Do women with a history of abuse have increased risk for preterm delivery (PTD)?

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Review question(s)
To assess association between maternal history abuse (physical, emotional, and sexual) and preterm delivery

Searches
The pertinent articles will be obtained through a comprehensive search strategy to ensure all relevant studies regardless of the language used, date of publication, or publication status (published, in press, and in progress) are identified. The search strategies include:

Electronic searches:
With the assistance of a library expert in systematic searching, we formulated a comprehensive search strategy to ensure that all relevant studies are identified regardless of the time and national context of the studies. The following electronic bibliographic databases were searched for relevant studies: MEDLINE, EMBASE, Cochrane Library, Cochrane Central Register of Controlled Trials (CENTRAL), PsycINFO, CINAHL, Scopus, Pilots, Web of Science, and PROSPERO. Abuse has been defined in a variety of domains and levels. Also, as the terminologies for exposure and outcomes might not be indexed or explicitly mentioned in the body of the relevant articles; to capture all potential relevant citations we conducted a broad search using a wide variety of keywords. The MESH terms and keywords for exposure such as abuse, violence, aggression, forced sex, maltreat, mistreat, torture, neglect, stress, hardship, trauma, anxiety, depression, racism, disaster, verbal abuse, sexual abuse, psychological abuse, child abuse, wife abuse, and spouse abuse, maternal, partner abuse, infant abuse, domestic violence will be combined with The MESH terms and keywords for the outcomes including gestational age, preterm, premature, pregnancy outcome, and low birth weight.

Searching other resources:
Reference lists of the excluded relevant review articles and the final included articles will be manually examined to find other potentially relevant literature. In addition, individual researchers or organizations working on population based studies on birth outcomes abuse and violence in women will be approached to determine any published or unpublished studies not retrieved by our search.

Types of study to be included
Any quantitative study designs that report association between preterm birth or low birth weight and maternal experience of abuse, or violence will be included. Inclusion will be based on a hierarchy of evidence from controlled cohort, case control, and cross sectional studies. Studies from all over the world which have been conducted on maternal history of abuse and abuse will be included. Studies which included pharmacological or psychosocial intervention during pregnancy to lower maternal stress but report no control data will be excluded.

Condition or domain being studied
With an estimated 15 million preterm births annually worldwide, the global burden of preterm birth (PTB or PTD, defined as birth before 37 completed weeks of pregnancy) is enormous. It is the leading cause of death in children < 5 years and a major cause of life-long handicap. Yet, its etiology remains elusive. Preterm birth is a complex phenomenon with maternal and fetal environmental factors contributing to its risk – factors that may have their influence early in life or in a previous generation. Among these, maternal stress is increasingly recognized as a causal factor for spontaneous PTB.
Significant antepartum and postpartum maternal stress can arise from multiple current circumstances or past sources across the lifespan. High levels of psychosocial stress including major and traumatic life events before or during pregnancy increase the risk of PTD although these were only associated with PTD when they were perceived to be stressful. Indeed, women who have increased perceptions of stress have a higher risk of PTD. These include physical and emotional abuse or domestic violence prior to or during pregnancy.

In a recent retrospective case-control study involving women in Edmonton, Alberta, we found that lifetime abuse was associated with PTD and with each additional increment of 1 on the abuse score scale, the risk of spontaneous PTB increased by 34 percent (adjusted OR 1.30; 95% CI 1.02-1.65). Eighteen percent of the women in our case group experienced sexual abuse as a child compared to eight percent of the control women. A similar difference was seen in the prevalence of emotional neglect: 20 and 6 percent of the women were emotionally neglected during childhood in the case and control group respectively. In addition, almost a quarter of all women with a PTB admitted to being physically abused during childhood, while 15 percent of the controls experienced physical abuse as a child.

Rather than using the term “abuse” the United Nations refers to violence against women as “any act of gender-based violence that results in, or is likely to result in, physical, sexual or mental harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life.” Violence against women - particularly intimate partner violence and sexual violence - are major public health problems and violations of women's human rights. Recent global prevalence figures indicate that about 1 in 3 (35%) of women worldwide have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetimes. Violence can negatively affect women's physical, mental, sexual and reproductive health, and may increase vulnerability to HIV.

In spite of these alarming numbers and now the evidence that lifetime abuse is associated with PTD, no systematic review of the literature examining the association of abuse or violence against women and PTD has been conducted.

**Participants/ population**
Studies from all over the world which have been conducted on maternal history of abuse and abuse will be included.

**Intervention(s), exposure(s)**
Abuse is defined as an attempt to control the behaviour of another person and it encompasses any direct or indirect physical, sexual or emotional maltreatment at any age, before pregnancy or during pregnancy (Alvarez-Segura, et al, 2014). Measurement tools for abuse are very divers; in this systematic review inclusion will not be limited by the type of measurement tools for abuse. However, studies which included pharmacological or psychosocial intervention during pregnancy to lower maternal stress but report no control data will be excluded.

**Comparator(s)/ control**
Not applicable.

**Outcome(s)**
Primary outcomes
Primary outcome in this study is preterm delivery which is defined as giving birth to a singleton at less than 37 weeks of gestation. (Christiaens, Hegadoren, Olson, 2015, p. 2).

Secondary outcomes
Low birth weight is defined as the secondary outcome; birth weight of a live born infant less than 2,500 g regardless of gestational age.

**Data extraction, (selection and coding)**
Selection of the studies will be done in two steps. In the first step, all identified citations and study abstracts obtained through the search will be appraised by two reviewers independently using the eligibility criteria. During the second step, further selection of those studies determined potentially relevant through the initial titles/abstract review will be based on structured inclusion/ exclusion form.

Any apparent discrepancies during the selection process will be resolved by consensus among the two reviewers and
the first author. The studies not meeting the inclusion criteria will be excluded and number and the reasons for exclusion will be recorded. For those studies which meet the inclusion criteria full reports will be retrieved.

**Risk of bias (quality) assessment**

For assessment of methodological quality of the included studies in the second step, we will use the Newcastle-Ottawa Quality Assessment Scale. The scale comprises seven items which evaluate three domains of quality: sample selection, comparability of cohorts, and assessment of outcomes. Each of these items that is adequately addressed is awarded one star, except for the “comparability of cohorts” item, for which a maximum of two stars can be given. The overall score is calculated by counting the stars. We considered a total score of 6 to 8 stars to indicate high quality, 4 or 5 stars to indicate moderate quality, and 3 or fewer stars to indicate poor quality.

The assessment of methodological quality of the included studies will be done by two reviewers independently. The final decision for inclusion of high quality studies in the synthesis will be made by consensus among the two reviewers and the first author and the full reports.

**Strategy for data synthesis**

Data will be extracted independently by the two reviewer using a data extraction form which includes the following details from all studies:

- Administrative details: studies identification; author(s); published or unpublished; year of publication and year in which study was conducted.
- Details of the study: study design; type, duration and completeness of follow-up; country and location of study.
- Details of participants: setting, numbers, age group, context
- Details of outcomes measure, relative risk and odds ratio:

The data extraction sheet will be pilot with a sample of the included studies.

The decision to pool the included studies will be made considering the studies methods and clinical heterogeneity. Where the included studies cannot be combined, a narrative review will be carried out.

**Analysis of subgroups or subsets**

As the maternal national context might affect the birth outcomes, subgroup analysis may depend on the context of obtained articles.

**Contact details for further information**

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Dr. David Olson, Professor, Department of Obstetrics and Gynecology, University of Alberta, Edmonton, Canada

Conflicts of interest
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Ongoing

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Stage of review at time of this submission

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