

## ASSESSMENT OF RISK FACTORS FOR METABOLIC SYNDROME AMONG NIS SCHOOLCHILDREN IN SEMEY: INTERVIEW OF SCHOOLCHILDREN AND THEIR PARENTS AND ANTHROPOMETRY

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Metabolic syndrome (MS) is a whole bunch of risk factors for cardiovascular diseases (CVD) and type 2 diabetes, including abdominal obesity, dyslipidemia, intolerance to glucose and hypertension. A number of studies have shown that MS have a persistent ability to move from childhood and adolescence to adulthood. The feasibility of identifying risk factors for MS in children and adolescents is relevant for the timely prevention of the CVD and its complications.

**The purpose** of this work is to assess risk factors for metabolic syndrome among NIS schoolchildren in Semey according to the questioning of children and their parents.

**Material and methods.** This is a cross-sectional study. Schoolchildren, 8-9-10 grades, studying at the NIS of Semey and their parents were interviewed. Anthropometric measurements were done in all children: height, body weight, body mass index (BMI), WC, hip circumference (HC), ratio of WC/HC. BMI was calculated and assessed using percentile tables for a given age and each sex (WHO, 2007). Normal BMI between the 15th and 85th percentiles, BMI within the 85-97th percentile is estimated as excess body weight, over 97th percentile as obesity. The type of distribution of the subcutaneous fat layer was evaluated by the index of the waist circumference (WC) normalized by the height:  $WC_n = WC(\text{cm}) / \text{height}(\text{cm})$ . At  $WC_n$  values exceeding the indices of the 97th centile, an abdominal-visceral type of obesity was noted, with indices less than these values being a gluteo-femoral type.

**Results.** The study included 100 children aged 13 to 17 years, 49.0% boys and 51.0% girls. In 15.0% of children, the BMI exceeded 85%, with a BMI of  $> 97\%$  in 7.8%, which is in line with obesity, and in 7.2% of children BMI was 85-97%, indicating increased body weight. Among the overweight girls predominated, and boys were more obese. The nutrition of all children was irrational, hypercaloric, unbalanced in nutrients. Thus, the excess of solid fats was detected in 57.2%, digestible carbohydrates - 31.0%. In 4,3% of children the excess of kilocalories was due to easily assimilated carbohydrates in drinks, i.e. these children consumed daily juices and/or sweet fizzy drinks up to 1-2 liters. In 7,5% of children, the hypercaloric diet was determined by frequent visits to fast food restaurants with food intake in them, amounting to 50-75% of the daily calorific value. 50.8% of children had insufficient fiber intake in the form of vegetables and fruits, fish dishes. Unsaturated fatty acids (ie, fish dishes and vegetable oils) were missing in the diet of children, and 40.1% of children lacked dietary fiber (vegetables, fruits). The lifestyle of overweight children was characterized by increased school load and reduced motor activity. Thus, decreased motor activity was observed in 60.7% of children with signs of obesity and in 40.4% of children with excessive body weight. Children with obesity spent  $4.6 \pm 1.4$  hours a day in front of the TV and / or computer, and children with an overweight of  $3.9 \pm 1.1$  hours, which further aggravated hypodynamia and caused psycho-emotional overexertion. The heredity of children was burdened by diseases that are part of the metabolic syndrome (obesity, hypertension, diabetes mellitus type 2). The analysis showed that the burdened heredity for obesity in the family was detected in 70% of children; on the maternal line 2 times more often than on the line of the father. The relatives of children had hypertension: in the first line of maternal relationship in 23.8%, on the paternal line in 19.3%; type 2 DM was found in 1.6% of the maternal line, and 2.1% in paternal line. More than half of the mothers of the examined children (63.7%) had a complicated course of pregnancy, and 38.5% had complications in childbirth. Almost every fifth child (22.3%) was on artificial feeding. Thus, the studied schoolchildren are characterized by risk factors for the development of metabolic syndrome.