… just the FACTS

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MATERNAL IRON DEFICIENCY IMPACTS NERODEVELOPMENT AT TWO YEARS OF AGE

OBJECTIVE:

To explore the impact of maternal iron deficiency during pregnancy on iron status in newborn infants and their neurodevelopment at 2 years.

STUDY DESIGN:

This prospective maternal-infant cohort study was a secondary analysis of data collected in Ireland. This is one of the first studies to examine the impact of maternal nonanemic iron deficiency during pregnancy on longer-term infant neurodevelopmental outcomes, downstream of the perinatal period.

PARTICIPANTS:

This study included 189 maternal-infant pairs with data for maternal and newborn iron status and neurodevelopmental assessments at 2 years. The mothers were all ≥16 years, nonanemic and generally healthy at the outset of their first singleton pregnancy. Most were well-educated (79% university grads).

METHODS:

Maternal iron status was measured at 15 and 20 weeks of gestation using ferritin from blood samples. Newborn iron status was measured using ferritin from the umbilical cord at birth. Neurodevelopment at 2 years of age was assessed using the Bayley Scales of Infant and Toddler Development (BSID-III).

RESULTS:

Iron deficiency was common during pregnancy, with ferritin levels below 30 µg/L seen in:

- 18.5% at 15 weeks (nearly 1 in 5 women)
- 42% at 20 weeks (nearly 1 in 2 women)

Newborn Iron Status:

Umbilical cord ferritin was 42.3 µg/L lower in infants born to mothers with ferritin <30 µg/L at 15-weeks of gestation. This indicates they were born with lower iron stores than infants born to iron-sufficient mothers.

Neurodevelopment at 2 Years:

At 2 years, children whose mothers had low ferritin during pregnancy (<30 µg/L at 15- and 20-weeks) had statistically significantly lower language and motor development composite scores compared to children of iron-sufficient mothers.

CONCLUSION:

Maternal nonanemic iron deficiency early in pregnancy was associated with low iron status at birth and poorer language and motor development at 2 years of age. This is one of the first studies to highlight the potentially serious consequences of maternal nonanemic iron deficiency on children's neurodevelopment.

McCarthy EK et al. Impact of maternal iron deficiency in early pregnancy on neonatal iron status and neurodevelopment at two years of age: a prospective, maternal-infant cohort study. J Nutr 2026;156(1):101240.