

# OVERWEIGHT PATHOLOGY IN CHILDREN FROM TIMIS COUNTY

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## Abstract:

**Introduction/background:** The constant global rise in the occurrence of overweight and obesity among all ages is accompanied by a higher incidence in serious health risks, such as type 2 diabetes, asthma, and the growth of cardiovascular diseases, which is now potentially present at an early age. **Aims:** To examine correlation and differences of overweight in school-aged children (10-13 years old-yo) according to their health lifestyle factors and depending on demographic repartition in our district, using two materials (Raport DSP 2008-2009 and Timiș Save the children survey 2010-2011). **Material and methods:** A cross-sectional survey including pupils (n= 1003, 7-17 yo) from the Timis county was carried-out. Height and weight were measured and a questionnaire regarding nutritional behavior was completed. Results were compared in terms of Rural/Urban appartenance by sex and age compared with the median 10-13 yo from our group (585 children) and Timișoara 6th grade pupils (1220 children). We use CDC Atlanta BMI charts and Excel analysis. **Results:** From rural group, girls medium height was 1.51 m and medium weight 46.6 kg and for boys 1.49 m and 44.2 kg, comparative with the urban group, girls medium height was 1.55 m and medium weight 44.9kg and for boys 1.54 m and 46.6 kg. Rural: 15.04% are overweight, 14.36% obese; urban: 17% overweight/obese from which 4% obese. **Conclusions:** Rural SC Timiș survey: 15.04% overweight, 14.46% obese, the difference boys-girls=3.71% statistically significant, pupils percentage with a BMI over 85 percentile (overweight and obese) for the urban group is 17%. Girls in urban group 13% are overweight or obese and 4% obese.

## Background

Obesity involves multiple interactions between genetic, social, behavioral, metabolic, cellular and molecular factors because of which changes in energy balance occur (1). Increasing global prevalence of obesity and overweight is due, on one hand, to the increasing intake of energy, particularly high calories-density foods, rich in fats, sugar, and on the other hand the decrease in activity due to the increased sedentary individuals. The risk of becoming obese adults of children who developed obesity in the early years of life is 80% for those with both parents obese and 40% for

children with one obese parent.(2,3) The World Health Organization (WHO 1986) defines health as a resource to live a productive life, and absence could obstruct achieving goals in life.

Obesity in children and adolescents is a risk factor for cardiovascular disease, hypertension, type 2 diabetes, sleep apnea, depression and some other forms of disease. (4, 5). In a study conducted in our territory (15) it was demonstrate that lifestyle and food behaviour it represents predictors for early onset of coronary diseases.

According to the current consensus, as for adults, also for children was adopted, the case definition of obesity based on body mass index (BMI = weight in kg / height in m square, Quetelet index). Also according to the new proposed definition of obesity in 2007 by an expert committee of the American Medical Association's Department of Human Health and the Center for Disease Control (Center for Disease Control - CDC), this also includes the severity of the disease. Thus, a BMI value between 85-95 percentile defines overweight, a BMI between 95-99 percentiles defines obesity, a BMI above the 99th percentile represents severe obesity and a characterized BMI > 40 kg/ m signifies morbid obesity. (6)

## Aims

To examine correlation and differences of overweight in school-aged children (aged 10-13 years old-yo) according to their health lifestyle factors and depending on demographic repartition in our district using two materials (Raport de cercetare al DSP 2008-2009 and Timis Save the children survey 2010-2011).

## Material and methods

A cross-sectional survey including pupils (n= 1003, 7-17 yo) from 9 rural Timis county settlements was carried-out. Height and weight were measured and a questionnaire regarding nutritional behavior and physical activity was completed. Results were compared in terms of Rural/Urban appartenance by sex and age oriented on comparison with the median 10-13 yo from our group (585 children) and Timisoara 6th grade pupils (1220 children). We use CDC Atlanta body mass index (BMI) charts and Excel data analysis.

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Graph 1. Sex repartition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	F	478	47.7	47.7	47.7
	M	525	52.3	52.3	100.0

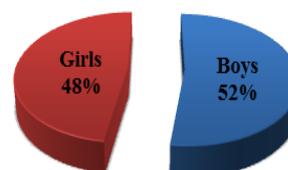
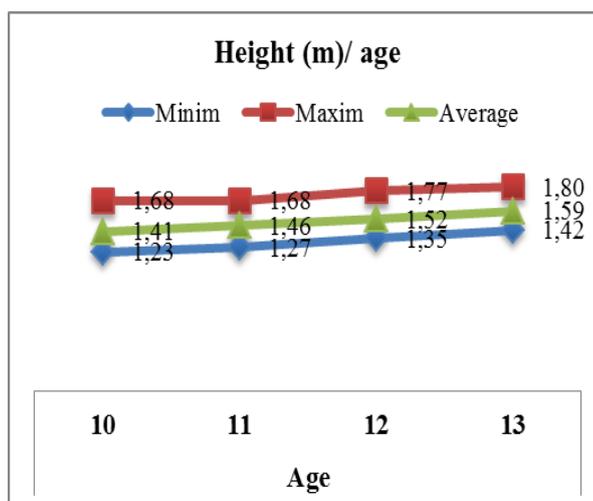
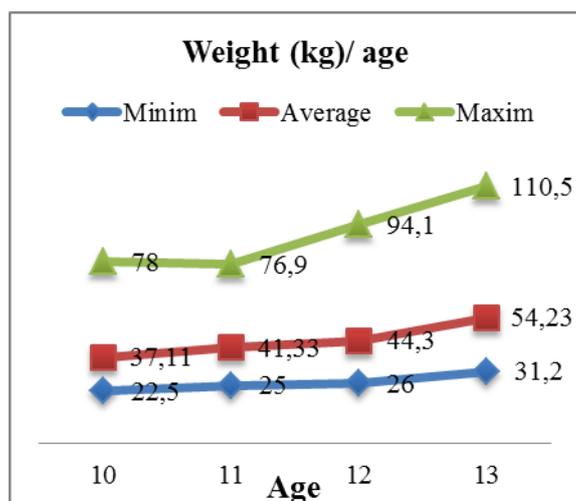
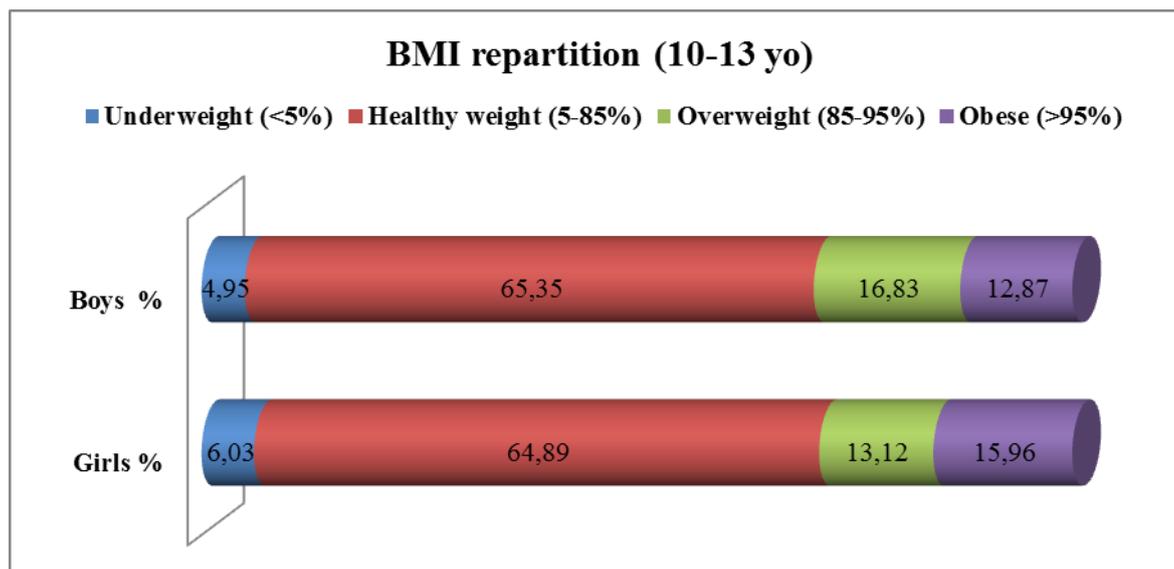


Table 1. Cohort distribution by sex



Graph 2. Weight values/ age

Graph 3. Height values/ age



Graph 4. BMI repartition in rural lot (10-13 yo)

## Results

Whole rural lot- descriptive statistics

The analysis group in terms of sex, we obtained the following: 525 male subjects and 478 girls valid for analysis. Boys are a percentage of 52.3% of the population and girls 47.7%, the balance is tilting in favor of boys. (table 1)

For an accurate comparative study with the urban Timisoara cohort, we selected from our whole lot, children with between 10-13 years old.

### 10-13 years old group parameters

From rural group, girls medium height was 1.51 m and medium weight 46.6 kg and for boys 1.49 m and 44.2 kg, comparative with the urban group, girls medium height was 1.55 m and medium weight 44.9 kg and for boys 1.54 m and 46.6 kg.

In the study group the average of girls BMI is different from the boys. To determine the statistical difference was applied Student t test, the value of p was 0.02. With reference  $p < 0.05$  and the hypothesis  $H_0$ : Mean BMI girls differ significantly from the average BMI of boys. The result was a statistically significant difference in the value of  $p = 0.02$ . So the two groups separately, with the criterion of sex differentiation and CDC graph as a reference for age and sex data were obtained:

- rural: 15.04% are overweight, 14.36% obese;
- urban: 17% overweight/obese from which 4% obese .

In rural lot, the proportion of healthy BMI is almost the same on girls and boys, girls are more underweight than boys and more boys (29.7%) are overweight or obese than girls (29.08%), but without a significant difference.

We applied a questionnaire regarding the children life style and sweet food/soft drinks consumption in our rural cohort and for Timisoara lot it was a vast and detailed list of items (both for pupil and parent) that we can compare in a large discussion. We resume that on one fact –that the correlation of soft drinks consumption by categories of gender overall results showed that boys drink more than girls, for example, in the frequency of 3-4 times a week there is a difference of 3.51% in favor of boys, and about every day drinking, a difference of 4.81%. (graph. 5)

## Discussions

The prevalence of obesity and overweight in children is increasing alarmingly in North America, in Europe, but recently in Australia, China, South America and North Africa. The prevalence varies considerably between different regions and countries, from under 5% in Africa and some parts of Asia, more than 20% in Europe and 30% in America and some countries in the Middle East. (7)

In the past 30 years, according to data from NHANES prevalence of obesity has tripled: in children aged 6-11 from 6.5% in 1980 to 19.6% in 2008, and in adolescents 12 to 19 years from 5% to 18.1%. (Kuczmarski, 2008)

In Romania, according to a study in the west of the country, in 1980, on a sample of 5250 children 3 months to 16 years, there has been a prevalence of obesity of 14.7%, ie 18.6% in infants 15% to preschool and 14.2% in school, with a predominance for girls. (1)

The first research HBSC (Health Behaviour in School-aged Children) in Romania took place in 2005-2006 (study published in a report by IASO, London, 2009), in children aged to 15 years old showed that the prevalence of overweight was 14.7% in girls and 8.7% for boys. (8)

A study performed in ClujNapoca (2009) showed that 8.29% of school children were obese, while 12.84% of them were overweight, using also CDC Atlanta growth reference charts, boys were more likely to be obese or overweight than girls (9).

According to data from the National Center for Evaluation and Promotion of Health in Romania (CNEPSS), the prevalence of obesity in children 3-16 years increased from 2004 in 2010 from 0.7% in rural areas and 1.6% in the urban to 1.5% and 3.1%.

In Romania (Craiova), during 2008-2010 was made a research aimed to pursue the correlations between obesity, overweight and the children's lifestyle and a better understanding of the clinical and etiopathogenic aspects of obesity in children. From 166 scholar children aged 6-14 (75 girls and 91 boys) 26.69% were overweight, 40.96% were obese and 34.33% had normal weight. From the girls 15.66% were overweight, 9.63% were obese and 19.87% normal. From the boys 9.03% were overweight, 31.32% were obese and 14.45% normal. These numbers show semnificative differences for overweight between girls (15.66%) and boys (9.03%) and for obesity between boys (31.32%) and girls( 9.63%). (8)

Previous studies showed that social status has a inverse relation with obesity in childhood period, a fact that is presumable in the results of this present study were overweight it was much higher in the rural areas than in the urban group of pupils.(11)

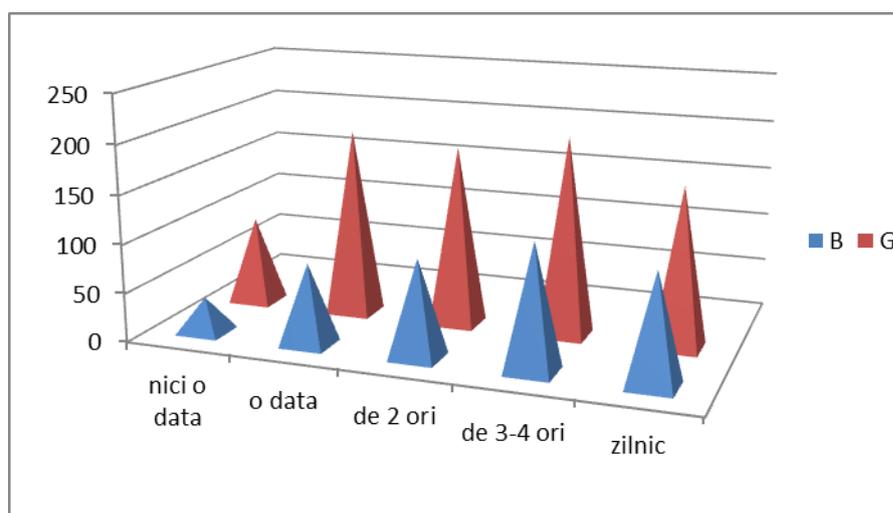
In the largest study from our county (12) using two groups from urban and rural areas we report associations between obesity and drinking of sweet beverages (1 of 4 children drink this every day), and no correlation with fast-food intake. We must agree that this became a major issue because in US the soft drink consumption increased by 300% in 20 years, with heavy consequences on teenagers health.(16)

## Conclusions

Rural SC survey showed 15.04% children with overweight, 14.46% obese, the difference boys-girls=3.71%, that is statistically significant. Pupil's percentage with a BMI over 85 percentile (overweight and obese) for the Timisoara urban group is 17%. In the girls from urban group they found 13% with overweight or obese and from those - 4% were obese. So it is obvious that in the low social status from villages in Timis county we have much more overweight pathology than in the main city (despite the fact that children from villages do more physical activity). We can presume that is linked with low economic profile but for a comprehensible position we need to solve the limitations of the studies (with same frame and tools doubled by obtaining the precise age using the date of birth on the database).

Urban study results	Girls %	Boys %	Total
Numar de copii evaluati	618	530	1148
Underweight (<5%)	4,00	3,00	3,00
Normal weight (5-85%)	84,00	75,00	80,00
Overweight (85-95%)	11,00	15,00	13,00
Obese (>95%)	2,00	7,00	4,00

Table 2. BMI repartition in urban lot (10-13 yo)



Graph 5. Rural cohort-soft drinks consumption comparison (boys-B vs girls-G)

In the final conclusion we must quote from AMERICAN ACADEMY OF PEDIATRICS (16) recommendation that suits just right in our region - Pediatricians should work to eliminate sweetened drinks in schools; they must promote literacy, better school meals, and consumption of fruits and vegetables. Without further changes in society, any actions may not be enough to prevent childhood obesity. Pediatricians should advocate for the formation of a school nutrition advisory council comprising parents, school officials, and food service

representing persons, other physicians, nurses, dietitians, dentists, and other health care professionals.

**Acknowledgement**

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