18. TRI PONDERAL INDEX AS A CRITERION FOR OBESITY IN CHILDREN

Author: Ajith Aanjanay

Scientific advisor: Dolapciu Elena, MD, Assistant Professor, Department of Pediatrics, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. Childhood obesity, a global health concern linked to premature mortality, lacks a single accurate assessment method. Common anthropometric measures (weight, height, neck, abdomen, hip, arm circumferences, body fat percent, body mass index (BMI), etc.) fall short in accurately defining obesity in children. TPI (Tri Ponderal index), a unique measure utilizing the cube root of height, offers a more precise evaluation of body mass in the pediatric population compared to traditional BMI. This study conducts a comparative anthropometric analysis using TPI to identify significant differences between normal and obese children, highlighting TPI's potential as an improved indicator of weight status in this group.

Aim of study. To compare anthropometric parameters of children with normal weight and obesity according to TPI.

Methods and materials. 30 healthy and 30 obese children aged 10-15(median age-12+/-1.7 years) were included, with equal gender distribution in both groups. Anthropometric exams covered weight, height, arm, neck, and abdomen circumferences, total body fat assessment, abdomen to hip circumference, abdominal circumference-to-height indexes, BMI and TPI. Two groups were formed based on TPI: Normal group N (n=30) and Obese group O (n=30). All examinations were conducted on empty stomachs. Keywords: obesity, children, anthropometric methods, Triponderal index

Results. Heights ranged from 138 to 184 cm, averaging 157.5+/-11,9 cm, with no significant intergroup differences. The obese group had a weight average of 64.6+/-19.5 kg, significantly higher than the control group's 41.8+/-9.7 kg ($p<0.05$). Statistically significant differences were seen in medium waist (N=61+/-5.9cm, O=82+/-13.4cm, $p<0.05$), hip (N=78.5+/-7.8 cm, O=96.5+/-11.5 cm, $p<0.05$), neck (N=29+/-2.5cm, O=32.5+/-3.4cm, $p<0.05$), and arm (N=21+/-2.6cm, O=27.5+/-3.9cm, $p<0.05$) circumferences between normal weight and obese children. Total body fat % found using bioelectrical impedance analysis also differed between group N(16.4+/-6.0%) and O (32.2+/-5.2%, $p<0.05$). Waist to hip ratio averaged 0.77+/-0.1 in group N and 0.87+/-0.1 in group O ($p<0.05$). Waist circumference-to-height ratio varied from 0.33 to 0.64, averaging 0.38+/-0.03 in group N and 0.53+/-0.05 in group O ($p<0.05$). A correlation analysis of the indicators was carried out and strong positive correlations were identified between TPI and weight (r=0,75), waist (r=0,82), hip (r=0,76), arm circumference (r=0,79), total body fat % (r=0,76).

Conclusion. Significant differences were identified among other anthropometric indicators in children with normal weight and obesity according to TPI. Strong positive correlations between TPI and weight, waist, hip, arm circumferences, and total body fat % allows us to consider this indicator to determine weight status in children.