STUDY ON THE NUMBER OF OVERWEIGHT AND OBESE STUDENTS IN PRIMARY SCHOOLS IN THE MUNICIPALITY OF SUCEAVA

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Keywords: obesity, overweight, students, schools, Suceava

Abstract: The study consists of applying specific measurements (BMI and waist-to-height ratio) over a period of six months to detect overweight and obesity in 12 primary schools in the municipality of Suceava. Following the measurements taken from a total of 2,819 primary school pupils, 724 are overweight, representing 25%, and 111 are obese, representing 3%.

Introduction

Overweight is a condition in which a person's body weight is greater than what is considered normal or healthy in relation to their height. This is most commonly determined by body mass index (BMI), which is calculated by dividing weight (in kilograms) by height squared (in metres). A person is considered overweight when their BMI is between 25 and 29.9. Although not equivalent to obesity (which starts at a BMI of 30), being overweight can pose an increased risk for diseases such as type 2 diabetes, high blood pressure or cardiovascular disease. [6] The causes of overweight include a higher calorie intake than energy consumption, lack of physical activity, genetic factors and, sometimes, hormonal or metabolic problems. Combating overweight usually involves adopting a healthy lifestyle with a balanced diet and regular exercise. [10]

Obesity is a medical condition characterised by excessive accumulation of body fat, which can negatively affect health. It is commonly assessed by body mass index (BMI), and a person is considered obese when their BMI is equal to or greater than 30. Obesity can be classified into several degrees, depending on severity: grade I obesity (BMI 30–34.9), grade II (35–39.9) and morbid or severe obesity (BMI over 40). [1]

The main causes of obesity include an imbalance between energy intake and expenditure, a high-calorie diet, lack of physical activity, and genetic, hormonal or psychological factors. Obesity is associated with an increased risk of many chronic diseases, such as type 2 diabetes, cardiovascular disease, hypertension, sleep apnoea and certain types of cancer. More and more people of all ages, especially children, have weight problems and suffer from overweight and obesity, with the percentage of increase being very rapid. The most alarming weight gain is among the infant population. [5] Most researchers believe that obesity that begins in childhood and continues into adolescence is much more difficult to treat. [2] Preventing and treating

The Annals of the "Ştefan cel Mare" University of Suceava.
Physical Education and Sport Section. The Science and Art of Movement
eISSN 2601 - 341X, ISSN 1844-9131

obesity involves lifestyle changes, such as healthy eating, regular exercise and, in some cases, medical treatment or surgery. [7, 8]

Material method

Overweight and obesity in children are assessed differently than in adults, as children's weight and height vary according to age and gender. In this study, we used the following techniques: body mass index (BMI) for age and gender and waist-to-height ratio. [9]

BMI is calculated in the same way as for adults: weight (kg) divided by height squared (m²). In children, the result is compared to age- and gender-specific growth charts (BMI percentiles) provided by the World Health Organisation (WHO) or the Centres for Disease Control and Prevention (CDC). Children with a BMI between the 85th and 95th percentile are considered overweight. Those with a BMI above the 95th percentile are considered obese. [3,4]

The waist-to-height ratio is a simple, increasingly used method that measures waist circumference relative to height. In children, a ratio above 0.5 may indicate an increased risk of metabolic problems, even when BMI is normal. [4]

In addition to these techniques, there are others for detecting overweight and obesity, such as:

Growth curves (percentile charts)

These charts show how a child's weight and height compare to other children of the same age and sex. They are useful for monitoring progress over time and for early identification of risks of overweight or obesity. [3,4]

Skin fold measurement

This involves using a special compass (skinfold caliper) to measure the thickness of the layer of fat under the skin in certain areas of the body (usually the triceps, abdomen, and shoulder blade). This method provides an estimate of body fat percentage. [3]

Body composition assessment

Methods such as bioelectrical impedance analysis (BIA) or dual-energy X-ray absorptiometry (DEXA) can provide detailed information about the proportion of fat, muscle mass and water in the body. These are less commonly used in routine practice, being more common in research or specialised medical centres. [3]

In conclusion, the correct identification of overweight and obesity in children requires a combination of methods, adapted to age, gender and individual context, to ensure accurate assessment and appropriate interventions. [2]

The study was conducted over a period of 6 months, following a pre-established plan and with the period announced for each school. The measurements were taken with the help of physical education teachers from the 12 schools in the municipality of Suceava. The following instruments were used to perform the measurement techniques: scales, measuring tape and height gauge.

Results:

The Annals of the "Ştefan cel Mare" University of Suceava.
Physical Education and Sport Section. The Science and Art of Movement
eISSN 2601 - 341X, ISSN 1844-9131

Table no.1 - Centralized table with the total number of overweight and obese pupils

Nr. Crt.	School	Cls. I No. Pupils (F+O+O) Percentage	Cls. a-II-a No.P(F+O+O) Percentage	Cls. a- III- a No.Pupils(F+O+O) Percentage	Cls. a -IV -a No.Pupils(F+O+O) Percentage	Overweight No.Full Pupils + Percentage	Obese No. Full Pupils + Percentage
1.	Secondary School no.1	75 12 (16%) 3 (4%)	81 16 (20%) 3 (4%)	90 18 (20%) 3 (4%)	90 20 (23%) 5 (5%)	66 20%	14 4%
2.	Secondary School no.3	84 10 (12%) 3 (4%)	90 14 (17%) 3 (4%)	82 17 (21%) 4 (4%)	87 24 (28%) 3 (4%)	65 19%	13 3%
3.	Secondary School no.4	50 10 (20%) 2 (4%)	54 13 (24%) 2 (4%)	60 16 (27%) 3 (4%)	64 19 (30%) 3 (4%)	58 26%	9 4%
4.	Secondary School no.8	54 9 (17%) 1 (2%)	60 11 (19%) 1 (2%)	62 15 (25%) 3 (4%)	60 18 (30%) 4 (6%)	53 23%	9 3%
5.	Secondary School no.9 "Ion Creangă"	60 13 (22%) 1 (2%)	73 12 (17%) 1 (2%)	84 17 (21%) 2 (3%)	81 26 (32%) 6 (7%)	68 23%	10 3%
6.	Secondary School no.10	48 10 (20%) 1 (2%)	52 13 (25%) 1 (1%)	58 19 (32%) 3 (5%)	64 24 (37%) 5 (7%)	66 29%	10 4%
7.	Secondary School "Jean Beart"	50 16 (32%) 1 (2%)	52 13 (25%) 1 (1%)	60 19 (31%) 3 (5%)	62 23 (51%) 3 (4%)	71 31%	8 3%
8.	Secondary School "Miron Costin"	44 13 (29%) 1 (2%)	50 16 (32% 1 (2%)	54 19 (35%) 3 (5%)	58 22 (37%) 3 (5%)	70 33%	8 3%
9.	St. John the New Primary School	44 9 (20%) 1 (2%)	48 12 (25%) 1 (2%)	44 15 (34%) 1 (2%)	50 17 (34%) 3 (6%)	53 28%	6 3%
10.	"Ciprian Porumbescu" Art College	50 12 (24%) 1 (2%)	52 16 (30%) 1 (1%)	46 13 (28%) 3 (6%)	54 18 (33%) 4 (7%)	59 29%	9 4%
11.	High School with Sports Program	25 7 (28%) 1 (4%)	27 9 (33%) 1 (3%)	29 6 (20%) 1 (3%)	31 5 (16%) 1 (3%)	27 24%	4 3%

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eISSN 2601 - 341X, ISSN 1844-9131

12.	Philadelphia Theoretical High School	48 15 (31%) 1 (2%)	54 14 (25%) 1 (1%)	60 18 (30%) 4 (6%)	64 21 (32%) 5 (7%)	68 30%	11 4%

F – Full
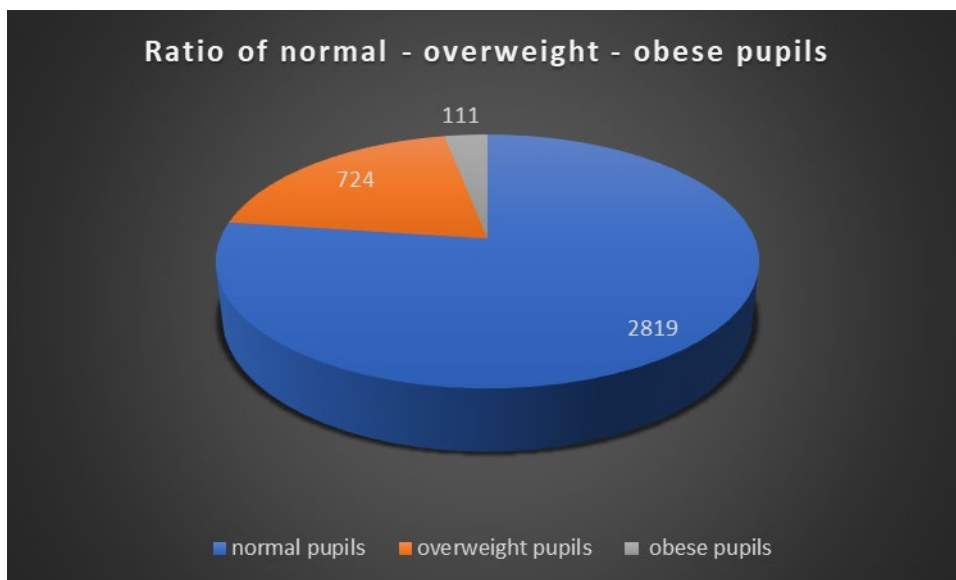O – Overweight
O - Obese

Chart 1 - Ratio of normal - overweight - obese pupils

Conclusions

Following the measurements, the following results were found for each school. At Secondary School No. 1, out of a total of 336 students, 66 were overweight, representing 20%, and 14 were obese, representing 4%. At Secondary School No. 3, out of a total of 343 students, 65 were overweight, representing 19%, and 13 were obese, representing 3% of the total number of students. At Secondary School No. 4, out of a total of 228 students, 58 were overweight, representing 26%, and 9 were obese, representing 3% of the total number of students. At Secondary School No. 8, out of a total of 236 students, 53 were overweight, representing 23%, and 9 were obese, representing 3%. At Secondary School No. 9, out of a total of 298 students, 68 were overweight, representing 23%, and 10 were obese, representing 3% of the total number of students. At Secondary School No. 10, out of a total of 222 students, 66 were overweight, representing 23%, and 10 were obese, representing 4% of the total number of students. At Jean Beart Secondary School, out of a total of 224 students, 71 were overweight, representing 33%, and 8 were obese, representing 3% of the total number of students. At the 'Sf. Ioan cel Nou'

Primary School, out of a total of 186 students, 53 were overweight, representing 28%, and 6 were obese, representing 3% of the total number of students. At the 'Ciprian Porumbescu' Art College, out of a total of 202 students, 59 were overweight, representing 29%, and 9 were obese, representing 4% of the total number of students. At the Sports High School, out of a total of 112 students, 27 were overweight, representing 24%, and 4 were obese, representing 3% of the total number of students. At the Filadefia Theoretical High School, out of a total of 226 students, 68 were overweight, representing 30%, and 11 were obese, representing 4% of the total number of students.

In Suceava, out of a total of 2,819 primary school students, 724 were overweight, representing 25%, and 111 were obese, representing 3%. Of the 25% of overweight students, there is a risk of an increase in the percentage of obesity if the necessary measures to combat overweight are not taken in time.

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