

ASSESSMENT OF EATING HABITS AND PHYSICAL ACTIVITY LEVELS OF HIGH SCHOOL STUDENTS

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Abstract

Introduction: Proper nutrition and adequate levels of physical activity determine the psychophysical development of children and adolescents. Nutritional recommendations aimed at developing proper eating habits have been included in the Pyramid of Healthy Food and Lifestyle for Children and Adolescents developed by experts from the Institute of Food and Nutrition. Unhealthy eating habits require improvement as soon as possible, because they significantly contribute to the development of diseases, primarily civilization diseases, such as obesity, type II diabetes or hypertension. In addition to proper nutrition, an equally important element of a healthy lifestyle is daily physical activity. Systematic physical activity significantly contributes to maintaining health. Children and adolescents are recommended to do at least 60 minutes of daily physical activity.

Aim of the study: The study aim was to assess the eating habits and physical activity levels of high school students.

Material and methods: Fifty randomly selected adult students of the III High School in Łomża were included in the study (38 girls and 12 boys). The study used the method of diagnostic survey, and the research tool was an author's questionnaire consisting of 30 (closed and open) questions.

Results: The majority of the subjects (78%) were of normal weight. Eight subjects in the study group were found to be overweight and no one was found to be obese. Six subjects were underweight. The majority of the participating students (70%) was found to eat three or four meals a day. Meat products are eaten 5 or more times a week by 72% of the students. There were no non-meat eaters in the study group. The majority of the students (44%) do not eat fish. Milk and dairy products are consumed once a day by 44% of the respondents. 200 g of fruits and vegetables are consumed per day for 60% of the students. Sweets are consumed once or twice a week by the majority of the students (48%). 92% of the students snack between meals, but 60% only sometimes snack. The majority of the students (80%) drink from 1.5 to 2 litres of fluids per day, and students mostly drink water. The majority of the students (40%) spend less than an hour a day doing physical activity, and the respondents usually spend their leisure time watching TV.

Conclusions: The most common unhealthy nutritional habits identified in the study are: consuming an insufficient amount of vegetables and fruit, eating an insufficient amount of fish, as well as milk and dairy products, while they consume too many sweets and snack between meals. The surveyed high school youth require nutritional education aimed at eliminating unhealthy dietary habits. In addition, the surveyed youth also require education about the importance of physical activity in their proper psychosomatic development.

Key words: eating habits, physical activity, youth, health

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1. Introduction

According to the World Health Organization (WHO), health is the complete physical, mental and social well-being of a person [1]. It can be defined as the balance of the human body and the harmony of mental and physical states.

1.1. Eating habits and physical activity as factors shaping health

Among the numerous determinants of health, proper nutrition and adequate levels of physical activity are of particular importance. These are factors that determine the proper

psychophysical development of children and adolescents, and in the case of adults, achievement and health maintenance.

Proper nutrition is the appropriate composition of the meals consumed, ensuring a supply of energy and macro- and micro-nutrients adapted to the needs of the body. A prerequisite for proper nutrition is the consumption of varied meals in the right proportions. Eating habits, formed from early childhood, affect our future health, as improper eating habits significantly contribute to the risk of developing civilization diseases, such as hypertension, type II diabetes, and obesity.

Habits are habitual, automatic behaviours that we learn and are not permanently assigned to us from birth [2].

This definition implies that habits, including eating habits, can be changed, and should be changed to promote health. Changing one's eating habits is a difficult process, requires an action plan and strong motivation, and involves making a long-term, consistent and conscious effort. It is recommended that dietary changes be made gradually, without the extremes of too rapid and large changes, to increase the chance of success of the intervention undertaken [3].

The development of dietary recommendations aims to improve the nutritional status of specific age groups in society, and therefore improve health by preventing the development of diet-related diseases [4]. The dietary recommendations specified for high school students are reflected in the Pyramid of Healthy Nutrition and Lifestyle for Children and Adolescents, developed by experts from the Institute of Food and Nutrition under the leadership of Professor Mirosław Jarosz (Figure 1). This pyramid is for children and adolescents from 4 to 18.

Fig. 1.: Pyramid of Healthy Food and Lifestyle for Children and Adolescents (4-18 years) [5].



The above pyramid should be analysed according to the principle: the lower the level, the more products from a particular group should be consumed, while the higher the level - the fewer products should be included in the diet of a particular social group, in this case children and adolescents. The pyramid is accompanied by relevant information in the form of 10 principles with the following content:

1. Eat 5 meals regularly and remember to drink water frequently and brush your teeth after eating.
2. Eat a variety of vegetables and fruits as often and as much as possible.
3. Eat grain products, especially whole grains.
4. Drink at least 3-4 glasses of milk a day (you can replace it with natural yogurt, kefir and - partially - cheese).
5. Eat lean meat, fish, eggs, legumes, and choose vegetable fats over animal fats.
6. Don't consume sugary drinks and sweets (replace them with fruits and nuts).

7. Don't add salt to your food nor eat salty snacks and fast food products.
8. Be physically active at least one hour a day every day (limit TV watching, computer use and other electronic devices to 2 hours).
9. Get enough sleep so your brain can rest.
10. Check your height and weight regularly [5].

An analysis of the pyramid shows that an essential element of a healthy lifestyle is physical activity - a factor that is extremely important for the health of young people. The physical activities recommended for young people include cycling, swimming, running, team sports, dancing, skateboarding, and even forgoing the use of the elevator in favour of taking the stairs. The amount of time recommended for schoolchildren to engage in physical activity is a minimum of an hour a day, with increased physical activity beyond an hour a day likely to provide additional health benefits [5]. Systematic physical activity is associated with a number of beneficial health effects, including on the respiratory system, cardiovascular system, musculoskeletal system, and the individual's mental state. In addition, physical activity develops social skills, provides an opportunity to establish numerous interactions, and requires that people who practice sports, especially team sports, to interact with each other [6]. Due to the progress of civilization since the middle of the twentieth century, the physical activity of people living in highly industrialized countries has decreased significantly. The progressive decline in physical activity of the population of these countries is accompanied by easy access to food, including highly processed foods. It contributes to a systematic increase in the prevalence of obesity, including among children and adolescents.

2. Material and methods

The study included 50 randomly selected, 18-year-old students of the Third High School named after the Soldiers of the Lomza District of the Home Army in Lomza. The study group consisted of 38 girls and 12 boys.

The study used a diagnostic survey, and the research tool was the author's questionnaire, which evaluated the dietary habits and the level of physical activity of the surveyed students. The survey consisted of 30 questions, among which there were both closed questions (with the possibility of choosing one answer) and open questions, concerning, among other things, the quantity and quality of the meals consumed, the regularity of their consumption and the proportion of basic product groups in the daily ration.

The results were analysed using Microsoft Excel.

3. Results

3.1. Demographic characteristics of the study group.

The study group (n=50) included more than three times as many girls as boys (76% girls, n=38 vs. 24% boys, n=12). All students surveyed were 18 years old.

Based on the students' answers to questions about height and weight, their body mass index (BMI) was calculated. The mean BMI in the study group was 22.3 kg/m². The majority of the subjects (n=39; 78%) were of normal weight (BMI ranging from: 18.2 to 24.9 kg/m²). Eight subjects in the study group were found to be overweight (BMI range: 25 to 29.99 kg/m²), and no one was found to be obese. 6 subjects were underweight (BMI within: 17 to 18.49 kg/m²).

3.2. Demographic characteristics of the study group.

The majority of the surveyed adolescents answered the question "Do you think you eat healthy?" affirmatively (64%, n=32), the answer "no" was chosen by 18 people (36%).

Among the surveyed adolescents, only 2 people (4%) eat 5 meals a day, the majority - 35 people (70%) eat three or four meals a day, while 13 people (26%) eat only one or two meal a day.

For all the high school students surveyed, the most substantial meal of the day is lunch, and all also eat breakfast every day. None of those surveyed eat their first meal right after waking up. This meal is eaten by 32 students (64%) 12 students (24%) eat it within 2 hours after waking, while 6 students (12%) eat their first meal more than 2 hours after waking.

For breakfast, students usually eat sandwiches, this option is chosen by as many as 30 people (60%), followed by cereal with milk - 10 people (20%), sweet rolls and pastries - 5 people (10%), other food - 5 people (10%).

Meat products are eaten 5 or more times a week by 36 people (72%), 4 times a week by 8 people (16%), once a week by 6 people (12%). There were no non-meat eaters in the study group.

The frequency of consumption of fish by the respondents is as follows: once a week - 14 people (28%), 2-3 times a week - 8 people (16%), once a month - 6 people (12%), not at all - 22 people (44%).

Milk and dairy products are consumed several times a day by 18 students (36%). The majority, in this case 22 respondents (44%) consume them once a day, and 8 high school students (16%) consume them 2-3 times a week. Only 2 surveyed high school students (4%) do not consume these products at all.

In responding to the question: "In what quantity do you consume fruits and vegetables?" 12 students (24%) answered - about 400 g. per day, 30 students (60%) - about 200 g. per day, 8 (16%) - about 100 g. per day. No person answered that they do not consume these products at all, and none answered that they consume more than 400 g. per day. The majority of students (64%) do not pay attention to whether they eat more vegetables or fruits during the day. More often fruits than vegetables are eaten by 24% of the students surveyed; only 12% of the students eat vegetables more often than fruits.

Of those who took part in the survey, 16 (32%) admitted that they eat sweets every day. 24 high school students (48%) consume sweets once or twice a week,

5 consume sweets once a week (10%), also 5 stated that they do not consume sweets at all (10%).

Of those surveyed, 16 (32%) state that they snack between meals, 30 students (60%) sometimes snack between meals, and only 4 students (8%) do not snack.

In response to the question: "How much fluid do you drink during the day?" 10 students (20%) answered that from 0.5 to 1 litre, and 40 (80%) answered that they drink from 1.5 to 2 litres of fluids per day. There was no person who drank less than 0.5 litres of fluids per day.

In response to the question: "What drinks do you drink most often?" in 40 cases (80%) students select water, in 5 cases (10%) juices, in 4 cases (8%) coffee and energy drinks, only in one case (2%) the answer was sweet sodas.

The nutritional value and composition of purchased food products are of interest to 10 high school students (20%), 15 (30%) sometimes read the labels of purchased products, and 25 high school students (50%) are not at all interested in the composition of purchased food products.

3.2. Demographic characteristics of the study group.

Of the 50 students surveyed, 7 (14%) rated their physical activity as very good, 34 (68%) rated it as average, and 9 (18%) rated it as poor.

Respondents usually spend their leisure time watching TV - this applies to 20 students (40%), walking - 15 students (30%), reading - 10 students (20%). Only 5 students (10%) spend their free time exercising at the gym.

Of the 50 high school students surveyed, 15 (30%) spend more than an hour a day on physical activity, 20 (40%) spend less than an hour a day, 12 (24%) spend less than 30 minutes a day, and 3 high school students (6%) say they are not physically active at all during the day.

4. Discussion

Balanced nutrition and the right level of physical activity are the elements necessary for the proper development of a young person. Proper eating habits, such as the regularity of eating meals or the adequate supply of vegetables and fruits as a source of vitamins, minerals and fibre, along with the proper level of physical activity, significantly contribute to maintaining health and well-being.

The results of the study showed that the average BMI value in the surveyed group of students was 22.3 kg/m², which proves that most of the surveyed students are of normal weight. Among the 50 subjects, as many as 72% had a normal body weight. 12% of respondents were underweight, 16% had an overweight BMI. Obesity was not observed in any of the examined teenagers. This result is consistent with the results of other researchers, showing that in the case of European adolescents, the problem of being overweight is much more often observed than obesity [7]. The recorded result of 72% of the surveyed students with a normal body weight is a very good result in the light of the currently growing problem of being overweight and obesity in the world population, among children and adolescents. Nearly every fifth

child in European countries is characterized by abnormal body weight [8]. Orkusz and Babiarz reported a definitely lower than 72% of teenagers with a normal body weight, and among the high school students in Poland they surveyed, only 55.5% had a normal body weight [9]. Researchers observed a relatively high percentage of underweight students - 28.6%, among the examined students there were also emaciated students (4.2%), and 9.5% of students were overweight [9].

The surveyed youth had good habits regarding the consumption of beverages as many as 80% of the surveyed high school students indicated water as the most frequently consumed beverage, 10% for juices, 8% for coffee and energy drinks, and only 2% for sweet carbonated drinks. Nutritional recommendations indicate the need to drink at least 1.5 litres of water during the day [5]. The majority (80%) of the surveyed students of III High School in Łomża drink from 1.5 to 2 litres of liquids during the day, 20% of students drink from 0.5 to 1 litre of liquids. For comparison, the study conducted by Cichočka and Krupa showed that the majority (30%) of the surveyed upper secondary students from Nowy Sącz drink from 1 to 1.5 litres of liquids during the day, 26% drink from 1.5 to 2 litres of liquids a day 17% of the surveyed students drink 2 to 2.5 litres of fluids a day, and 17% of the surveyed students drink less than 1 litre of fluids a day [10].

It was shown that only 4% of the surveyed youth of III High School in Łomża eat 5 meals a day, the majority (70%) eat three or four meals a day, while 26% eat only one or two meals a day. In the study by Orkusz and Babiarz, the surveyed high school students stated that their daily diet was dominated by the 4-meal diet model (65.5% of all respondents) [9]. Consuming three meals a day was selected by 19.4% of girls and 8.3% of boys, and five or more meals a day by 15.8% of high school girls and 8.3% of high school students [9].

According to nutritional recommendations, at least half of the daily food ration should be vegetables and fruits. Such a large amount of vegetables and fruits in the diet results from the need to provide the body with the right amount of fibre, vitamins and minerals, including antioxidant substances. It is recommended to consume at least 400 g. of vegetables and fruits a day, with the right proportion of vegetables and fruits: α should be vegetables, β fruits, due to the high content of simple sugars in fruits [5]. The recommended amount of 400 g. of fruit and vegetables per day is consumed by only 24% of the surveyed students of the Third Secondary School in Łomża. Most students (60%) consume only about 200 g. of fruit and vegetables per day. Typically, the surveyed high school students do not pay attention to whether they consume more vegetables or fruits. In a study by Zalewska et al., less than half (42.8%) of 1999 high school students surveyed stated that eating vegetables several times a day. A similar number (45.4%) of the respondents stated that eating fruit several times a day [11].

According to the current nutritional guidelines, the daily diet should include limiting the supply of meat, especially red meat, and consuming no more than 0.5 kg per week, it is worth introducing sources of protein other than meat, mainly fish but also eggs and legumes [5]. It was shown that 72% of the

surveyed students of III High School in Łomża eat meat and meat products 5 or more times a week, 16% of students eat them 4 times a week, and 12% of the surveyed students once a week. There were no people among the respondents who did not eat meat at all. The consumption of fish by students of III High School in Łomża is as follows: once a week 28% of people eat it, 2-3 times a week - 16% of people, once a month 12% of people, as many as 44% of respondents do not eat fish at all. This result is consistent with the observation that Poland belongs to countries with generally low consumption of fish. In the case of adolescents under the age of 18, the Food and Drug Administration (FDA) recommends eating 1-2 portions of fish per week [12]. In a study by Bieżanowska-Kopeć et al., only 3.8% of the surveyed girls and 14.5% of the surveyed boys ate fish at least once a week [13]. In the study conducted by Król et al., a very rare inclusion of fish in the diet of young people was observed, eating fish several times a week was selected by just over 7% of the surveyed youth [14].

Children and adolescents are recommended to consume 3-4 portions of milk and/or milk products per day [5]. These products are eaten several times a day by 36% of the surveyed students, once a day by 44% of the respondents, 2-3 times a week by 16% of high school students. Only 4% of respondents do not consume dairy products. For comparison, in the study by Bieżanowska-Kopeć et al., in which 140 students of the Catering School Complex in Krakow were surveyed, it was observed that half of the respondents consumed milk and milk products every day [13]. Among those participating in the study, 32% of students admitted to consuming sweets daily. 48% of students eat sweets once or twice a week, 10% - once a week, the remaining 10% do not eat sweets at all. For comparison, in a study by Stefańska et al. it was observed that approx. 32% of girls and 36% of boys eat sweets every day, and 34% of girls and 24% of boys - even several times a day [15].

Daily snacking between meals was selected by 32% of the surveyed high school students, the majority of the surveyed students (60%) chose the answer "I snack sometimes", and the answer "I don't snack between meals" was selected by only 8% of the respondents. In the Orkusz and Babiarz study, 43.5% of the surveyed adolescents admitted to daily snacking between meals, while the study conducted by Batyk showed that snacking between meals is one of the most frequently observed improper eating behaviours among adolescents [9, 16].

Most of the surveyed students (40%) spend less than an hour on daily physical activity, 30% of the respondents spend more than an hour during the day, while 24% of the respondents - less than 30 minutes. In addition, the respondents in most cases choose to spend their free time passively: watching TV (40%) and reading (20%). Bochenek and Grabowiec also showed that the high school students they studied usually spend their free time in more passive ways, most often in front of a computer or TV screen [17]. Orkusz and Babiarz also showed that too little physical activity among adolescents is now a common phenomenon [9].

5. Summary and conclusions

Nutritional mistakes that were identified as most often committed by the surveyed students were: eating insufficient amounts of fruit and vegetables and in the wrong proportion mostly consuming fruit, eating insufficient amounts of fish, as well as milk and milk products, excessive consumption of sweets and snacking in between meals. Therefore, the conducted survey allows us to conclude that the surveyed high school students require nutritional education aimed at eliminating dietary mistakes. In addition, the surveyed youth also require education about the importance of physical activity in proper psychosomatic development and in maintaining health. Unfortunately, the surveyed youth most often spend their free time in passive ways, the majority of physically active students spend less than an hour a day on this activity.

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