# Evaluation of the Mediterranean Diet Quality Index (KIDMED) in adolescents in Turkey

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**Abstract**

This study has been carried out for the purpose of determining nutrition habits of adolescents who join selections for national basketball team and evaluating nutrition condition by means of KIDMED index (Mediterranean Diet Quality Index) which is a quick, easy and valid means. 785 male adolescents between 11-14 ages participated in the study. General characteristics, applications about nutrition habits of the participators have been determined by using a questionnaire of 16 questions including Mediterranean Diet Quality Index (KIDMED). Furthermore, heights (cm) and weights (kg) of the participators have been measured, BMI (Body mass index-kg/m²) values of them have been calculated and they have been contrasted with standard BMI values. In statistical evaluation of data, SPSS 15.0 statistics packaged program has been used. The average age of the participators is 12.7 ± 0.6 year (11-14), weight is 58.9 ± 12.9 kg (31.30-103.8), height is 160 ± 10 cm (130-190) and BMI (Body mass index) average is 20.3 ± 2.8 kg/m$^2$ (14.0-32.1). It is determined that the most missed meal is lunch and then the second one is breakfast. According to evaluation of healthy eating index, 55.7% of the participators are in poor diet quality. Although diet quality of the participators is in medium and good level, it is concluded that informing on nutrition is needed.

**Keywords**: Adolescence; nutrition habits; Mediterranean Diet Quality Index; BMI; sports

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# Adölesanlarda Akdeniz Diyeti Kalite Indeksinin (KIDMED) değerlendirilmesi

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## Özet

Bu çalışma, Türkiye'nin değişik bölgelerinden mili takım basketbol seçmelerine katılan adölesanların, beslenme alışkanlıklarını saptamak ve beslenme durumunu hızlı, kolay ve geçerli bir araç olan KIDMED (Akdeniz Diyeti Kalite indeksini) indeksi ile değerlendirmek amacıyla yapılmıştır. Çalışmaya 11-14 yaş grubu 785 erkek adölesan katılmıştır. Katılımcıların genel özellikleri, beslenme ile ilgili uygulamaları ve beslenme alışkanlıkları, 16 soruluk Akdeniz Diyet Kalite İndeksini de (KIDMED) içine alan bir anket formu kullanılarak belirlenmiştir. Sağlıklı beslenme göstergesi KIDMED, uygulaması sonunda elde edilen puana göre; ≥8 puan ise en uygun (optimal) diyet kalitesi, 4-7 puan; orta kalite/diyette iyileştirme gerekiyor ve ≤3 puan ise, diyet kalitesi çok düşük olarak değerlendirilmektedir. Ayrıca, katılımcıların boy uzunluğu (cm) ve vücut ağırlığı (kg) ölçülerek, BKİ (Beden kütle indeksi-kg/m$^2$) değerleri hesaplanmış, adölesanların standart BKİ değerleri ile kıyaslanmıştır. Verilerin istatistiksel değerlendirmesinde, SPSS 15.0 istatistik paket programı kullanılmıştır. Katılımcıların yaş ortalaması, 12.7 ± 0.6 yıl (11-14), vücut ağırlığı 58.9 ± 12.9 kg (31.30-103.8), boy uzunluğu 160 ± 10 cm (130-190) ve BKİ (Beden kütle indeksi) ortalamaları 20.3 ± 2.8 kg/m$^2$ (14.0-32.1) bulunmuştur. En çok atlanılan öğün olarak ilk sırayı öğle öğünü, ikinci sırayı ise kahvaltının aldığı belirlenmiştir. Öğün arasında tüketimde en çok tercih edilen besinlerde, ilk üç sırayı sırasıyla; sandviç, tost, börek (%20,4), bisküvi, kurabiye (%19,5) ve simit (%17,5) almıştır. Günlük sıvı tüketimleri, 1,9±0,8 L bulunmuştur. "Beslenme destek ürünü kullanıyor musunuz?" sorusunu yanıtlayan 756 kişiden %22,9'u herhangi bir beslenme destek ürünü kullandığını ifade ederken, en fazla kullanılan ürünün balık yağı (%14,8) ve multivitamin tabletleri (%5,2) olduğu saptanmıştır. Sağlıklı yeme indeksi değerlendirmesine göre, katılımcıların %55,7'si orta, % 39,9'u iyi, % 4,5'i ise düşük diyet kalitesi sınıflamasına girmektedir. Katılımcıların çoğunun diyet kalitesinin orta ve iyi düzeyde olduğu buna karşın beslenme konusunda bilgilendirme yapılması gerektiği sonucuna varılmıştır.

**Anahtar kelimeler:** Beslenme alışkanlıkları, basketbol seçmeleri, adölesan, milli takım

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### Introduction

As the World Health Organization (WHO) defines, adolescence is a special period that comprises 10-19 age group in which quickest growth and development and developing from a child into an adult occur (Demirezen and Coşansu 2005, Geçkil et al. 2004).

In this period, adolescents develop not only physically but also in cognitive and psychological way. Adolescents are in identity search, try to be independent and accepted, and they are too interested in their physical appearances. Irregular meals, bolting down, eating habits away from home and eating fast food are the typical characteristics of their nutrition habits. Many factors such as family, friends and media usually affect these eating habits (Demir 2008, Demirezen and Coşansu 2005).

With adequate and balanced nutrition, the expected growth and development of the children and the adolescents are provided, and also their resistances against the diseases increase, and an increase occur in their cognitive abilities and school performances besides their bone and physical ability developments (Baysal 2007, Demirezen and Coşansu 2005, Ersoy 2006).

An increase is seen in the energy need of the adolescents who play sports as parallel to the sport played. However, it is not easy to determine the daily energy need. Because there are great personal differences among the adolescents. Especially the quick increase in growth speed and energy need is an important factor. The adolescent's age, height, weight, sex, the type, intensity and duration the physical exercise he plays are important factors affecting his daily energy need (Yıldız 2004). The food pyramids, prepared by using foods needed to be consumed daily as basis, help in evaluation of adequate and balanced nutrition (González-Gross et al. 2008, US Department of Agriculture 2008). Furthermore, there are various methods developed in order to make evaluations on nutrition level. One of these methods, Mediterranean Diet Quality Index/Healthy Eating Index (KIDMED) is a device developed in order to measure total diet quality, to evaluate nutrition habits in many aspects and to follow diet quality continually. Following the adolescent's nutrition and giving necessary information would help in reducing the problems which may occur (MacLellan et al. 2008, Majem et al. 2003, Yücecan 2008).

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This study has been carried out for the purpose of determining nutrition habits of the adolescents joining the selection for National Basketball Team, to evaluate them by means of KIDMED (Mediterranean Diet Quality Index) and to associate them with other findings.

**Methods**

The participators have been informed about the study and they participate in the study willingly. Seven hundred eighty five male adolescents in the $12.7 \pm 0.6$ year average age who join the selection for National Basketball Team from different regions of Turkey (Aegean, Central Anatolia, the Mediterranean, the Marmara, Eastern Anatolia and Blacksea Regions) between November-December 2008. Questionnaire has been filled by using face to face technique with athletes.

Measuring weights (kg), heights (cm) of the participators, values of BMI (Body Mass Index-kg/m$^2$) have been calculated and they have been contrasted with standard data of adolescents (Figan et al 2002).

Height was measured by Martin type anthropometer to the nearest millimeter and weight by digital scale (TANITA BC-418 Body Fat Monitor) to the nearest 100 grams, according to techniques described by Anthropometric Standardization Reference Manual (Lohman et al. 1988). Subjects were measured without shoes and wearing light-weight clothes.

A questionnaire of 16 questions including personal characteristics in the technique of face off interview, nutrition applications, nutrition habits, Mediterranean Diet Quality Index (KIDMED) has been filled by the participators. According to the points obtained from the application of the healthy nutrition index (KIDMED), it is evaluated that if the point is ≥8 it is optimal diet quality, if it is between 4-7 it is medium quality, it needs to be improved, and if it is ≤3 it is very low.

The statistical evaluation of data has been made by using SPSS 15.0 statistical packaged program. Average and standard deviation values have been calculated and Chi-Square test has been applied for some data.

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**Results**

In the result of the study, it is found that the average age of the participators is $12.7 \pm 0.6$ year (11-14), average weight is $58.9 \pm 12.9$ kg (31.30-103.8), average height is $160 \pm 10$ cm (130-190) and average BMI (body mass index) $20.3 \pm 2.8$ kg/m$^2$ (14.0-32.1). According to the BMI classification, the rate of the ones divided into thin, normal and fat groups are %13.1 (103), %37.6 (295) and %49.3 (387) respectively. %6.1 (48) of the participators express that they play sport as being affiliated to the school team, %29.2 (229) of them play sport s being affiliated to a club, and %64.7(508) of them play sport as being affiliated to both the school team and also a club. The durations they separate for daily activities are $2.3 \pm 0.8$ hour/day (n=700) for sport, $1.9 \pm 0.9$ hour/day (n=727) for watching TV, $2.8 \pm 2.4$ hour/day (n=705) for using computer, $8.8 \pm 1.3$ hour/day (n=785) for sleeping. In question about the things they do in the recess for 40 minutes in the school, %59.4 (466) of the participators express that they play basketball, football or volleyball, and %28.7 (225) of them say that they walk around in the garden. A significant connection between the activities and BMI values have not been found in the level of $p<0.05$.

The regions where the number of the basketball players joining the selections from is the highest is Central Anatolia, Marmara and Aegean regions respectively (Table 1).

**Table 1:** Distribution Density of the Participators According to the Regions

| Regions | n | % |
|---|---|---|
| Aegean Region | 169 | 21.5 |
| Central Anatolia Region | 238 | 30.3 |
| Mediterranean Region | 69 | 8.8 |
| Marmara Region | 221 | 28.2 |
| Eastern Anatolia Region | 33 | 4.2 |
| Blacksea Region | 55 | 7.0 |
| Total | 785 | 100.0 |

In considering the educational statue of the participators' parents, the ones whose parents are primary school graduates are %22.3 (175), %16.7 (131); high school graduates are %34.6 (272), %31.5 (247); university graduates are %43.1 (338), %51.8 (407) respectively. No significant connection between the educational statue of parents and BMI values could be found (p>0.05).

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Taking the jobs of the parents into consideration, whereas %52.6 (413) of the participators' mothers are housewife, %29.2 (229) of them are civil servant. Whereas the rate of ones whose fathers are civil servant is %32.4 (254), the rate of the ones who works in self employment is %49.6 (389). There is a significant relationship between mothers' job and BMI in the $p<0.05$ level. It is found that BMI values of the housewives' children are higher.

The participators' numbers of daily meal, missing meals, the most missed meals and its reason are given in the Table 2. It is determined that the most missed meal is lunch and the reason of it is not answered by the most participators.

**Table 2:** Nutrition Habits of the Participators

| The number of meal | n | % |
|---|---|---|
| 2 meals | 27 | 3.4 |
| 3 meals | 724 | 92.2 |
| 4 meals | 26 | 3.3 |
| 5 meals | 8 | 1.0 |
| **Total** | **785** | **100.0** |
| **Missing meal** | | |
| Yes | 49 | 6.2 |
| No | 452 | 57.6 |
| Sometimes | 229 | 29.2 |
| Total | 730 | 93.0 |
| The ones who did not answer | 55 | 7.0 |
| **Total** | **785** | **100.0** |
| **The most missed meal** | | |
| Breakfast | 85 | 10.8 |
| Lunch | 163 | 20.8 |
| Dinner | 30 | 3.8 |
| Total | 278 | 35.4 |
| The ones who did not answer | 507 | 64.6 |
| **Total** | **785** | **100.0** |
| **The reasons of missing meal** | | |
| Lack of time | 24 | 3.1 |
| I do not want, I have not desire for food | 22 | 2.8 |
| I would be late for school | 39 | 5.0 |
| Total | 85 | 10.8 |
| The ones who did not answer | 700 | 8.2 |
| **Total** | **785** | **100.0** |

While 88.3% (693) of the participators express that they have their breakfast at home, 10.2% (80) of them have it in the school, the rate of the ones having lunch at home is 34.9%

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(274), the rate of the ones having it in the school is 49.2% (386). 86.3% (681) of the students have dinner at home, and the rest has it in the restaurant.

It is determined that there is no significant relationship between the habit of having breakfast and the mother's job (p>0.05), but there is a significant relationship in the p<0.05 level between the habit of having breakfast and the mother's education. It is determined that the ones who have breakfast are generally the ones whose mothers' educational levels are high.

There is a significant relationship in p<0.05 level between the mother's education and the missing meal. It is found that the ones who do not miss the meals are mostly the children of high school and university graduates. There is no significant relationship between duration of daily sport activities and missing meals (p>0.05).

The first three things eaten between the meals are sandwich, toast, pastry (20.4%), biscuits, cookies (19.5%) and simit (bread cake) (17.5%) respectively (Table 3).

**Table 3:** The Food Eaten Between Meals

| The food eaten between meals | n | % |
|---|---|---|
| I eat nothing | 124 | 15.8 |
| Simit | 137 | 17.5 |
| Biscuit, cookies | 153 | 19.5 |
| Soft drinks | 19 | 2.4 |
| Candy, chocolate, wafer | 71 | 9.0 |
| Tea, coffee | 11 | 1.4 |
| Ready made fruit juices | 47 | 6.0 |
| Sandwich, toast, pastry | 160 | 20.4 |
| Drinks with cola | 2 | 0.3 |
| Fruit and fresh fruit juice | 61 | 7.8 |
| **Total** | **785** | **100.0** |

Examining the food consumption frequencies of the participators, it is seen that the rate of the ones, who express that they consume milk and milk products (milk, yoghurt, cheese) every day, is high (76.6%, 56.4%, 67.1% respectively). The ones, who express that they do not drink milk every day, say that they have reason such as "I have not that habit, I do not like drinking milk". It is found that the rate between the ones saying that they eat meat, egg and leguminous seeds and fish 3-4 times a week (29.8%) and the ones say that they eat them once a week (30.1%), is close. The rate of the ones eating vegetables and fruits every

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day and rice and macaroni 3-4 times a week is higher. It is determined that drinks with coke and hamburger are consumed even once a week (Table 4).

**Table 4:** Food Consumption Frequencies

| Food consumption frequencies | Never | | Every day | | 3-4 times a week | | 2 times a week | | Once a week | | Number of total answerers | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % |
| **Milk** | 12 | 1.5 | **601** | **76.6** | 127 | 16.2 | 27 | 3.4 | 10 | 1.3 | 777 | 99.0 |
| **Yoghurt** | 12 | 1.5 | **443** | **56.4** | 233 | 29.7 | 54 | 6.9 | 36 | 4.6 | 778 | 99.1 |
| **Cheese** | 24 | 3.1 | **527** | **67.1** | 163 | 20.7 | 32 | 4.1 | 37 | 4.7 | 783 | 99.7 |
| **Egg** | 28 | 3.6 | 221 | 28.2 | **297** | **37.8** | 127 | 16.2 | 99 | 12.6 | 772 | 98.3 |
| **Meat** | 37 | 4.7 | 102 | 13.0 | **347** | **44.2** | 154 | 19.6 | 128 | 16.3 | 768 | 97.8 |
| **Chicken** | 20 | 2.5 | 60 | 7.6 | **327** | **41.6** | 211 | 26.9 | 151 | 19.2 | 769 | 98.0 |
| **Fish** | 40 | 5.1 | 38 | 4.8 | 234 | 29.8 | 213 | 27.1 | **236** | **30.1** | 761 | 96.9 |
| **Legum.seeds** | 38 | 4.8 | 120 | 15.3 | **314** | **40.0** | 167 | 21.3 | 124 | 15.8 | 763 | 97.2 |
| **Vegetables** | 20 | 2.5 | **317** | **40.4** | 276 | 35.2 | 78 | 9.9 | 78 | 9.9 | 769 | 98.0 |
| **Fruits** | 5 | 0.6 | **624** | **79.5** | 119 | 15.2 | 17 | 2.2 | 7 | 0.9 | 772 | 98.3 |
| **Bread** | 16 | 2.0 | **572** | **72.9** | 118 | 15.1 | 40 | 5.1 | 19 | 2.4 | 765 | 97.5 |
| **Rice** | 11 | 1.4 | 183 | 23.3 | **373** | **47.5** | 142 | 18.1 | 55 | 7.0 | 764 | 97.3 |
| **Macaroni** | 36 | 4.6 | 119 | 15.2 | **340** | **43.3** | 162 | 20.6 | 107 | 13.6 | 764 | 97.3 |
| **Drinks with cola** | 170 | 21.7 | 70 | 8.9 | 178 | 22.7 | 142 | 18.1 | **206** | **26.2** | 766 | 97.6 |
| **Candy** | 85 | 10.8 | 117 | 14.9 | **224** | **28.5** | 160 | 20.4 | 176 | 22.4 | 762 | 97.1 |
| **Biscuit** | 58 | 7.4 | 135 | 17.2 | **266** | **33.9** | 178 | 22.7 | 134 | 17.1 | 771 | 98.2 |
| **Hamburger** | 127 | 16.2 | 64 | 8.2 | 160 | 20.4 | 128 | 16.3 | **281** | **35.8** | 760 | 96.8 |
| **Dried fruits** | 64 | 8.2 | 211 | 26.9 | **245** | **31.2** | 113 | 14.4 | 136 | 17.3 | 769 | 98.0 |

Daily liquid consumption is found as 1.9±0.8 (0.5-4.0) L/day. 42.8% (336) of the 759 students who answered question "Do you drink tea?" express that they drink tea 1 glass in a day, 14.4% (113) express that they drink tea 3 glasses in a day and 39.0% (306) express that they drink no tea. 21.4% (168) of 321 students who drink herbal tea express that they prefer linden tea, 8.8% (69) of the students give "yes" answer to the question "Do you drink sport drink?". 22.9% of 756 students answering the question "Do you use nutrition supporter product?" express that they use any nutrition supporter product and it is determined that the most used product is fish oil (14.8%) and multivitamin tablets (5.2%) (Table 5).

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**Table 5:** Using Nutrition Supporter Products and the Nutrition Supporter Products Which Are Used

| Using nutrition supporter products | n | % |
|---|---|---|
| Yes | 180 | 22.9 |
| No | 576 | 73.4 |
| Total | 756 | 96.3 |
| The ones did not answer | 29 | 3.7 |
| **Total** | **785** | **100.0** |
| **The nutrition supporter products which are used** | | |
| Multivitamin | 41 | 5.2 |
| Fish oil | 116 | 14.8 |
| Mineral | 8 | 1.0 |
| Protein powder | 8 | 1.0 |
| Vitamin | 7 | 0.9 |
| **Total** | 180 | 22.9 |

In the result of the study, it is determined that there is a significant relationship ($p<0.05$) between daily sport durations and using nutrition supporter products, and the ones who use them most are the ones who make 2 hour/day activities. It is also determined that there is a significant relationship ($p<0.05$) between missing meals and using nutrition supporter products, and while the rate of using those products is higher in the ones who miss the meals, the ones, who do not miss the meals, do not prefer using those products.

Evaluations of healthy nutrition index of the participators are given in the Table 6. According to the evaluations of healthy nutrition index; the rate of the ones who have medium diet quality (55.7%) is high.

**Table 6:** Evaluations of Healthy Nutrition Index

| Healthy nutrition index | n | % |
|---|---|---|
| Poor ( $\leq 3$ ) | 35 | 4.5 |
| Medium( 4-7 ) | 437 | 55.7 |
| Good ( $\geq 8$ ) | 313 | 39.9 |
| **Total** | **785** | **100.0** |

In the result of the study, it is found that there is a significant relationship ($p>0.05$) between BMI values and healthy nutrition indexes of the participators (Table 7).

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**Table 7:** The Relationship between BMI Values and Healthy Nutrition Index of the Participators

| BMI Classification | | Healthy Nutrition Index | | | |
|---|---|---|---|---|---|
| | | Poor (3 and below) | Medium (3-4) | Good (4 and above) | Total |
| **Weak** | Number | 7 | 53 | 43 | 103 |
| | According to BMI% | %6.8 | %51.5 | %41.7 | %100.0 |
| **Normal** | Number | 16 | 156 | 123 | 295 |
| | According to BMI% | %5.4 | %52.9 | %41.7 | %100.0 |
| **Fat** | Number | 12 | 228 | 147 | 387 |
| | According to BMI% | %3.1 | %58.9 | %38.0 | %100.0 |
| **Total** | Number | 35 | 437 | 313 | 785 |
| | According to BMI% | %4.5 | %55.7 | %39.9 | %100.0 |

**Table 8:** The Values of Healthy Nutrition Index of the Participators According to the Regions

| Regions | | Healthy Nutrition Index | | | |
|---|---|---|---|---|---|
| | | Poor (3 and below) | Medium (3-4) | Good (4 and above) | Total |
| Aegean Region | Number | 9 | 106 | 54 | 169 |
| | % | %5.3 | %62.7 | %32.0 | %100.0 |
| Central Anatolia Region | Number | 7 | 132 | 99 | 238 |
| | % | %2.9 | %55.5 | %41.6 | %100.0 |
| Mediterranean Region | Number | 1 | 28 | 40 | 69 |
| | % | %1.4 | %40.6 | %58.0 | %100.0 |
| Marmara Region | Number | 5 | 115 | 101 | 221 |
| | % | %2.3 | %52.0 | %45.7 | %100.0 |
| Eastern Anatolia | Number | 9 | 21 | 3 | 33 |
| | % | %27.3 | %63.6 | %9.1 | %100.0 |
| Blacksea | Number | 4 | 35 | 16 | 55 |
| | % | %7.3 | %63.6 | %29.1 | %100.0 |
| Total | Number | 35 | 437 | 313 | 785 |
| | % | %4.5 | %55.7 | %39.9 | %100.0 |

$p < 0.05$

It is found that there is a there is a significant but a low relationship in the $p < 0.05$ level between healthy nutrition index according to the regions (Table 8). In this evaluation, the difference of the number of the participators from the regions should be considered. It is determined that there is a significant relationship in the $p < 0.05$ level between the educational statue of the mother and the healthy nutrition index. The children, whose healthy nutrition

indexes are high, are the children of the mothers with high education level. There is not a significant relationship (p>0.05) between the jobs of mother and father and healthy nutrition indexes.

**Discussion**

In the result of the study, it is found that the average age of the participators is; 12.7 ± 0.6 year (11-14), average weight is; 58.9 ± 12.9 kg (31.30-103.8), average height is 160 ± 10 cm (130-190) and average BMI (Body mass index) is 20.3 ± 2.8 kg/m$^2$ (14.0-32.1). Average height and weight bear resemblance to the standard values given for the same age group. According to the BMI classification, the rates of the weak normal and fat groups are 13.1% (103), 37.6% (295) and 49.3% (387) respectively. However, as there will be an increase in the muscle mass especially in the ones who play active sports, excess in the BMI values may cause wrong evaluation. Taking the percentages of the body fat into consideration in the studies on sportsmen causes a more correct evaluation. In a study in which obesity prevalence is researched in 4260 (2040 girls and 2220 boys) school children between 6-15 ages, it is determined that 9.1% of the boys are fatter or obese (Süzeki et al. 2005). In another study carried out on 781 boys, whose average age is 15, the rate of obesity is 5.9% (Turan et al. 2009). In the result of the studies, it is stated that interventions in nutrition and physical activity in adolescents can be quite effective in avoiding and controlling obesity (Nur and Koçoğlu 2008).

No significant relationship between the daily activity durations (playing sports, using computer, watching TV, sleeping) of the participators and BMI values is found (p>0.05). In another study, watching TV durations of the adolescents are seen as 3.05+1.85 hour/day, and no significant relationship between watching TV duration and obesity is found (p>0.05) (Süzeki et al. 2005). While this result bears resemblance to the study data, a positive relationship between watching TV and obesity is found in some other studies (Parlak and Çetinkaya 2006, Türk et al. 2007). In another study, it is found that there is a significant relationship between playing sport duration and BMI values (Farias et al. 2009). Although differences are seen in the results of the studies, it is a fact that inactivity lays the base for obesity and from this perspective it is concluded that the importance of physical activity should be caused the adolescents to earn.

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While there is not a relationship between educational statue of the parents and the BMI values of the adolescents (p>0.05), a significant relationship between the job of the mother and the BMI values (p<0.05) is seen. It is found that the BMI values of the children of housewives are higher. In another study, a statistically important relationship between the BMI values of adolescents and the mother's working statue is found and this bears resemblance to the study data (Süzeki et al. 2005).

It is determined that 92.2% of the participators have 3 meals in a day and the most missed meals are lunch and then breakfast respectively. In questioning the reasons of missing meal, most of the participators did not answer, and the ones answered the question put some reasons forth such as "I will be late for the school, I do not want to eat, I have not enough time". In another study, the rate of the students who do not have breakfast every day regularly is 23.3%. It is determined that the most missed meal is breakfast and then lunch (Turan et al. 2009). In another study carried out on 721 students between 14-18 ages, it is found that 62.2% of the students have 3 meals in a day (Figan et al. 2002). Adolescence is the period in which growth and development still continue; considering that energy spends and need increases in the adolescents playing sports, the importance of having 5-6 meals a day is clear. The sportsmen need to be informed on this issue.

Whereas 88.3% (693) of the participators expresses that they have breakfast at home, 10.2% (80) of them has it in the school canteen; the ones having lunch at home is 34.9% (274) and the ones having it in the canteen is 49.2% (386). 86.3% (681) of the participators have dinner at home, and the rest has it in a cafeteria and restaurant. In a study carried out on 721 students, 39.5% of the participators expresses that they have lunch in the canteen, 26.4% of them expresses that they eat the food they brought from home and 84.1% of them says that they have dinner at home with their family (Figan et al. 2002). In another study, 27.7% of 287 students expresses that they eat from food machines and a la carte menus, 9.1% of them eat in the school and 5% of them eat in the cafeterias out of school (Fox et al. 2009).

It is determined that there is no significant relationship in the p>0.05 level between the habit of having breakfast and jobs of mother. It is found that there is a significant relationship in the p<0.05 level between the habit of having breakfast and the educational statue of mother. The mothers of the ones having breakfast mostly have high education levels. As there are differences in the number of the participators in province base, level of meaningfulness is

ignored. In another study, the rate of missing breakfast is found as higher in the ones who live in urban regions (Maddah et al. 2009).

There is a significant relationship $p < 0.05$ level between missing meals and the educational statue of the mother. It is found that the ones who do not miss meals are the children of high school and university graduate mothers. Similarity with the data of another study, which states that nutrition habits of the children and adolescents change with the effect of family, is seen (Pearson et al. 2009).

In another study, carried out on 824 adolescents, the most preferred foods are fruit (59.4%), soft drink (57.2%) and hamburger (54.6%) (Shi1z Lien et al. 2005). Considering the positive effects of eating carbohydrate foods in filling the glycogen stores and increasing the performance of the sportsmen, the necessity of eating foods high in carbohydrate should be told.

It is seen that the rate of the ones, who say that they consume milk products everyday, is high. The ones, who express that they do not drink milk every day, say that they have reasons such as "I have not that habit, I do not like drinking milk". It is found that the rate between the ones saying that they eat meat, egg and leguminous seeds and fish 3-4 times a week (29.8%) and the ones say that they eat them once a week (30.1%), is close. The rate of the ones eating the group of vegetables and fruits and bread everyday, and the rate of the ones eating rice-macaroni 3-4 times a week are high. It is a satisfactory finding for consumption frequencies that consuming milk products, vegetables-fruits everyday; meat, egg, leguminous and fish 3-4 times a week. It is determined that drinks with coke and hamburger are consumed even once a week. In another study, it is found that 5% of the 198 adolescents eat 5 portions vegetables-fruits in a day, and 29% of them eat 3-5 portions vegetables-fruits in a day (Jaeger 2008). In a study carried on 325 adolescents, it is seen that vegetable-fruit and milk consumption of adolescents are below the suggested level (MacLellan et al. 2008). In another study on American adolescents, it is determined that the level of vegetable and fruit consumption is on the suggested border (Kimmons et al. 2009). The results of the studies may differentiate.

The daily liquid consumption is seen as 1.9±0.8 (0.5-4.0) L/day. Considering increase of liquid loss due to perspiration and the 1-2% of weight in the sportsmen can affect performance negatively, it is concluded that informing on increasing of liquid consumption is necessary. 42.8% (336) of the 759 students who answered question "Do you drink tea?"

express that they drink tea 1 glass in a day, 14.4% (113) express that they drink tea 3 glasses in a day and 39.0% (306) express that they drink no tea. 21.4% (168) of 321 students who drink herbal tea express that they prefer linden tea, 8.8% (69) of the students give "yes" answer to the question "Do you drink sport drink?". In the results of 2004 Canada society health and nutrition research, it is stated that consumption of fruit juice and fruit drinks is high in boys between 14-18 ages (Garriguet 2008). In another study, the most preferred drinks of the students are water, soft drink and fruit juice respectively (Lo et al. 2008). Whereas water is enough in putting up for the lost liquid due to perspiration in short time activities, sport drinks are advantageous in putting up of the lost minerals and carbohydrate in long time activities in which perspiration is high. The sportsmen need to be informed on this matter and learnt to prepare practical drinks if necessary.

There are some expressions on some nutrition supporter products as "it increases performance, changes appearance, develops muscles" in order to attract attention of especially sportsmen and adolescents (Babu et al. 2005, Petróczi and Naughton 2007). 22.9% of 756 persons answering the question "Do you use any nutrition supporter product?" express that they use a nutrition supporter product, and it is determined that the most used one is fish oil (14.8%) and multivitamin tablets (5.2%). 34% of 828 children and adolescents between 2-17 ages use vitamin and mineral supporters (Shaikh et al. 2009). In an adequate and balanced nutrition, using extra vitamin/mineral does not affect the performance. If the person is not sure that his nutrition is adequate and if he has a nutrition deficiency, this deficiency should be first determined by experts (doctor or dietician) and he should use supporter product according to their suggestions.

According to the healthy nutrition index, 55.7% of the participators is in medium, 39.9 of them is in good and 4.5% is in poor nutrition quality classes. It is a satisfactory finding that the majority of the ones who are in medium and good level. In a study carried out on 624 children and adolescents between 7-12 ages, it is found that 15.1% of the participators has low, 59.3% of them has medium and 25.6% of them has good diet quality index according to KIDMED evaluation (Köksal et al. 2008b). In another study, it is determined that only 16.9% of 225 individuals between 12-18 ages have adequate nutrition level (Köksal et al. 2008a). Also in another study on 10-12 age groups, it is found that 76.2% of 84 participators have optimal nutrition level (Samur et al. 2008).

In a study on 638 students, 64.1% of the students is medium-risk, 21% is high-risk and 14.1% is low-risk respectively according to nutrition habits, and it is seen that average

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nutrition habits index points of the boys (10.33±3.35) is higher than the girls' (9.77±3.13) (Demirezen and Coşansu 2005). Again in another study, according to nutrition habits index, all students are risky and 47.4% of them is in medium-risk group, 2.1% is in high-risk group (Turan et al. 2009). While 37% of the participators' nutrition habits is in adequate level in a study on 532 adolescents whose average age is 15 (Turconi et al. 2008), nutrition habits are inadequate in another study (Burrows et al. 2008).

In the conclusion of the study, no relationship ($p > 0.05$) between BMI values and healthy nutrition indexes of the participators is found, but in healthy nutrition index according to the regions a low but significant relationship in $p < 0.05$ level is determined. In this evaluation, the difference in the number of participators from the regions should be considered. In the other studies, it is determined that there is a reverse relationship between BMI and KIDMED points (Demirezen and Coşansu 2005, Samur et al. 2008).

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