



## EATING HABITS AND BEHAVIOR IN ADOLESCENTS FROM DIFFERENT ETHNIC GROUPS IN THE MUNICIPALITY OF PLOVDIV, BULGARIA

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### ABSTRACT:

**Purpose:** The present study aims to analyze eating habits and behavior in adolescents from different ethnic groups in the Municipality of Plovdiv, Bulgaria.

**Material and methods:** This cross-sectional study was carried out with three different ethnic groups (Bulgarian, Turks, and Roma) in Plovdiv Region in Bulgaria. The study was conducted with a total of 185 middle or high school students. For the purposes of the study original semi-structured questionnaire was developed. Statistical analyses were performed using SPSS Statistics v. 26 software (IBM Corp. Released 2019. Armonk, USA).

**Results:** More than half of the respondents eat breakfast in the morning, 107 (57.8%) sometimes eat breakfast, 52 (28.1%), and 26 (14.1%) never eat breakfast. Around 93% (50.3%) of children consume pasta daily, with the highest daily consumption among children of Turkish and Roma origin 21 (40.39%) Bulgarian boys and 14 (31.82%) Bulgarian girls consume pasta among Bulgarian children. More than half of the respondents, 105 (56.8%), consume fruits and vegetables daily. This trend persists among ethnic groups, but we have to note the fact that Roma boys at the age of 13 consume the least fresh fruits and vegetables compared to children from other ethnic groups.

**Conclusions:** More than half of the adolescents surveyed eat breakfast in the morning; Pasta products are consumed daily by half of the respondents, with the highest daily consumption among children of Turkish and Roma origin; Fruits and vegetables are consumed daily by more than half of the respondents.

**Keywords:** Adolescent seating habits, adolescent behavior, adolescents health, ethnic groups,

### INTRODUCTION:

Building a healthy and resilient body is the result of many components that include a healthy diet and a healthy lifestyle.

Influenced by the global trends and the economic crisis, the eating habits of Bulgarians have undergone dynamic changes recently. The multi-sectorial nutrition policy, cooperation and joint activities of governments, society and the international community are aimed at the promotion of health at all life stages and are the key to decreasing the incidence of chronic diseases and creating a healthy lifestyle [1].

### PURPOSE:

The present study aims to analyze eating habits and behavior in adolescents from different ethnic groups in the Municipality of Plovdiv, Bulgaria.

### MATERIAL AND METHODS:

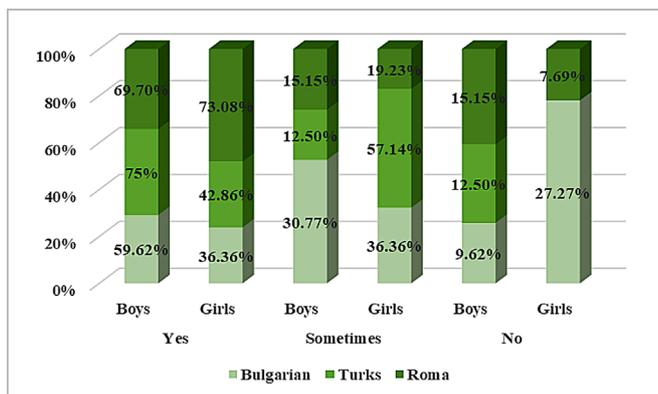
This cross-sectional study was carried out with three different ethnic groups (Bulgarian, Turks, and Roma) in Plovdiv Region in Bulgaria. The study was conducted with a total of 185 middle or high school students. For the purposes of the study original semi-structured questionnaire was developed. Descriptive statistics were applied to summarize demographic characteristics. Quantitative variables were presented by the mean and standard deviation (mean±SD), and qualitative variables were presented as absolute/relative frequencies (n / %). The Chi-square test was employed to analyze the association between two categorical variables, and if proven z-test was applied to test for the difference of relative parts between the groups. Comparisons between groups were carried out with the use of the Jonckheere-Terpstra rank-based nonparametric test. A 2-sided p-value <0.05 was considered statistically significant. Statistical analyses were performed using SPSS Statistics v. 26 software (IBM Corp. Released 2019. Armonk, USA).

**RESULTS:**

The study was conducted in the period May - July 2019 on the territory of Plovdiv and the village of Karadjovo. About 185 students aged 11-14 from three different ethnic groups - Bulgarians, Turks and Roma – have been covered into the survey. At the time of the measurements, there were children who were 15 years old. The gender distribution is 101 (56.6%) boys and 84 (45.4%) girls. The study covered mainly 96 Bulgarian children (51.89% ± 3.67), followed by 30 Turkish (16.22% ± 2.71) and 59 Roma origin (31.89% ± 3.43).

More than half of the respondents eat breakfast in the morning, 107 (57.8%) sometimes eat breakfast, 52 (28.1%), and 26 (14.1%) never eat breakfast. Compared by gender and ethnicity: the largest relative share of having breakfast in the morning are girls of Roma origin, and the smallest share are the Bulgarian girls. Fig. 1 are presents the answers to the question, “Do you have breakfast in the morning?”.

**Fig. 1.** Relative share of students having breakfast in the morning by gender and ethnicity

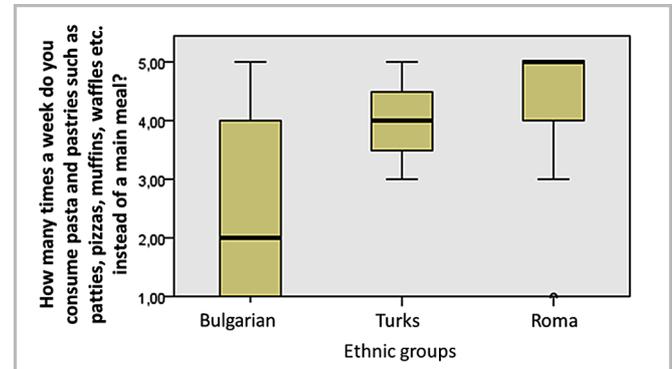


An association has been established between the children’s habits to have breakfast in the morning and the ethnicity of the girls  $\chi^2 = 15, 074; df = 4; p = 0.005$ . A statistical difference has been proved between the Bulgarian 16 (36.4%) and the Roma girls 19 (73.1%) for those who answered “yes” to the question “Do you have breakfast in the morning” and those who answered “sometimes” as among them a statistical difference has also beenfound between the Turkish 8 (57.1%) and the Roma girls 5 (19.2%). There was no association between ethnicity and the number of main meals during the day for both sexes.

Around 93% (50.3%) of children consume pasta daily, with the highest daily consumption among children of Turkish and Roma origin 21 (40.39%) of the Bulgarian boys and 14 (31.82%) Bulgarian girls consume pasta among the Bulgarian children. Among Turkish, these foods are consumed daily by 8 (50%) Turkish boys and 12 (85.71%) Turkish girls. Among Roma, the ratio is 21 (63.63%)boys and 17 (65.39%)Roma girls, respec-

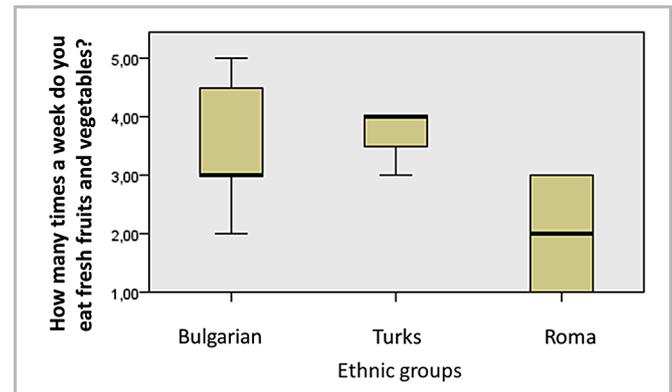
tively. Compared to gender, age and ethnicity, most often, the main meal is replaced by pasta and sweets for 11-year-old boys of Roma origin **J 185,500; p = 0.002** (Fig. 2).

**Fig. 2.** Weekly consumption of pasta and sweets instead of the main meal for 11-year-old boys by ethnicity



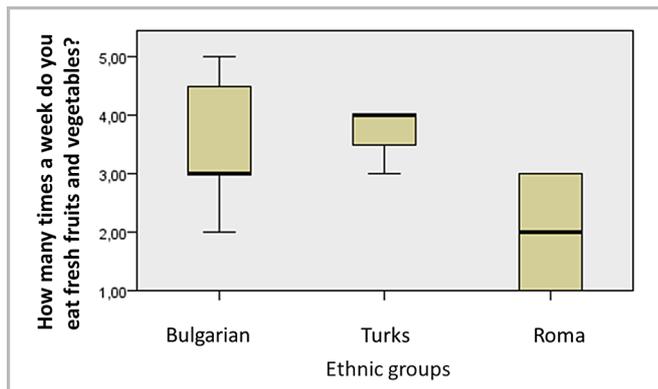
Among girls of the same age, the leaders in the consumption of pasta products are the girls of Turkish ethnicity **J - 286, 000; p = 0.002** (Fig. 3).

**Fig. 3.** Weekly consumption of pasta and sweets instead of the main meal for 11-year-old girls by ethnicity



More than half of the respondents, 105 (56.8%), consume fruits and vegetables daily. This trend persists among ethnic groups. Among Bulgarians, 27 (51.93%) of boys and 25 (56.82%) of girls consume fruits and vegetables every day. Among children of Turkish origin, 9 (56.25%) of boys and 11 (78.58%) of Turkish girls, respectively. Among the Roma, the consumption of fruits and vegetables is daily in 17 (51.51%) of the boys and in 16 (61.54%) of the Roma girls. An analysis by gender, age and ethnicity found that Roma boys aged 13 consumed the least fresh fruits and vegetables compared to children of other ethnicities **J - 18,000; p = 0.049** (Fig. 4). No significant difference has been found in the other statistical groups.

**Fig. 4.** Weekly consumption of fresh fruits and vegetables by 13-year-old boys by ethnicity



## DISCUSSION:

The results of our study show that more than half of adolescents eat breakfast in the morning. Of interest is the part of adolescents who do not eat breakfast in the morning, regardless of their ethnicity. The reasons can be both on the part of the children themselves and on the part of the parents, who often leave the house before the children and are not able to control whether they have breakfast. There are many cases in which the child is given more pocket money in order to buy breakfast, but this does not happen often.

There is no initiative from parents to prepare homemade food for their children for school, but even if they do, it is not preferred by children. In Bulgaria, the tradition of carrying sandwiches in food boxes at school is still not accepted by society. It is considered that buying food from shops is a matter of higher social status. The children are covered by the national programs for healthy eating at school, for whom lunch is provided mainly up to 4th grade.

On the other hand, the results of a number of studies among children of the same age show that the frequency and quality of breakfast are important influencing factors of malnutrition. The breakfast behavior situation showed that rice noodle products (71.66%) had been the most frequently consumed by primary and middle school students [2]. Skipping breakfast is a predisposing factor for overweight and obesity [3]. The findings indicate that the most significant risk and protective factors of eating disorders do not differ largely for male and female adolescents or different BMI<sup>s</sup> [4, 5].

In Bulgaria, preventive measures aimed at changing the diet, use of personal resources to overcome the risk factors of the social and material environment are very insufficient and are carried out sporadically. At the initiative of the Bulgarian Red Cross on November 8 (European Day of Healthy Eating), the so-called “healthy breaks” are organized in schools. Students engage in initiated conversations about healthy eating, drawing in the school yard on the topic and participating in games to increase their physical activity. These measures, according to the authors, are a good start but much remains to be done in this direction [6, pp. 86-87]. We should not underestimate the role of the family,

which is leading in building healthy eating habits in adolescents, which should first be a priority and way of eating in the family and then expect a similar healthy diet in young people outside the family environment. Eating, like any other positive health behavior is part of an individual’s health culture, such as physical activity, sports, preferences for a certain type of music, tolerance for people, reading books, love of nature and more. It is a matter of upbringing, which should start from the earliest childhood and be a way of life in the family. We cannot expect young people to show a certain type of behavior, attitude towards anything if they do not see similar patterns of behavior and lifestyle in the family and their home environment.

Healthy eating among adolescents in the family is essential for building their health education, health culture and increasing their health literacy.

Adolescents who have a low health literacy level were found to have a higher probability of having symptoms of eating disorders, especially when they perceive themselves as fat. The study refers to potential theoretical frameworks for health literacy intervention that may provide guidelines for the intervention design and materials [7].

Of great importance, according to M. Semerdzhieva and the team, is to build a healthy diet in the family, which plays a preventive role. The main recommendation of the specialists is to use every opportunity for the family members to eat together, and according to their abilities, the children also participate in the preparation of the food [6, p. 85].

Results of the same study in Greece shows that the constrained food spending due to financial crisis has an independent and inverse impact on parents’ diet quality while keeping unaffected adolescent’s diet quality. This finding highlights the role of parents as a protective ‘wall’ against the deterioration of their children’s diet quality. The modification of the prices of healthy food and the provision of food aid, particularly in economically disadvantaged households, is underlined [8].

And last but not least, of great importance, according to A. Kanellopoulou and the team, accurate weight perception in conjunction with healthy dietary habits may play a determinant role in the prevention of obesity. Thus, the early identification of children with wrong weight perception, along with the promotion of healthy dietary habits, is of crucial importance from a public health perspective to combat childhood obesity [9].

Our results regarding the use of pasta show higher consumption in adolescents of Roma and Turkish ethnicity, as well as the replacement of basic meals with pasta in 11-year-old students from the above ethnic groups.

When reviewing the literature, we have been found that consumption of fast foods among adolescent students was remarkably high in both public school and private school adolescents in Nepal. Regardless of adequate knowledge the harmful consequences of junk foods, school-going adolescents are consuming fast foods due to their easy availability and ready-to-use packaging. An appropriate intervention targeted at adolescents to improve food

behaviors is recommended [10].

The results of our study correspond to the results of the following another study. Intervention to improve dietary and psychological health in young people should target males, those in less affluent households, seek to reduce consumption of 'junk' food, and increase fruit and vegetable intake [11].

In recent decades, more and more often, a connection is established between the time spent in front of a computer, electronic game, smart phone, TV, etc., electronic devices united under a common term "screen" and diet in young people. Children spending at least one hour of daily leisure screen time had a higher prevalence of high frequency of sweet and snack intake than children being exposed to less than one hour. For soft drinks and fast food, the prevalence of high frequency intake was significantly higher from two and three hours of exposure, respectively. Longer periods of screen exposure in Spanish children during their leisure time may be associated with poorer dietary behaviors [12]. Teenagers were found to be well aware of the ill effects of fast food, but they were found to be happy with their dietary habits and unwilling to change them [13]. Obesity prevalence has been simultaneously increasing with the high consumption of large food portion sizes (PS). However, there is information on PS of energy-dense (ED) foods as a potential risk factor for obesity in adolescents. The present study suggests an association between the PS of ED foods and obesity in European adolescents [14].

It has been found that increasing the time in front of the "screen" has a negative effect on PA in both sexes [15].

Vegetables and fruits are foods that are very important for growth and health and should therefore be consumed daily.

Unfortunately, when reviewing the literature, we come across the following hopeless results: The median consumption of fruits, vegetables, starchy foods and milk/dairy products among adolescents in Germany was below the recommendation. The median consumption of both meat/meat products and unfavourable foods, like confectionery, which should be consumed sparingly, was about 1.5 times the recommended amount. The total amount of beverages consumed by most adolescents was above the minimum amount recommended [15].

Interesting results have been found from a study that aims to determine the associations between body weight status perception, health status, diet quality, and consumption of fruits and vegetables within the adolescent population in the United States. Those who perceived their weight status as "just right" also reported their health to be "very good" or "excellent" and that their diet was good. Similarly, adolescents who perceived their weight to be just right consumed significantly more fruits and vegetables than those who perceived their weight as "underweight" or "overweight" [16].

Results of a large-scale study - in total, 484 children aged between 8 and 13 years old participated in the study (147 in Denmark and 337 in Lithuania) have been

shown that fruits, vegetables, highly processed and animal-based foods were not included in large part of children's most preferred meal composition. Favorite meals' composition varied among children in both countries and included different products from separate food groups. Vegetables were more likely to be present in the children's favorite meals together with meat products. Girls in both countries had more expressed vegetable preferences than boys. Boys in Lithuania had a relatively more expressed preference for highly-processed foods, while Danish girls had a more expressed preference for animal-based products [17].

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Also interesting are the results of a study in which: age; gender; ethnicity; the locality of schools; frequency of eating out per week; imbalanced intake of cereals or grains, meat, poultry or eggs; and inadequate vegetable intake were significantly associated with fast-food consumption among adolescents in Malaysia [19].

The findings presented in this paper demonstrated that it is possible to design environmental-friendly meals from existing school menus. The result is a four-week menu characterized by large vegetable components that were used not only as side dishes but also as ingredients in the first and second courses. Pasta and sweets are often included, and white meat is selected instead of red meat [20].

The results of our study are confirmed by T. Popova and all, who found that only half of the students consume fresh fruits and vegetables daily. But they often consume unhealthy foods - ready-made snacks and sweets [21].

## CONCLUSIONS

The study conducted in this way allows us to draw the following more significant conclusions:

1. More than half of the adolescents surveyed eat breakfast in the morning. When comparing by gender and ethnicity, we found that the largest relative share of having breakfast in the morning are girls of Roma origin, and the smallest share is of Bulgarian girls.

2. Pasta products are consumed daily by half of the respondents, with the highest daily consumption among children of Turkish and Roma origin. It is noteworthy that even the main meal is replaced by pasta and sweets for 11-year-old boys of Roma origin and girls of the same age of Turkish ethnicity.

3. Fruits and vegetables are consumed daily by more than half of the respondents. This trend persists among ethnic groups, but we have to note the fact that Roma boys at the age of 13 consume the least fresh fruits and vegetables compared to children from other ethnic groups.

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#### Conflicts of interest:

There is no conflict of interest in the realization of this scientific work. The scientific work was presented to the Scientific Ethics Committee on June 13 2019, which gave its opinion with an order of The Rector of Medical University - Plovdiv No. P-1742 / 28. 06. 2019. This scientific study has been conducted under the project NO-12/2019 of the Medical University of Plovdiv on the topic: Physical development and health behavior of adolescents (11-14 years old) from different ethnic groups in the Municipality of Plovdiv.

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