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## Evaluation of metabolic syndrome, insulin secretion and insulin resistance in adolescents with overweight and obesity

Yethindra Vityala<sup>1</sup>; Tugolbai Tagaev<sup>2</sup>; Altynai Zhumabekova<sup>3</sup>; Sagynali Mamatov<sup>4</sup>

*1International Higher School of Medicine, International University of Kyrgyzstan, Bishkek, Kyrgyzstan; 2Department of Public Health and Healthcare, I.K. Akhunbaev Kyrgyz State Medical Academy, Bishkek, Kyrgyzstan; 3City Maternity Hospital No. 2, Bishkek, Kyrgyzstan; 4Department of Hospital Internal Medicine, Occupational Pathology with a Course of Hematology, I.K. Akhunbaev Kyrgyz State Medical Academy, Bishkek, Kyrgyzstan*

### Abstract

**Background:** Adolescents with overweight and obesity are associated with many serious health complications and increased risk of early-onset of diseases such as diabetes mellitus, cardiovascular diseases, which causes mortality in the population together with dyslipidemia, hypertension, and musculoskeletal diseases. The accumulation of fat characterizes overweight and obesity has been associated with metabolic syndrome (MetS). Overweight, obesity, MetS are metabolic disorders that cause alterations in insulin secretion, accompanied by insulin resistance (IR).

**Objective:** To evaluate the frequency of MetS, insulin secretion, and IR in adolescents with overweight and obesity.

**Methods:** This was an analytical cross-sectional study involving 138 adolescents with overweight or obesity. MetS was diagnosed according to the International Diabetes Federation criteria. IR and insulin secretion were evaluated with the HOMA-IR and HOMA- $\beta$  indices, respectively. Patient confidentiality was maintained, and informed consent was obtained. The student's t-test was used to assess the significance of differences between the groups;  $p < 0.05$  was considered statistically significant.

**Results:** 78.4% of the adolescents with obesity and 21.6% with overweight. The frequency of MetS was 16.6% in adolescents with overweight and 29.8% in adolescents with obesity. Adolescents with obesity had greater IR ( $6.6 \pm 6.4$  vs.  $3.6 \pm 3.7$ ,  $p < 0.001$ ) and increased insulin secretion ( $294 \pm 184$  vs.  $142 \pm 102$ ,  $p < 0.05$ ) compared to adolescents with overweight.

**Conclusion:** Adolescents with obesity had a higher frequency of MetS, with greater IR and increased insulin secretion compared to adolescents with overweight.

**Keywords:** metabolic syndrome; insulin secretion; insulin resistance; overweight; obesity.

**Abbreviations:** Metabolic syndrome (MetS); insulin resistance (IR).

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