Obese youths have a nearly six fold risk of hypertension

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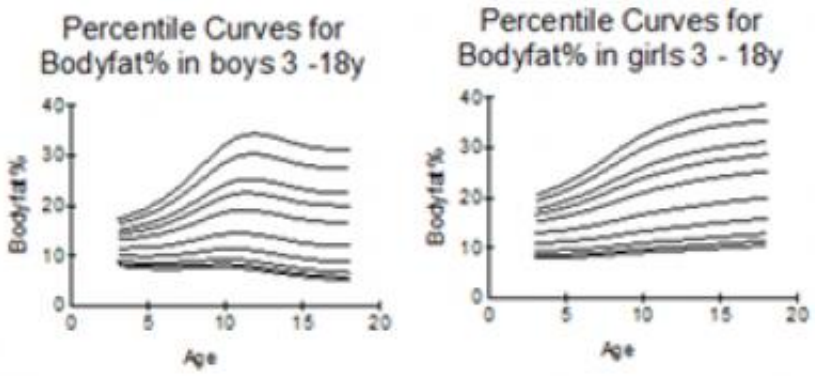


This figure (1) shows percentile curves. Credit: Dr Schwandt

Obese youths have a nearly six fold risk of hypertension, according to research in more than 22 000 young people from the PEP Family Heart Study presented at ESC Congress today by Professor Peter Schwandt from Germany.

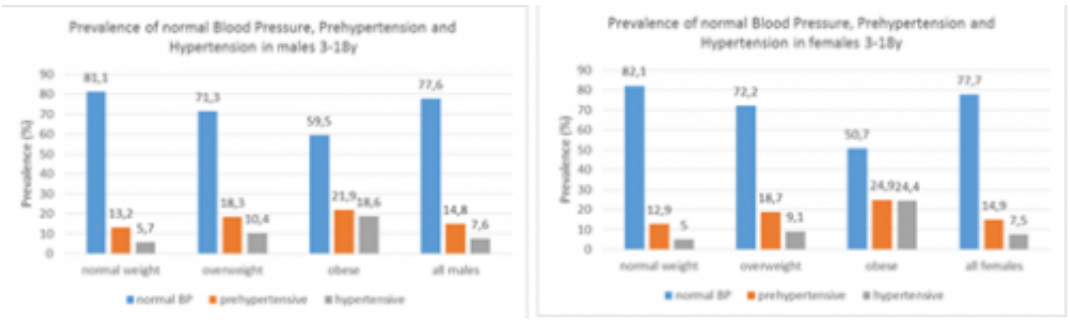
Professor Schwandt said: "The prevalence of hypertension and obesity in children and adolescents is continuing to rise in most high and middle-income countries. Because adiposity is considered a driving force for cardiovascular disease, we examined whether elevated blood pressure was associated with body fat distribution in young people."

The current study included 22 051 children and adolescents from the

PEP (Prevention Education Program) Family Heart Study (1). In each participant, the researchers measured blood pressure, body mass index (BMI), waist circumference (WC), waist-to-height ratio (WHtR), skinfold thickness (SFT) and percent body fat (%BF).

Professor Schwandt said: "These measures are simple, inexpensive, risk free and can be used in offices, schools and at home. However, they must be performed correctly and age and gender specific cut-off values have to be used in growing children and adolescents." (figure 1) (2)

Prehypertension was defined as a blood pressure reading between the 90th and 95th percentile of the blood pressure curve for children and adolescents, while hypertension was a blood pressure reading over the 95th percentile. The diagnosis was based on several measurements on separate days and on repeated estimations with the child sitting quietly for five minutes. The researchers used an adequate cuff size for the arm in the correct position.



This figure (2) shows the prevalence of normal blood pressure, prehypertension, and hypertension in males (L) and females (R). Credit: Dr Schwandt

The researchers found that compared with normal weight children and adolescents, the risk of prehypertension was significantly higher in

youths with an elevated BMI (3). The risk was 1.6 fold higher in overweight and 2.4 fold higher in obese boys, and 1.8 fold higher in overweight and 3.3 fold higher in obese girls.

The significant associations with adverse fat patterning were even stronger for the risk of hypertension. In obese boys the odds ratio (OR) was 5.9 and in obese girls 4.3. Professor Schwandt said: "We found that obese boys had a nearly six fold increased risk of hypertension compared to normal weight boys. In obese girls the risk was more than four times greater than their normal weight counterparts."

The prevalence of elevated blood pressure increased in boys and girls as body weight went up (figure 2). The prevalence of prehypertension/hypertension in normal weight, overweight and obese youths was 13.2%/5.7%, 18.3/10.4% and 21.9/18.6% in boys and 12.9/5.0% 18.7/9.1% and 24.9/24.4% in girls, respectively.

Professor Schwandt said: "Our study clearly shows that the fatter young people are, the greater their risk of prehypertension and hypertension. Any weight loss they can achieve will help reduce their risk."

The researchers also found increased risk of hypertension with elevated SFT and %BF measurements, (4) and abdominal adiposity (5).

Professor Schwandt concluded: "General and abdominal adiposity, estimated using simple and inexpensive methods, are already significantly associated with prehypertension and hypertension in children and adolescents. This is of great importance because of the ongoing rise in the prevalence of hypertension and overweight/obesity in young people and the tracking of childhood overweight into adulthood."

More information: References:

(1) The PEP (Prevention Education Program) Family Heart Study is a prospective community-based observational study which was performed from 1994 to 2008 in Nuremberg, Germany. The aim of the study is to assess cardiovascular disease (CVD) risk factors, examine whether sustained healthy lifestyles can be implemented in 3 268 healthy families, and evaluate associations between lifestyle change and CVD risk factors in 24 927 parents and their 23 740 children aged 3-18 years.

(2) Schwandt P, von Eckardstein A, Haas GM. Percentiles of percentage body fat in German children and adolescents: an international comparison. Int J Prev Med. 2012 Dec;3(12):846-852.

(3) Normal weight, overweight and obesity were defined using the BMI growth curve for children and adolescents. Normal weight was a BMI less than the 85th percentile, overweight was a BMI between the 85th and 95th percentile, and obesity was a BMI over the 95th percentile.

(4) When the researchers looked at SFT measurements, they found that if the sum of subscapular plus triceps SFT was above 35 mm, the risk of hypertension was 5.8 fold in boys and 3.4 fold in girls. The risk increased to 5.6 fold in boys and 3.4 fold in girls when they also had a %BF above the 95th percentile.

(5) Abdominal adiposity predicted a 3 to 4 fold risk of hypertension. A WC above the 90th percentile increased the risk by 3.5 in boys and 3.1 in girls, while a WHtR greater than 0.5 increased risk by 3.9 in boys and 3.8 in girls.

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