Study finds one third of children have higher levels of cardiometabolic risk factors due to family history

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A new study published in *Diabetologia* (the journal of the European Association for the Study of Diabetes [EASD]) shows that children with a strong family history of cardiovascular disease (CVD) and/or type 2 diabetes were found to have cholesterol levels significantly higher than children with no family history of those conditions.

The research conducted by Dr Nina Berentzen, Dr Alet Wijga and Dr Annemieke Spijkerman (National Institute for Public Health and the Environment, Bilthoven, the Netherlands) and colleagues found that one third of the 12-year-olds studied had a strong family history of one or both diseases. This group also had unfavourable levels of cardiometabolic markers in the form of higher total cholesterol, and a higher ratio of total cholesterol to HDL cholesterol than the groups with moderate or no family history of disease. Children with elevated levels of these markers may also have a higher risk of heart attacks and strokes in adulthood.

Family history of disease reflects a complex combination of genetic, environmental and lifestyle characteristics that are shared by family members, and can provide valuable information about a multitude of factors that influence disease risk in children. This study considers both CVD in the form of heart attacks (referred to as myocardial infarction [MI]) and strokes, and type 2 diabetes which often occur together, and which share risk factors including high blood pressure, unhealthy diet, a lack of physical activity, and being overweight or obese.

While these conditions have been studied in the past, previous efforts lacked critical information about family history of CVD and type 2 diabetes. This study is therefore the first to investigate the occurrence of both diseases across two generations of parents and grandparents, and relate it to measurable risk factors in children.

A broad sample of children and their families involved in an ongoing Dutch population-based birth cohort study: The Prevention and Incidence of Asthma and Mite Allergy (PIAMA) Study were invited to take part. Out of the original group of 3,963 children born in 1996/97, 1,511 participated in a clinical assessment at age 12, and around age 14, parents were asked to complete questionnaires which included items on their family history of CVD and diabetes. This provided a study population of 1,374 children (704 girls and 670 boys) who had both a clinical assessment at age 12 and parental reports on their family history of disease.

Parents were asked to report any history of MI, stroke and diabetes for both the biological parents and grandparents of the child, as well as the age at onset of those conditions. The family history for each child was then placed into one of three categories based on the severity of risk it presented. These was 'no family history' if they had no affected parents and grandparents, 'moderate family history' if they had 1-2 grandparents with late disease onset, and 'strong family history' if they had one affected parent, or at least one grandparent with early disease onset, or 3-4 grandparents with late disease onset. Early onset was defined as