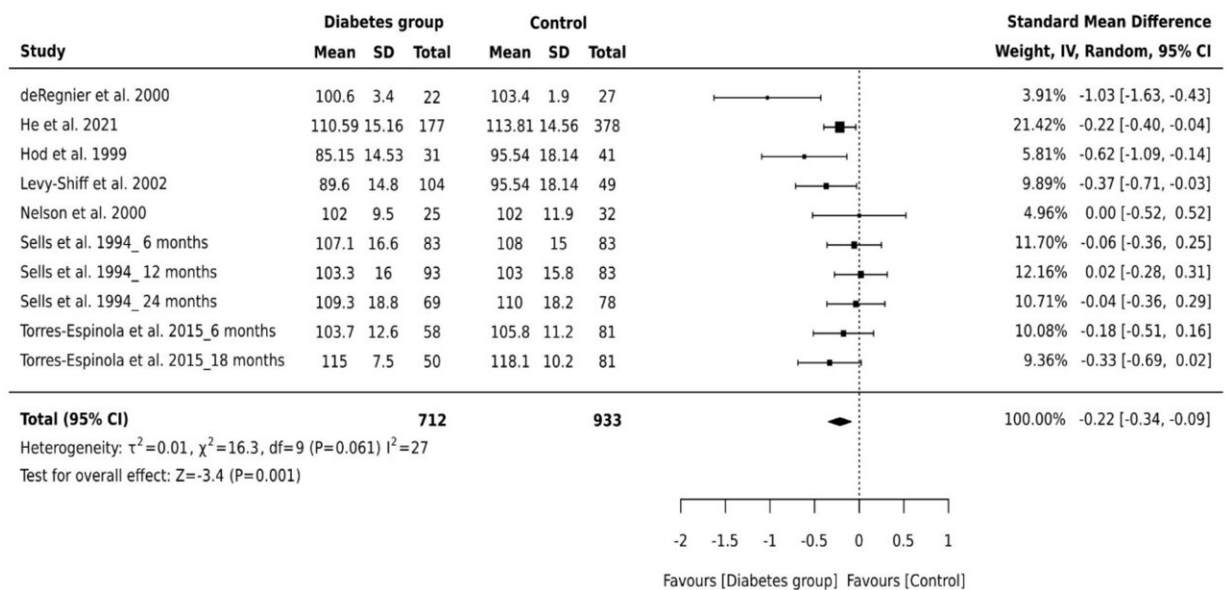


Maternal health support critical in the development of children born to mothers with pre-existing diabetes

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(A) PDI



Forest plots comparing differences in: (A) Psychomotor Development Index (PDI) scores of infants born to mothers with and without diabetes (References mentioned respectively [14,15,16,17,18,19,20]) and (B) Mental Development Index (MDI) scores of infants born to mothers with and without diabetes (References mentioned respectively [14,15,16,17,18,19,20]). Credit: *International Journal of Environmental Research and Public Health* (2024). DOI: 10.3390/ijerph21020191

Research from Edith Cowan University (ECU) has found that intrauterine exposure to diabetes could be a crucial factor in the mental and psychomotor development of children, particularly those younger than 12 months.

A meta-analysis by Associate Professor Diana Arabiat found that studies assessing [child development](#) reported significantly lower mental and psychomotor development scores in children born to mothers with pre-existing diabetes compared with mothers with no previous exposure to diabetes.

Lower mental and psychomotor development scores were also reported for children born to mothers with [gestational diabetes](#).

Psychomotor performance is the set of skills that children acquire in the first five years of life, comprising cognitive, emotional, motor, and social capacities. A delay in psychomotor development can be related to numerous risk factors, including [premature birth](#), [low birth weight](#), or [intrauterine growth restriction](#).

Associate Professor Arabiat noted that intrauterine exposure to diabetes could impact child development through an increase in [insulin resistance](#), which leads to higher glucose levels in the blood and an abnormal increase in [ketone bodies](#) that can lead to lower oxygen supply to the brain and altered chemical reactions in the brain cells.

"Children born to mothers with pre-existing diabetes may also have an altered fuel environment that could lead to issues with their growth and development, as high levels of glucose concentrate within the mother could impact the development of brain cells, pancreatic beta cells, fat and muscle cells. This could result in neurodevelopmental consequences for the unborn child."

However, Associate Professor Arabiat noted the scores were only higher for children under 12 months.

"This suggests that using terms, such as 'developmentally delayed' or 'impaired development', for describing the development of infants of diabetic mothers may be an inappropriate characterization since the results of the subgroup [meta-analysis](#) suggest these infants will exhibit 'developmental spurts' and catch up with their peers at age 18 months and older," she said.

Associate Professor Arabia has urged that future research is needed to consider the impact of maternal diabetes on child development within a larger context of interdependent elements and processes such as maternal comorbidity, parent and child relations, and socio-economic status.

"Studies that differentiate between type of diabetes and level of glycemic control need to be conducted. Children born to mothers with pre-existing diabetes may experience greater developmental challenges than children born to mothers with gestational diabetes. Analysis that combines diabetes by type may fail to identify differences that exist within samples," she said.

The work is [published](#) in the *International Journal of Environmental Research and Public Health*.

More information: Diana Arabiat et al, Does Intrauterine Exposure to Diabetes Impact Mental and Motor Skills? A Meta-Analysis of the Bayley Scales of Infant Development, *International Journal of Environmental Research and Public Health* (2024). [DOI: 10.3390/ijerph21020191](#)

Provided by Edith Cowan University

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