

Mother's health, diet during pregnancy may impact child's later neurodevelopment

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Maternal gestational diabetes mellitus may have unfavorable effects on the neurodevelopment of 2-year-old children. On the other hand, a mother's healthy, comprehensive diet supports the child's

neurodevelopment, reveals a new study conducted at the University of Turku.

Mother's health and lifestyle during pregnancy are important regulators of the child's [neurodevelopment](#). The mother-child study conducted at the University of Turku and Turku University Hospital in Finland examined how maternal [gestational diabetes](#), obesity and diet during pregnancy affect the neurodevelopment of 2-year-old children.

The research project examined the development of children's cognitive, language and motor skills. Maternal adiposity was determined by air displacement plethysmography, and gestational diabetes with an oral glucose tolerance test. Dietary intake during pregnancy was assessed with diet quality index and fish consumption questionnaires.

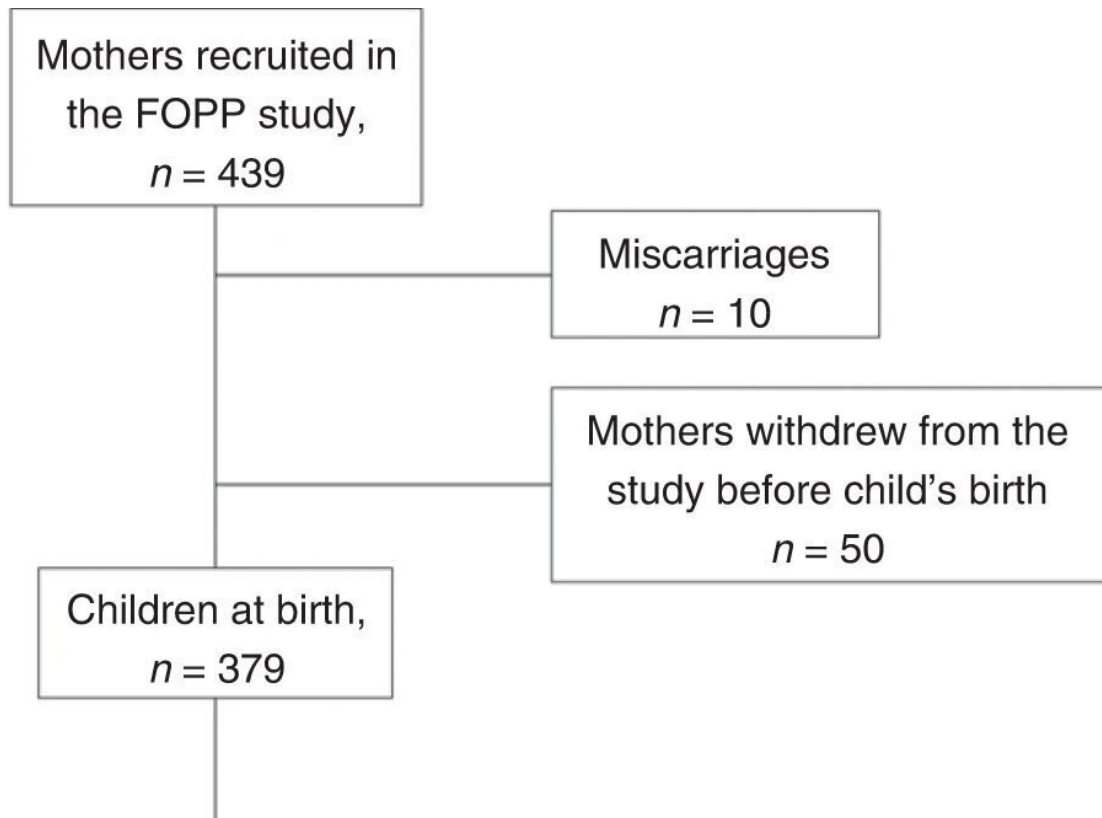
"On average, child neurodevelopment in our data was in the normal range. Our research results showed that 2-year-old children whose mothers had been diagnosed with gestational diabetes had poorer language skills than children whose mothers had not been diagnosed with gestational diabetes," says Doctoral Researcher Lotta Saros from the Institute of Biomedicine at the University of Turku.

In addition, the study discovered that higher maternal body fat percentage was associated with weaker cognitive, language and [motor skills](#) in children.

"Our observation is unique, as previous studies have not examined the association between maternal body composition and children's neurodevelopment," notes Saros.

Gestational diabetes and obesity, high body fat mass in particular, have unfavorable effects on the mother's metabolism and increase inflammation in the body. In fact, these are the likely mechanisms

through which the detrimental factors impact the child's neurodevelopment.



Flow chart of the present study. The data on neurodevelopmental assessments (the Bayley-III and/or the HINE) were available from 243 children. Credit: *Pediatric Research* (2023). DOI: 10.1038/s41390-022-02455-4

The study also revealed that better dietary quality of the mother's diet was associated with better language development of the child. A similar finding was also discovered between mother's fish consumption and child's neurodevelopment.

The results indicate towards the same conclusion that a good-quality diet

contains [unsaturated fatty acids](#) that are found, for example, in fish. Soft, [unsaturated fats](#), such as omega-3 fatty acids, promote the neurodevelopment of children.

"A healthy, comprehensive diet during pregnancy can be particularly beneficial for the neurodevelopment of the children whose mothers belong to the [risk group](#) for gestational diabetes due to overweight or obesity," says Professor Kirsi Laitinen who leads the Early Nutrition and Health research group of the University of Turku that implemented the study.

The paper is published in the journal *Pediatric Research*.

More information: Lotta Saros et al, Maternal obesity, gestational diabetes mellitus, and diet in association with neurodevelopment of 2-year-old children, *Pediatric Research* (2023). [DOI: 10.1038/s41390-022-02455-4](#)

Provided by University of Turku

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