

Snacking in children according to age

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ABSTRACT

Introduction: One of the major nutritional mistakes committed by children and adolescents is snacking between meals. Sweet or salty snacks are rich in simple sugars, fats, preservatives and dyes, and poor in minerals and vitamins. Their excessive consumption can lead to the development of diet-related diseases in the future.

Purpose: To evaluate the nutrition of children and adolescents with a focus on snacking between meals.

Materials and methods: The study included 162 students from Białystok schools, of which primary school students accounted for 30.2%, junior high school 38.3%, high school 31.5%. The questionnaire used by the authors contained 27 questions.

Results: Regular meals were consumed by only 55.1% of primary school students, 35.5% of junior high school, and 37.3% of high school students. Two and fewer meals a day were consumed by 1.6% to 5.8% of the students studied. First breakfast was omitted by 18.4% of the students in elementary school, 16.1% of junior high school, and 15.7% of high school. Second breakfast was omitted by 12.9% to 17.6% of the respondents.

Sweet products instead of a second breakfast were consumed by 44.9% of primary school students, 61.3% of junior high school, and 64.7% of high school students. Snacking most often occurred in the respondents' home (69.4% of elementary school students, 43.5% of secondary level students, and 52.9% of high school students). Water in school was drunk by 85.7% of primary level students, 56.5% of junior high school, and 51.0% of high school. The main source of knowledge about nutrition for 61.2% of primary level students was the family, while television, radio, and the Internet were the main sources of knowledge for 62.7% of high school students.

Conclusions: The regularity of eating in the study group decreased with the studied students' age. The most popular products in the group of younger students were salty snacks and sweets. Healthy snacking was observed more frequently in the group of high school students. The main place of snacking was the home. The primary source of knowledge about nutrition for primary school students was the family and for high school students the mass media.

Keywords: Nutrition, snacking, obesity, children

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INTRODUCTION

Nutrition is one of the most important environmental factors responsible for the health and proper psychosomatic development of children and adolescents [1]. Proper nutrition allows for the full realization of the child's genetic potential, proper functioning of all organs and systems, affects well-being, and protects against the development of civilization diseases.

Recently, due to lifestyle changes, eating disorders have become increasingly common, for example limiting meal time, high calorie diets, food irregularities, high processed food consumption, low fruit and vegetable consumption, and frequent meals.

Children and adolescents during intensive growth are particularly vulnerable to the consequences of improper nutrition [2,3]. Recently, overweight and obesity of developmental age children has been a major public health challenge with both malnutrition and nutritional deficiencies in children and adolescents.

In almost all countries, the number of obese people is rising rapidly. In Poland, overweight and obesity concern 18% of students. According to current research, many indications suggest that the development of obesity in children and adolescents may be to the result of inappropriate feeding patterns of the mother during pregnancy, too short or too extended period of breastfeeding, and an increasingly observed family history of abnormal eating habits [4].

One of the major nutritional mistakes committed by children and adolescents is snacking between meals. Snacking according to the Polish dictionary is "eating intermittently, little by little, eating between main meals" [4,5]. Among the reasons for snacking may be casual meals, too much time between meals, a lack of first breakfast before going to school and second breakfast while at school.

Snacking can also take place in people who are physically active and in individuals who are not able to consume large quantities of food and are still hungry long before the next meal [6,7].

Snacking is beneficial if full-fledged products are consumed that replenish essential energy during the day and enriches the diet with nutrients. Such products are nuts and seeds, vegetables and fruits, and lean dairy products.

Products such as sweets, salty snacks, and fast food products are unhealthy because of their high sodium content, sugar, fatty acids and high caloric content [8,9]. Their excessive consumption can lead to the development of diet-dependent diseases such as diabetes, obesity, and cardiovascular disease in the future. Unfortunately, there is often no link between nutritional errors

committed during childhood and health at a later stage, as the effects of improper nutrition in most cases reveal themselves after many years.

The purpose of the study was to analyze snacking among the children and youths of Bialystok schools to determine the frequency, place of snacking, and type of products eaten. The frequency and regularity of meal intake by children and adolescents, the level of knowledge about healthy eating, the environmental impact on the dietary behavior of the subjects, and the sources of information on the principles of proper nutrition were also evaluated.

MATERIALS AND METHODS

The study included a group of 162 students from Bialystok schools, including 49 elementary students (30.2%), 62 junior high school students (38.3%), and 51 high school students (31.5%). People living in the city accounted for 78.4% of respondents, while people living in rural areas accounted for 21.6% of the surveyed group. Most of the children surveyed were from 3-, 4-, and 5-person families. Children did not live with their grandparents, their financial situation was good. Mothers and fathers had a secondary education or higher. Most of the parents did physical work. Each school had a school shop and canteen.

The written consent of each child and his / her parent, school director, and the consent of the Bioethics Committee of the Medical University of Bialystok (Resolution: R-I-002/330/2014) was obtained. The questionnaire used by the authors contained 27 questions. The first part of the questions concerned the age, sex, place of residence, material situation of the studied students, and family status.

The second part of the final questions concerned the nutrition of the respondents, especially snacking and type of food eaten, but also the number of meals students consumed and their regularity, and first and second breakfast consumption.

The data obtained was statistically analyzed using StatSoft's STATISTICA 12.0 statistical package.

RESULTS

After analyzing the results of the study, there was an abnormality in the nutrition of children and adolescents of the study group. We found that the regularity of meals in the study group decreased with age - regular meals were consumed by 55.1% of primary school pupils, but only 37.3% of high school students (Figure 1).

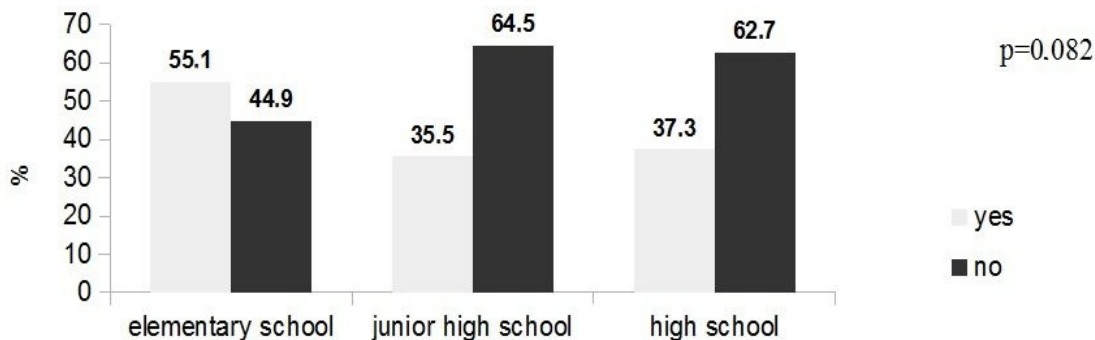


Figure 1. Regularity of meal consumption declared by the studied students

It turned out that about one third of the students studied did not consume the recommended 4-5 meals a day. From 1.6% to 5.8% of the studied

students consumed only two or fewer meals per day (Figure 2).

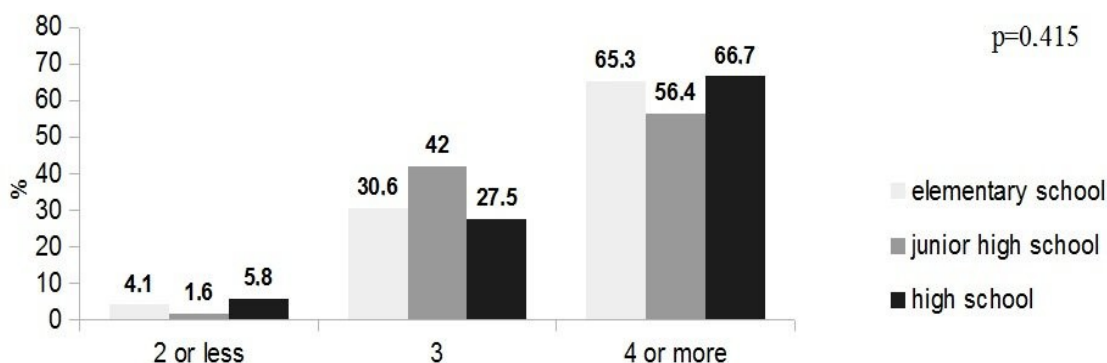


Figure 2. Number of meals consumed by the studied students during the day

The positive information is that the students in the study mostly consumed first breakfast, regardless of age. First breakfast was omitted by 18.4% of primary school students, 16.1% of junior high school students, and 15.7% of high school students (Figure 3).

The students in the study mostly consumed a second breakfast, most often in the form of sandwiches brought from the home. A total of 12.9% up to 17.6% of the respondents omitted second breakfast (Figure 4).

Unfortunately, a large percentage of students ate sweet products instead of second breakfast, and this proportion increased with age and accounted for 44.9% of primary school students, 61.3% of junior high school, and 64.7% of high school students (Figure 5).

The study also showed that a high percentage of students were snacking between meals. Frequent snacking was reported in 26.5% to 37.3% of the respondents, and occasional snacking from 43.1% to 57.1% of those surveyed.

There was no statistically significant relationship between snacking and the studied students' age. The education and professional work of the parents and the financial situation of the family did not significantly affect student snacking.

However, snacking on sweets by students during school activities was shown, often instead of second breakfast. The most commonly eaten products were sweets and fruit, sandwiches and salty snacks were replaced in successive places. Sweets were the most commonly eaten products among elementary and middle school students. High school students were more likely to eat fruit. Consumption of salty snacks decreased with age.

Regardless of the studied students', the main place of snacking was the home (from 43.5% to 69.4% of the studied students). The vast majority of the respondents declared free access to snacks at home. Pupils in primary school mostly received snacks from parents (53.1%). High school (78.2%) and junior high school students (68.3%) bought snacks themselves. Expenditures of the respondents for snacks usually ranged from 1-5 PLN per day.

The study also revealed that although the youngest students are the most likely to snack on sweets, they belong to the group of people most often drinking water at school, which they brought from home.

Based on the obtained answers, the main source of knowledge about nutrition for primary school students was the family (61.2%), and for high school students (62.7%) television, radio, Internet, magazines.

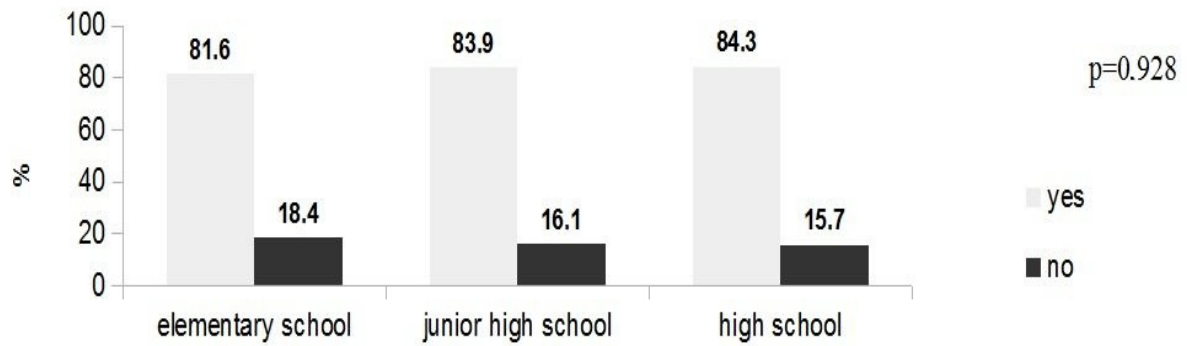


Figure 3. Consumption of first breakfast at home by the studied students

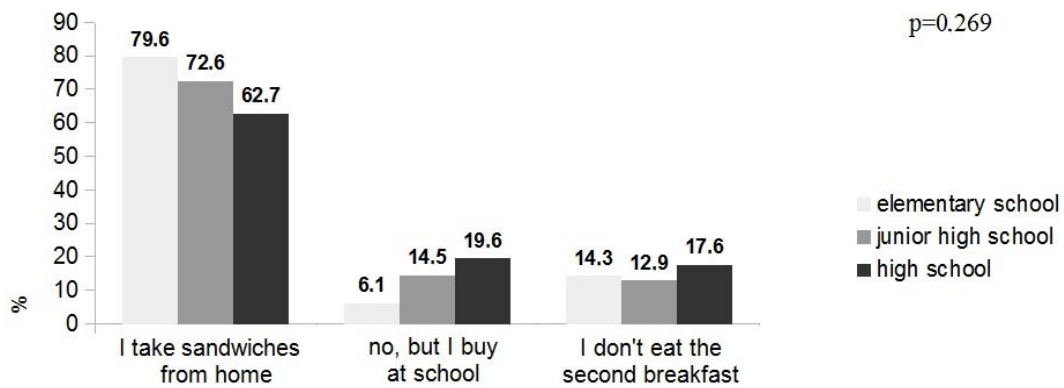


Fig. 4. Consumption of second breakfast by the studied students

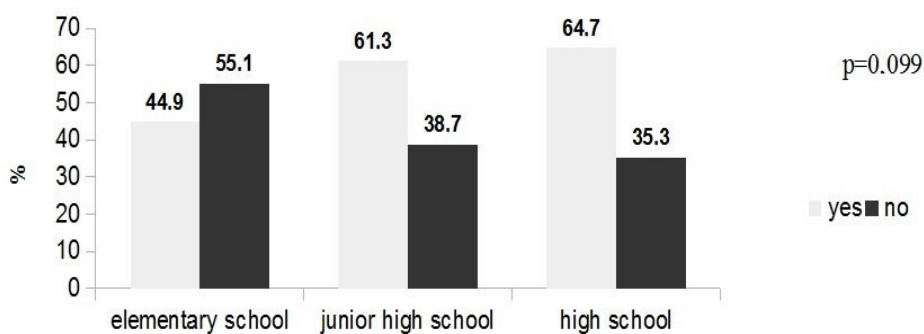


Figure 5. Consumption of sweet products instead of second breakfast by the studied students

DISCUSSION

In the population of children and adolescents, simple obesity is most common (over 90% of cases). It is influenced by a genetic predisposition, which to a large extent controls appetite regulation and basic metabolism. The environmental factors include incorrect nutrition, low physical activity, some medications, and stress [10,11].

Observed overweight in childhood persists in later life in about 80% of people. The risk of obesity in adult life is greatest if overweight occurs in infants [12,13]. That is why the nutrition of children and young people and the development of proper habits from a young age are so important. A proper diet should consist of regularly eaten (every 3 to 4 hours) five meals a day with age-specific calorie intake. Time and place and the atmosphere of the meals are also important. It is advised not to watch TV or read magazines while eating.

Unfortunately, as shown by the study, a high proportion of children eat irregularly, and nearly 6% of students eat two or fewer meals a day. Too much time between meals affects the growing body adversely. There is a reduction in mental and physical performance, poorer mood, lower concentration, and less active participation in school activities [14].

The study showed that the regularity of meals in the study group decreased with age. These results coincide with the conclusions of other authors. In the studies of Zabronska et al. [15] meals were regularly consumed by 47.23% of the studied primary school students, and in the study by Czarniecka-Skubina et al. [16,17] it was shown that only 16.8% of high school students ate regularly.

Irregularities in eating may be due to long periods of time spent in school and extra-curricular activities. Currently, there are more requirements for children than a few dozen or so years ago. In addition to school classes, most children attend extra classes. This is not always in the interest of the child, and often it is due to the parent's exaggerated ambitions.

Irregularity of eating meals may also result from the conditions of family life; often the carers work late in the afternoon and meals that should be consumed at intervals during the day are combined into one hearty meal in the evening. The lack of regularity in the menu establishes incorrect eating habits and promotes cravings for non-recommended products, such as sweets, fast food, or salty snacks [14,18,19].

Children, adolescents, but also adults should not omit the first meal of the day. Breakfast affects our activity, well-being and behavior throughout the day. The positive news is that despite the high number of responsibilities most

students eat first and second breakfast. These meals are important in the diet of the developing young body, because they maintain the correct course of metabolic processes. It is also important for breakfast to be full-bodied, consisting of adequate amounts of protein, fats, complex carbohydrates, and a feeling of satiety for a long time [20-22].

An alarming phenomenon among children and adolescents is snacking between meals. Most often as a cause of snacking a lack of time for a full-fledged meal is reported, but the problem is much more complex. Snacking is conducive to all food-borne errors, including irregularities and omitting meals, monotonous diet, eating while watching television or using a computer. It is also believed that one of the main causes of snacking is stress, and eating more food is a form of coping in difficult life situations.

The study found that a significant percentage of students snack between meals. Similar results were also obtained by Krzywicz et al. who showed that 96.7% of high school students snacked [23], and the study by Wojtyła et al. revealed that 77% of young people in Poland snacked, and 23% of those also snacked at night [24,25].

A common cause of incorrect nutrition is also stress and difficulty dealing with it. School, but also the family at home, often causes youth problems too difficult to overcome. In times of intense studying, when making difficult decisions, it is very common to consume more food. Food is a form of distraction from problems and brings mental relief for a short period. In the case of difficulties in interpersonal relations, food is considered as a means of improving one's mood and reducing the number of emotions felt as negative [26-28].

It is a separate issue to encourage young children by their parents to snack by treating tasty snacks as a reward. This can cause not only dietary errors but also parental problems later.

Snacking can be beneficial if full-fledged products are eaten. The study found that they are more often replaced by poor products with low value nutrients, which occurred in younger children. Elementary school students were more likely to choose sweets and salty snacks. Such snacking may result in more calories than the actual daily requirement, and a long-term imbalance between the amount of energy delivered and its expenditure leads to overweight and obesity. Obesity complications begin early in childhood; they affect the functioning of many organs and systems, cause poorer learning outcomes, poor well-being and lack of acceptance by peers [4].

The irregularities in nutrition identified in the study require targeted education aimed at children and adolescents as well as teachers but

primarily parents. It is believed that the main factor shaping the child's nutritional behavior is the way parents and carers eat.

The study showed that the family is indeed the main source of nutritional knowledge for elementary school students. With the passage of time and the longer stay away from home, the pattern becomes the eating habits of peers or taken from the media or the Internet. Health education should be linked to parallel nutrition education for parents/carers.

Later in life, parents of children and adolescents may find it difficult to affect abnormal eating habits because, as the study found, for older students media are the main source of learning and education, and students begin to decide for themselves about many things.

CONCLUSIONS

1. The regularity of meals in the study group decreased with age.
2. The frequency of snacking (meals between meals), regardless of age, was high.
3. The most commonly snacked products in the group of younger students were salty snacks and sweets.
4. Healthy snacking (vegetables, fruits, sandwiches) was observed more frequently in the group of high school students.
5. The main place of snacking in the studied group of pupils was the home, and the suppliers of the snack products were the pupils themselves or their parents.
6. A relationship between sweets consumption during school activities and snacking was detected. A high percentage of students often snack or sometimes eat sweets instead of breakfast.
7. The primary source of knowledge about nutrition for primary school students is the family and for high school students the mass media.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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