Abstract: P115

**Determination of waist circumference and correlation of waist-to-height ratio in adolescents as a prediction tool of high blood pressure**

**Authors:**
A Kerimkulova¹, AS Ospanova², RG Nurpeissova¹, GM Kamalbekova¹, TH Rymbaeva², ¹Astana Medical University - Astana - Kazakhstan, ²State Medical University of Semey City - Semey - Kazakhstan,

**Topic(s):**
Hypertension – Diagnostic Methods

**Citation:**

Introduction. The obesity and overweight epidemic, together with increasing cardiovascular disease, represent a major health problem worldwide, and their occurrence in childhood and adolescence has increased in recent time.

Purpose: to assess the association of waist circumference (WC) and waist-to-height ratio (WHtR) coefficient with occurrence rate in adolescents with high blood pressure.

Materials and methods. The results of a single-step cross-sectional study of teenagers aged 12-13 years studied in 12 secondary schools in our city (Kazakhstan) are presented. The study included adolescents in the amount of 1519 (average age, standard deviation 12.3 ± 0.46 years). For representing the outcomes there were used the measurement of weight, height, BMI, WC, WHtR and the blood pressure of adolescents. Criteria for BP: normal BP (SBP and DBP <89th percentile); high normal BP (SBP and DBP =90 and 94th percentile); arterial hypertension (SBP and DBP>95th percentile). ROC analysis was used to study the relationship between WC, WHtR and BMI. The distinctive impact of WC or WHtR on the development of these states was expressed as the area under the curve (AUC 95% CI).

Results. From 1519 studied teenagers of 12-13 years, boys were 49.1% (n=745), girls 50.9% (n=774). Population with normal BP composed 62.7%, normal raised BP - 24.8%, hypertension - 12.4%, WC90th percentile at 98.5% (n=939). The distribution by sex was: girls are more likely to have abdominal obesity than boys, (?=19.940, df=1, ?0.001). An elevated level of WHtR was detected in 7.6% (n=115) of adolescents. Among boys were 7.7% (n=57) and girls 7.5% (n=58), ?=0.013, df=1, p=0.908.). Girls (10.8%) with high blood pressure have increase WC than boys (2.1%), ?=26.689, df=1, ?0.001. Adolescents with high blood pressure have enhanced WHtR - 12.2% than adolescents with normal blood pressure (2.7%), ?=27.518, df=1, ?0.001. Increase of WC>90th percentile enhances with 4.5 times (95% CI: 2.44-8.53) and WHtR with 2.7 times (95% CI: 1.85-4.04) in adolescents with high blood pressure. WC (AUC=832; 95% CI: 0.792-0.872) and WHtR (AUC=0.812; 95% CI: 0.770-0.854) was a better predictor of abdominal obesity than BMI.

Conclusions. Indicators of WC, WHtR indicating to the presence of abdominal obesity to identify risk factors for the development of high blood pressure. Participants with increase of WC>90th percentile were 4.5 times and WHtR were 2.7 times more likely to have high blood pressure.