Review article

A systematic review and meta-regression of the prevalence and incidence of perinatal depression

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ABSTRACT

Background: Major Depressive Disorder (MDD) is a leading cause of the disease burden for women of childbearing age, but the burden of MDD attributable to perinatal depression is not yet known. There has been little effort to date to systematically review available literature and produce global estimates of prevalence and incidence of perinatal depression. Enhanced understanding will help to guide resource allocation for screening and treatment.
Methods: A systematic literature review using the databases PsycINFO and PubMed returned 140 usable prevalence estimates from 96 studies. A random-effects meta-regression was performed to determine sources of heterogeneity in prevalence estimates between studies and to guide a subsequent random-effects meta-analysis.
Results: The meta-regression explained 31.1% of the variance in prevalence reported between studies. Adjusting for the effects of all other variables in the model, prevalence derived using symptom scales was significantly higher than prevalence derived using diagnostic instruments (odds ratio [OR] 1.6, 95% confidence interval [CI] 1.3–2.0). Additionally, prevalence was significantly higher in women from low and middle income countries compared to women from high income countries (OR 1.8, 95% CI 1.4–2.2). The overall pooled prevalence was 11.9% of women during the perinatal period (95% CI 11.4–12.5). There were insufficient data to calculate pooled incidence.
Limitations: Studies in low income countries were especially scarce in this review, demonstrating a need for more epidemiological research in those regions.
Conclusions: Perinatal depression appears to impose a higher burden on women in low- and middle-income countries. This review contributes significantly to the epidemiological literature on the disorder.

1. Introduction

The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) defines perinatal depression as a major depressive episode (MDD) with peri-partum onset, i.e. symptom onset during pregnancy or in the four weeks following delivery (American Psychiatric Association, 2013). Although outside of the timeframe to yield a DSM-5 diagnosis, epidemiological studies commonly consider onset within three months after delivery (Wisner et al., 2002). Perinatal depression is distinct from the commonly experienced "baby blues", which can cause tearfulness and irritability in up to seventy percent of new mothers (Marcus and Heringhausen, 2009; Wisner et al., 2002). However, the baby blues usually resolve within two weeks (Marcus and Heringhausen, 2009). Severe depressive symptoms during pregnancy have been associated with poor utilisation of prenatal clinics, substance misuse, preterm delivery, and low birth weight (Evans et al., 2001); postnatally, these symptoms affect a woman's ability to care for her new baby, as well as her ability to maintain relationships with significant others (Stewart, 2011).

MDD is a major cause of disease burden across low, middle, and high income countries (Ferrari et al., 2013b). The Global Burden of Disease (GBD) 2015 study found MDD to be the third leading cause of years lived with disability (YLDs) globally (GBD 2015 Disease and Injury Incidence and Prevalence Collaborators, 2016). The GBD 2015 study estimated MDD to account for 5.0% of YLDs in males, and 6.2% of YLDs in females (Institute for Health Metrics and Evaluation, 2016).

Although the overall burden of MDD was estimated, GBD studies have not quantified the proportion of MDD due to perinatal depression. Women are up to twice as likely to suffer from MDD as men, and thus comprise a larger proportion of the disease's burden when measured by prevalence (Ferrari et al., 2013b). Worldwide, more than two billion babies are projected to be born over the next fifteen years; this is a two percent increase in the total number of births compared to the past fifteen years, with about half of these babies anticipated to be born in Asia and one third in Africa (Commission on Population and Development, 2015). This growing number of births will challenge low and middle income countries to expand their services for mothers and infants, including strategies to identify and treat perinatal depression (Commission on Population and Development, 2015). Quantifying how much of the burden of MDD in women is attributable to perinatal depression using globally representative estimates will allow better assessment of trends over time and inform the allocation of health services to mothers around the globe.

Prevalence estimates for perinatal depression from previous literature reviews vary greatly and globally representative estimates are scarce. A 2005 systematic review estimated a one month postpartum prevalence of 5.7% (Gavin et al., 2005). This study only analysed data from high-income countries, and was therefore not globally representative. Additionally, the samples used were not consistently representative of the diversity of each country where studies were conducted (Gavin et al., 2005). A review by Leahy-Warren and McCarthy (2007) found that the past-month prevalence of depression ranged from 4.4% to 73.7% throughout the postnatal period, largely due to differences between included studies in measurement instruments, sampling methods, and sociodemographic variances. As meta-regression or meta-analysis was not performed, summary estimates of prevalence and incidence were not reported and the suggested sources of heterogeneity were not quantified. A review of the prevalence of common mental disorders during the perinatal period in women in low and lower-middle income countries was conducted in 2011 (Fisher et al., 2011). Fisher et al. (2011) found the average prevalence of prenatal depression to be 15.9%, but reported that data on this measure was only available from 8% of low and lower middle income countries. During the postnatal period, they found the pooled prevalence to be 19.8%, using data from 15% of low and lower middle income countries (Fisher et al., 2011). Although important in demonstrating the lack of global coverage in estimates of prevalence during the perinatal period, this review considers several disorders together, and is thus not an estimate of the prevalence of depression alone. This review is also limited in its exclusion of upper middle and high income countries. A 2016 review found the pooled prevalence of its fifteen included studies during the prenatal period to be 17.2%, while the pooled prevalence for the postnatal period was 13.1% (Underwood et al., 2016). However, all included studies relied on prevalence from self-report symptom scales, rather than diagnostic instruments, which may overestimate the true prevalence (Gavin et al., 2005). Moreover, many of these measurements did not take place during a time frame that would yield a DSM or ICD (International Classification of Diseases) diagnosis (within four and six weeks after childbirth, respectively) (Underwood et al., 2016). Most recently, a review of perinatal depression in low and middle income countries by Gelaye et al. (2016) found the prevalence of prenatal depression to be 25.8%, while the postnatal prevalence was 19.7%. This review is limited because of its exclusion of high income countries; additionally, although significant heterogeneity was detected between studies, no efforts were made to further investigate its sources.

The review by Gavin et al. (2005) also estimated incidence. Based on nine studies, their estimates suggest the incidence of women suffering a new major depressive episode is 7.5% during the prenatal period and 6.5% during the postnatal period. However, some included studies utilised non-representative samples and small sample sizes. To our knowledge, this is the only analysis of incidence included in a systematic review (Mann et al., 2010).

Together, these findings indicate a need for updated and comprehensive global estimates of perinatal depression that cover countries within all income levels, derive epidemiological measures from timepoints consistent with MDD criteria in major diagnostic classification systems, and account for known sources of heterogeneity between study methods. The present systematic review responds to these gaps in the literature by summarising current available literature on the prevalence and incidence of perinatal depression. This will allow the global availability and distribution of data for this disorder to be explored. By focusing on estimates drawn from representative samples, the identification of at risk groups within the population in most need of prevention or early intervention will be facilitated.

2. Methods

2.1. Literature review

The systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement guidelines (Moher et al., 2009). Searches were performed in PsycINFO and PubMed using the search string: "epidemiology OR prevalence OR proportion 1980–2015" AND "partum OR peri OR natal AND depress* OR mood". Searches were limited to studies published between 1980 and 2015. Publications in languages other than English were included. Reference lists from pertinent articles were examined.

2.2. Inclusion and exclusion

Measures of prevalence and incidence of perinatal depression were the epidemiological parameters of interest. For prevalence, point prevalence (up to one month) or period prevalence (up to 12 months) estimates were included. Estimates of lifetime prevalence were not included, as they are more susceptible to recall bias (Simon and VonKorff, 1995). For incidence, rates with person-years of follow-up as the denominator were included. Studies were included if they made use of population-based surveys representative of communities, regions or countries under study. Non-representative samples (e.g. inpatient groups, minority populations) were excluded as they would likely provide biased estimates of perinatal depression in the general population. Studies using DSM, ICD or Research Diagnostic Criteria (RDC) for diagnosis were included and differences in data-points derived using these diagnostic classifications were investigated during analysis. Studies using symptom scales, even those that make use of DSM/ICD definitions, may not fully adhere to the clinical thresholds stipulated. These studies were included to maximise the volume of data available for analysis; their effect on prevalence estimates, compared to estimates generated using diagnostic instruments, was investigated statistically. Additionally, only studies providing sufficient detail to assess study quality (e.g. methods, sample characteristics) were included.

2.3. Extraction

Data were extracted following the GBD protocol for epidemiological data extraction which specifies study-level parameters such as country and year of study, sample urbanicity (urban, rural or mixed), response rate, case name (as defined by the study), diagnostic criteria (ICD, DSM, or RDC), and survey instrument (Whiteford et al., 2013). This study also included information on gestational period (prenatal or postnatal), weeks of gestation or since birth, rate-level parameter value and recall period, and the age of the sample. Additionally, the sampling methodology for each study was recorded. Studies were classified by income level according to the World Bank Country and Lending Groups (The World Bank Group, 2016). If an article detailed multiple parameter values (e.g. stratified by location, and/or perinatal period), the estimate for each was initially extracted. If multiple data sources reported on the same sample, the more informative data source was used. CAW