

Miscarriage and long-term maternal morbidity and mortality; a systematic review and meta-analysis.

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Introduction

Evidence suggests correlation between pregnancy loss and long-term maternal disease, and thus pregnancy complications represent important predictors of morbidities. Multitude of studies explores the correlation between miscarriage (single or recurrent) on future maternal health. However, results appear controversial especially considering the variations in size and population groups. We aimed to describe the association between miscarriage and long-term maternal morbidity and mortality.

Objective

To quantify the correlation between miscarriage and long-term maternal morbidity and mortality.

- Methodology
- **Design:** Systematic review (SR) and meta-analysis (MA)
 - **Databases:** MEDLINE, EMBASE, AMED, BNI, CINAHL, Cochrane Library and grey literature search
 - **Study selection:** 2 independent reviewers
 - **Data Extraction:** study design, participant and comparator demographic characteristics, definition of fetal loss, incidence of morbidity and mortality outcomes
 - **Risk of Bias:** Newcastle Ottawa Scale (NOS) by 2 independent reviewers
 - **Statistical analysis:**
 - Outcomes: Ischaemic Heart Disease (IHD), Cerebrovascular Disease (CVD), All circulatory disease, Renal disease, Malignant disease, Type 2 Diabetes Mellitus (T2DM), Depression
 - Dichotomous outcomes using random effects model, presented as pooled risk ratios (RR) with 95% confidence intervals (CI)
 - Heterogenicity: I² statistics

Inclusion criteria	Exclusion criteria
• Studies examining the incidence of all types of morbidities and mortality in the women with miscarriage • Outcomes ≥1 year after miscarriage • All study types except for study except case reports or letters.	• No exposure to miscarriage • History of disease unrelated to miscarriage • Pregnancy termination for any indication • Long-term mortality and morbidity in offspring • Maternal morbidity or mortality as a direct pregnancy complication (<1 year after pregnancy).

Table 1: Study Inclusion and Exclusion Criteria

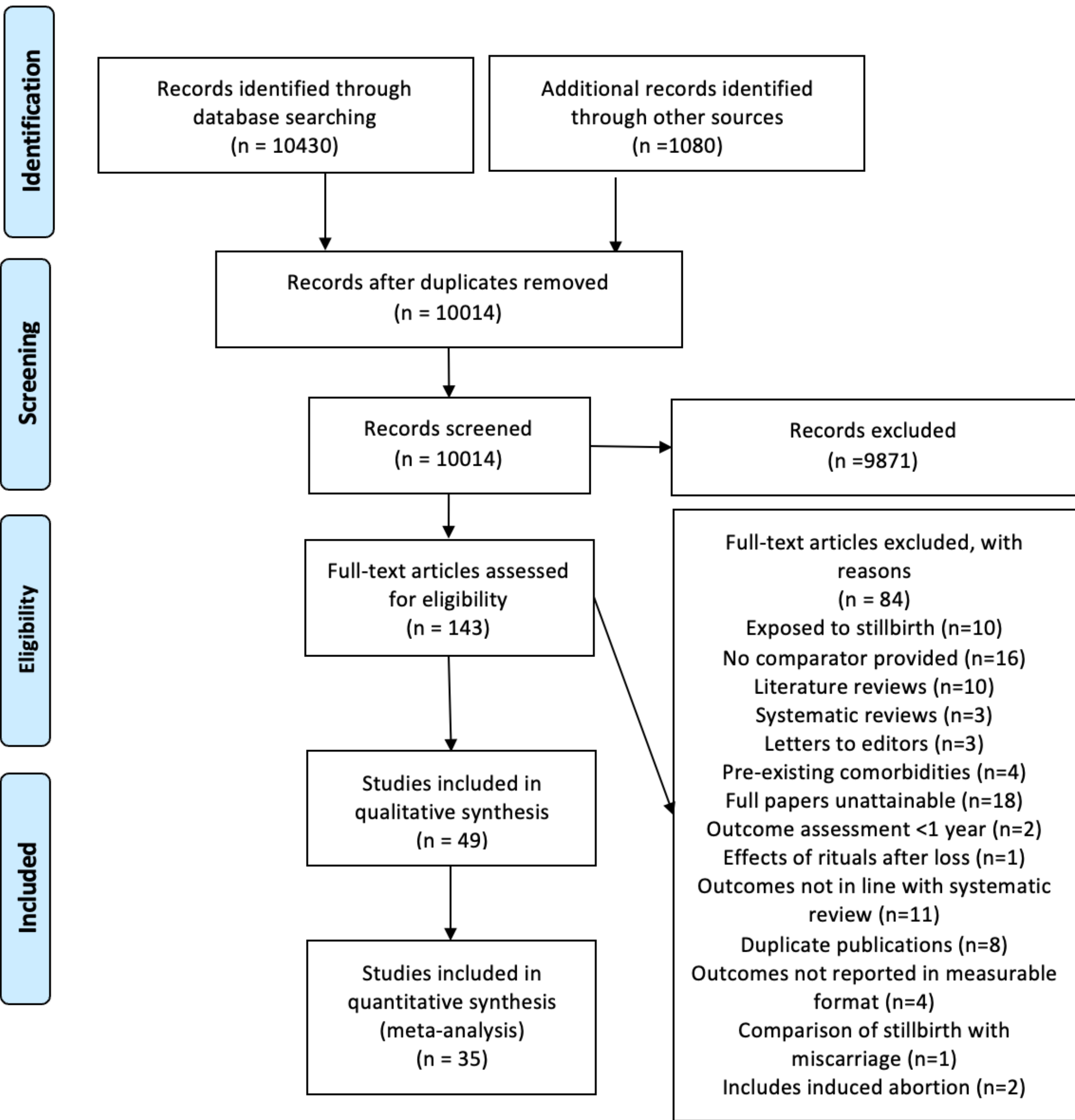


Figure 1: PRISMA flowchart of study inclusion and exclusion

- Results
- We included **48 studies**, with **36 in the meta-analysis**.
 - These included **1,112,250 women with a history of miscarriage** and **6,719,014 controls**.
 - Outcomes:
 - Exposure to miscarriage demonstrated no significant change in the risk of long-term maternal **ischaemic heart disease (IHD)** (RR 1.11, 95% CI: 0.98-1.27, p=0.10)
 - **Cerebrovascular disease** (RR 1.01, 95% CI: 0.85-1.21, p=0.89)
 - **Diabetes mellitus** (RR 0.82, 95% CI: 0.42, 1.61, p=0.57) compared to women with no loss.
 - **Breast and uterine malignancy risk** was similar in women with miscarriage compared to those without history of loss (Breast: RR 0.97, 95% CI: 0.88-1.07, p=0.69, uterine: RR 1.5, 95% CI: 0.85-1.31, p=0.65).
 - There was no substantial risk of **future psychiatric conditions** in women with miscarriage compared to controls (RR 1.90, 95% CI: 0.93-3.88, p=0.11).
 - Subgroup analysis demonstrated that history of recurrent losses did not have a greater risk in comparison with single loss.

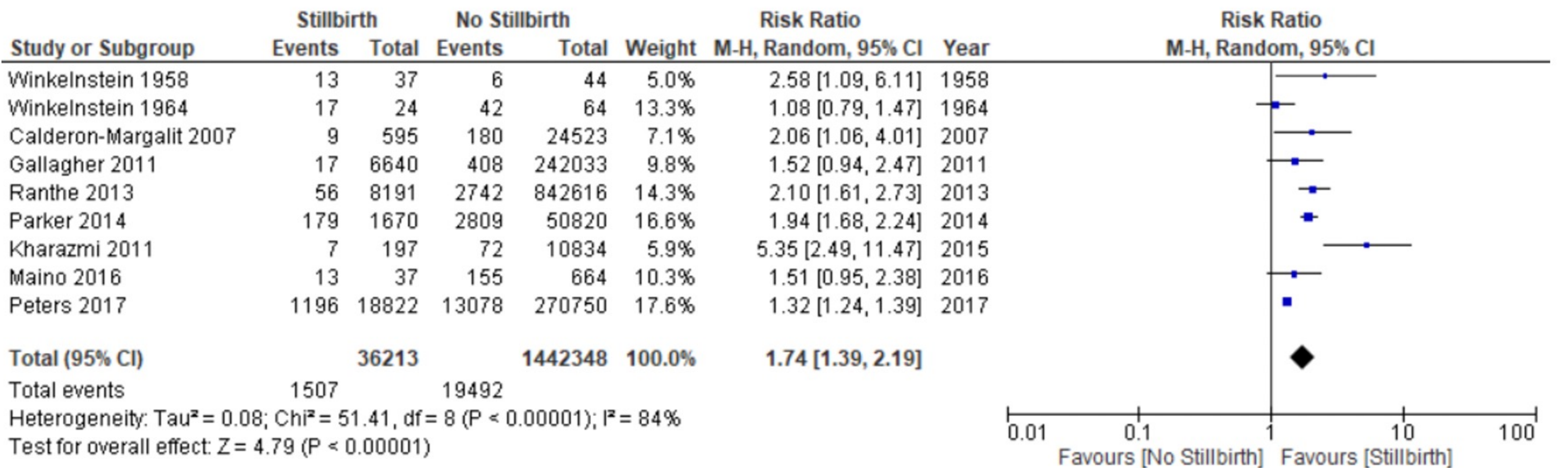


Figure 2: Forest plots with RR and 95% CI comparing IHD in women with and without miscarriage

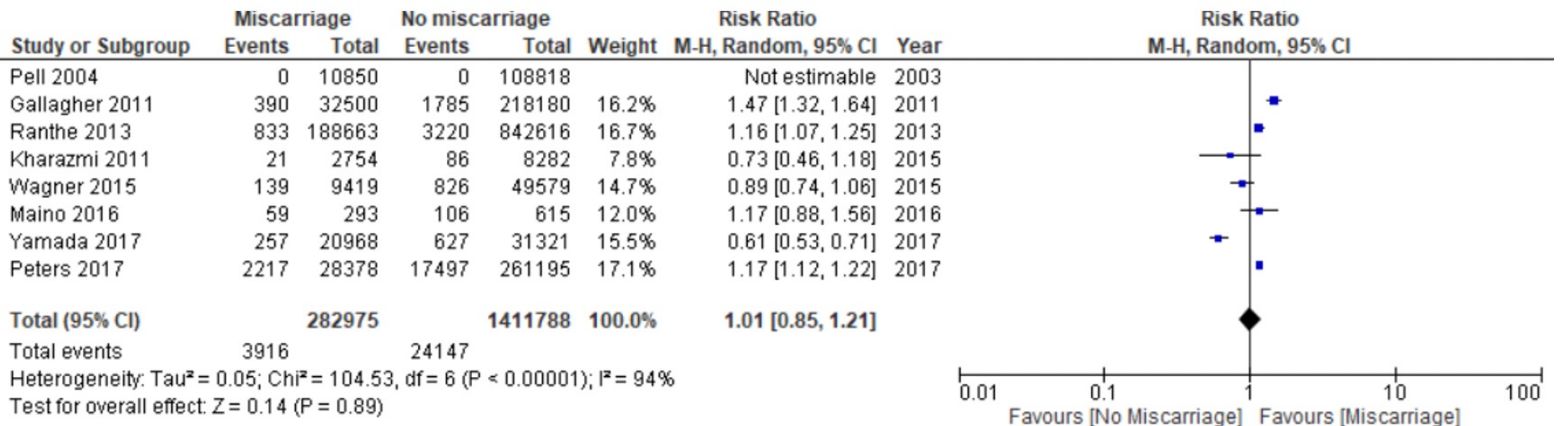


Figure 3: Forest plots with RR and 95% CI comparing CVD in women with and without miscarriage

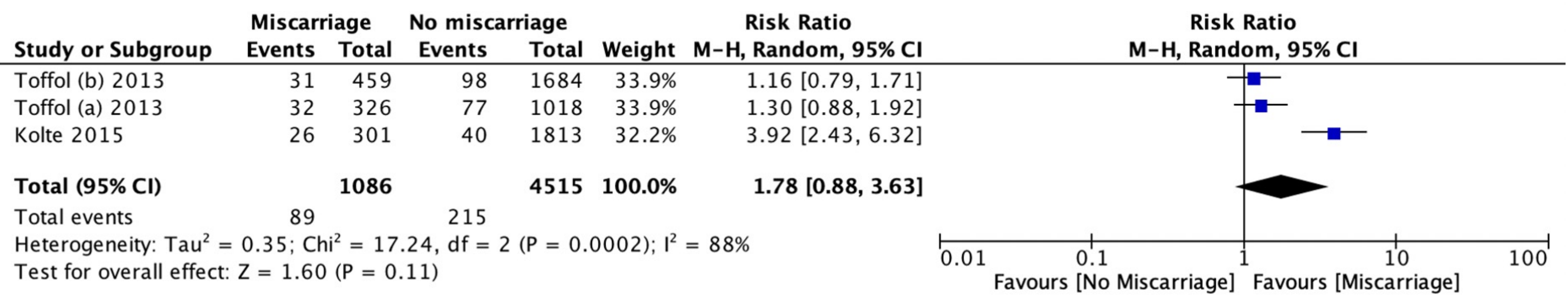


Figure 4: Forest plots with RR and 95% CI comparing depression in women with and without miscarriage

Conclusion

Our results suggest no significant association between miscarriage and future maternal IHD, cerebrovascular, malignant or mental illness. Early miscarriages, single or recurrent, are more likely to be multifactorial in aetiology, thus resulting in a small overall impact in the pathophysiological factors contributing to long-term disease.

For references scan the QR code

