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Metabolic syndrome is similar in different age groups

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Metabolic risk factors cluster similarly in children and adults, according to a study carried out at the University of Eastern Finland. Furthermore, in adults, the clustering of these risk factors increases the risk of premature death caused by type 2 diabetes, myocardial infarction and cardiovascular diseases. The results indicate that lifestyle interventions aiming at the prevention of type 2 diabetes and cardiovascular diseases should be invested in already in childhood. The results of the study were recently published in *Diabetologia*.

Metabolic syndrome refers to a condition in which a person carries several risk factors associated with type 2 diabetes and cardiovascular diseases. Traditionally, these risk factors have included overweight and abdominal obesity, reduced muscle, adipose tissue and liver insulin sensitivity and related glucose metabolism disorders, increased levels of plasma triglyceride, decreased levels of plasma HDL cholesterol, and increased blood pressure. As obesity has become increasingly widespread, the clustering of metabolic risk factors has become increasingly common also in children. If no improvement in exercise and nutrition habits takes place in childhood, metabolic syndrome is likely to persist into adulthood, increasing the risk of type 2 diabetes, cardiovascular diseases and premature death. Up until recently, the definition of metabolic syndrome has been a controversial topic especially in children, although the components of metabolic syndrome have been known for a long time. It has also been unclear whether the components of metabolic syndrome are the same in children and adults.

The study showed that the components of metabolic syndrome cluster similarly in children and adults of different ages irrespective of sex. However, abdominal obesity was relatively less emphasised in children than in adults, and increased blood pressure was relatively more emphasised in middle-aged men than in children and older men and women. As expected, the risk factor score was higher in adults than in children. The observed cumulation of metabolic risk factors in all age groups increased the risk of premature death due to type 2 diabetes, myocardial infarction and cardiovascular diseases in adults.

The results indicate that also metabolic risk factor scores lower than those generally accepted in the field of medicine are detrimental especially in cases where several risk factors are present. The results suggest that risk assessment of type 2 diabetes and cardiovascular diseases should increasingly pay attention to the scores of several risk factors. Furthermore, lifestyle interventions begun in childhood and continuing into adulthood, combined with drug treatment when necessary, should constitute the primary method of reducing the overall risk.

The data comprised three population samples from the Kuopio region in eastern Finland: 491 healthy 6-8 year old girls and boys participating in the Physical Activity and Nutrition in Children (PANIC) Study, 1,900 middle-aged men participating in the Kuopio Ischaemic Heart Disease Risk Factor Study (KIHD), and 1,170 older women and men participating in DR's EXTRA Study. The PANIC Study is an on-going lifestyle intervention study, which produces valuable information on children's lifestyle factors, health and well-being all the way into adulthood. Collaboration between the three different studies involving people of different ages made it possible to study the development of metabolic syndrome and its risk factors extensively.

More information: Viitasalo A, Lakka TA, Laaksonen DE, Savonen

K, Lakka HM, Hassinen M, Komulainen P, Tompuri T, Kurl S, Laukkanen JA, Rauramaa R. "Validation of metabolic syndrome score by confirmatory factor analysis in children and adults and prediction of cardiometabolic outcomes in adults." *Diabetologia*. 2014 Jan 24.