

Thesis summary

Assessment of overweight and obesity in children in terms of epidemiology and nutritional status

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Obesity is a disorder of nutritional status, leading to excessive accumulation of fat in the subcutaneous and other tissues and organs, due to the imbalance of energy equilibrium followed by medical complications (health state impairment, comorbidities and complications in all systems of the body, the perpetuation of obesity in adulthood), psychological and social integration problems and not at least, financial implications.

General Part of the thesis presents an overview of the problem, according to the literature:

- Nutritional status reflects the balance between the nutrient intake and body needs, and the consequences of any disturbances; assessment of it is fundamental in nutritional assistance of the child.
- Obesity has plurifactorial etiology (genetic and environmental factors, psycho-emotional, social and cultural factors). The prevalence of obesity grew globally, in some geographical areas reaching alarming proportions.
- Diagnosis is based on medical history, physical examination, anthropometric measurements, paraclinical investigations - laboratory, imaging and modern tests for assessing body composition.
- Management involves more than adjusting diet and increased physical activity: changes in overall lifestyle, with the support of the entire family, a multidisciplinary collaboration (pediatrician, endocrinologist, nutritionist, physiotherapist and psychologist) and also prophylactic interventions (to avoid the perpetuation of obesity in adulthood and installation of complications).

The first study aimed to determine the prevalence of overweight and obesity in children in Mures county, indicating the proportion of overweight and obesity by age, sex and area of origin.

Between September 2012 and June 2013, anthropometric measurements were performed in four municipalities of the county, three towns, and 2-5 villages around each city/town. There were evaluated 425 children. The group was stratified as compared with the existing data regarding the distribution by sex and age.

Child obesity is a reality in our geographic area also, since infancy.

Prevalence of overweight and obesity in children in Mures county is 17.64 % (6.82 % overweight, respectively 10.82 % obesity), with a higher prevalence in the 10-14 years old category (globally, overweight and obesity 22.85% at this age-group). For both nutritional disorders, there was a slight predominance of male. After area of origin, overweight predominates in rural, while obesity in urban areas.

The second study evaluated a group of 139 pediatric patients with overweight or obesity from clinical, anthropometric and laboratory point of view, compared with a control group consisting of 159 normal weight children.

Nutritional assessment components were: history, physical examination, anthropometry – measurements and identification of the case on the standard growth reference curves, as well as paraclinical data.

Children with overweight or obese are less anemic than normal weight children, without significant differences regarding the erythrocyte indices, but with less alteration of blood smears.

The most common biochemical tests revealed significantly higher values in the obese group.

The level of all adipocytokines were higher in the obese group, except for adiponectin. Leptin and other pro-inflammatory markers (interleukins - IL6 and 8, Tumor necrosis factor - TNF) were significantly higher in overweight children, as well as Insulin-like growth factor - IGF1, whereas adiponectin (anti-inflammatory adipokine) was significantly lower.

Dyslipidemia was associated with excess weight, the share of this disorder was higher in adolescents than in preschool and school children.

Overweight implicates less metabolic disorders than obesity itself: between the group of children with overweight and normal weight, the differences of metabolic parameters were not so pronounced as between obese and controls.

On ultrasound, half of overweight or obese children had changes of liver echogenicity and varying degrees of hepatomegaly. High percentage of patients had ultrasonographic changes suggestive for steatosis. Ultrasound elastography showed higher values of shear wave velocity in the group of overweight or obese children compared to normal weight children (tendency to liver fibrosis in the context of obesity).

Overweight and obesity disturb the child's nutritional status, not only in terms of physical measurements, but also laboratory parameters, with all related metabolic consequences.

Keywords: child, epidemiology, nutritional status, overweight, obesity