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# RESULTS OF THE CHILD OBESITY – “TABULA RASA” SCREENING PROGRAM

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## Summary

**Aim.** In Budapest, between April 2010 and May 2011 we carried out a screening program by the competition of the Capital Council along with the medical and professional supervising of the “Heim Pál” Hospital on 2467 students between the age of 15 and 18 (1509 girls and 958 boys). Looking at their health behaviour they belong to the risk group, as they do not care enough about themselves or not in the right way.

**Material and methods.** In the health screening program the aimed group was the students in the 10<sup>th</sup> or 11<sup>th</sup> year in high school. The participation in the screening program was voluntary and had to be contributed by the parents. The screening and the following medical consultations areas are: full orthopedic screening, eyesight screening, hearing screening, dentistry screening, internal medicine screening, celiac screening, cardiovascular screening and mental hygiene test.

The cardiovascular screening of pre-recorded professional medical protocol, blood pressure, heart rate, body composition determination, BMI, cholesterol, blood glucose was present. Body Mass Index (weight/height<sup>2</sup>) value was calculated.

The body composition measurements were done by the InBody3.0 multi-frequency, segmental impedance meter. This survey was used in the body fat values. Among boys above 25%, among girls above 30% we considered the body fat abnormally dangerous (1). We measured the blood pressure by an automatic blood pressure meter after a rest. According to the Hungarian Hypertension Association’s advice we considered the 130 mmHg systolic and 85 mmHg diastolic as the boarder of the hypertension. For the determination of the cholesterol and blood glucose we used an enzymatic, colorimetric methodology. The serum cholesterol level above 5.0 mmol/l in fasting blood glucose 5.5 mmol/l was considered abnormal.

Processing the details was done by Microsoft Office Excel.

**Results.** The tests showed that there were 231 cases of high body fat percentage, 671 cases of high blood pressure, changes in lipid values in 64 cases, high in fasting blood glucose in 37 cases.

**Conclusions.** The results of the cardiovascular tests confirm that obesity among youngsters is increasing. Family paediatricians, school doctors and health visitors working in primary care it is very important to influence and stimulate youngsters towards a healthy way of life and to prevent sickness.

Key words: child obesity, screening program, cardiovascular diseases, body composition definition, prevention

## INTRODUCTION

Obesity is one of the most common problems occurring in the developed countries. The numbers are increasing both among the adult and child society. In Hungary the prevalence among the child society is between 9-10% (National Institution of Child Health, 2012).

In 1998 the WHO declared obesity as a disease. Obesity, and other metabolic, endocrine and musculoskeletal lesions originated from obesity is seen as one of the biggest public health related problem nowadays.

Obesity increases the morbidity and mortality rates, furthermore, in relation with child obesity there are more and more NIDDM (non-insulin dependent diabetes mellitus) patient.

Due to fatness, physical fitness reduces, so does lifetime, cholesterol level increases and also high blood pressure might occur. The National Institute of Child

Health (NICH), according to the test results carried out by family paediatricians and health visitors, determined that in Hungary between 1996 and 2004 among children aged from 5 to 17, the frequency of obesity increased up to 7% by the age of 17 (2).

According to estimations, in 2006 there were 22 million obese adult and 5 million obese children, in Europe (3). According to American researches the prevalence of obesity tripled between 1976 and 2000 (4).

Obesity causes not just somatic lesions, but also can lead to psychological problems. Due to the psychosocial effects the children’s self-assessment deteriorate, might isolate from the environment, and due to unsuccessful diets eating disorders (anorexia nervosa, bulimia nervosa) could be formed.

There could be several reasons behind the emergence of obesity among children, such as environmental

or social issues. Although, obesity became a problem in the past few decades, and it could not be explained only by the genetic predispositions. By social reasons we could think about the stimulation to overconsumption by advertisements, the free time spent in front of the TV and the sedentary lifestyle.

#### AIM

The presence of obesity among children could lead to lesion in the cardiovascular, respiratory, and the operation of endocrine organs, just as metabolism, and could lead to orthopaedic problems. The problems related to the metabolism mainly are carbohydrate and lipid metabolism.

Diseases rooted from obesity could be significantly reduced by prevention, preventing the obesity, as well as the recognition of it in time. In Hungary, the role of the paediatricians and health visitors on the field in schools highly important in the prevention.

#### MATERIAL AND METHODS

The students (aged between 15 and 17,  $n = 2467$ ) arrived to the Heim Pál Hospital from 19 high schools of Budapest. Firstly, we measured their height and weight, so we could calculate their Body Mass Index (weight/height<sup>2</sup>).

The body composition measurements were done by the InBody3.0 multi-frequency, segmental impedance meter. This survey was used in the body fat values. Among boys above 25%, among girls above 30% we considered the body fat abnormally dangerous (1). We measured the blood pressure by an automatic blood pressure meter after a rest. According to the Hungarian Hypertension Association's advice we considered the 130 mmHg systolic and 85 mmHg diastolic as the boarder of the hypertension. For the determination of the cholesterol and blood glucose we used an enzymatic,

colorimetric methodology. The serum cholesterol level above 5.0 mmol/l in fasting blood glucose 5.5 mmol/l was considered abnormal.

Most of the tests were done during the morning hours without any pre-eating.

#### RESULTS AND DISCUSSION

During the tests that were made within a year, 231 out of 2467 person (9.3%) were high in body fat. Among girls, 177 out of 1509 (7.12%), among boys, 54 out of 958 (2.17%) had their body fat index over 25%. The BMI results according to the tests are the following: altogether 213 person (8.6%); among girls, 68 person (2.74%) had their BMI result over 30, among boys, 145 person (5.85%) had their BMI results over 25. Knowing the body composition results was a huge advantage apart from the BMI results, because we could get really accurate results according to their body fat about their extent of obesity. The results of the blood pressure measurement: 671 person had their results over 130/85 mmHg (17.3/11.3 kPa), 234 girls and 437 boys. The blood glucose results when fasting are the following: altogether 37 person (1.5%), 14 girls and 23 boys had their results over 5.5 mmol/l. The serum cholesterol results are the following: altogether 264 person, 166 girls and 98 boys had their results over 5.22 mmol/l (fig. 1).

The high body fat results in 86 cases were followed by high blood pressure, 33 cases of raised cholesterol level, for three children it came along with a raise in fasting blood glucose.

The relevant paediatric literature writes about the child obesity and the linked diseases with obesity attacking the body system and the health in a negative way. It is important from the point of view of the public health that the cardiovascular diseases are in the first place in the mortality rate, which are usually a consequence of obesity.

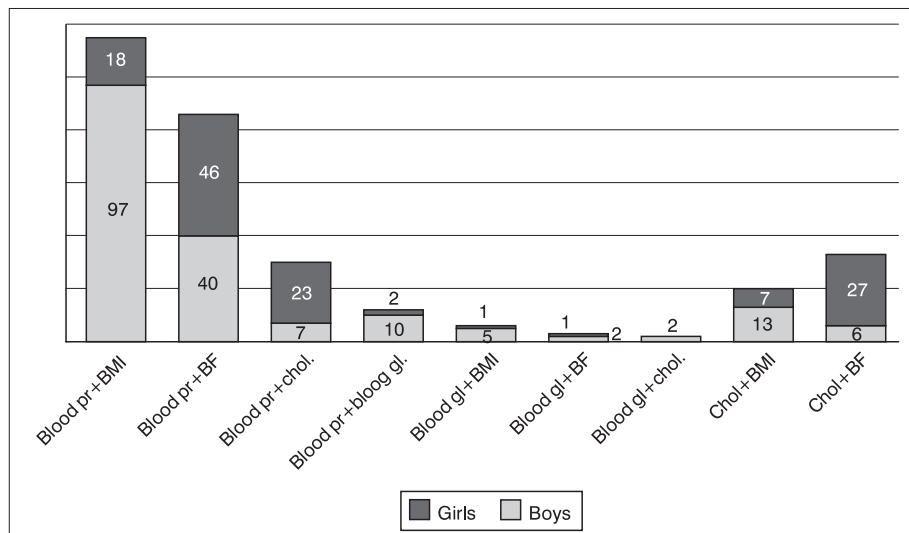


Fig. 1. Multiple abnormal results ( $n = 2467$ ).

The cardiovascular diseases in the adulthood can be prevented in the childhood. Risk factors like high blood pressure, obesity, carbohydrate and fat metabolism disorders in the child age are a straight way to the diseases in adulthood. Over more, the healthy years can be reduced by smoking and lack of training.

Those kids whose mother was smoking during the pregnancy are more likely to be obese in their childhood and after (5). That is why the prevention if this must be started during or even before the pregnancy. The health visitors and the obstetrician gynaecologists are monitoring the mother during the whole pregnancy. They are recording a very detailed history where the lifestyle during the pregnancy is highlighted, like nutrition, motion or addiction (e.g. smoking, drinking).

Obesity is not just an aesthetic problem, but mostly a health issue. Up against all these, the number of obese children is not lessening, but rising. The solution should depend on the family and the school, to educate them about the healthy lifestyle.

We are continuously building the results of the cardiovascular screening into the curriculum of the Faculty of Health Sciences for the health visitor students, the

Development of Children and their nursing and the Public nursing post graduate subjects as well. We help the practical prevention to be more efficient. Although, the early recognition of the diseases was only of the aims of the tests, it was also an aim to direct the potential or already sick children to specialists and monitor them.

The prevention requests a coordinated and complex work from the institution of health, the institution of education, the media, the food industry and the parents as well. □

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