

The relations between the family nutrition and physical activity levels and prevalence of obesity of their children in turkey

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Summary. *Study objectives:* The aim of the study is to examine the relationship between diet and physical activity levels of family with their children's the prevalence of obesity. *Method:* A total of 433 parents, including mothers (n = 217) and fathers (n = 216), participated in the study. Data form containing socio-demographic characteristics and family nutrition and physical activity (FNPA) questionnaire were applied to the participants. FNPA was developed by Ihmels et al. (2009) and adapted into Turkish by Özdemir (2020). Descriptive statistics and independent samples t test, One-way ANOVA and Pearson correlation analysis were used in the analysis of the data obtained. *Results:* As a result of the research, no relationship was found between mother, father and child Body Mass Index (BMI) values and total scores of FNPA scale ($p > 0.05$). It has been determined that the area where the families live has no effect on their nutrition and physical activity levels. It was found that families with high income levels had higher nutritional and physical activity levels than families with low and middle-income levels ($p < 0.05$). *Conclusions:* It has been observed that the family income level has a direct positive effect on the nutritional and physical activity levels of the individuals. There was no statistically significant difference between the FNPA levels of the individuals participating in the study and the BMI and regional differences of the families.

Key words: Childhood, Family attitude, Nutrition, Physical Activity

Introduction

School-age children have high nutritional needs because they are in a period of rapid growth and adolescent (1). Parents provide a nutritional environment for their child's first experiences with food and nutrition. In addition, the environment includes parents' own eating habits and child feeding practices (2). Psycho-social and environmental factors play an important role in the food selection of adolescents (3,4). Children often tend to eat foods that are served at home and easily accessible. It has been reported that especially parents directly affect the weight and nutritional habits of children (5,6). It has been determined that parents can directly influence children's food

preferences by controlling children's access to food and supporting food production (7). In addition, there are other studies showing that the physical activity level of the parents affects the participation of their children in physical activity. Studies have reported that children with one or two active parents are more active than those whose parents are passive (8,9). In many studies, it has been stated that parental behaviors also affect children's behavioral patterns as well as children's participation in nutrition and physical activity (10,11).

It emphasizes that the increase in childhood health problems throughout the world cannot be explained only by changes in the genetic structure and the role of environmental factors in the formation of mentioned problems. Malnutrition and lack

of physical activity are accepted as important risk factors for many diseases (12). It has been reported that an 'obesogenic' environment and physical inactivity which contribute to overeating have a direct effect on obesity (13,14). Regular exercise keeps the body fit. This physical fitness, which provides weight control and physical control, reduces the risk of cardiovascular diseases and many diseases. In addition, it contributes to the protection of the individual's health by creating a life-protective body reserve (15). It is known that physical activity also reduces the risk of breast cancer due to its effects on hormonal metabolism. In addition, participating in physical activities plays an active role in improving bone resorption and skeletal-muscular system, reducing back pain, maintaining body weight, reducing depression, anxiety and stress. In addition to the medical benefits of physical activity, it has also been reported that it decreases the tendency to violence by increasing social relations (16).

It has been reported that individuals who have regular physical activity lead a healthy life and socialize (17). It is unknown which the intensity, type and frequency of physical activity suitable for different countries. Therefore, it is known that there is generally a consensus on the recommendation of 30 minutes of moderate intensity daily exercise. Longer and more intense exercises for young people are beneficial for healthier bones and muscles. Physical activity does not mean running a heavy, strenuous marathon or competitive sport. Physical activity composes of many things such as walking to school, walking in the park, using the stairs instead of the elevator. Regular physical activity is the most important factor in preventing chronic diseases with a healthy diet (16). Rapid weight gain and excessive energy consumption due to the low energy consumption of individuals can cause weight loss. It is known that maintaining the energy balance depend on proper nutrition and regular physical activity. Therefore, improving children's energy balance is linked to their relationships with family, school, and environment (13). It is thought that 60% of the world population does not have enough physical activity and it is known that the lives of adults in developing countries are more sedentary. Childhood and young adulthood are the most appropriate period for people to acquire physical activity

habits and continue them throughout their lives. It is thought that it is very difficult to change the sedentary lifestyle habits acquired at a young age and bad eating habits in the following periods (16). In this context, the study has aimed determine the level of family's nutrition and physical activity (FNPA) in Turkey to reveal relationship with their children's the prevalence of obesity.

Materials and methods

Participants

Simple sampling method was used in the study. The research sample compose of students who are studying in two different regions of Turkey (Marmara and Southeastern Anatolia).

Demographics and Data Collection Tools

Surveys were applied to Turkey between 6-18 years who are residing in two different regions. The data collection tools used in the study consist of two parts: "Personal information form", "Family Nutrition and Physical Activity Scale (FNPA)".

In the personal information form, the families were asked about their region of residence, their income levels, and the weight-height measurements of the parents and children. In the second part, FNPA scale was used. An online form was used to collect data.

Anthropometric Measurements

It was asked the height and weight measurement values of the children to be written into the data form after the measurements made by the families with their own means. While classifying according to the calculated BMI percentile values, those in the 5th percentile and below are considered as weak, those between the 5th and 85th percentile as normal weight, those between the 85th and 95th percentile as overweight, and those in the 95th percentile as obese. The parents were classified as underweight, normal weight, overweight and obese by using WHO standards (18) after the BMI values of them were calculated.

Family Nutrition and Physical Activity (FNPA) Scale

FNPA scale Ihmel et al. (2009) and the Academy of Nutrition and Dietetics (American Dietetic Association) designed a 21-question questionnaire. The Turkish validity and reliability of the FNPA scale was carried out by Özdemir (2020) (20).

Statistical Analysis

When it is examined whether the obtained data are suitable for normal distribution, kurtosis and skewness values vary between -1.5 and +1.5. The data showed a normal distribution (21). IBM Statistics 22 was used for the analysis of the data obtained. Continuous variables are expressed through \bar{x} and standard deviation through (SD). In the study, t test, one-way ANOVA and Pearson correlation analysis were used for independent groups. In the study, the significance level was accepted as $p < .05$.

Results

The results of the t-test conducted to examine the difference between the regions did not show a statistically significant difference ($p > .05$) (Table 1).

No statistically significant difference was found as a result of the ANOVA test performed to determine whether the scores obtained from the FNPA scale of the individuals participating in the study differ significantly according to the BMI values of the parents ($p > .05$) (Table 2; Table 3). As a result of the analysis, a statistically significant difference was found between the income levels of the parents and the total scores of the FNPA scale ($F = 8.55$; $p < .05$) (Table 4). Tukey test was conducted to determine from which options this difference arises. As a result of the test, it was concluded in favor of those with high income levels and those with middle and low income. It has been found that middle-income families have higher levels of FNPA than low-income families.

Table 1. Comparison of participants' FNPA levels according to region of residence

Variables	Region	N	\bar{X}	Sd	t	p
FNPA	Southeastern Anatolia	199	2.58	.32	-1.052	.293
	Marmara	234	2.61	.31		
	Total	433				

Table 2. Comparison of participants' FNPA levels according to their mother BMI

Variables	Mother BMI	N	\bar{X}	Sd	F	p
FNPA	Underweight	12	2.66	.45	.211	.899
	Normal weight	149	2.60	.31		
	Overweight	153	2.60	.27		
	Obesity	119	2.58	.35		
	Total	433				

Table 3. Comparison of participants' FNPA levels according to their father BMI

Variables	Father BMI	N	\bar{X}	Sd	F	p
FNPA	Underweight	7	2.65	.24	.744	.526
	Normal weight	143	2.57	.34		
	Overweight	192	2.62	.31		
	Obesity	91	2.59	.29		
	Total	433				

In the study, the correlation between the mean score of the FNPA scale and the BMI of the mothers, the BMI of the fathers and the BMI percentile values of the children was examined (Table 5). Among these variables, it was observed that there was no significant correlation between the child’s BMI percentile value and the total score of the scale ($p = 0.101$), the BMI values of the mothers ($p = .291$) and the father’s BMI values ($p = .324$). It was found that there was no correlation between BMI values of mothers and BMI values of fathers between total scores of the scale.

Discussion

There are many positive studies about an active lifestyle and healthy nutrition, especially by the World Health Organization. Rather than these studies, it is thought that family members have a great effect on a healthy diet and a sportive lifestyle for their children. Not only can family members prevent obesity, but they can encourage older children to participate in regular physical activity (22). For this reason, the family is a key element in shaping and influencing children’s lifestyle-related behaviors. Families especially recommend that their children encourage school health programs, healthy eating and physical activity styles (23).

In the study, it was examined whether BMI of the parents and BMI of the children, family income levels and the region where they live in had an effect on their nutrition and physical activity levels. As a result of the data obtained in the study, no statistically significant difference was found between the FNPA levels of the regions where the participants live (Table 2). According to the results we have obtained, it is thought that the regions where the individuals live do not have a direct effect on nutrition and physical activity. There was no significant difference between BMI values and nutrition and physical activity levels of the mothers and fathers who participated in our study. (Tables 3, 4). According to another test result, statistically significant differences were found between families’ income levels and their nutritional and physical activity levels (Table 5). It is seen in the findings that family income is important in terms of physical activity and nutritional levels of individuals.

It was found that BMI values of mother, father and child were not related with nutrition and physical activity levels (Table 6). As a result of the literature review, in a study conducted in Oman, it was found that the BMI values of the parents were associated with their nutritional and physical activity levels. The result obtained is not in parallel with our study (23). In the study on income levels, Janssen et al. (2016) found that

Table 4. Comparison of participants’ FNPA levels according to family income status

<i>Variables</i>	<i>Income Status</i>	<i>N</i>	\bar{X}	<i>Sd</i>	<i>F</i>	<i>p</i>	
FNPA	Low (a)	67	2.47	.33	8.55	.000	c-a c-b b-a
	Middle (b)	359	2.62	.30			
	High (c)	7	2.81	.23			
	Total	433					

* $p < 0.05$

Table 5. Correlation between the FNPA levels and children and their parents’ BMI

		FNPA Scale	Child BMI Percentile	Mother BMI	Father BMI
Child BMI Percentile	r	.062	1.000		
	p	.101			
Mother BMI	r	-.027	.066	1.000	
	p	.291	.086		
Father BMI	r	.022	-.010	-.026	1.000
	p	.324	.420	.295	

individuals with high family income adopt a sedentary lifestyle more (24). Another study found that families' income levels were directly positively associated with children's nutrition and physical activity levels (23). Children of individuals living in high-income countries tended to buy healthy food. In contrast, children of highly educated parents living in middle and socioeconomic countries tended to consume unhealthy food (25). In Germany, it has been found that children of overweight mothers also get high protein (26). In this study, the nutritional and physical activity levels of the children are related to the family income. This parallels the result we have obtained. Although there was no relationship between mother and father BMI and FNPA levels in our study, it was observed in many studies in the literature. Children of individuals living in high-income countries tended to buy healthy food. In contrast, children of highly educated parents living in middle and socioeconomic countries tended to consume unhealthy food (25). In Germany, it has been found that children of overweight mothers also get high protein (26). In this study, the nutritional and physical activity levels of the children are related to the family income. This parallels the result we have obtained. Although there was no relationship between mother and father BMI and FNPA levels in our study, it was observed in many studies in the literature. Children of individuals living in high-income countries tended to buy healthy food. In contrast, children of highly educated parents living in middle and socioeconomic countries tended to consume unhealthy food (25). In Germany, it has been found that children of overweight mothers also get high protein (26). In this study, the nutritional and physical activity levels of the children are related to the family income. This parallels the result we have obtained. Although there was no relationship between mother and father BMI and FNPA levels in our study, it was observed in many studies in the literature. It is thought that there may be a cultural difference here. And also, FNPA levels in Turkey should be investigated with different demographic information. Conclusion

As a result, it has been determined that FNPA are related to the income levels of the individuals. In the light of the results we have achieved, the necessary support and incentives for families with

middle and low-income levels and their children should be increased through various institutions and organizations. In addition to the milk campaigns for children that continue through various institutions and organizations in our country, it should be supported with vitamin and protein-like projects. In addition, the importance of physical activity in terms of health should be instilled in children from an early age and attention should be paid to raising them as the conscious parents of future.

References

1. Nies MA, McEwen M. Community health nursing: promoting the health of populations: Elsevier Health Sciences; 2001.
2. Wardle J, Guthrie C, Sanderson S, et al. Food and activity preferences in children of lean and obese parents. *International journal of obesity*. 2001;25(7):971-7
3. Bassett R, Chapman GE, Beagan BL. Autonomy and control: the co-construction of adolescent food choice. *Appetite*. 2008;50(2-3):325-32
4. Garipağaoğlu M, Sahip Y, Budak N, et al. Food types in the diet and the nutrient intake of obese and non-obese children. *Journal of clinical research in pediatric endocrinology*. 2008;1(1):21
5. Benton D. The influence of dietary status on the cognitive performance of children. *Molecular nutrition & food research*. 2010;54(4):457-70
6. Ventura AK, Birch LL. Does parenting affect children's eating and weight status? *International Journal of Behavioral Nutrition and Physical Activity*. 2008;5(1):1-12
7. Berg C. Influences on Swedish schoolchildren's dietary selection: focus on fat and fibre at breakfast. *Scandinavian Journal of Nutrition*. 2002;46(4):194-6
8. Fuemmeler BF, Anderson CB, Mâsse LC. Parent-child relationship of directly measured physical activity. *International Journal of Behavioral Nutrition and Physical Activity*. 2011;8(1):1-9
9. Sigmund E, Turonová K, Sigmundová D, et al. The effect of parents' physical activity and inactivity on their children's physical activity and sitting. *Acta Universitatis Palackianae Olomucensis Gymnica*. 2008;38(4)
10. Golan M, Crow S. Parents are key players in the prevention and treatment of weight-related problems. *Nutrition reviews*. 2004;62(1):39-50
11. Welk GJ, Wood K, Morss G. Parental influences on physical activity in children: An exploration of potential mechanisms. *Pediatric exercise science*. 2003;15(1):19-33
12. Hawkes C, Organization WH. Marketing food to children: the global regulatory environment: World Health Organization; 2004.

13. Dietz WH, Gortmaker SL. Preventing obesity in children and adolescents. Annual review of public health. 2001;22(1):337-53
14. Hill JO, Wyatt HR, Reed GW, et al. Obesity and the environment: where do we go from here? Science. 2003;299(5608):853-5
15. Abdurrahman G, Şener Ü, Karabacak H, et al. Kadın ve erkek genç erişkinler arasında fiziksel aktivite ve yaşam kalitesi farklılıklarının araştırılması. Kocatepe Tıp Dergisi. 2011;12(3):145-50
16. Akyol A, Bilgiç A, Ersoy G. FİZİKSEL AKTİVİTE, BESLENME VE SAĞLIKLI YAŞAM. Baskı Ankara: Klasmat Matbaacılık. 2008
17. Weir JP. Quantifying test-retest reliability using the intraclass correlation coefficient and the SEM. The Journal of Strength & Conditioning Research. 2005;19(1):231-40
18. WHO. Nutrition and Food Safety 2021 [Available from: <https://www.who.int/teams/nutrition-and-food-safety>].
19. Ihmels MA, Welk GJ, Eisenmann JC, et al. Development and preliminary validation of a Family Nutrition and Physical Activity (FNPA) screening tool. International Journal of Behavioral Nutrition and Physical Activity. 2009;6(1):1-10
20. Özdemir Ş. "Çocukluk çağı obezitesini değerlendirmede kullanılan" aile beslenme ve fiziksel aktivite ölçeği-nin" Türkçe geçerlik ve güvenilirlik çalışması/Şule Özdemir; tez danışmanı Özlem Terzi. 2020
21. Tabachnick BG, Fidell LS, Ullman JB. Using multivariate statistics: Pearson Boston, MA; 2007.
22. Scaglioni S, Salvioni M, Galimberti C. Influence of parental attitudes in the development of children eating behaviour. British journal of nutrition. 2008;99(S1):S22-S5
23. Al Yazeedi B, Berry DC, Crandell J, et al. Family influence on children's nutrition and physical activity patterns in Oman. Journal of Pediatric Nursing. 2021;56:e42-e8
24. Janssen I, Boyce WF, Simpson K, et al. Influence of individual-and area-level measures of socioeconomic status on obesity, unhealthy eating, and physical inactivity in Canadian adolescents. The American journal of clinical nutrition. 2006;83(1):139-45
25. Hinnig PdF, Monteiro JS, De Assis MAA, et al. Dietary patterns of children and adolescents from high, medium and low human development countries and associated socioeconomic factors: a systematic review. Nutrients. 2018;10(4):436
26. Pei Z, Flexeder C, Fuertes E, et al. Mother's body mass index and food intake in school-aged children: results of the GINIplus and the LISAPLUS studies. European journal of clinical nutrition. 2014;68(8):898-906

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