

### PREVALENCE OF UNDERWEIGHT, OVERWEIGHT AND OBESITY AMONG PRESCHOOL CHILDREN IN ANKARA, TURKEY AND ASSOCIATED SOCIO-ECONOMIC FACTORS

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The aim of the present study is to assess the prevalence of underweight, overweight and obesity among preschool children and to analyse factors contributing to this phenomenon. The study group consisted of 270 children (135 boys and 135 girls) aged 3–5 years, whose parents gave consent to include them in the study. Weight, height were recorded according to the standard protocols and, underweight, overweight and obesity were classified using BMI according to WHO criteria. Socio-economic status (SES) was determined using education level and occupation of parents. Developmental multiple domains, motor, concept, linguistics developmental levels were measured and a standard of development index were also taken into account. Younger children's development level was assessed with Developmental Indicators for the Assessment of Learning™, Fourth Edition (DIAL™-4). It was developed by Mardell and Goldenberg (1998) and adapted by Aral et. al. (2014) to Turkish culture and was utilized as data collection tools. Data indicated that younger children (3 and 4 years old) had sexual dimorphism, girls had significantly lower mean weight-for-age ( $p < 0.01$ ) and height-for-age ( $p < 0.01$ ). According to the mean z-scores of BMI, 1.1% of children were diagnosed as underweight (1.2% at age 3, 1.9% at age 4, no at age 5), 3.6% overweight (3.6% at age 3, 2.1% at age 4 and 3.9% at age 5) and 1.2% obese (1.2% at age 3, 0.9% at age 4 and 2.6% at age 5). Tendency of being overweight and obese was prominent in boys, prevalence gradually increased with age, where stunted girls were evident at younger ages. Development index, SES, weight and height factors were highly associated ( $p < 0.01$ ), and ANOVA results revealed better anthropometric status with better family background. It is suggested that the growth level of these more advantaged peers may have a positive impact of changing environmental conditions among preschool children in Turkish population.

**Key words:** *preschool children, growth, underweight, overweight, obesity, Turkey*

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### CONSTITUTIONAL CHARACTERISTICS OF BIOLOGICAL MATURATION PROCESS IN ONTOGENESIS

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The rate of biological maturation may have a genetic nature, associated with a certain type of constitution (Nikityuk, 2000). Longitudinal study of 210 boys and 159 girls was conducted for 4 years (ages 3 to 6) and of 66 boys and 59 girls for 10 years (ages 7 to 17). Biological age of the examined subjects was estimated from 3 to 9 years with the somatic criterion (Philippine test), from 5 to 14 years with odontological criterion, and from 9 to 17 years by the development of secondary sexual characteristics. Somatotypes of all children were assessed according to the Shtefko-Ostrovsky method (1929) with the 4 selected types: asthenic (A), thoracic (T), muscle (M) and digestive (D). In the first childhood constitutional differences in biological maturity were expressed as trends likely due to insufficient differentiation of somatotypes at this stage. In the second

childhood somatotypes significantly differ in the results of the Philippine test only at the age of 7 years, when children have positive and negative values. Complete replacement of milk teeth with the permanent ones occurs in girl of type D at 10 years, of type M – at 11 years, of types T and A – at 12 years. In boys constitutional differences in teeth replacement are more pronounced before 11 years, while at the final stage (up to 13 years) they develop more synchronously. Variations of the loss of primary teeth in the representatives of different somatotypes are stronger than in the eruption of the permanent dentition. Secondary sexual characteristics in girls are accelerated in the types as follows: A<T<M<D, and in boys - A<T<D<M, which coincides with the secretion of estrogens for females, and androgens for males in the pubertal period.

**Key words:** *children, somatotypes, different criteria of biological age*

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### **SECULAR CHANGES OF ADIPOSITY AND PHYSICAL FITNESS DURING EARLY GROWTH**

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Secular changes of somatic growth, body composition and functional capacity has concerned not only school children and adolescents, but also preschool age children. Highest level of spontaneous physical activity (PA) was found in Czech preschool children, with its following significant decrease in school and adult age. This means that the reduction of PA can have a more serious consequences in the following life. Since the 1950's-70's up to the first decade of this millenium, significant increase of adiposity, especially on the trunk (evaluated by skinfold thickness measurements) was revealed in Czech preschool children. Increased adiposity was accompanied by significant deterioration of motor development (evaluated by motor tests – broad jump and ball throw, as markers of the adaptation to exercise) which has been considered as the result of PA reduction along last decades. Changes of lifestyle concerning nutrition and PA have therefore negatively influenced Czech growing population especially during the period of adiposity rebound (AR), which has been also occurring at a significantly lower age as compared to previous decades: Earlier start of AR, accompanied by increasing adiposity is considered especially as an increased risk with regard to later development of obesity and health prognosis. Global epidemy of obesity has concerned during recent decades also children and adolescents not only in the industrially developed, but also in transition countries, or in selected social strata of developing countries. - An adequately increased physical activity tended to reduce adiposity, improved cardiorespiratory efficiency in spite of an increased food intake, and significantly increased serum level of high density lipoproteins (HDL) in Czech preschool children. Percent of body fat correlated significantly with total cholesterol and triglycerides serum levels (TG and TC) already at preschool age, which indicates a significant role of PA in health development. Organized physical education for preschool children (physical education classes for preschooler with one of the parents, or any other caretaker), or special physical education regime introduced in selected Czech kindergartens improved significantly motor development already at preschool age. As follows, aimed intervention in lifestyle including PA regime has to start in children as early as possible.

**Key words:** *secular changes, preschool children, adiposity, motor development*

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