 9, there was a moderate positive rela-tionship between the KAN and PEH sub-dimensions (r= 0.597**, p <0.001). This finding indicates that individuals' knowledge of nutrition can increase their positive eating habits. In addition, a very weak posi-tive relationship was found between the KAN and BEH subscales (r= 0.238**, p <0.001). This situation reveals that there is a limited relationship between knowledge of nutrition and bad eating habits. A weak positive relationship was found between the NE subdimension and BEH (r= 0.352**, p <0.001). This re-sult indicates that individuals' feelings about nutrition may have a limited effect on poor eating habits. However, there was a moderate positive correlation between PEH and KAN (r= 0.597**, p <0.001), and a weak positive correlation with BEH (r= 0.274**, p <0.001). This finding indicates that positive eating habits have a strong connection with nutritional knowledge and a significant relationship with poor eating habits. Finally, when the relationships between BEH and other subdimensions were evaluated, it was fo-und that

there were very weak positive correlations with KAN (r= 0.238**, p <0.001), weak positive cor-relations with NE (r= 0.352**, p <0.001), and weak positive correlations with PEH (r= 0.274**, p <0.001). These results show that poor eating habits are associated with different dimensions; however, these relationships are generally limited.

DISCUSSION

This study examined the relationship between the eating habits of primary school students and their families' socioeconomic status and evaluated how various factors affected this relationship. Although the findings showed that there was no strong relationship between socioeconomic status and eating habits at the expected level, they revealed that demographic factors such as grade and age affected students' eat-ing habits. In this section, we provide a detailed discussion will be made by comparing our findings with those in the literature.

The current study found that gender did not have a significant effect on students' eating habits. Alt-hough this finding is consistent with the results of Bükülmez et al. (2021), it contradicts the results of the study conducted by Adatepe and Çelik (2022). Adatepe and Çelik (2022) stated in their study that gen-der created a significant difference in attitudes towards healthy eating among amateur football players. Similarly, Çıplak and Eler (2020) found statistically significant differences in unhealthy eating habits and gender in their study. Akçakoca et al. (2021) found differences in the number of daily snacks according to gender in their study. Some studies have emphasized that gender affects eating habits, especially in adolescence (Scaglioni et al., 2018). The findings of this study indicate that the effect of gender on eating habits may vary according to regional or cultural factors and that gender does not create a significant dif-ference in eating behaviors, especially in the Central Anatolia Region.

In the current study, age-related differences in students' nutritional knowledge and emotional atti-tudes were observed when age and grade variables were examined. These results are consistent with those of the study by Bükülmez et al. (2021). Similarly, Carrasco-Luna et al. (2018) observed that nutritional knowledge and emotional attitudes towards nutrition changed positively as age increased. Similarly, the nutritional habits of the 18-14 age groups in their study expressed the prevalence of Choudhuri and Su-tradhar Balaram (2020), who emphasized overweight and reported age-related differences. These findings are consistent with those of our study and show that students' nutritional knowledge and attitudes im-prove with age. However, the fact that age and grade level create a difference only in some sub-dimensions suggests that not only is the level of knowledge sufficient for the formation of healthy eating habits but also that environmental and psychological factors are effective. In particular, the differences at the grade 5 level can be associated with the education levels of the students, and it was observed that students in older grades tend to develop positive eating habits with the nutrition knowledge they have previously acquired. The current study found that socioeconomic status did not

have a significant effect on students' eating habits. Many studies have addressed the effect of socioeconomic status on children's eating habits and general health status. For example, Hinnig et al. (2018) stated that children with low so-cioeconomic status generally have unhealthy eating habits, which increase obesity rates. Similarly, Mahmood et al. (2021) stated that parents' eating behaviors have a significant effect on their children's habits. However, the findings of this study show that the effect of socioeconomic status on eating habits may not be observed in a specific region or sample. This suggests that cultural and environmental factors may be more dominant, and that other factors that shape eating habits, independent of families' economic status, are also effective. In our study evaluating the relationship between BMI and eating habits, a signif-icant difference was found only in the "Nutrition Information Sub-Dimension", while no difference was observed in the other sub-dimensions. This finding is similar to those of other studies in the literature. For example, Choudhuri and Balaram (2020) stated that BMI is directly related to children's eating habits, whereas Çıplak and Eler (2020) stated that body mass index can encourage healthier eating habits. How-ever, the findings of this study show that body mass index only affects nutritional knowledge but has a limited effect on habits and emotional attitudes. This situation reveals that eating habits are shaped not only by physical conditions, but also by psychological and environmental factors. Educational level and eating attitudes within the family can be determining factors in children's eating habits. In the studies by Erdem et al. (2017) and Bükülmez et al. (2021), it was observed that families with a higher education lev-el can better instill healthy eating habits in their children. Akçakoca et al. (2021) stated that children's eat-ing habits are directly related to their eating attitudes. This study shows that education and attitudes within the family, regardless of socioeconomic status, can affect eating habits more strongly.

This study presented important findings on the relationship between primary school students' eating habits and the socioeconomic status of their families. However, the results show that socioeconomic fac-tors do not always have a decisive effect on eating habits. Instead, it can be said that different factors such as education, age, grade level, and environmental factors are more effective in students' eating hab-its. These findings reveal that intervention programs aimed at improving eating habits should consider not only socioeconomic factors but also education level and environmental factors.

CONCLUSIONS

In conclusion, this study revealed that there is no strong relationship between the nutritional habits of primary school students and the socio-economic status of their families as expected. Instead, it shows that some demographic factors such as the age and grade level of the students have more significant effects on nutritional knowledge and attitudes. These findings emphasize that programs aimed at improving nutri-tional habits should consider broader factors such as student age group and grade level rather than focus-ing solely on socio-economic factors. At the same time, it can be concluded that nutritional education is important for all students regardless of their economic status.

Recommendations

- To gain healthy eating habits, regular nutrition education programs should be established for students in schools.
- Awareness-raising and guidance services should be provided for families to gain healthy eating habits for their children.
- Nutrition support programs should be developed for families with low socio-economic status, and children in this group should have more access to healthy eating habits.
- For children to develop healthy eating habits, individuals in the family should be made more con-scious about nutrition.
- To improve children's eating habits, comprehensive education programs should be implemented in schools on physical activity and healthy nutrition.
- Information campaigns on healthy nutrition should be launched through media and digital platforms, and children and families should be determined as the target audience.
- Regular health and nutrition screenings should be conducted to monitor and evaluate children's eating habits.

Author Contributions

Conceptualization, M.Ö. methodology, M.Ö., and İ.G; formal analysis, İ.G., and M.Ö; investigation, İ.G., and M.Ö; data curation, İ.G., and M.Ö; writing-original draft preparation, İ.G. and M.Ö; writing-review and editing, M.Ö.

Informed Consent Statement:

The research was conducted in line with the Declaration of Helsinki.

Acknowledgments:

We would like to thank all participants who took part in the research.

Funding:

This research was not funded by any institution or organization.

Conflicts of Interest:

The authors declare that no conflicts interest.

REFERENCES

Adatepe, E., & Çelik, H. (2022). The Examination of Amateur Footballers' Attitudes Towards Healthy Nutrition. *Mediterranen Journal of Sport Science*, *5*(Özel Sayı 1), 217-229.

Akçakoca, D. A., Meşeli, Ö. Ü. S. E., Yıldırım, Ö. Ü. H. S., Mungan, D. N. C., Akyüz, S., & Kuru, L. (2021). Evaluation of children dietary and oral hygiene habits with affecting factors. *Journal of 7tepe Klinik*, *17*(1), 54-61.

Akdoğan, R., & Balcı, S. (2022). The Effect of Nutritional Habits of Pre-School Children on The Growth and Development. *DEUHFED*, *15*(2), 186-196.

Aker, S., Dündar, C., & Pekşen, Y. (2005). Two Vitaly Consept of Measurement instruments: Validity and Reliability. *Journal of Experimental and Clinical Medicine*, *22*(1), 50-60.

Bendor, C. D., Bardugo, A., Pinhas-Hamiel, O., Afek, A., & Twig, G. (2020). Cardiovascular morbidity, diabetes and cancer risk among children and adolescents with severe obesity. *Cardiovascular Diabetology*, *19*, 1-14.

Byrne, B. M. (2013). *Structural Equation Modeling with Mplus: Basic Concepts, Applications, and Programming*. Routledge.

Bükülmez, A., Oflu, A. T., Molon, L., Aydın, H., & Şen, T. A. (2021). The relationship between mothers' nutritional attitudes and children's weight status. *Kocatepe Medical Journal*, *22*(3), 213-220.

Carrasco-Luna, J., Gombert, M., Carrasco-García, Á., & Codoñer-Franch, P. (2018). Adolescent feeding: nutritional risk factors. *Journal of child science*, *8*(01), e99-e105.

Choudhuri D, Balaram S. (2020). Factors Associated with Nutritional Status of Adolescent Schoolchildren in Tripura. *Indian Pediatr*, *57*(2),177-178.

Coşkun, A., & Karagöz, Ş. (2021). Investigation of Obesity Prevalence, Physical Activity Level and Healthy Lifestyle Behaviors in Adolescent Children. *Türkiye Spor Bilimleri Dergisi*, *5*(2), 63-72.

Çıplak, M. E., & Eler, N. (2020). The relationship between eating habits and body mass index of adolescent students doing sports. *Progress in Nutrition*, *22*(3).

Demir, G. T., & Cicioğlu, H. İ. (2019). Attitude Scale for Healthy Nutrition (ASHN): Validity and Reliability Study. *Gaziantep Üniversitesi Spor Bilimleri Dergisi*, *4*(2), 256-274.

Erdem, S., Özel, H. G., Çınar, Z., & Işıkhan, S. Y. (2017). The Effects of Nutrition Attitude and Behaviors of the Families on Nutrition Status in Children at Different Socioeconomic Status. *Bes Diy Derg*, *45*(1), 3-11.

George, D., & Mallery, P. (2011). *SPSS for windows step by step: A simple study guide and reference, 17.0 update, 10/e*. Pearson Education India.

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: a guide for non-statisticians. *International Journal of Endocrinology and Metabolism*, *10*(2), 486-489.

Gorondutse, A. H., & Hilman, H. (2013). Trust business social responsibility (BSR) on organizational performances in Nigerian small scale industry: A pilot test. *International Journal of Management Research and Reviews*, *3*(4), 2733.

Gülü, M., Yagin, F. H., Gocer, I., Yapici, H., Ayyildiz, E., Clemente, F. M., ... & NPEHri, H. (2023). Exploring obesity, physical activity, and digital game addiction levels among adolescents: A study on machine learning-based prediction of digital game addiction. *Frontiers in Psychology*, *14*, 1097145.

Gürol Ekinci, M. (2019). Nutrition in preschool children. *Journal of Economics and Culture*, *5*(59),1-4.

Hammond, R. A., & Levine, R. (2010). The economic impact of obesity in the United States. Diabetes, metabolic syndrome and obesity:Targets and therapy, 285-295.

Hinnig, P. D. F., Monteiro, J. S., De Assis, M. A. A., Levy, R. B., Peres, M. A., Perazi, F. M., ... & Canto, G. D. L. (2018). Dietary patterns of children and adolescents from high, medium and low human development countries and associated socioeconomic factors: a systematic review. *Nutrients*, *10*(4), 436.

İslamoğlu, A. H., & Alnıaçık, Ü. (2019). Sosyal bilimlerde araştirma yöntemleri. *Içinde (530). İstanbul: Beta Yayınevi*.

Lari, M., Traghella, I., Vassalle, C. (2019). Preventive primordial strategies: Times are changing. In Adolescent Health and Wellbeing (pp. 3 18). Springer, Cham.

Mahmood, L., Flores-Barrantes, P., Moreno, L. A., Manios, Y., & Gonzalez-Gil, E. M. (2021). The influence of parental dietary behaviors and practices on children's eating habits. *Nutrients*, *13*(4), 1138.

Nair, A., Doibale M. K., Kuril, B. M., Domple, V. K., (2017). Study of nutritional status of adolescent girls in a rural area of a district of Maharashtra. *Int J Community Med Public* .

Özer K. (2020). Fiziksel Uygunluk. Nobel Yayın Dağıtım, Ankara, 1-400.

Razali, N. M., & Wah, Y. B. (2011). Power comparisons of shapiro-wilk, kolmogorov-smirnov, lilliefors and anderson-darling tests. *Journal of Statistical Modeling and Analytics*, *2*(1), 21-33.

Scaglioni, S., De Cosmi, V., Ciappolino, V., Parazzini, F., Brambilla, P., & Agostoni, C. (2018). Factors influencing children's eating behaviours. *Nutrients*, *10*(6), 706.

Sekaran U, Bougie R. (2010). Research methods for business: A skill building approaches (5th ed.). Chichester: John Willey & Sons Ltd.

Şahin, N. (1994). The use of scales in psychological research. *Turkish Journal of Psychology*, *9*(33), 19-26.

Ural, B., & Özmaden, M. (2022). Television advertisements: The effects of childhood obesity and food choices. *Health Care Acad J*, *9*(3), 286-290.

Van Horin, L., Vincent, E., Perak, A.M. (2018). Preserving cardiovascular health in young children: beginning healthier by starting earlier. Curr Atheroscler Rep 20: 26.