Low-to-moderate prenatal alcohol exposure and pregnancy and childhood outcomes

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Introduction

In many countries (e.g. Canada, France, Finland), guidelines advise women simply not to consume alcohol in pregnancy (1). Current UK guidelines similarly advise women to avoid consuming alcohol in pregnancy, but go on to suggest that they should limit their consumption 1 to 2 UK unit, once or twice a week. Thus the message is potentially confusing, with 1-2 units up to twice a week implicitly marking a 'safe' quantity.

Recent evidence using Mendelian randomization (MR) has suggested that even low levels of alcohol can be detrimental to the developing foetus' brain, measured as childhood cognition and academic performance (2-3).

Objectives

To systematically review:

1. Existing systematic reviews/meta-analyses
2. MR studies and quasi-experimental studies
3. Prospective observational studies
4. Identification and summery of relevant existing UK Guidelines

Methods

Databases searched: Medline, Embase, web of science and Psychinfo. All databases will be searched from inception.

Population: Pregnant women or women who are trying to become pregnant sampled from the general public.

Exposure: low–to-moderate levels of prenatal alcohol consumption (up to 10.4 UK units or 83 g/week).

Outcomes:

1. Pregnancy complications: Intra uterine growth restrictions (IUGR); miscarriage; premature labour and delivery

2. Delivery outcomes: Birth weight/ low birth weight/ small for gestational age (SGA); Apgar score

3. FAS features: Facial malformation; cranium size/ head circumference; developmental delays; behaviour complications; cognitive impairment / IQ - attention scores

Study design: Prospective studies and systematic reviews/meta-analyses of prospective studies & natural experiments / studies using instrumental variables to improve casual inference.

Statistical analysis: The impact of low-to-moderate alcohol use on pregnancy and related outcomes was investigated using high-low methods of meta-analysis techniques; random-effect meta-analysis will be performed alongside fixed-effect in the presence of high levels of between-studies heterogeneity.

Results

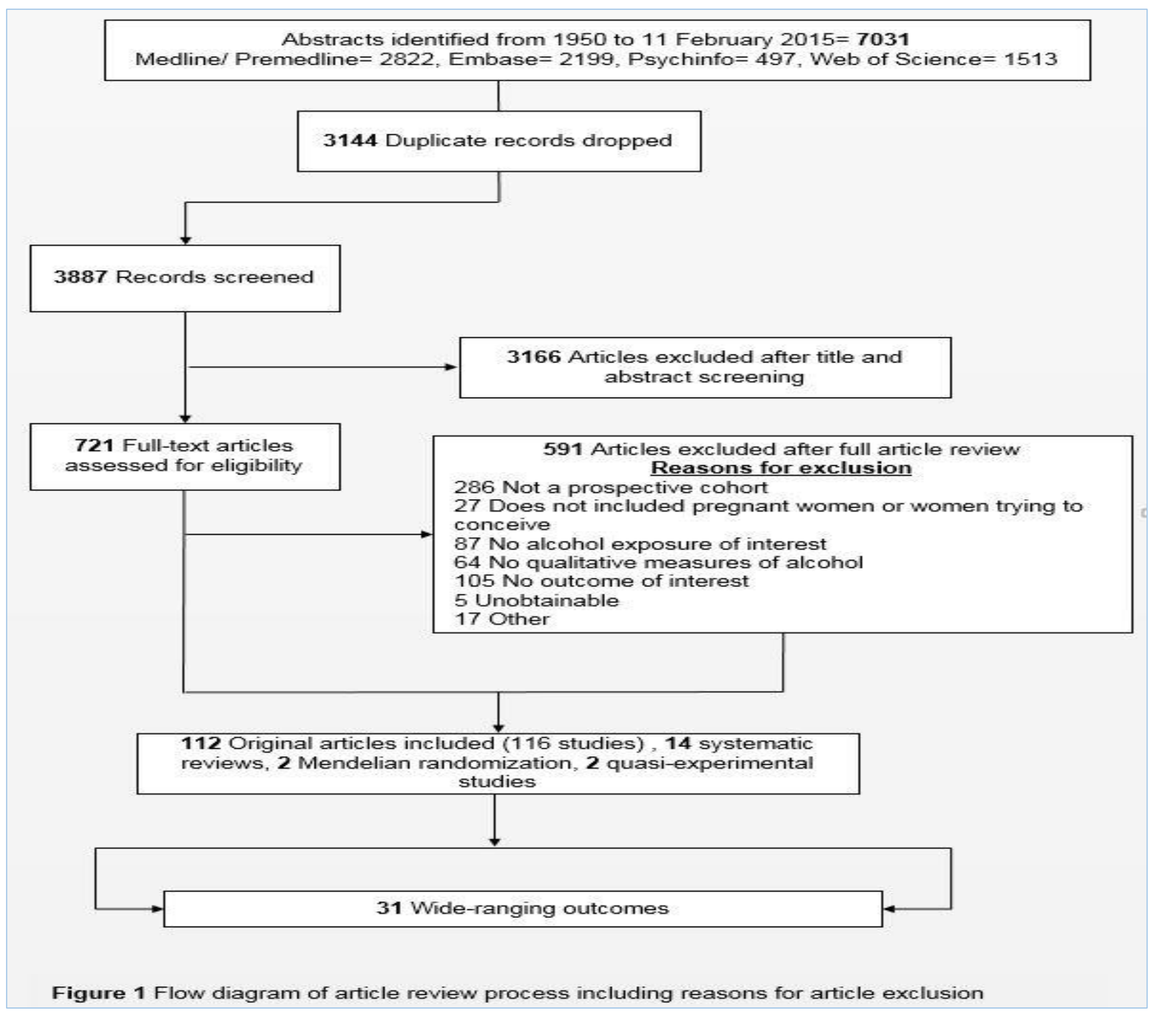

Figure 1 Flow diagram of article review process including reasons for article exclusion

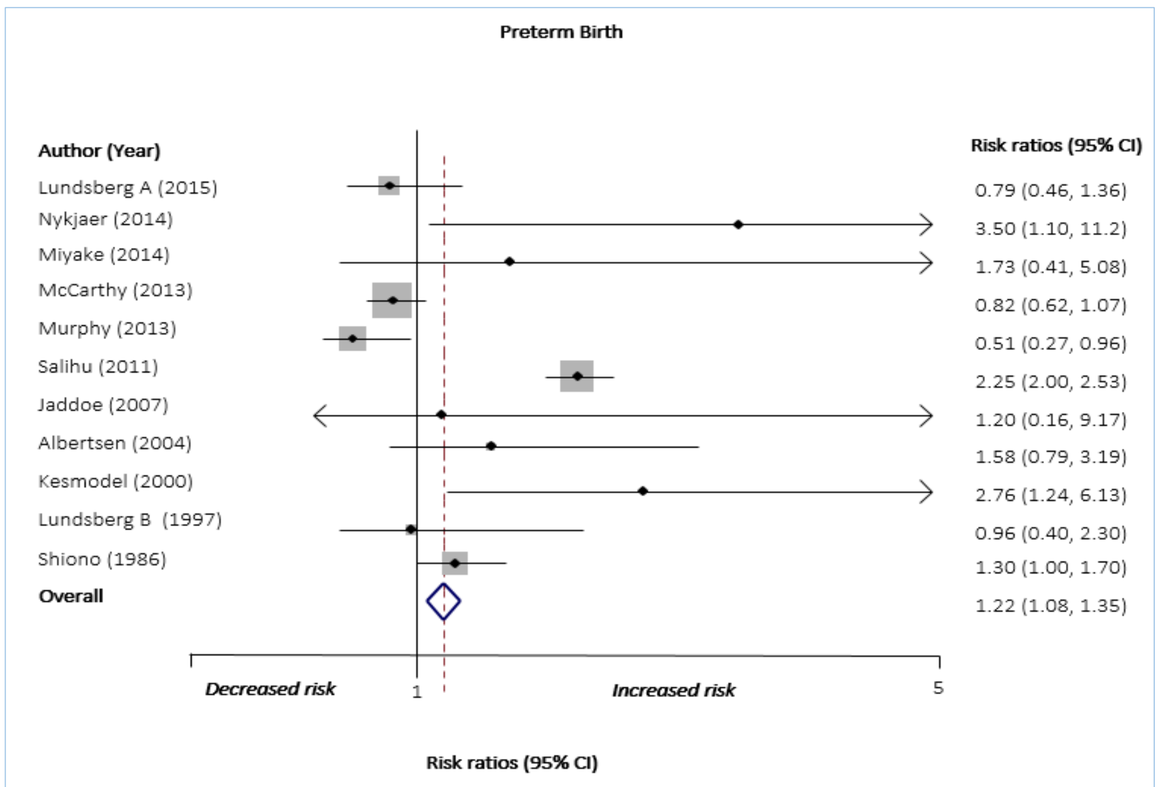

Figure 2 Risk ratios for preterm birth comparing low to moderate alcohol consumption (up to 83g/week) with no alcohol consumption. Overall I^2 = 89.3%, P < 0.001

Conclusion

Results from MR and quasi-experimental studies suggest that it is likely that prenatal exposure to low or moderate levels of alcohol are detrimental in the long term to offspring cognitive development.

Prospective studies showed that in mothers who consumed a moderate amount (maximum of 83g/week) of alcohol, the risk of having a preterm birth was increased by 22%.

References

1- http://iard.org/Policy/Policy-Resources/International-Guidelines-on-Drinking-and-Pregnancy
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3- Lewis SJ, Zuccolo L, Davey Smith G, Macleod J, Rodriguez S, Draper ES, et al. Fetal alcohol exposure and IQ at age 8: evidence from a population-based birth-cohort study. Plos One. 2012;7(11):e49407.

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