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Maternal Birth Weight and Gestational Diabetes: a systematic review of the literature



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Maternal Birth Weight and Gestational Diabetes: a systematic review of the literature

Gestational diabetes mellitus (GDM) is a heterogeneous disorder characterized by the intolerance to carbohydrates and varied degrees of hyperglycemia with onset or first diagnosis during pregnancy

WHO, 1999

Several international guidelines recommend selective screening for pregnant women above age 29 or for younger women with risk factors, whereas others recommend universal screening

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Maternal Birth Weight and Gestational Diabetes: a systematic review of the literature

Age, obesity, family history of diabetes

- ❖ Well known risk factors for GDM
- ❖ Largely discussed and studied in the literature
- ❖ Several guidelines recommend screening



Maternal Birth Weight and Gestational Diabetes: a systematic review of the literature

Since fetal origin theory which states that the susceptibility to chronic diseases can be programmed in uterus

Barker, 1993

Several studies explore association between birth weight

- ❖ type 2 diabetes mellitus (DM),

Law 1996;Phillips,1998; Rich-Edwards,1999

- ❖ insulin resistance,

Mi, 2000

- ❖ and other aspects of metabolic syndrome

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Maternal Birth Weight and Gestational Diabetes: a systematic review of the literature

Pregnancy is physiologically a condition of insulin resistance

...it may therefore constitute the first opportunity in a woman's life for testing her capacity to respond to physiological stress and detecting higher risk of developing diabetes in the future.



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OBJETIVE

The goal of this study was to find evidence at the literature that justify the inclusion of low birth weight as risk factor for GDM

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SYSTEMATIC REVIEW

Medline, Cochrane, Lilacs, PAHO databases were searched using a combination of:

Gestational diabetes; Pregnancy Diabetes X

- ❖ birth weight (777; 1250),
- ❖ low birth weight (173; 306),
- ❖ small birth weight (107; 98),
- ❖ small birth size (17; 21),
- ❖ small for gestational age (212; 137)

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METHODOLOGY

3098 titles

1025 (without duplicates)

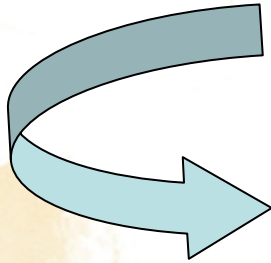
Birth, migration, social
epidemiology, and
treatment

read

7 papers

3 references

10 papers



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METHODOLOGY

The methodological quality of selected papers was evaluated using the criteria suggested by Dows & Black (D&B) - adapted for observational studies

This checklist provides an overall score for study quality and a profile of scores of

- ❖ reporting
- ❖ internal validity – bias, confounding
- ❖ power
- ❖ external validity

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METHODOLOGY

A funnel plot was drawn to explore the occurrence of publication bias favoring studies that found positive associations between BW and GDM

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RESULTS

Mean Score D&B 17.5 (sd=2.9)

Quality of reporting -was good

Weakness:

– Lack of information about ...

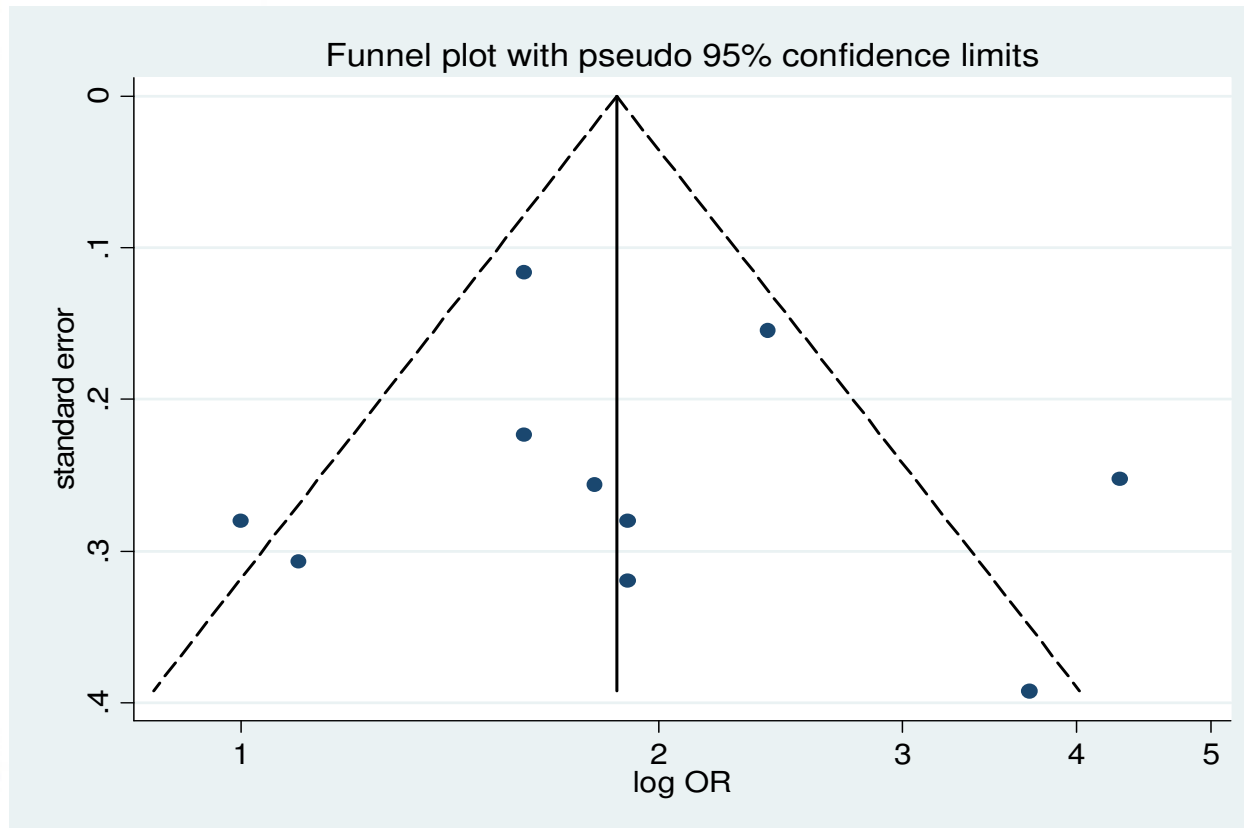
- ❖ Outcome definition
- ❖ Confounders
- ❖ Power
- ❖ Losses, refusals

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FUNNEL PLOT – BIRTH WEIGHT X GDM



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RESULTS

Different countries: USA (5), Norway (1), Italy (2), Australia (1) e Malta (1)

Seven Cohort -Population based

4 large cohort: *Plante et al*, *Willians et al*, *Egeland et al*, *Innes et al*

Despite of differences in methodology –
Eight studies -statistic significance

OR= 1.7-4.2

Cohort 46,246

four racial groups, (Non-Hispanic whites, African-Americans, Hispanics, and Native-Americans)

RR= 2x

Williams et al, 1999



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CONCLUSION

The available literature based on cohort and case control studies indicates the existence of an inverse association between BW and GDM. It also highlights the importance of adjusting BW for family history of DM and especially for maternal DM.

The impossibility of conducting a meta-analysis highlights the need for standardizing measures of BW and GDM as well as cutoff points for GDM screening and diagnosis.

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CONCLUSION

The consistency of the results of cohort and case-control studies, using different methods of diagnosing GDM, in several ethnic populations, and the strength of the observed associations indicate the existence of an inverse association between the woman BW and posterior development of GDM.

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Thanks!
Obrigada!

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