

## PROSPERO International prospective register of systematic reviews

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### Systematic review of the effects of low-moderate prenatal alcohol exposure on pregnancy and childhood outcomes

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#### Citation

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#### Review question(s)

To determine what is known about the effects of prenatal alcohol exposure, corresponding to low-to-moderate levels of maternal consumption, on pregnancy outcomes. These include pregnancy complications, delivery outcomes and Fetal Alcohol Syndrome (FAS) features. This will include the assessment of systematic reviews and meta-analyses. A particular focus will be placed on identifying practical and meaningful outcomes of alcohol toxicity during pregnancy.

#### Searches

Publications will be identified by searching the following major relevant databases: Medline, Embase, web of science and Psycinfo. All databases will be searched from inception. Internet searches will be carried out using Google Scholar. Attempts to identify further studies will be made by examining the reference lists of included studies and of previous reviews. All studies to be restricted to those published in the English language only.

#### Types of study to be included

1) Prospective studies and systematic reviews/meta-analyses of prospective studies (cohort or case-control studies nested in a cohort). 2) Natural experiments / studies using instrumental variables to improve causal inference, including Mendelian Randomization (MR) studies 3) Sibling comparison studies 4) Parental comparisons

#### Condition or domain being studied

Pregnancy and delivery outcomes as well as offspring outcomes (from the domains affected by Fetal Alcohol Syndrome (FAS))

#### Participants/ population

Pregnant women or women who are trying to become pregnant sampled from the general population. Cohorts of pregnant women with alcohol abuse/dependency will be excluded.

#### Intervention(s), exposure(s)

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

Exclusion: studies will be excluded if there was no quantitative measure of alcohol consumption that could be converted to UK standard units or grams of alcohol and if there was insufficient data for an (adjusted and/or crude) effect measure of low-moderate consumption to be extracted. Cohorts of pregnant women with alcohol abuse/dependency will be excluded.

#### Comparator(s)/ control

women with no or very sporadic alcohol consumption in pregnancy.

#### Outcome(s)

##### Primary outcomes

Outcomes: (in both children and adults)

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1) Pregnancy complications

- Intra uterine growth restrictions (IUGR)
- Miscarriage
- Premature labour and birth- Gestational age
- Preeclampsia and gestational hypertension
- Low amniotic fluid (oligohydramnios)
- Gestational diabetes
- Placenta previa

2) Delivery outcomes

- Birth weight/ low birth weight/ small for gestational age (SGA)
- Still birth
- Delivery intervention (including vacuum extraction, forceps delivery, Caesarean section)

- Apgar score

3) FAS features

- Facial malformation
- Growth restrictions (height- measurements of growth restriction)
- Cranium size/ head circumference
- Developmental delays
- Behaviour complications
- Cognitive impairment / IQ
- Attention scores / Attention deficit and hyperactivity disorder (ADHD)

**Secondary outcomes**

none

**Data extraction, (selection and coding)**

Selection of studies:

Titles and abstracts will be screened independently by one reviewer (a random selection of 20% will also be screened by a second reviewer independently) with inclusion/exclusion being decided according to prespecified criteria. Discrepancies will be discussed and disagreements resolved through consensus. The full-text of each of the articles identified through screening of titles and abstracts will be obtained in order to determine their inclusion in the review.

Data extraction:

Data extraction will be carried out using Microsoft Access. This will be piloted on a small selection of studies and adjusted as necessary. Relevant data will be documented from each identified study including information on study design and location, population characteristics, exposures studied (including timing of exposure), methods used to ascertain exposures, outcomes studied, method of outcome ascertainment (including person reporting the outcome, whether parent, teacher, health professional, researcher, child...), study results (from both unadjusted and fully adjusted regressions), statistical adjustments etc. Data extraction will be carried out independently by one reviewer and a random selection of 20% will be checked by a second reviewer. Discrepancies will be resolved through discussion or referral to a third reviewer. Where necessary, authors will be contacted for additional information.

### **Risk of bias (quality) assessment**

Studies that did not adjust for smoking and maternal education/social class as potential confounders in their final model will be considered to be of low evidence quality.

### **Strategy for data synthesis**

The impact of low-to-moderate alcohol use on pregnancy and related outcomes will be investigated using high-low methods of meta-analysis techniques; however, due to anticipated low number of studies for some outcomes, a formal meta-analysis may not be appropriate for some of the outcomes. Where meta-analysis is not possible, a narrative summary of findings will be carried out. Random-effect meta-analysis will be performed alongside fixed-effect in the presence of high levels of between-studies heterogeneity (measured through I<sup>2</sup>). Item response theory (IRT) will be used to combining results from different scales if required. The likelihood of small study bias deriving from publication bias will further be assessed through drawing funnel plots.

### **Analysis of subgroups or subsets**

Where the included number of studies in the meta-analysis is large enough, sub-group analyses will be performed for 1) studies adjusting for smoking and maternal education/social class; 2) studies reporting separately on the effects of alcohol use in different gestational periods; 3) studies using different exposure/outcome assessments.

### **Dissemination plans**

We anticipate dissemination to regional and national public health directors

### **Contact details for further information**

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### **Organisational affiliation of the review**

none

### **Review team**

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**Anticipated completion date**

01 September 2015

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National Institute of Health Research, Medical Research Council, University of Bristol. UK

**Conflicts of interest**

None known

**Language**

English

**Country**

England

**Subject index terms status**

Subject indexing assigned by CRD

**Subject index terms**

Alcohol Drinking; Humans; Pregnancy Outcome; Prenatal Exposure Delayed Effects

**Stage of review**

Ongoing

**Date of registration in PROSPERO**

19 January 2015

**Date of publication of this revision**

25 February 2015

**DOI**

10.15124/CRD42015015941

**Stage of review at time of this submission**

	<b>Started</b>	<b>Completed</b>
Preliminary searches	No	Yes
Piloting of the study selection process	No	Yes
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

**PROSPERO**

**International prospective register of systematic reviews**

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