An evaluation of the Metabolic Syndrome cut-offs for waist circumference and blood pressure: why we should be more cautious

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Objective

In this study we evaluated the prevalence of metabolic syndrome (MetS) and its individual components, according to the Joint Interim Statement (JIS) definition using different cut-off values for waist circumference (WC) and in addition age-specific BP values, within sex-, body mass index (BMI)- and age combined clusters of a representative population sample.

Methods

Cross-sectional data of 74,531 western European participants, aged 18–79 years, were used from the Dutch LifeLines Cohort study. MetS was defined according to the JIS definition with the low- and high threshold, respectively ≥94 (men)/80 (women) cm and ≥102/88 cm. Furthermore MetS was defined, using either the JIS cut-off values for elevated BP (≥130/85 mmHg) or age-specific values as recommended by the eight report of the Joint National Committee (JNC 8) (≥140/90 mmHg for those aged <60 yrs, and ≥150/90 mmHg for those aged ≥60 yrs).
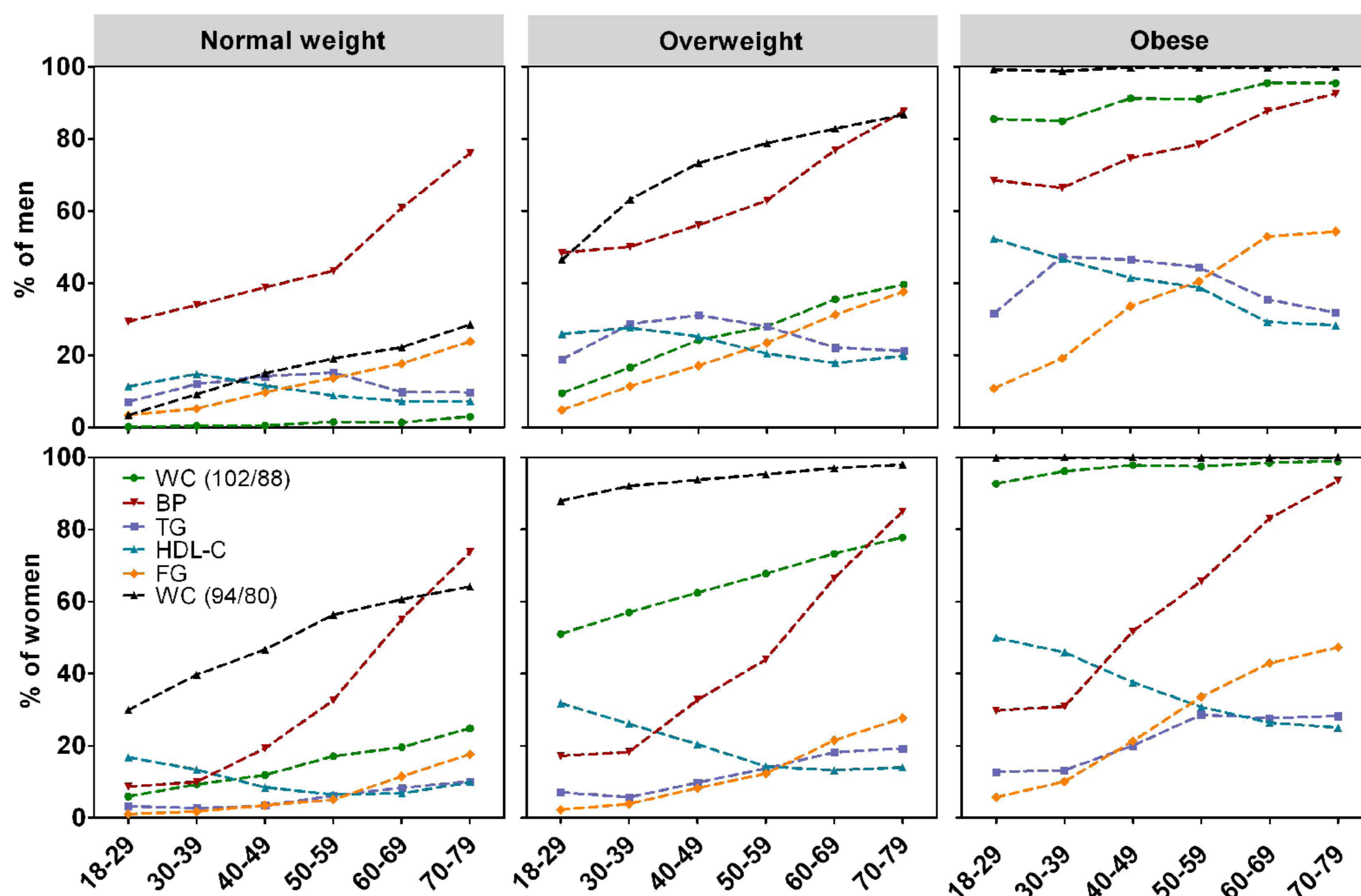

Figure 1. Prevalence of the metabolic syndrome components in the total population.
Abbreviations: waist circumference, WC (≥102 (men)/88 cm (women) or ≥94/80 cm); blood pressure, BP (≥130/85 mmHg or meds); high density lipoprotein cholesterol, HDL-C (<1.03 mmol/L (men) or <1.30 mmol/L (women) or meds) and ; triglycerides, TG (≥1.70 mmol/L or meds); fasting glucose, FG (≥5.6 mmol/L, meds or type 2 diabetes).
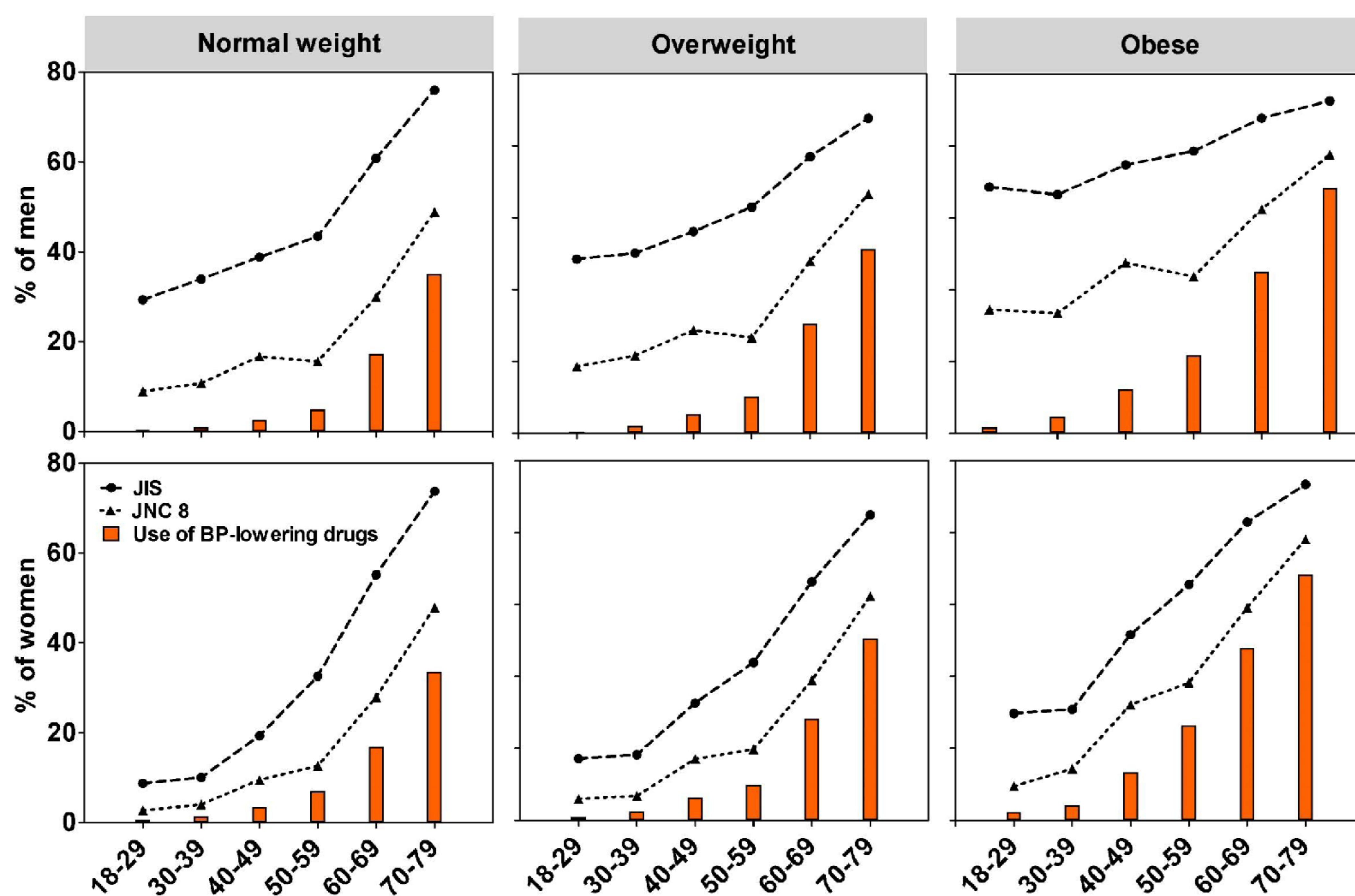

Figure 2. Prevalence of elevated blood pressure including blood pressure lowering medication use, according to the JIS and JNC 8.
Abbreviations: Joint Interim Statement, JIS; Joint National Committee 8, JNC 8

Major findings

We observed a gender disparity with age and BMI for the prevalence of MetS and the WC and BP component. According to the JIS-94/80 and JIS-102/88 definition, respectively 26.0% and 19.2% men, and 14.1% and 12.1% women fulfilled the criteria for MetS. The prevalence of abdominal obesity and elevated BP was particularly high in this population (figure 1), which is related to the inappropriate cut-off values used to define these risk factors. Applying age-specific BP cut-offs resulted in a 0.6-11.9% drop in the prevalence of MetS and a 6.0-36.3% drop in elevated BP (figure 2).

Our data contribute to the discussion to revise the WC cut-offs for identifying abdominal obesity in Europeans, and support the need to establish BP cut-offs appropriate for age.