

INPLASY PROTOCOL

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None declared.

Risks of Overweight in the Offspring of Women with Gestational Diabetes at Different Developmental Stages: A Meta-Analysis with More Than Half a Million Offspring

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Review question / Objective: We conducted a meta-analysis 1) evaluating the association of maternal gestational diabetes mellitus (GDM) and offspring overweight from birth to adulthood, and 2) assessing the effects of lifestyle interventions in women with GDM during pregnancy on this risk of offspring overweight.

Condition being studied: Women with Gestational Diabetes at Different Developmental Stages. The data were managed and analyzed using STATA/SE 15.1 (Statacorp) unless otherwise specified.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 August 2021 and was last updated on 24 August 2021 (registration number INPLASY202180091).

pregnancy on this risk of offspring overweight.

Rationale: We identified literature from PubMed and twelve other electronic databases and retrieved relevant literature published before October 20, 2020. Random-effect model analysis was used to calculate (relative risks) RRs of overweight

INTRODUCTION

Review question / Objective: We conducted a meta-analysis 1) evaluating the association of maternal gestational diabetes mellitus (GDM) and offspring overweight from birth to adulthood, and 2) assessing the effects of lifestyle interventions in women with GDM during

and weighted mean differences (WMDs) of body mass index among children stratified at different developmental stages, i.e., under five years, between five and ten years, between ten and 18 years, and over 18 years of age. Multivariable logistic regression and generalized linear regression were used to adjust for confounders.

Condition being studied: Women with Gestational Diabetes at Different Developmental Stages. The data were managed and analyzed using STATA/SE 15.1 (Statacorp) unless otherwise specified.

METHODS

Search strategy: We retrieved literature published before October 20, 2020, using 13 electronic databases (PubMed, Web of Science, EMBASE, Wiley Online Library, EBSCO, Science Direct, Cochrane, Springer Link, Nature, Science, the New England Journal of Medicine, Lancet, and the Journal of the American Medical Association). The following MeSH terms, words, and combination of words were used to systematically search for papers, i.e., “Diabetes, Gestational OR gestational diabetes OR gestational diabetes mellitus OR GDM”, “child* OR adolescen* OR pediatri* OR infant* OR descendan* OR baby OR babies OR offspring OR kid OR kids”, “overweight OR obesity OR adiposity OR obese OR ‘body mass index’ OR BMI”.

Participant or population: 1) Offspring born to women with and without gestational diabetes mellitus (GDM); 2) Offspring born to women with GDM.

Intervention: 1) Exposure to GDM; 2) Lifestyle interventions.

Comparator: Overweight in offspring.

Study designs to be included: 1) Cohort studies; 2) Randomized controlled trials.

Eligibility criteria: 1) Cohort studies that compared the incidence of overweight and/or the reported BMI in offspring born to women with and without GDM; 2)

Randomized controlled trials that compared the occurrence of offspring overweight among women with GDM who received intensive lifestyle interventions or usual care.

Information sources: 13 electronic databases (PubMed, Web of Science, EMBASE, Wiley Online Library, EBSCO, Science Direct, Cochrane, Springer Link, Nature, Science, the New England Journal of Medicine, Lancet, and the Journal of the American Medical Association).

Main outcome(s): Relative risks (RRs) of overweight and weighted mean differences (WMDs) of body mass index among children stratified at different developmental stages, i.e., under five years, between five and ten years, between ten and 18 years, and over 18 years of age.

Data management: We extracted the data using a pre-designed form, which included study countries, sample sizes, maternal ages at study enrollment, maternal BMI before the index pregnancy, years of follow-up, types of intervention (e.g., diet, physical activity, medicine, or any combination of these), events of offspring overweight, offspring BMI, diagnostic criteria of GDM, and definitions of overweight.

Quality assessment / Risk of bias analysis: Newcastle-Ottawa Scale (NOS) for cohort studies and Cochrane Collaboration's tool for randomized controlled trials.

Strategy of data synthesis: Fixed-effect model analysis and random-effect model analysis were used, respectively, to calculate the pooled relative risk (RR), weighted mean difference (WMD), and their 95% confidence interval (CI) when the heterogeneity was low or medium/high. Forest plot was used to visualize the RRs, WMDs, and 95% CIs of the included studies.

Subgroup analysis: Studies were divided into four offspring age groups: early childhood (under five years of age), late childhood (between five and ten years of

age), the pubertal period (between ten and 18 years of age), and adulthood (over the age of 18).

Sensitivity analysis: We performed sensitivity analysis by removing the included studies one by one to assess the impact of a single study on the overall pooled estimate. A study was suspected of having excessive influence and then excluded if the point estimate after its exclusion fell outside the 95% CI or was significantly different from the overall pooled effect.

Language: English.

Country(ies) involved: China.

Keywords: Gestational diabetes, Offspring, Childhood, Adulthood, Overweight, Body mass index, Lifestyle interventions, Meta-analysis, Systematic review.

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