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# COMPARISON OF SCHOOL CHILDREN AND THEIR PARENTS' PHYSICAL ACTIVITY WITH THEIR NUTRITION STATUS

## OKUL ÇOCUKLARI VE EBEVEYNLERININ FIZIKSEL AKTIVITE ILE BESLENME DURUMLARININ KARŞILAŞTIRILMASI

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**ABSTRACT**

**Objective:** This study was conducted to compare physical activity levels and dietary habits of school children according to parents' compliance with physical activity and adherence to Mediterranean diet.

**Methods:** This descriptively research was finished face to face with the candidates of in public schools 339 students (56.9% male) and parents. The study utilized several assessment tools to gather a comprehensive range of data. These tools included the Socio-Demographic Information Form, the Physical Activity Questionnaire for Older Children (PAQ-C), the Mediterranean Diet Quality assessment (KIDMED), the International Physical Activity Questionnaire (IPAQ), and the Mediterranean Diet Adherence Screener Scale (MEDAS). Alongside these questionnaires, anthropometric measurements were conducted and subsequently categorized based on the Body Mass Index (BMI) in relation to age groups.

**Results:** 57.5% of the children and 48.1% of the parents are of normal weight. While 52.8% of children and 52.5% of parents had low physical activity, it was determined that more than half of both children and parents (54.6%-54.9%, respectively) had low compliance with Mediterranean diet adherence. Parental BMI score ($R2= 0.057$, $p<0.05$), IPAQ score ($R2= 0.084$, $p<0.001$) and MEDAS score ($R2= 0.100$, $p<0.001$), affect the children's weight status, PAQ-C score, and KIDMED according to multiple regression

**Conclusion:** The study found a positive relationship between parents' body mass index, physical activity status, Mediterranean diet, and children's weight status, physical activity and dietary compliance. These results further emphasize the connection between children's physical activity levels and parental nutrition approaches.

**Keywords:** Children, Mediterranean Diet, Obesity, Parents, Physical Activity, Public Health.

**ÖZET**

**Amaç:** Bu çalışma, okul çağındaki çocukların fiziksel aktivite düzeylerini ve beslenme alışkanlıklarını ebeveynlerin fiziksel aktiviteye uyumu ile Akdeniz diyeti uyumlarına göre karşılaştırmak amacıyla yapıldı.

**Yöntem:** Tanımlayıcı desende yapılan bu çalışma, devlet okullarında öğrenim gören 339 öğrenci (%56.9 erkek) ve velilerin katılımıyla yüz yüze gerçekleştirildi. Sosyodemografik bilgi formu, Büyük Çocuklar için ebeveynlerin Fiziksel Aktivite Anketi (PAQ-C), Akdeniz Diyet Kalitesi (KIDMED), Uluslararası Fiziksel Aktivite Anketi (IPAQ) ve Akdeniz Diyeti Uyum Ölçeği (MEDAS) uygulandı. Antropometrik ölçümler değerlendirildi ve Beden Kitle İndeksi (VKİ)/yaşa göre sınıflandırıldı.

**Bulgular:** Çocukların %57,5'i ve ebeveynlerin %48,1'i normal kilodadır. Çocukların %52,8'i ve ebeveynlerin %52,5'i düşük fiziksel aktiviteye sahipken, hem çocukların hem de ebeveynlerin yarısından fazlasının (sırasıyla %54,6-%54,9) Akdeniz diyeti uyumunun düşük olduğu belirlendi. Yapılan çoklu regresyon sonuçlarına göre, ebeveyn VKİ puanı ($R2= 0,057$, $p<0,05$), IPAQ puanı ($R2= 0,084$, $p<0,001$) ve MEDAS puanı ($R2= 0,100$, $p<0,001$), çocukların kilo durumunu, PAQ-C puanını ve KIDMED'i etkiler.

**Sonuç:** Çalışmada ebeveynlerin vücut kitle indeksi, fiziksel aktivite durumu, Akdeniz diyeti ile çocukların kilo durumu, fiziksel aktivite ve diyete uyumları arasında pozitif yönlü bir ilişki bulunmuştur. Bu sonuçlar ayrıca çocukların fiziksel aktivite düzeyleri ile ebeveynlerin beslenme yaklaşımları arasındaki bağlantıyı vurgulamaktadır.

**Anahtar Kelimeler**: Akdeniz Diyeti, Çocuklar, Ebeveynler, Fiziksel Aktivite, Halk Sağlığı, Obezite.

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## INTRODUCTION

In recent years, obesity and weight gain in school age children have demonstrated increases (WHO Regional office for Europe, 2022). Childhood age obesity is a multifactorial status impacted by unhealthy lifestyles, genetic predisposition, socioeconomic and cultural status (Cheraghi et al., 2019). Physical activity in the childhood stage, nutrition and other health related lifestyle behaviors are impacted by physiological, psychological, familial, and environmental factors, as these behaviors tend to continue until adulthood (Moradell et al., 2022). Especially the lifestyles of children, directly or indirectly, are impacted by family environments, parental roles, and behavioral modeling. The age, knowledge and education, work status, physical activity and nutrition status of parents are known to be the most important factors benefiting weight status in a familial manner (Carbert et al., 2019). Therefore, the development of healthy lifestyle behaviors of parents has an important impact on the general health of children. In the literature, excess weight observed in children is an important indicator of obesity and related illnesses in the adulthood stage. For this reason, the childhood stage is an opportunity for the earning of healthy lifestyle behaviors (Saqib et al., 2020).

Regular physical activity and healthy nutrition is important at all ages, however, as it impacts growth in the childhood stage and cognitive development, quality of life, and school performance, it is necessary to put emphasis on it (WHO, 2019). For the prevention of many non-contagious illnesses and quality of life, regular participation in physical activity is known to be important (Saqib et al., 2020). In the literature, it was stated that a weak diet correlates with overly motionless lifestyles, while a healthy diet correlates with more physical activity (Jezewska-Zychowicz et al., 2018). The Mediterranean diet, accepted to be a diet model that may be protected and developed throughout the entire duration of life (Caprara, 2021), especially in adulthood, is impactful on metabolic syndrome, cardiovascular illnesses, type 2 diabetes mellitus, neoplastic illness and general mortality (López-Gil et al., 2020). In the literature, a positive relationship between high adherence to the Mediterranean diet in children and an active lifestyle (Manzano-Carrasco et al., 2020), as well as the fact that adherence to the Mediterranean diet lowers the incidence of non-chronic contagious illnesses was stated (Owen et al., 2018). Due to the complicated nature of the determiners of healthy lifestyle behaviors, in the scope of the World Health Organization School Health Development Frame, parent participation in school-based interventions was defended and the important impact of parents on children's behaviors was emphasized (Scaglioni et al., 2018). Therefore, parents' display of healthy lifestyle behaviors may encourage children to adopt these behaviors.

When the literature is inspected, the body mass index of children is an important regulatory mechanism for parent applications, nutrition, and physical activity. However, from what we inspected, despite its strong positive impacts on parent diets, its weak impact on physical activity demonstrates the fact that more research is required on the factors related to children (Machado et al., 2018). Our hypothesis in this study was: The body mass index, adherence to the Mediterranean diet and physical activity levels in parents have an impact on the body mass index, adherence to the Mediterranean diet and physical activity levels among children.

## MATERIALS AND METHODS

### Study setting and population

This study was conducted descriptively. The scope of the study encompassed students registered to three middle schools connected to the Ministry of National Education of a province (N=2424). ''G-power-3.1.9.7'' analysis was used in the study. When determining the sample size, it was determined that 331 students and parents with an alpha = .05, 95% trust level and 0.8 margin of error must be reached ( Yazıcıoğlu &Erdoğan, 2014). To this end, the research questionnaire was completed by 339 willing students and parents. The study was conducted between January-March 2023 with students and parents outside of class hours in a face-to-face manner. A questionnaire form consisting of three parts, which was created for both parents and children, was applied. In the first part, all participants were asked questions such as demographic information, age, gender, grade level, birth weight of their children, and anthropometric body height and weight measurements. The second part covered physical activity practices. Chapter three covered adherence to the Mediterranean Diet.

***Inclusion Criterion:***

(i) are willing to participate,

(ii) are students who continue their classes throughout the dates of the study

(iii) are mothers or female caretakers (grandmothers, etc.) were included in the study.

***Exclusion Criterion:***

(i) Students or their parents who are unwilling to participate in the study.

**Data Collection Tools**

The research incorporated a range of data sources, including the socio-demographic information forms completed by both students and their parents. Additionally, researchers employed established assessment tools such as the Physical Activity Questionnaire for Older Children (PAQ-C), the Mediterranean Diet Quality assessment (KIDMED), the International Physical Activity Questionnaire (IPAQ), and the Mediterranean Diet Adherence Screener Scale (MEDAS). These instruments were thoughtfully designed by the researchers, drawing insights from existing literature. Detailed explanations of these utilized instruments are provided below.

***Socio-demographic information form***

Prepared by researchers using literature and studies on the subject (Van De Kolk et al., 2019; Machado et al., 2018; Sekulic et al., 2021), this form is made up childrens' of 6 questions (age, gender, learning status, income status, technological used, BMI) and parents of 4 questions (age, education status, technological used, BMI).

***The Physical Activity Questionnaire for Older Children (PAQ-C)***

Developed by Kowalski et al., this scale is made up of 9 questions that are based on the remembrance of activities done in the last 7 days and was evaluated with the likert type (Kowalski et al., 2004). Emlek Sert and Temel (2014) conducted a study in our country to assess the validity and reliability of the measurement tools For the calculation of the physical activity points of the participants, the average of all questions are obtained. PAQ-C involves 5 points for the highest physical activity level, and 1 for the lowest physical activity level. The Cronbach alpha reliability value of the scale is 0.74. The Cronbach alpha reliability value of our study is 0.83.

***Mediterranean Diet Quality (KIDMED)***

Developed by Serra-Majem et.al (2004) this scale is made up of 16 questions and was evaluated with the likert type**.** Şahingöz and colleagues conducted a validity and reliability study specific to our country regarding the measurement tools (Şahingöz et al., 2019). The Cronbach alpha reliability value of the scale is 0.72. The Cronbach alpha reliability scale of our study is 0.79. The cut-off points of KIDMED are as shown below; ≥ points: highest diet quality; 4-7 points: average diet quality; ≤ 3 points: very low diet quality.

***International Physical Activity Questionnaire (IPAQ)***

Developed by Craig, et al., 2003 the scale's Turkish reliability and validity study was conducted by Saglam et al. (2010). Knowledge on time spent while sitting, walking intermediate activities, and severe activities are provided. The evaluation of all activities must be done at once for at least 10 minutes and the scale is made up of 7 questions. For the evaluation of the scale; energy levels under 600 MET are considered no physical activity, energy levels between 600-3000 MET are considered insufficient physical activity levels and energy levels equal to or higher than 3000 MET are considered sufficient physical activity levels. The weekly and daily physical activity level of the individual is evaluated based on these values.

***Mediterranean Diet Adherence Screener Scale (MEDAS)***

Martinez Gonzalez et al. (2012) formulated this scale, comprising a total of 14 questions Pehlivanoglu et al. (2020) carried out a Turkish reliability and validity study for the study With each question being either 1 or 0 points depending on consumption amounts, the total point calculations are conducted. A total point of 7 or higher demonstrates that the individual sufficiently adherence, 9 or higher implies that the individual strictly adherence to the diet. The Cronbach alpha reliability value of the study is 0.83. The Cronbach alpha reliability value in our study is 0.77.

**Statistical analysis**

The data obtained from the study was evaluated with the SPSS24 package program. For the depiction of descriptive factors, numbers, point average, percentage distribution, and standard deviation were utilized. The Kolmogorov-Smirnov and Shapiro-Wilk tests were employed to evaluate the normal distribution of the data. The data of the research was inspected with multiple regression analysis. The level of significance was determined as $p<0.05$.

### Ethical Principles of the Study

Ethics committee approval (Decision no: E.47278, Date: 28.09.2022/126) was received from Şırnak University Clinical Research Ethics Committee and in order to conduct the study in schools, the Ministry of National Educations Institutional Permission (E-61543340-604.01.01-62607975) was obtained. Rules stated in the Helsinki declaration were followed throughout the study. The written consent of students and their families willing to participate in the study was obtained.

## RESULTS

This section inspects the sociodemographic properties of school children and their parents, their body mass indices, their physical activity and Mediterranean diet adherence levels.

**Table 1.** School Children Sociodemographic Properties Distribution

| | **Number** | **%** |
|---|---|---|
| **Age** (Mean ±SD) years | 12.56 ±0.92 | |
| **Gender** | | |
| Female | 146 | 43.1 |
| Male | 193 | 56.9 |
| **Learning Status** | | |
| 6th grade | 37 | 10.9 |
| 7th grade | 139 | 41.0 |
| 8th grade | 163 | 48.1 |
| **Income Status** | | |
| Good | 70 | 20.6 |
| Medium | 203 | 59.9 |
| Low | 66 | 19.5 |
| **Duration of used technological devices/day (phone, computer, etc.)** | | |
| Less than 1 hours a day | 208 | 61.4 |
| 1-2 hours a day | 103 | 30.4 |
| 3-4 hours a day | 23 | 6.8 |
| 5-6 hours a day and over | 5 | 1.5 |
| **BMI** | | |
| <18.5 kg/m2 | 139 | 41.0 |
| 18.5–24.9 kg/m2-normal | 195 | 57.5 |
| 25–29.9 kg/m2-slightly fat | 4 | 1.2 |
| 30–39.9 kg/m2-obese | 1 | 0.3 |
| **PAQ-C score (Mean ±SD)** | 3.11 ± 0.61 | |
| Insufficient physical activity (below average) | 179 | 52.8 |
| Sufficient physical activity (above average) | 160 | 47.2 |
| **KIDMED (score)** | | |
| Low- bad nutrition (<4 points) | 185 | 54.6 |
| Medium- intervention on diet necessary (4-7 points) | 143 | 42.2 |
| Good- ideal mediterranean diet (8-12 points) | 11 | 3.2 |
| **Total** | 339 | 100.0 |

When Table 1 was analysed, the children, 56.9% were male, 48.1% were 8th grade, 51.5% had a normal BMI, and 52.8% had a low PAQ-C score and 54.6% had a KIDMED was found to be low (Table 1).

**Table 2.** Parents' Sociodemographic Properties Distribution

| | **Number** | **%** |
|---|---|---|
| **Age** | 35.64 ±3.86 | |
| **Education status** | | |
| Illiterate | 35 | 10.3 |
| Literate | 25 | 7.4 |
| Primary School | 114 | 33.6 |
| Middle School | 95 | 28.0 |
| High School | 44 | 13.0 |
| License and over | 26 | 7.7 |
| **Duration of used technological devices/day (phone, computer, etc.)** | | |
| Less than 1 hours a day | 122 | 36.0 |
| 1-2 hours a day | 178 | 52.5 |
| 3-4 hours a day | 31 | 9.1 |
| 5-6 hours a day and over | 8 | 2.4 |
| **BMI** | | |
| Weak (<18.5 kg/m2) | 3 | 0.9 |
| Normal (18.5–24.9 kg/m2) | 163 | 48.1 |
| Slightly Fat (25–29.9 kg/m2) | 138 | 40.7 |
| Obese (30–39.9 kg/m29 | 34 | 10.0 |
| Very obese (>40 kg/m2) | 1 | 0.3 |
| **IPAQ score** | | |
| Inactive (<600 MET) | 178 | 52.5 |
| Insufficient physical activity (600-3000 MET) | 134 | 39.5 |
| Sufficient physical activity (>3000 MET) | 27 | 8.0 |
| **MEDAS score** | | |
| Not adherent to the Mediterranean Diet (<7 points) | 186 | 54.9 |
| Acceptable adherence to the Mediterranean Diet (=7-8 points) | 123 | 36.3 |
| Strictly adherent to the Mediterranean Diet (= 9 points and over) | 30 | 8.8 |
| **Total** | 339 | 100.0 |

Table 2 analyses of the parents, 33.6% primary school graduates, 48.1% had a normal BMI, 52.5% had a low IPAQ score, and 54.9% had a MEDAS score was found to be low (Table 2).

**Table 3:** Regression analysis examining the associations between assessed variables and BMI of Children

| | Unstandardized Coefficients | | Standardized Coefficients | | | 95% CI | |
|---|---|---|---|---|---|---|---|
| Parent parameters | B | SE | Beta | t | p | LL | UL |
| Constant | 18.162 | 1.108 | | 16.394 | **0.000** | 15.983 | 20.342 |
| BMI | 1.094 | 0.383 | 0.353 | 2.853 | **0.005** | 0.340 | 1.848 |
| MEDAS (score) | 0.061 | 0.113 | 0.057 | 0.536 | 0.592 | -0.162 | 0.284 |
| IPAQ | 0.564 | 0.342 | 0.167 | 1.649 | 0.100 | -0.109 | 1.238 |
| | R=.238 | | $R^2$= .057 | F= 3.308 | **p=0.004** | | |

*p<0.05, BMI; body mass index, MEDAS; Mediterranean Diet Adherence Screener, IPAQ; International Physical Activity Questionnaire, B: regression coefficient, SE: standard error, CI: confidence interval, LL: lower limit, UL: upper limit.

Table 3 depicts factors that impact the BMI of children. The impact of the variables we inspected were determined to be significant on the p<0.05 level. The impact of properties tied to qualitative data on BMI were determined and found to be R=.238, R2=.057, 5.7% of the total variance in the BMI dependent variable was explained through these variables and it was determined that the conclusion is significant (p<0.05). The impact of parents BMI on child BMI was determined to be in the positive direction (Table 3).

**Table 4:** Regression analysis examining the associations between assessed variables and PAQ-C score.

| | Unstandardized Coefficients | | Standardized Coefficients | | | 95% CI | |
|---|---|---|---|---|---|---|---|
| Parents parameters | B | SE | Beta | t | p | LL | UL |
| Constant | 1.117 | 0.254 | | 4.390 | **0.000** | 0.617 | 1.618 |
| BMI | 0.111 | 0.087 | 0.153 | 1.276 | 0.203 | -0.060 | 0.282 |
| MEDAS Score | 0.118 | 0.080 | 0.154 | 1.482 | 0.139 | -0.039 | 0.274 |
| IPAQ | 0.197 | 0.041 | 0.250 | 4.763 | **0.000** | 0.116 | 0.279 |
| R=0.291 | | $R^2$= 0.084 | | F= 6.139 | p<0.001 | | |

*p<0.001, BMI; body mass index, MEDAS; Mediterranean Diet Adherence Screener, IPAQ; International Physical Activity Questionnaire, B: regression coefficient, SE: standard error, CI: confidence interval, LL: lower limit, UL: upper limit.

Table 4 depicts the inspection of factors that impact the PAQ-C. The variables we inspected were determined to have a significant impact on PAQ-C on the p<0.05 level. The impact of properties tied to qualitative data on PAQ-C were determined and found to be R=.291, R2=.084, 8.4% of the total variance in the PAQ-C (p<0.001). The regression analysis shows that IPAQ score and PAQ-C were significantly associated (Table 4).

**Table 5:** Regression analysis examining the associations between assessed variables and KIDMED score.

| | Unstandardized Coefficients | | Standardized Coefficients | | | 95,0% CI | |
|---|---|---|---|---|---|---|---|
| Parents parameters | B | SE | Beta | t | **p** | LL | UL |
| Constant | 2.569 | 1.095 | | 2.347 | **0.020** | 0.415 | 4.723 |
| BMI | 0.322 | 0.379 | 0.103 | 0.849 | 0.397 | -0.424 | 1.067 |
| MEDAS score | 0.250 | 0.112 | 0.231 | 2.236 | **0.026** | 0.030 | 0.471 |
| IPAQ score | 0.405 | 0.338 | 0.119 | 1.198 | 0.232 | -0.260 | 1.071 |
| R=0.317 | | $R^2$= 0.100 | | F= 6.156 | p=0.000 | | |

*p<0.001, BMI; body mass index, MEDAS; Mediterranean Diet Adherence Screener, IPAQ; International Physical Activity Questionnaire, B: regression coefficient, SE: standard error, CI: confidence interval, LL: lower limit, UL: upper limit.

Table 5 depicts the inspection of factors that impact the KIDMED. The variables we inspected were determined to have a significant impact on KIDMED on the p<0.05 level. The impact of properties tied to qualitative data on KIDMED were determined and found to be R=.317, R2=.100, 10% of the total variance in the KIDMED dependent variable was explained through these variables and it was determined that the conclusion is significant (p<0.001) Regression analysis shows that MEDAS score and KIDMED are significantly correlated (Table 5).

## DISCUSSION

Physical activity and nutrition are the foundational factors of a child's development and growth (Martínez-González et al., 2012). Therefore, education provided by nurses carries vital importance due to the opportunities it provides for better nutrition options and for adults to be active with their children. In our study, it was determined that more than half of children and their parents engage in insufficient physical activity and that they do not demonstrate Mediterranean diet adherence. Similarly, in studies conducted using KIDMED, it was emphasized that more than half of the children showed low compliance with the Mediterranean diet and approximately half of their parents showed average adherence to the Mediterranean diet (Bučan Nenadic et al., 2021; Franić et al., 2022; Matana et al., 2022). In addition, studies have shown that long school hours affect children's physical activity levels and that children are insufficiently active, while more than half of the parents are not physically active (Abell et al., 2019; Bachner et al., 2021). On the other hand, conducted studies stated that for a better quality of life, physical activity and Mediterranean diet adherence demonstrated positive relationships

(Lee et al., 2019; Brunet et al., 2019). All these results may demonstrate not only the importance of geographical location, but also that the physical activity levels and Mediterranean diets in these countries must be improved.

Another finding in our study is that the body mass index of parents impact the body mass index of children. Similarly conducted studies have stated that the parents of children whose parents have normal body mass indices, compared to children whose parents have higher body mass indices, depict healthier behaviors (regular physical activity and healthy eating), that the body mass indices of parents and children are strongly related (Petersen et al., 2020; Yabancı et al., 2014). These conclusions may demonstrate that the body mass index of parents, childhood obesity development and permanence formed in adulthood are not completely hereditary, but simultaneously may be explained by the health and parenting behaviors of parents.

This study is that IPAQ score are determiners of the PAQ-C score. A prospective longitudinal study inspecting the impact of the physical activity behaviors of parents on the physical activity behaviors of children, it was specified that parents' behaviors encourage children to participate in physical activity (Brunet et al., 2019). In the literature, while it is specified that the physical activity levels of children are strongly related to parental help (bringing the child into a wide variety of exercises or gyms or procuring equipment, accessibility, or opportunities for the child to be active) (Brugere et al., 2020), a recently conducted systematic inspection (n=39) emphasized that there is a weak positive relationship between the physical activity of children and parents (Groele et al.,2018). These conclusions demonstrate that parents who spend important time in child caring may be at the center of a successful intervention.

In our study, it can be seen that the MEDAS score is an important indicator of the KIDMED. A cross-sectional study inspecting children's attitude and behaviors regarding nutrition and how it is impacted by the nutrition information of mothers (n=302) specified that mothers who have high levels of nutrition information and their children have normal body mass indices, and that these mothers avoid giving food with artificial content to their children, and that they feed more vegetables, fruits, and legumes compared to mothers with lower nutrition information (Papamichael et al., 2021). A cross-sectional study inspecting mothers' fruit choices and consumption as well as the similar attitudes and behaviors of children (n=2357) stated that; the fruits mothers and children do not consume are similar and that this status results from the fact that food preferences are generally learned from the family environment (Giménez-Legarre et al., 2021). In the literature, it is specified that the Mediterranean diet adherence organization of parents and children share a positive relationship ( Papamichael et al., 2021; Giménez-Legarre et al., 2021). These similar results to our findings may show that with their nutrition habits, parents probably may play an important role in shaping the nutrition habits of their children through positive role modelling.

These findings confirmed our research hypothesis. We asserted that parents' body mass index, physical activity levels, and adherence to the Mediterranean diet have a substantial influence on their children's respective factors, such as body mass index, physical activity levels, and adherence to the Mediterranean diet.

## CONCLUSION

In our study, it was determined that parents impact their children's BMI (5.7%), PASQ-C (4.6%), and their KIDMED (10%). Our study results put the importance of increasing the Mediterranean diet, a nutrition approach that supports growth and development in the childhood stage and is impactful in the prevention of non-contagious chronic illnesses in the maturity stage, and the importance of family-based initiatives for the purpose of increasing regular physical activity participation forward. In light of these results; school health nurses, in the education they will conduct, may consider focusing on interventions for the prevention and control of childhood obesity, and simultaneously changing the health behaviors of both parents and children.

Our study has some limitations, and the research was performed with the participation of students and families living in the Sırnak region. The research results are limited to data obtained from students who accepted participation in the research during the dates when the data collection tools were applied.

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**Author Contributions**
**Plan, design:** MK, UA, BE; **Material, methods and data collection:** MK, UA, BE; **Data analysis and comments:** BE; **Writing and corrections:** MK, UA, BE.

**Conflicts of Interest**
The authors declare no conflicts of interest

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