Waist-to-Height Ratio as a possible Health Index for Swedish Children

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Background: Central body fat has been reported to better predict risk for cardiometabolic diseases than total body fat. Recently, Waist-to-Height Ratio (WHtR) has been proposed to be a conveniently age-independent, simple and rapid screening tool for assessing this kind of risk in different populations.

Aims: To investigate whether WHtR is age or gender dependent; to describe the prevalence of Swedish children at risk using 0.5 as a cutoff point; to examine the relationship between this index and Body Mass Index (BMI).

Methods: The study was a cross-sectional design and included a random sample of 1804, 7-9 year old Swedish children (53% boys and 47% girls) from 45 primary schools. WHtR was calculated by waist circumference divided by height on the bases of standard anthropometric measurements. Independent Sample t test were performed to determine whether WHtR was gender dependent. Pearson’s correlation between WHtR and age was assessed. The number of Swedish children at risk according to this method (using 0.5 as a cutoff point) was described and these results were then compared with the number of children considered at risk by using BMI as a risk assessment tool. The level of agreement between the two indexes was obtained by Cohen’s k.

Results: No significant differences for WHtR between genders were found. There was a very week correlation between WHtR and age (r = - 0.061, p=0.01). Much fewer children were considered at risk according to WHtR (6.8%) compared to BMI (22.1%). The level of agreement between these two indexes was low (k=0.382, p<0.001). Nevertheless, after merging the overweight children together with the ones classified by BMI as having a normal weight, there was a much higher agreement between this index and WHtR (k=0.693, p<0.001).

Conclusions: WHtR was found to be age and gender independent in the evaluated Swedish population and therefore may be a simple health index for children. However, WHtR and BMI may produce differing predictions for disease risks. Hence, longitudinal data are needed to examine WHtR’s relation to disease.

Keywords: Waist-to-Height ratio, Body Mass Index, Children, Abdominal obesity, Risk