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Original Article

Relationship Between Physical Activity Level and Healthy Nutritional Attitude of High School Students

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Abstract

The study was conducted with 117 students studying in high schools affiliated to national education in Konya city center, Selçuklu district. The average age of the students is 17.08 ± 0.853, 59% of them are girls, 43.6% of the extended family, 38.5% of them perceive their health well, 34.2% of their mothers are high school graduates and 56.4% 46.2% of them were high school graduates and 69.2% were working, and 36.8% perceived their income as bad. The mean score of the knowledge about nutrition is 11.74 ± 3.22, the mean score for the emotion towards nutrition is 17.97 ± 4.14, and positive nutrition The mean score for the was found to be 13.18 ± 2.43 and the mean score for the was found to be 11.61 ± 2.61. As a result of the study, it was seen that the students were in the risky group in terms of physical activity.

1. Introduction

Adolescence begins with sexual and psychosocial maturation caused by physical and emotional processes; It is a period where the individual gains independence, sense of identity and social productivity. In this transition period, adolescents are more vulnerable to many risky behaviors and negative effects, especially health risks. In recent years, participation in physical activity has been decreasing due to the increase in sedentary activities such as watching television / video and using computers. As a result, a widespread increase in childhood obesity is observed. Physical activity and healthy nutrition play an important role among health-promoting activities in adolescents. Physical activity has a positive effect on physical health and mental health in adolescents. It is also accepted as an important

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determinant of physical and psychosocial health and development among children and adolescents (Biddle, Cıaccıonı, Thomas, & Vergeer, 2018; Lubans, Morgan, Cliff, Barnett & Okely, 2010).

Childhood obesity is an increasingly common global public health problem associated with increased long-term health risks (WHO, 2018; Sakarya et al., 2018). Schools offer children an environment where eating and drinking and activities take place. For this reason, schools are often seen as an important environment for childhood obesity prevention interventions. Studies show that the prevalence of obesity in adolescents is high and they are at risk in terms of eating habits and mental problems. This situation highlights the important need to improve the health of adolescents (Schmidt, Reinboth, Resaland, & Bratland-Sanda, 2020).

Healthy lifestyle behaviors that are effective in improving health are usually acquired or tested during adolescence (Fish and Nies, 1996; Geçkil, Çalışkan & Zincir, 2004; Spear & Kulbok, 2001). Especially adolescent health creates a suitable environment for the acquisition of protective and developing behaviors. If adolescent children are fed adequately and balancedly, their growth and development are completed on time and become resistant to diseases. Until they reach school age, children can imitate the eating habits of their families and may be affected by the foods they eat or do not eat. Schools have a major role in acquiring nutritional habits, as the nutrition of children who spend a large part of their time at school with their going to school is out of the control of their families (Karakaş & Törnük, 2016). Evaluation of nutritional attitudes and behaviors that may lead to obesity in high school students in this group has an important place. Adolescents' eating habits are different from children and adults, they tend to skip meals. In addition to consuming most of their meals outside the home; They also frequently consume foods or beverages such as carbonated, sugary and fast-food (Günebak, 2005). Adolescent period is very important in terms of eating habits and the formation of a positive eating attitude. However, it is difficult to measure and evaluate the eating attitudes of individuals in this period.

It is necessary to evaluate the physical activity and nutritional attitudes of individuals in the adolescent period, which covers an important period for the acquisition of positive health behaviors in society. The reason for this is that during this period, adolescents' food preferences are the last stage in which they are shaped and what is learned in this period can turn into conscious and controllable behavior. Sudden and rapid changes in this period may also affect physical activity levels and nutritional behavior. Nutrition in childhood and adolescence is of great importance for a healthy adulthood and old age. In order to determine the risks beforehand, the awareness of the family and adolescents should be created by screening the educational institutions in the early period and the necessary measures should be taken.

2. Material and methods

Purpose of research and questions of the research

In this study, the determination of the physical activity level of high school students and the relationship between physical activity level and healthy eating attitude were evaluated.

1. What are the socio-demographic characteristics of high school students?

2. Does the physical activity level of high school students change according to their socio-demographic characteristics?

3. Does the healthy eating attitude level change according to the socio-demographic characteristics of high school students?

4. Is there a relationship between physical activity level and healthy eating attitude?

Type of research

This study is descriptively planned as relational.

The place and features of the research

The study was carried out with students studying in high schools affiliated with national education in Konya city center, Selçuklu district.

Study group of the research

The sample size in the research was calculated using G * Power 3.1.9.2 analysis program. With an effect size of 0.5, a power of 80%, a margin of error of 5%, it was calculated as 117, taking into account the average score of the "International Physical Activity Survey" (879.65 ± 778.26) in the study of Tural 2020. It has formed students who study in high schools connected to Selçuklu district of Konya province.

Data Collection Techniques and Tools

Data were collected by online survey method. An online survey link was sent to high school students who were eligible for the sample and they were asked to fill it out. In collecting data; The personal information form that questioned the socio-demographic characteristics and prepared by the researchers, the International Physical Activity Questionnaire, and the Healthy Eating Attitude Scale were used.

International Physical Survey (UFAA)

Physical activity levels were determined using the International Physical Activity Questionnaire (UFAA). The validity and reliability study of the questionnaire was conducted in Turkey (Saglam et al, 2010). In our study, the short form of the questionnaire, which can be administered by itself and includes “last seven days”, was used to evaluate the level of physical activity. This short form consists of seven questions and provides information about sitting, walking, moderately vigorous activities and time spent in vigorous activities. The calculation of the total score for the short form includes the total duration (minutes) and frequency (days) of walking, moderate vigorous activity, and vigorous activity. The sitting score (sedentary behavior level) is calculated separately. In the evaluation of all activities, the criterion is that each activity is done at least 10 minutes at a time. Multiplying the minute, day, and MET value (multiples of resting oxygen consumption) a score is obtained as "MET-minute / week". The walking time

(minutes) was multiplied by 3.3 MET in calculating the walking score. In the calculation, 4 METs were taken for moderate activity and 8 MET values were taken for vigorous activity. Physical activity levels are classified as physically inactive (3000 MET-min / week) (Öztürk, 2005).

Healthy Nutrition Attitude Scale

The validity and reliability study of the healthy nutrition attitude scale was conducted by Tekkurşun Demir and Cicioğlu (2019). Data were collected from a study group of 476 people for the construct validity and reliability studies of the Attitude towards Healthy Nutrition Scale. EFA was applied to the data obtained as a result of this application. During EFA, KaiserMayer-Olkin (KMO) and Bartlett tests were performed first. Sampling fit is 0.87; Bartlett Sphericity test's chi-square value was found to be 5076.914 (sd = 476; p = 0.001). In the measurement tool, it is seen that there is no factor load of less than 40 items, and the factor loads of the scale items vary between 41 and .95. Considering the content of the items collected in the factors and the theoretical structure, the first factor was named Information About Nutrition (BHB), the second factor was named as Nutritional Emotion (BYD), the third factor was Positive Nutrition (OB), and the fourth factor was Malnutrition (BP). The BHB factor with an eigenvalue of 4.73 consists of 5 items and explains 22.45% of the total variance. The BYD factor with an eigenvalue of 4.03 consists of 6 items and 19.19% of the total variance. The eigenvalue of the OB factor consists of 1.93 and 5 items and explains 9.71% of the total variance. The KB factor with an eigenvalue of 1.45 consists of 5 items and explains 6.93% of the total variance. The ratings of the positive items in the scale are "Absolutely Disagree", "Disagree", "Undecided", "Agree", "Strongly Agree". Positive attitude items; 1, 2, 3, 4 and 5 negative attitude items were scored as 5, 4, 3, 2 and 1. As the scores obtained from sub-dimensions increase, it is understood that there are positive results for that sub-dimension (Tekkurşun Demir and Cicioğlu 2019).

Data Evaluation

The data of the study were evaluated using the SPSS for Windows 22.0 (Statistical Package for Social Science) statistical package program. Unit number (n), percentage (%), mean ± standard deviation (mean (SD)) values will be used as summary statistics. Normal distribution of data was evaluated by Shapiro-Wilk test and Q-Q graph. In the analysis of the data, t-test and Mann-Whitney U, variance analysis and Pearson correlation analysis were used in independent groups. Results were evaluated at 95% confidence interval and $p < 0.05$ significance level.

Ethical Procedure

Ethical approval was obtained from the Faculty of Sport Sciences Ethics Committee (Date: 25.03.2021 / Decision number: 52) for the ethical permission of the study. Before starting the research, online permissions of individuals were obtained.

3. Results and Discussions

The average age of the students is 17.08 ± 0.853, 59% of them are girls, 43.6% of them are extended family, 38.5% of them perceive their health well, 34.2% of their mothers are high school graduates and 56.4%. It was determined that 46.2% of them were high school graduates and 69.2% were working and 36.8% perceived their income as bad.

The physical activity questionnaire and healthy eating attitude scale score averages of the students are evaluated in Table 1. The physical activity questionnaire mean score of the students was determined as 199.58 ± 62.382 (physically inactive inactive group) (<300 met). When the mean scores of the subscales of the attitude towards healthy eating scale are evaluated, the mean score of the knowledge about nutrition (NI) sub-dimension is 11.74 ± 3.22, the mean score for the emotion towards nutrition (NE) sub-dimension is 17.97 ± 4.14, The mean score for the pozitive nutrition (PN) sub-dimension was found to be 13.18 ± 2.43 and the mean score for the bad nutrition (BN) sub-dimension was found to be 11.61 ± 2.61.

Table 1. *Distribution of Students' Physical Activity Questionnaire and Healthy Nutrition Attitude Scale Mean Scores*

Scales	Mean±SD	Min-Max
Physical Activity Questionnaire	199,58±62,382	50-340
Healthy Nutrition Attitude Scale		
Nutrition Information (NI)	11,74±3,22	6-18
Nutritional Emotion (NE)	17,97±4,14	11-26
Positive Nutrition (PN)	13,18±2,43	8-18
Bad nutrition (BN)	11,61±2,61	5-17

When the distribution of the physical activity questionnaire mean scores of the students was examined by sociodemographic characteristics, it was seen that the physical activity level of the boys was higher than the physical activity level of the girls, and the difference was found to be statistically significant ($p < 0.05$). Significance was found between perceived health status and physical activity level, and it was observed that the difference stems from those who perceive their health well ($p < 0.05$). A statistically significant difference was found between the mother's education level and the level of physical activity, and it was determined that the difference was caused by those whose mothers were university graduates ($p < 0.05$). It was found that the physical activity level of students whose mothers are working is higher than those who do not work, and the difference is statistically significant ($p < 0.05$). A statistically significant difference was found between the educational status of the father and the level of physical activity, and it was determined that the difference stems from those whose fathers are university graduates ($p < 0.05$). No statistical significance was found between physical activity level and family type, father's employment status and perceived income status ($p > 0.05$) (Table 2).

Table 2. *Distribution of Students' Physical Activity Questionnaire Scores According to Sociodemographic Characteristics*

Variables	Physical Activity Questionnaire Mean±SD	Test value P value
Gender		
Female	197,70±62,07	t: 0,391
Male	202,29±63,75	p:0,006*
Family type		
Nuclear family	201,44±59,79	F:1,583
Extended family	192,98±62,49	p:0,058
Parents divorced	209,37±66,60	
Perceived Health Level		
Good	208,44±63,87	F:0,773
Middle	197,54±54,06	p:0, 0,01*
Bad	191,82±65,89	
Mother Education Status		
Literate	190,35±62,40	F:0,984
Primary education	195,96±53,52	p:0,002*
High school	198,96±53,52	
University	215,72±52,95	
Mother working status		
Working	211,30±62,24	U:55,50
Not working	184,41±59,79	p:0,002*
Father's Education Status		
Primary education	179,83±55,81	F:0,780
High school	209,65±62,39	p:0,021*
University	219,70±66,44	
Father's employment status		
Working	200,79±62,39	t:1,012
Not working	196,86±63,16	p:0,462
Perceived Income Level		
Good	194,39±59,99	F: 0,773
Middle	187,76±64,77	p:0,243
Bad	214,84±60,11	

F: One Way Anova, t: t test, U:Mann Whitney U Test, *p<0,05

When the distribution of mean scores of the healthy eating attitude scale was examined according to the sociodemographic characteristics of the students, a significant difference was found between the family type and the positive nutrition sub-dimension, and it was found that the difference was due to those living in the nuclear family ($p < 0.05$). A significant difference was found between the perceived health status and the positive nutrition sub-dimension, and it was observed that the difference was due to those who perceived their health as good ($p < 0.05$). A significant difference was found between the mother's education level and the emotion towards nutrition sub-dimension, and it was observed that the difference was due to the university graduates ($p < 0.05$). It was determined that there is a statistically significant difference between the sub-dimensions of knowledge about nutrition and emotion towards nutrition of students whose mothers are working ($p < 0.05$).

Table 3. *Distribution of Students' Attitudes towards Healthy Nutrition Scale by Socio-demographic Features*

Variables	NI Mean±SD	NE Mean±SD	PN Mean±SD	BN Mean±SD
Gender				
Female	11,99±3,09	17,90±4,09	13,29±2,41	11,65±2,58
Male	11,38±3,40	18,06±4,25	13,02±2,48	11,54±2,68
Test value	t: 1,006	t: 0,210	t: 0,586	t: 0,224
P value	p:0,339	p:0,801	p:0,59	p:0,55
Family type				
Nuclear family	11,18±3,32	18,10±3,89	**13,54±2,19**	11,64±2,59
Extended family	12,14±3,40	18,10±4,47	12,96±2,60	11,39±2,75
Parents divorced	11,78±2,69	17,52±3,96	13,07±2,48	11,96±2,44
Test value	F:0,975	F:0,202	F:0,649	F:0,420
P value	p:0,38	p:0,81	p:0,03*	p:0,65
Perceived Health Level				
Good	11,62±3,13	17,18±4,08	**14,61±2,40**	11,96±2,73
Middle	12,21±3,17	18,71±4,27	13,57±2,57	11,43±2,42
Bad	11,55±3,39	18,30±4,08	11,51±2,28	11,36±2,63
Test value	F:0,408	F:1,420	F:2,839	F:0,649
P value	p:0,66	p:0,24	p:0,03*	p:0,52
Mother Education Status				
Literate	10,13±2,89	16,72±4,10	12,96±2,65	11,61±2,35
Primary education	11,88±3,87	17,88±3,79	13,55±1,99	10,86±2,35
High school	12,17±2,56	18,52±3,66	13,05±2,77	11,32±2,93
University	12,25±3,22	**19,04±4,92**	13,16±2,21	12,33±2,65
Test value	F:2,524	F:1,597	F:0,322	F:1,929
P value	p:0,06	p:0,019*	p:0,80	p:0,12
Mother working status				
Working	12,45±2,98	18,35±4,19	13,18±2,30	11,61±2,78
Not working	10,80±3,31	17,47±4,07	13,18±2,62	11,61±2,43
Test value	U:7,500	U:12,00	U:65,00	U:12,50
P value	p:0,02*	p:0,021*	p:0,135	p:0,923
Father's Education Status				
Primary education	11,02±3,69	16,91±4,33	12,30±1,97	11,07±2,22
High school	11,79±2,45	18,26±4,20	12,98±2,72	11,77±2,89
University	**13,55±2,68**	**19,45±2,98**	**13,84±2,10**	12,70±2,73
Test value	F:4,792	F:2,915	F:3,159	F:3,043
P value	p:0,010*	p:0,038*	p:0,046*	p:0,052
Father's employment status				
Working	11,99±3,32	17,59±4,11	13,47±2,41	11,64±2,64
Not working	11,17±2,97	18,81±4,15	12,53±2,41	11,53±2,59
Test value	t: 0,629	t:0,524	t:0,086	t:0,499
P value	p:0,206	p:0,145	p:0,056	p:0,829
Perceived Income Level				
Good	**12,79±3,09**	18,33±4,03	12,67±2,49	12,27±2,66
Middle	11,33±3,02	17,59±4,11	13,29±2,63	11,29±2,52
Bad	10,95±3,29	18,05±4,32	13,47±2,18	11,40±2,64
Test value	F: 3,955	F:0,307	F:1,071	F:1,515
P value	p:0,022*	p:0,73	p:0,34	p:0,22

F: One Way Anova, t: t test, U:Mann Whitney U Test, *p<0,05

A significant difference was found between the educational status of the father and the sub-dimensions of nutrition, emotion towards nutrition, and positive nutrition, and the difference was found to be due to university graduates ($p < 0.05$). A significant difference was found between the perceived income level and the sub-dimension of knowledge about nutrition, and it was observed that the difference was due to those who perceived their income as good ($p < 0.05$) (Table 3).

When the relationship between students' knowledge about physical activity and healthy nutrition scale nutrition, emotion towards nutrition, positive nutrition and malnutrition was evaluated, it was determined that there was a moderate relationship between physical activity and information about nutrition, emotion towards nutrition, positive nutrition and malnutrition sub-dimensions ($p < 0.05$). It was determined that there is a moderate relationship between the knowledge about nutrition sub-dimension and the emotion towards nutrition, positive nutrition and malnutrition sub-dimensions ($p < 0.05$). A high level of correlation was found between the positive nutrition sub-dimension and the malnutrition sub-dimension ($p < 0.05$) (Table 4).

Table 4. *The Relationship between the Physical Activity Questionnaire of the Students and the Sub-Dimensions of the Healthy Nutrition Attitude Scale*

Scales	**Physical Activity Questionnaire**	**NI**	**NE**	**PN**	**BN**
Physical Activity Questionnaire	1,00				
Nutrition Information (NI)	r:0,551 p:0,006*	1,00			
Nutritional Emotion (NE)	r:0,68 p:0,04*	r:0,618 p:0,02*	1,00		
Positive Nutrition (PN)	r:0,624 p:0,026*	r:0,657 p:0,029*	r:0,543 p:0,019	1,00	
Bad Nutrition (M)	r:-0,391 p:0,008*	r:-0,432 p:0,017*	r:-0,451 p:0,070	r:-0,747 p:0,021*	1,00

r: Pearson correlation analysis, *p<0,05

Discussions

The physical activity questionnaire mean score of the students participating in the study was 199.58 ± 62.382 (physically inactive inactive group) (<300 met). It was observed that the physical activity level of boys was higher than the physical activity level of girls, and the difference was found to be statistically significant. Similarly in the literature, a statistically significant difference was found between gender and physical activity levels in the study conducted by İşgüder (2019) on high school students, and the average physical activity level of male students (123.77□81.61) 48.06) were further determined.

In the study conducted by Ölçücü et al with secondary school students, it was found that the physical activity level of male students was higher than that of

female students (Ölçücü et al, 2015). One of the reasons for the higher physical activity level of male students may be that boys are directed more to sports or they are thought to be more willing. Every child should be directed to sports from a young age, it is important at this stage that families support and guide their children. The environment plays an important role in the acquisition of this habit.

In this study, a statistically significant difference was found between the physical activity mean scores and the perceived health status, mother's education level, mother's employment status and father's education level. It can be said that physical activity increases if the individual's health is favorable and the education level of the parents increases. There was no statistical significance between physical activity level and family type, fathers working status and perceived income status. Similarly, in the study conducted by Yılmaz (2020) with high school students, no statistically significant difference was found between income groups and physical activity status. Especially in the transition period from childhood to adulthood, it is very important to acquire and maintain healthy style behaviors. Although regular and healthy eating is important for all age groups, it is among the more priority issues in adolescence. In this study, when the mean scores of the students in the sub-dimensions of the attitude towards healthy eating scale were evaluated, the mean score of the knowledge about nutrition (BHB) sub-dimension was 11.74 ± 3.22 and the mean score for the emotion towards nutrition (BYD) sub-dimension was 17.97 ± 4.14. The mean score of the positive nutrition (OB) sub-dimension was found to be 13.18 ± 2.43 and the mean score for the malnutrition (BP) sub-dimension was found to be 11.61 ± 2.61. In a study conducted by Özenoğlu et al. (2021) on a population of 750; When the mean scores of the participants' SSTO and its sub-dimensions are examined; It was found to be 20.32 ± 3.17 for the Knowledge about Nutrition sub-dimension, 17.97 ± 4.48 for the Emotion about Nutrition sub-dimension, 17.87 ± 3.91 for the Positive Nutrition sub-dimension, and 19.41 ± 3.92 for the Bad Nutrition sub-dimension. In this study, the highest sub-dimension mean score was information about nutrition, while in the study of Özenoğlu et al., This sub-dimension had the highest score average. This is thought to be due to the fact that this study was conducted in high school students and the other in an adult population aged 20-65. Healthy nutrition education at this age can form the basis of a healthy life (Özenoğlu et al., 2021).

A significant difference was found between family type and positive nutrition sub-dimension, which can be explained by gaining healthy lifestyle behaviors in the family environment first. Perceived health status can also be supported by a positive nutritional attitude. A statistical significance was also found between the mother's education level and the emotion towards nutrition sub-dimension. Similarly, Karaağaç (2020) found a significant difference between the attitude score towards healthy eating and education level in his study on adults. In this study, a statistical significance was found between the mother's working status and a different sub-dimension of knowledge about nutrition and the emotion towards nutrition sub-dimension. In the study of Özenoğlu et al. (2021), when the sub-dimensions of the Attitudes Towards Healthy Nutrition Scale (SCSTO) were

examined; In the Knowledge about Nutrition sub-dimension, mean scores of women were found to be significantly higher. In this case, taking into account the characteristics of the society lived in, it can be said that the role of the mother is more prominent and influential than the role of the father in nutrition. A significant relationship was also found between the father's educational status and perceived income and the sub-dimension of feelings about nutrition. Similar to this study, in another study, this sub-dimension total score was found to be significantly higher in men (Özenoğlu et al., 2021). When the income is evaluated, it can be considered as a factor that supports behavioral change in the process of forming a healthy eating attitude and can be effective in this respect.

In this study, it was determined that there is a moderate relationship between physical activity and knowledge about nutrition, emotion towards nutrition, positive nutrition and malnutrition sub-dimensions. Regular exercise and a healthy diet have become more important, especially as lifelong habits are acquired during adolescence. Students may also experience big changes in their eating habits as they reach adolescence. It is necessary to increase these and similar studies in order to detect these situations early and to take precautions.

4. Conclusions

As a result of the study, it was seen that the students were in the risky group in terms of physical activity. According to the results, while girls were in the risk group in terms of physical activity, poor perception of health, literacy of the mother's education level, the mother's not working and the father's education level being primary education were determined as risk factors. Those whose mothers are not working, whose fathers are primary school graduates and their income perceive poorly, those whose mother is literate in terms of nutrition and whose fathers are primary school graduates, those who live in a large family in terms of positive nutrition, those who perceive their health badly and whose fathers are primary school graduates are in the risk group. took place.

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