Influence of Lifestyle on Overweight and Obesity in School-age Children

Enisa Ramic1, Suada Kapidzic-Durakovic2, Enisa Karic1, Olevira Batic-Mujanovic3, Esad Alibasic3, Muharem Zildzic4

Primary Health Care Center and Polyclinics Dr Mustafa Šehović, Tuzla, BiH1
University Clinical Center Tuzla, Clinic of Physical Medicine and Rehabilitation, Tuzla, BiH2
Primary Health Care Center Kalesija, Kalesija, BiH3
University Clinical Center Tuzla, Clinic for Internal Medicine, Tuzla, BiH4

ORIGINAL PAPER
SUMMARY

Introduction: Special attention needs to be given to resolution of obesity problem among children because many studies indicate that majority of persons that have suffered from obesity during their child age still have the same problems when they become adults. Incorrect nutritional habits cause health problems at later age. The purpose of this study is to determine the frequency of overweight and obesity occurrence among school-age children, as well as risk factors that certainly lead to obesity. Methods: This research was conducted on sample of 530 pupils from one elementary school from suburban area. Assessed children were from seven to fourteen years old. Anthropometric measurements were taken and questionnaires and general medical examinations followed with the statistical processing of collected data. Results: Based on the Body Mass Index (BMI) considering age and gender of examined subjects we have found that 14.7% subjects were overweight and 7.3% of children were obese. Also, we have determined that children often use food that is identified as risk factor for obesity. Overweight and obesity are directly related to amount of time spent in front of TV set or personal computer (p=0.01). Children that were overweight in 57.1% cases would prefer to change their nutritional habits and 68.4% of obese children would like to do so as well. Children that were obese, in high percent would like to change habits regarding their physical activity (57.9% of them) and overweight children in 33.8% cases. Conclusion: It is necessary to encourage young people to develop healthy nutritional habits, to promote physical activity and sports, and definitely to strongly advice against the sedentary lifestyle. It is crucial to educate parents on healthy nutritional habits and physical activity because they have the strongest influence on their children. Also, effort needs to be taken in schools by increasing number of physical education classes and to provide healthy food in school canteens in order to ensure improvement of physical activity and healthy nutritional habits among children.

Keywords: school-age children, body mass index, risk factors, physical activity

1. INTRODUCTION

Obesity in children is still not adequately diagnosed and is insufficiently treated well. It is estimated that among children between 5 and 17 years there are about 155 millions over weighted and 30-45 million that are obese (1). Obesity is becoming increasingly important public health problem, and special attention should be given to resolution of the obesity issue in children, since studies indicate that most people who were overweight in child age have problems with obesity in adulthood. For children who were at age of 7 years overweight (body mass index > 95 percentile) it is estimated that 43% of girls and 63% of boys will remain overweight as 30 years old (2).

Body mass index is a square of ratio between weight expressed in kilograms and body height expressed in meters (BMI = weight (kg) / visina (m²)). Identification of obesity in children is done by using a curve, so called, BMI percentiles, which are tailored to age and child gender (3). In evaluating nutritional status, BMI values between 85 and 95 percentiles indicates overweight and obese children are those that have a body mass index above the 95 percentiles. Lack of physical activity and inadequate diet supports an irregular increase in body weight in children (4). Regular physical activity contributes to the quality of life. The contribution of physical activity includes reducing health risks for the occurrence of cardiovascular diseases, diabetes mellitus and osteoporosis. It have favorable impact on obese, those suffering from arthritis, anxious and depressed persons. Reduced physical activity is associated with increased incidence of obesity (5).

Reducing physical activity is a characteristic of today’s lifestyle. Physical activity gives way to more mechanization (driving a car, using elevators instead of stairs, etc.). There is very large number of people whose lifestyle may be considered as sedentary (6).

As a risk factor for excess weight and obesity in children are fast food, increased portion sizes, which are eaten at home and outside, increased use of sweetened drinks. Irregular eating habits cause health problems in older age. Children enjoy the sweets, thanks mostly to the commercials, and have them consumed between meals. Research from some authors has confirmed that many adolescents take a lot of sucrose, which provides 25% of daily energy.

Preventive activities should begin at an early age and primarily in terms of dietetic advices and increased physical activity. It has been shown that BMI in children correlates positively with time spent in front of the TV, computer or video games, calories, while it is negatively correlated with physical activity (7). Obesity, along with a decrease in physical activity, dislipidaemio hypertension, use of tobacco products are the main risk factors for the development of cardiovascular disease in children (8).

2. RESPONDENTS AND METHODS

Sample is representing students from first to eighth grade of elementary school in the suburban municipality of Tuzla. The survey is conducted in all classes of this school from first to eighth grade, on a sample of 530 children, age between seven and fourteen years. During the survey we used the questionnaire and anthropometric measurements. In the first part of the questionnaire were general information related to gender, age, questions about the socio-economic features and family status such as parents’ income, education, health and weight of parents, child health. Second part of the questionnaire contains questions related to nutrition of children (food intake frequency, questionnaire for young people and adolescents), which collects information about eating and dietary habits related to food. The third part of the survey questionnaire includes questions about frequency of physical activity and the number of hours spent sitting (watching TV, working on the computer, playing video games).

2.1. Anthropometric measurements

Body weight was measured decimal scale Libela Elsi (UWE PM -150, Max150 kg, 100 grams of tolerance) that is calibrated prior to measurements. The subjects were measured in the underwear or with fewer clothes, which weight is reduced from the measured weight values. Body height (cm) was measured using anthropometer.
which is composed of a vertical measuring rod with the scale and with the movable horizontal arm. Body mass index (BMI kg/m²) was calculated for each child separately from data on body height and body weight, date of birth which taken from school records. Body mass index was determined using the BMI calculator. Assessment of nutrition among children were done on the basis of criteria – provided excessive physical mass and percent values over 95 meant obesity. Prevalence of obesity and body weight is determined on the basis of percentile values of body mass index for age and sex. After three months, a new survey is done in relation to nutrition and physical activity, among children with excessive physical mass and which are obese. Standard methods of descriptive and comparative statistics are used, the statistical significance of differences was tested with the t-test and chi-square test, while the differences between samples was considered as significant if p<0.05.

3. RESULTS

The study involved 530 children, of who were 278 boys and 252 girls. The boys were represented with 52.5% and girls with 47.5%. Most respondents were in the age group of children between eleven and twelve years of life (a total of 183 children), and the least children at age from seven to eight years (a total of 65 children).

Mean value of BMI in boys increases with age (Table 1). BMI values are between genders at age from 8 to 10 years almost the same until the age of 14 when they larger in girls (p<0.05). In general, about 22% of school-age children have problems with excessive bodily mass (overweight or obese), 10.5% boys and 11.5% girls.

On the basis of the survey we have come to the data related to nutrition, dietary habits, physical activity, and socio-economic status of school age children. From the total number of respondents 79.6% of children eat breakfast, and 10.4% of children do not eat breakfast on work days. Children are mostly eat for breakfast sweet spread in 66.4% of cases, and 75.5% of them are using white bread. Only 1.5% do not eat breakfast on work days. Children are mostly eat in front of TV (Chart 2).

In regards to the use of so-called fast food (hamburger, sandwiches), only 1.9% of school age children do not use these meals, and about 30% of children eat fast food more than three times a week. The chi-square test indicated that there is no correlation between body weight and consumption of fast food (p =0.30). Fizzy drinks use every day 36% of school-age children, and only 7% of children do not use carbonated beverages. Variety of salty snacks (chips) use every day more than half of the tested children or 57.35%. Sweets eat every day 64.5% of school-age children. It is determined that the use of sweets is not related to body weight of subjects (p = 0.96). Most children eat chicken and meat products, and the minority eats fish (chart no.4).
School-age children eat fruit in 72% of cases every day, and 59.5% vegetables. The connection of body weight and consumption of vegetables has been further analyzed with the z-test of proportion, and it is found that the proportion of children who are not overweight and obese and eat vegetables more than three times per week is significantly higher than in the group of children, with excessive body weight and obesity (Z = 1.77, p = 0.04). We tested risk factors related to physical activity through participation of children in sports, physical education classes and time spent in front of the TV or computer.

No physical activity after school does have 21.3% of school age children, and 4.0% of children every day spent at least an hour in sports, dance or other physical activity. There were no correlation of body weight of subjects and physical activity or participation in sports (p = 1, p = 0.97). There are 15.7% of school children who spend more than 3 hours daily in front of the TV or computer. It was found that time spent in front of a TV or computer spent 3.6% of school children. Up to three hours a day, 49.0% school-age children spend every day sitting in front of the TV or computer. It was found that time spent in front of a TV or a computer is connected to the body mass of the subjects (p = 0.01). In this analysis we calculated the corresponding OR-Odds Ratio. It was found that the chance for excessive body weight or obesity is 1.95 times higher (95% CI: 1.21-3.16) in the group of children who spend more than three hours in front of the TV or computer.

In extra-curricular activities such as sports activities at school, basketball, volleyball, and football 7.3% of children are included from this school. The school kitchen is selling sandwiches made of white bread with salami, hot-dogs, and sweet spread. Juices sold in school are carbonated, cola cola, fanta, with available variety of snacks, chocolates, sweets. The school does not sell fruit.

After education about healthy nutrition we made an overview of children who are overweight and obese between surveys. We found that there was no statistical significant difference in body mass index.

27.3% of children with excessive bodily mass said that they changed their habits related to nutrition, and children who are obese in somewhat higher percentage change their eating habits–31.6%. Children who want to change nutrition habits were in 68.4% obese and 57.1% of them were children with excessive bodily mass. Habits related to physical activity changed 35.0% of children with excessive bodily weight, and 47.4% of obese children. Obese kids wanted in a higher percentage to change habits related to physical activity, or in 57.9% of cases, while the children with excessive bodily mass in 33.8% of cases.

4. DISCUSSION

Obesity is a growing threat to human health and it takes the form of an epidemic in a growing number of countries. Particularly concerning is the appearance of increasing overweight and obesity in children.

According to World Health Organization report, the fundamental causes of the obesity epidemic are sedentary way of life and increased food intake (9).

In our study we found that the excess body mass exist in 14.7% of school age children, while obese was 7.30%. In total, about 22% of school-age children have problems with excessive bodily mass (overweight or obese), which is similar to research conducted in the UK (9).

Childhood and adolescence is the period when there are increased physiological for more nutritional substances, and a large nutritional value of foods is of paramount importance. Adequate intake of energy and nutritional matters during this period will not only reduce the immediate risk for health problems such as tooth decay, anemia, excessive body weight and obesity, but will delay or prevent chronic degenerative diseases in adulthood such as cardiovascular disease, hypertension, stroke, osteoporosis and insulin-independent diabetes.

Impact on the creation of food intake habits of children has their families, schools, health care and media. Young people create their habits under the influence of the food industry and advertising directed to them. Due to lack of time and employment of parents, children increasingly consume food outside the home, usually as a “fast food” meal. The availability of delicious and inexpensive healthy food is important in the choice of diet. The choice of food is closely linked with socio-economic status. There are indications that young people of lower socio-economic status eat more snacks and sweets, skip breakfast, eat fewer fruits and vegetables than those with higher economic status.

In our research on school-age children we found that in 72% of cases they eat fruits every day and vegetables in 59.5%. This can be explained by the fact that surveyed children live in an area that is rich in fruits and vegetables. There was no correlation between consumption of fruits (p = 0.30) and vegetables (p = 0.1) with the body mass of the respondents. The correlation of body weight and consumption of vegetables has been further analyzed with the z-test of proportion, and found that the proportion of children who are not obese and overweight take vegetables more than three times a week significantly higher than in the group of children with excessive body weight and obesity (Z = 1.77, p = 0.04).

Fizzy drinks use every day 36% of school-age children, and only 7% of children do not use carbonated beverages. There was no correlation between consumption of carbonated beverages with body weight of children (p = 0.77), which coincides with the examination in New Scotland (11).

Sweets eat every day 64.5% of

Figure 4. Meat in diet of school age children
school-age children who are involved in the survey and this agrees with data from Croatia (10). It was found that the use of sweets is not related to body weight subjects (p = 0.96). Most children eat chicken and meat products, and just few fish. According to Jusupović (12) in their study majority consumed chicken which has the advantage over other types because it allows a healthy diet and low fat content.

It was found that time spent in front of a TV or a computer is linked to the body mass of the subjects (p = 0.01). It was found that the chance for excessive body weight or obesity is 1.95 times higher (95% CI: 1.21-3.16) in the group of children who spend more than three hours in front of the TV or computer games, than in a group that has the same activity for three hours or less. Analyzing 95% CI (confidence interval-level of reliability) it can be seen that the chance for excessive body weight is 21% higher in children who spend in front of the TV or computer more than three hours.

The study by Veugelers and Fitzgerald (11) has shown that sitting activities for more than one hour per day were associated with a significantly increased risk of obesity, where 28.5% of children spent more than three hours sitting, and 20% more than six hours. Participation in physical activities for more than twice a week was associated with reduced risk of obesity. Reduction of time spent in TV viewing and playing video games can help in the prevention of obesity among children and youth. According to some authors, 62.8% of children did not want to change their habits related to diet, and 37.2% of children were willing to participate and work on modifications of their regular diet (13).

We came to results that 62.78% of children with excessive bodily mass or are obese wish to change their eating habits, and that it is done by 29.42% of the children. Obese children in more cases changed their habits related to physical activity (47.4%) than children with excess weight. More children who are overweight wish to change their habits regarding physical activity. In the group of children who do not want to change their habits regarding physical activity there is approximately the same percentage of obese (23.7%) and children with excessive bodily mass (23.4%)

5. CONCLUSIONS

About 22% of children have a problem with body mass (fat or obese). Children often eat food which is a risk factor for obesity. Fatness is positively correlated to the time spent in front of TV or computers. Preventive activities should start at among young children. It is necessary to encourage young people to have healthy eating habits, encourage them to physical activity, sport, and advise less sedentary lifestyle. Family doctor and schools are ideal place for children’s education and health promotion. Necessary is also the education of parents about healthy nutrition, physical activity, because they have the greatest influence on their children.

REFERENCES


Corresponding author: Ass. Enisa Ramic, MD. Health center „Dr Mustafa Sehović“, Tuzla, BiH. E-mail: enisa_nerko@yahoo.com.