

# Gestational weight gain and offspring's cognitive skills: a systematic review and meta-analysis

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## Abstract

**Background:** Gestational weight gain has been associated with some adverse perinatal outcomes, but few studies have examined the association between gestational weight gain and offspring's cognition and their conclusions are inconsistent. Our systematic review and meta-analysis aimed to synthesize the evidence regarding the association between gestational weight gain and offspring's cognitive skills. **Methods:** In this systematic review and meta-analysis (PROSPERO number, CRD42017073266), we systematically searched MEDLINE, EMBASE, Web of Science and the Cochrane Library for studies examining association between gestational weight gain and offspring's cognitive skills, without restriction in study design or language. Two reviewers extracted in an independent way the data. The Quality of Reporting of Observational Longitudinal Research scale was used to assess the quality of included studies. Effect size (ES) for adjusted models and their corresponding 95% confidence intervals were calculated for (i) intelligence quotient, (ii) language related skills and (iii) mathematic related skills comparing offspring's cognitive skills when gestational weight gain was within recommendations (as reference) with those from mothers whose gestational weight gain was above or below the recommendations. **Results:** Thirteen studies were included. There was a positive trend that associated gestational weight gain above recommendations with better offspring's intelligence quotient, although not statistically significant (ES 0.02, 95% CI -0.00, 0.05;  $I^2 = 0.00\%$ ). **Conclusions:** There is a not significant positive association between gestational weight gain above recommendations and intelligence quotient and some studies reported associations between gestational weight gain and offspring's cognitive skills. Our analyses confirm a wide variability in the results of studies published so far and highlights the need for conducting studies including specific samples of pregnant women by pre-pregnancy body mass index and trimester of pregnancy.

## Author keywords

Children

Cognition

Gestational

Pregnancy

Weight gain