

## ABSTRACT

This diploma thesis is based on a study of seven year old children Childhood Obesity Surveillance Initiative (COSI) processed by Institute of Endocrinology sponsored by WHO Europe and MZ ČR and on a study of adolescents Childhood Obesity Prevalence And Treatment (COPAT) organized by Institute of Endocrinology sponsored by Norway grants and MŠMT ČR. These studies were focused on the prevalence of overweight and obesity among children and adolescents and on factors possibly related to origin of overweight and obesity.

Obesity is a severe chronic multifactorial disease that significantly affects health conditions and development of children. Obesity, as a risk factor, is involved in origin of cardiometabolic problems (II. type *diabetes mellitus*, ischemic heart disease, hypertension, dyslipidemia), cancer, musculoskeletal problems and reproductive system disorders (infertility, hypogonadism, polycystic ovary syndrome, disorders of sexual development in children). Preventive programs, focused on childhood obesity, are important part of health care. These programs are based on results of factors involved in the origin of obesity.

The aim of this thesis is determine and compare the prevalence of overweight and obesity in seven year old children and adolescents by classification of Czech republic, WHO and IOTF. The main aim of this thesis is to compare effects of factors environmental and familiar (family history, lifestyle, ie. eating habits, passive activities and sleep duration) on weight parameters in seven year old children group and adolescents group.

In this thesis is evaluated measurement and questionnaires of 2497 children aged 6.3 to 7.6 years and 1546 adolescents aged 12.8 to 18.4 years, obtained in collaboration with paediatricians. Paediatricians were selected randomly to provide representative sample of children and adolescents. Each individual was measured by classical anthropological methodology (body weight, body high, waist circumference, hip circumference) and all children completed questionnaire on daily life, physical activity and family history. The results were processed in the programs Microsoft Office Access, Microsoft Office Excel, RůstCZ, WHO AnthroPlus and statistically processed in the programs Statistica and R.

Prevalence of overweight and obesity was 6,74 % and 8,69 % in boys and 8,38 % and 7,75 % in girls in 2010 among seven year old children when evaluated by the Czech classification; 13,64 % and 10,06 % in boys and 15,18 % and 7,04 % in girls when evaluated by the WHO classification; 10,80 % and 4,46 % in boys and 12,89 % and 5,69 % in girls according to the IOTF classification. Prevalence of overweight and obesity was 11,69 %

a 16,07 % in boys and 11,73 % a 11,35 % in girls in 2010 among adolescents according to the Czech classification; 22,97 % and 11,82 % in boys and 18,28 % and 5,04 % in girls according to the WHO classification; 22,31 % and 7,70 % in boys and 14,38 % and 3,91 % in girls according to the IOTF classification. Different methods show different results. According to the Czech methodology, there is statistically significant increase in the prevalence of overweight and obesity between seven year old and adolescents.

Comparison of factors influencing BMI values of seven year old and adolescents shows, that in group of adolescents there is stronger impact of diabetes in family history, sleep duration and sex on higher BMI values. Adolescents BMI values are dependent on lower consumption of chocolate compared to seven year old; and more dependent on low consumption of whole milk and sweets, than in seven year old. Compared to seven year old children, there is no influence of dyslipidemia in family history, birth weight, breastfeeding duration and frequency of consumption of meat, low-fat dairy products and vegetables on BMI values in adolescents. These differences may contribute to the increasing prevalence of overweight and obesity with age. There was similar dependence of BMI values on the consumption of "light" drinks and length of television watching on weekdays in both age groups.

**Key words:** prevalence of overweight and obesity, childhood and adolescent obesity, BMI, day life and BMI, personal and family history and BMI, differences between children and adolescents