

Are women with a history of abuse more vulnerable to perinatal depressive symptoms? A systematic review

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Received: 7 January 2014 / Accepted: 11 June 2014 / Published online: 9 July 2014
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Abstract The objective of this paper is to examine the association between maternal lifetime abuse and perinatal depressive symptoms. Papers included in this review were identified through electronic searches of the following databases: Pubmed Medline and Ovid, EMBASE, PsycINFO, and the Cochrane Library. Each database was searched from its start date through 1 September 2011. Keywords such as “postpartum,” “perinatal,” “prenatal,” “depression,” “violence,” “child abuse,” and “partner abuse” were included in the purview of MeSH terms. Studies that examined the association between maternal lifetime abuse and perinatal depression were included. A total of 545 studies were included in the initial screening. Forty-three articles met criteria for inclusion and were incorporated in this review. Quality of articles was evaluated with the Newcastle-Ottawa-Scale (NOS). This systematic

review indicates a positive association between maternal lifetime abuse and depressive symptoms in the perinatal period.

Keywords Postpartum · Antepartum · Perinatal depression · Violence · Childhood abuse · Domestic violence

Introduction

Perinatal depression: definition and relevance

Perinatal depression encompasses major and minor depression episodes that occur during pregnancy or within the first 12 months after delivery (Gavin et al. 2005). The prevalence of this depression varies widely from 5 % to more than 25 % depending on the studied population (Bennett et al. 2004; O'hara and Swain 1996).

Although depression at any time during a woman's lifetime is of concern, depression during the postpartum or/and antepartum period is of special importance because in addition to its potentially negative effects on the mother, it can lead to negative health outcomes for the child, affecting both physical and mental health. Edwards et al. (2008b) found that in a sample of 154 women, 30 % (44) meet criteria for antenatal depression, 23 % (33) for postnatal depression, and 14.4 % (21) were depressed both before and after delivery. Watson et al. (1984) found that in 23 % of those with postnatal depression had symptoms already during pregnancy; Patel et al. (2002) found that 78 % of mothers with postnatal depression had depression already before delivery. Additionally, Evans et al. found that postpartum depressive symptoms are neither more common nor more severe than depressive symptoms during pregnancy within 9,028 mothers followed through pregnancy and 8 months after childbirth (Evans et al. 2001).

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The perinatal period implies also a high vulnerability related with the increased physiological and emotional demands of pregnancy and childbearing. This period is a time when partner support and a confiding trusting relationship may be particularly important for psychological health (Mezey et al. 2005). In circumstances of lack of support, mothers may experience pregnancy and childbirth as particularly threatening to their physical and emotional integrity.

Effects of antenatal depression on the mother and the child health

Depression during pregnancy has been linked to numerous suboptimal outcomes for the mother, including increased substance use (alcohol, illicit drugs, and tobacco), inadequate prenatal care, preeclampsia, postnatal depression, and suicide (Horrihan et al. 2000; Kurki et al. 2000; Najman et al. 2000).

According to recent studies, maternal depressive stress has profound impact on infants not only during the postpartum period but also during the prenatal period (Dieter et al. 2008; Field et al. 2006; Kinsella and Monk 2009). Clinical studies link pregnant women's exposure to a range of traumatic stressors to significant alterations in children's neurodevelopment, including increased risk for affective and anxiety disorders and reduced cognitive ability (O'Connor et al. 2002; Van den Bergh et al. 2005). The in utero environment is regulated by placental function, and there is emerging evidence that the placenta is highly susceptible to maternal distress and a target of epigenetic dysregulation. There is an association between maternal prenatal depression and both fetal and infant developmental trajectories and a potential role of epigenetic mechanisms in mediating these effects (Monk et al. 2012).

Effects of postpartum depression on the mother–infant interaction and on child development

Untreated postpartum depression may negatively affect interactions between mothers and their children. Studies have found that maternal depression may be manifested by the mother being less sensitive and less available to meet the needs of her infant (Cassell and Coleman 1995; Cohn et al. 1986; Cox et al. 1999) and subsequently by greater child insecurity in attachment relationships (Marmorstein et al. 2004). Mothers with depressive symptoms have been found to exhibit higher levels of yelling, spanking, and feeling annoyed with their children (Lyons-Ruth et al. 2000; Martin et al. 2006). Exposure to maternal depression may affect a child's entire developmental trajectory. Grace et al. (2003) describe the negative effects of maternal depression on child cognitive development, intellectual quotients, and on increased rates of conduct disorders in children who are less

than 5 years old. Moreover, in a meta-analysis about postpartum depression and child psychopathology, Goodman et al. (2011) found positive associations between maternal depression and child levels of externalizing and internalizing behavior, increased negative and less positive child emotionality, and overall increased levels of child psychopathology. These effects were shown to potentially be present until adolescence; children of mothers who suffered from postpartum depression were more likely to suffer from an affective disorder at the age of 13 years (Halligan et al. 2007). Negative effects on physical child development, such as inadequate weight gain during the first 2 years of life (Wojcicki et al. 2011) and inadequate growth in children between 6 and 24 months of life have been described (Surkan et al. 2008). There also is a higher incidence of missed pediatric appointments and more frequent visits to the emergency department (Flynn et al. 2004), highlighting the impact of maternal depression on healthcare utilization.

Lifetime history of abuse as a risk factor for maternal perinatal depression

Previous studies have revealed a number of risk factors associated with antenatal and/or postnatal maternal depression: a lifetime history of depression prior to pregnancy (regardless if it was perinatal depression or depression unrelated to pregnancy or childbirth), high levels of anxiety during pregnancy, low-self esteem, low social support, and stressful life events (Marcus et al. 2003). Other risk factors for antenatal and postnatal depression such as a maternal history of abuse have been described (Mezey et al. 2005; Records and Rice 2005) but have not been systematically reviewed to date.

There is a large body of research about the associations between history of abuse and depression in women (Felitti et al. 1998; Gould et al. 2012; Kendler et al. 2004; Sachs-Ericsson et al. 2007; Springer et al. 2007; Weiss et al. 1999), both for childhood and lifetime abuse. Less attention has been paid to the possible association between a history of abuse and maternal depression during pregnancy and/or the postpartum period.

Effects of a maternal history of childhood abuse on maternal and child health

Understanding the effects of a history of abuse on depression during pregnancy and the postpartum period is important for prevention of negative outcomes for both mothers and children. The perinatal period is a particularly vulnerable period for depression due to the normative physical, hormonal, and neurochemical shifts that occur (Feldman et al. 2007).

One of these aspects is the reorganization that takes place on a psychological level. Becoming a mother activates the woman's attachment system and activates representations that

she has formed based on her relationship to her parents (Slade et al. 2009). As Bibring et al. (1961) noted, this process occurs gradually, as a woman reworks her internalized and actual relationship with her own mother over the course of the pregnancy. This process might be particularly difficult for mothers with a history of childhood abuse (Slade et al. 2009) because there might be an increased tendency to feel out of control or to experience intrusive thoughts about pregnancy-related changes or the fetus's presence (Issokson 2004; Seng et al. 2004).

The more abusive her relationship experiences with important caregivers were, the more fraught a maternal experience is likely to be (Pines 1972). A history of childhood abuse is thus a particular risk factor for the development of depression during pregnancy and the postpartum period. The mother's childhood abuse may affect her ability to cope with the changes that occur during pregnancy and postpartum.

During the perinatal period, a history of childhood abuse in the mother is associated with hormonal changes and negative physical outcomes for the mother, increasing the probabilities of premature contractions, cervical insufficiency (Leeners et al. 2010), pre-term delivery (Noll et al. 2007), and pregnancy loss (Hillis et al. 2004). Women with a history of childhood abuse also have a greater risk for postpartum thyroid dysfunction (Plaza et al. 2012). Similarly, children of mothers who have been abused show hormonal changes in the HPA axis (Brand et al. 2010) and are at greater risk for low birth weight (Gavin et al. 2011). Moreover, the presence of childhood abuse in the mother is a risk factor for abuse of her children (Berlin et al. 2011), harsher parenting (Berlin et al. 2011), greater internalizing and externalizing behavior problems in the children (Dubowitz et al. 2001), and other child psychopathology (Pawlby et al. 2011). In this review, the differentiation between adult and childhood abuse in perinatal depression will be made because it is important to determine if childhood abuse by itself is related to perinatal depression.

State of the art of studies about abuse and perinatal depression

An understanding of the relationship between a history of abuse and depression in expectant women or mothers in the postpartum period is then particularly important given the possible vulnerability of the perinatal period and the well-documented link between depression and adverse parenting and infant sequelae (Gilson and Lancaster 2008). A previous systematic review about maternal abuse history and depression focused on the postpartum period only selected eight articles (Ross and Dennis 2009). Studies investigating associations between a history of abuse and depression during the entire perinatal period have not been systematically reviewed.

In addition, it is important to distinguish between childhood abuse and adulthood abuse to determine if childhood by itself is related to perinatal depression and how much it could

contribute to the severity of the perinatal depression. Thus, the specific objectives of this study are twofold:

1. To systematically review research articles that study the association between maternal abuse and perinatal depression.
2. To review if there is a difference between the effects of a childhood abuse in comparison to the effect of a adulthood abuse on perinatal depression.

Materials and methods

Search strategy

Papers included in this review were identified through electronic searches of the following databases: Pubmed Medline and Ovid, EMBASE, PsycINFO, and the Cochrane Library. Each database was searched from its start date through 1 September 2011, using the keywords provided in Table 1. Additional papers were identified from the reference lists of included studies and relevant reviews. Only published, peer-reviewed articles available in English or Spanish were considered for this review, as resources to assess the quality of studies in other languages were not available.

Selection criteria

Articles were considered for inclusion in the systematic review according to the following criteria:

- i. Only research studies that focused on antenatal or postpartum depression were included; studies of other childbirth-related conditions (including perinatal anxiety and psychosis that did not specifically measure depression) were excluded.

Table 1 List of keywords

Topic	Keyword
Perinatal period	Postpartum OR postnatal OR pregnant* OR perinatal OR childbirth OR obstetr* OR "labor, obstetric" OR parturition OR puerperal OR parity OR prenatal OR antenatal OR maternal
Depression	Depress* OR dysthymi* OR melancholia OR mood disorder OR affective disorder OR baby blues
Abuse	Violence OR sexual abuse OR "spouse abuse" AND "child abuse, sexual" AND "adult survivors of child abuse" AND "child abuse" OR spouse abuse OR partner abuse OR battered women OR domestic violence OR sexual assault OR family abuse OR family violence OR child neglect

- ii. Experiences of any lifetime abuse were considered eligible for this review.

Assessment of exposure

Abuse Abuse was defined as any direct or indirect physical, sexual, or emotional maltreatment at any age. The use of measurements is very diverse. Frequently, investigators use either homespun measures of unknown reliability and validity or generic measures.

Assessment of outcome

To be included in this review, studies were required to include a standardized screening tools for depression (either self-report or observer-rated and performed during pregnancy or through approximately 12 months postpartum) and to report either the prevalence of depression during pregnancy or postpartum depression (as variously defined by the authors) in the population of interest, a statistical comparison of depression scores between the target population and a control group or the odds ratio or the risk increase.

Quality assessment

Quality of articles was evaluated with the Newcastle-Ottawa-Scale (NOS). The NOS was developed for assessing quality of nonrandomized studies. The NOS is composed of eight items, categorized into three dimensions (selection, comparability, and outcome or exposure) depending on the type of the study (cohort or case-control). A star system is used to allow the quality assessment: one star is awarded for high quality in each area, with the exception of comparability, which allows the assignment of two stars. The NOS ranges between 0 and 9 stars.

Results

Literature research

The article selection process is presented in Fig. 1. Peer-reviewed papers were identified in the initial stage of the search process, and approximately 545 potentially relevant abstracts meeting the predetermined eligibility criteria were extracted for further examination. After the first round of screening based on titles and abstracts with the aforementioned criteria, 53 articles were selected and assessed more rigorously to determine inclusion suitability. After examining

those articles in more detail, ten were excluded for reasons shown in Fig. 1.

Forty-three articles met the criteria for inclusion and were incorporated in the review. The most common reasons for exclusion were that articles were not based on empirical studies or that the study did not focus on the perinatal period.

Study characteristics

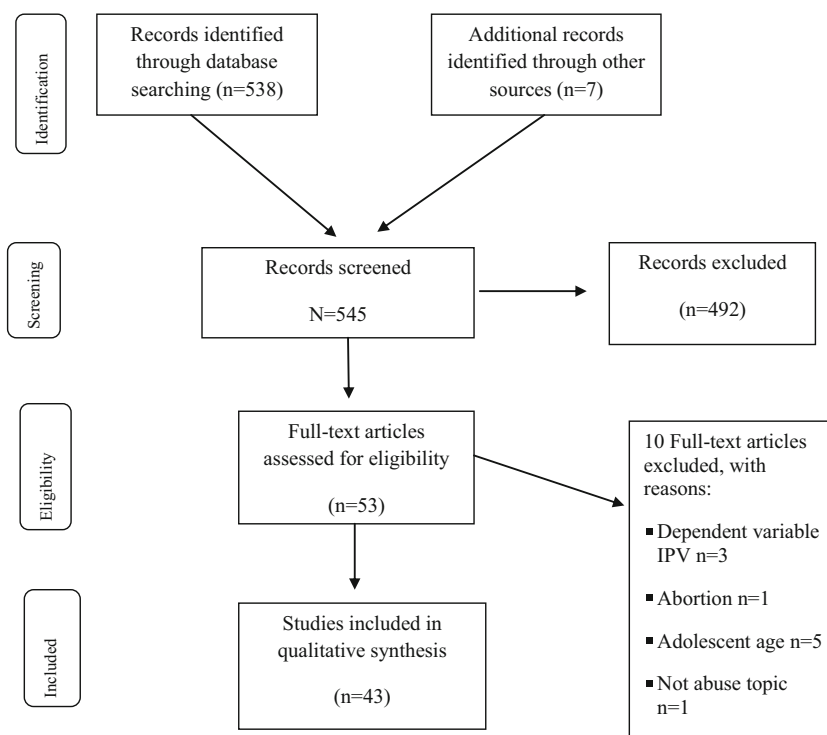
Characteristics of the 43 selected studies are shown in Tables 2 and 3.

The studies varied with regard to how results were presented. Twenty studies mainly reported results according to the mean score of the scale used, and 23 studies reported the results in ratios. Twenty-two articles focused on postpartum period, 17 articles focused exclusively on the pregnancy period, 2 focused on the entire perinatal period (pregnancy and postpartum), and another 2 included separate samples for antenatal and postpartum period. The review identified 29 cross-sectional studies and 14 longitudinal studies. Sample sizes ranged from 38 to 6,421, with a mean of 832.8 ($\pm 1,410.40$) and median of 324. Twenty-one studies (50 %) were conducted in USA and Canada, 11 (26 %) in Asia, 5 (12 %) in Oceania, 4 (9 %) in Europe, and 2 (5 %) in Latin America.

Five articles referred only to childhood abuse (Benedict et al. 1999; Buist 1998; Chung et al. 2008; Lang et al. 2006; Edwards et al. 2008b), and seven articles considered both adult and childhood abuse (Cohen et al. 2002; Stevens et al. 2002; Mezey et al. 2005; Holzman et al. 2006; Edwards et al. 2008a; Jundt et al. 2009; Nelson et al. 2010). One article considered any adult abuse including intimate partner violence (IPV) (Urquia et al. 2011), and two articles referred to abuse, without time specification—childhood or adulthood (Silverman and Loudon 2010; Shah et al. 2011). Twenty-seven articles included IPV. Twenty-three articles considered only IPV, two articles included IPV and childhood abuse, and two articles IPV and other forms of abuse.

Depression scales

In most studies, depression was measured solely based on self-report instruments. Depressive symptomatology was measured using the Edinburgh Postnatal Depression Screen (EPDS; $N=24$, 56 %), the Beck Depression Inventory (BDI; $N=10$, 24 %), or the Center for Epidemiological Studies Depression Scale (CES-D; $N=7$, 17 %). One article used the PHQ-9 (Gomez-Beloz et al. 2009), another one, the HADS depression (Jundt et al. 2009). Only one article conducted by Savarimuthu et al. (2010) used formal diagnostic assessment as the International Classification of Diseases 10 Primary Care Version Criteria in addition to the EPDS. A cross-sectional research design was overwhelming used in 29 (67 %) studies

Fig. 1 Flow diagram

while 14 (33 %) studies employed a longitudinal design (see Tables 1, 2, and 3).

Trauma exposure measures

There was significant heterogeneity in measurement of trauma exposure and abuse history. The measure of IPV (27 articles) used validated instruments of spousal abuse: the Abuse Assessment Screen (46 %), the Conflict Tactics Scale (11 %), the Severity of Violence against women survey (8 %), and the Index Spouse Abuse (8 %). One study used the WHO Multi-country study on women Health and Domestic violence (Ludermir et al. 2010). The remaining articles used a combination of questions from validated instruments and surveys. Other forms of childhood and adulthood abuse were heterogeneously measured. Nineteen studies designed specified surveys, open questions, self-report inventories, and semistructured or structured interviews, and two used combinations of scales. One study used the Kiddie-SADS (Stevens et al. 2002), one the Childhood Trauma Questionnaire (Lang et al. 2006), and one the Posttraumatic Stress Disorder (PTSD) scale (Mezey et al. 2005).

Adjusted odds ratios were determined for several studies ($n=25$, 58 %), but 18 studies (43 %) did not adjust results for potential confounding factors. In those articles that included confounding factors, the wide variety of them made the comparison of articles difficult. According to the NOS, most of the studies were of good (33 %) or mild quality (61 %).

Analysis of results

Relationship between maternal lifetime abuse and perinatal depression

All of the reviewed studies reported significant elevation in depression scores during antepartum and/or postpartum period among women who had lifetime abuses histories (specially sexual or physical abuse), although three of them (Cohen et al. 2002; Edwards et al. 2008b; Tiwari et al. 2008) only found this association in the case of emotional abuse, but not for physical or sexual abuse, and one study found no significant relationship between childhood abuse (physical, emotional, or sexual) and postpartum depression, but in contrast it found a significant association with depression during pregnancy (Lang et al. 2006). Overall, the studies reported significant elevation in depression scores or higher risk during antepartum and/or postpartum period among women who had lifetime abuse histories. Among the studies that adjusted the association for confounding factors (25/43), the association remained significant in the majority of cases (20 studies, 80 %).

Different articles confirmed that childhood abuse is associated also with a higher likelihood of having depressive symptoms during pregnancy (Benedict et al. 1999; Chung et al. 2008; Hayes et al. 2010; Lang et al. 2006; Mezey et al. 2005; Nelson et al. 2010). Three of these articles studied the association during the entire perinatal period (Hayes et al. 2010; Lang et al. 2006; Mezey et al. 2005). Only one of these

Table 2 General characteristics of cross-sectional studies

ID	Study	Country	Sample	Number	Type of abuse	Measurement			Results		QR
						Depression			Abuse and depression association		
						Antenatal	Postnatal	Child	Adult	Antenatal	
Benedict et al. (1999)	USA	Community	357	Childhood SA	CES-D	Russell's questions CTS	CTS	Present	Present	Controlled for verbal and physical abuse (current and in childhood) and negative life events	7
Nelson et al. (2010)	USA	Clinical (Emergency Department)	1,536	PA and SA in childhood. Current violence (including IPV)	CES-D	Open questions	Open questions	Present	Present	Adjusted for maternal race, age, and educational attainment. Higher risk when childhood and current violence co-occurred	5
Jesse et al. (2005)	USA	Community	130	IPV	BDI-II		AAS	Present	Present	No association after adjusting for confounders	6
Jesse and Swanson (2007)	USA	Community	324	IPV	BDI-II		AAS	Present	Present		6
Holzman et al. (2006)	USA	Community	1,321	PA, SA, or witnessing abuse in childhood or adulthood	CES-D	Specific survey	Specific survey	Present	Present		6
Chung et al. (2008)	USA	Community	1,476	Adverse childhood experiences: verbal hostility, PA, SA, and DV	CES-D	Questions from the ACE Study		Present	Present	Only childhood sexual abuse remained significant after adjusting for all confounders	7
Zeitlin et al. (1999)	UK	Clinical	38	IPV	EPDS		AAS		Present		3
Bacchus et al. (2004)	UK	Community	200	IPV	EPDS		AAS	Present	Present	Association of IPV with depressive symptomatology but no association with depression according to EPDS thresholds (antenatal EPDS 14/15, postnatal 12/13)	5
Cohen et al. (2002)	Canada	Community	253	Adult (PA, EA, and SA) and childhood (PA, EA, and SA)	EPDS	Questions from Briere	Questions from CTS, PMWL, AAS, violence against women survey		Present	In the multivariate analysis, association only for the adult emotional abuse	7
Savarimuthu et al. (2010)	India	Community	137	IPV (physical)	EPDS, ICD-10-PC-version criteria		SEMI	Present	Present	No association after adjusting for confounders	7
Gao et al. (2010)	New Zealand	Community	1,376	IPV (verbal aggression and physical)	EPDS		CTS-2	Present	Present	Physical IPV was associated with PND after adjusting for confounders	7

Table 2 (continued)

ID	Study	Country	Sample	Number	Type of abuse	Measurement			Results		QR
						Depression		Abuse	Abuse and depression association		
						Antenatal	Postnatal		Antenatal	Postnatal	
Shah et al. (2011)	Pakistan and Canada	Community	384	PA, EA, and SA	EPDS			Present		5	
Urquia et al. (2011)	Canada	Community	6,421	Adult abuse (including IPV): SA and PA	EPDS			Present	Multivariate analyses: Pakistan: association of depression with physical abuse. Canada (Caucasian): no association with abuse. Canada (Aboriginal): association of depression with sexual abuse	7	
Jundt et al. (2009)	Germany	Community	455	PA and SA: adulthood and childhood	HADS		Questions from validated instruments	Present	Adjusted for age, marital status, and income	6	
Varma et al. (2007)	India	Community	203	IPV	BDI		Screening interview, SES; IPV women completed ISA	Present		4	
Thanarowan et al. (2008)	Thailand	Community	487	IPV	EPDS		AAS	Present	Adjusted for age, length of marriage, and income	6	
Edwards et al. (2008a)	Australia	Community	154	Abuse (childhood and adulthood)	EPDS		APQ	Present	Multivariate analysis: recent physical abuse was associated with antenatal depression	6	
Karaçam and Ançel (2009)	Turkey	Community	1,039	IPV	BDI		Specific questionnaire	Present	Multiple regression analysis: association of depression with physical IPV	5	
Imran et al. (2010)	Pakistan	Community	213	IPV	EPDS		Semistructured interview	Present		5	
Mezey et al. (2005)	UK	Community	200	Traumatic lifetime events, DV (physical and sexual)	EPDS		PTDS	Present	A history of trauma involving adult/childhood physical or sexual assault and history of DV were associated with significant EPDS scores	6	
Martin et al. (2006)	USA	Community	95	IPV (physical, sexual, and emotional)	CES-D		CTS-2	Present	Women who experienced any level of physical assault or sexual coercion by their intimate partners (before or during pregnancy) had higher levels of depressive	4	

Table 2 (continued)

ID	Study	Country	Sample	Number	Type of abuse	Measurement			Results		QR	
						Depression			Abuse and depression association			
						Antenatal	Postnatal	Child	Adult	Antenatal		Postnatal
Rodriguez et al. (2008)	USA	Community	210	IPV	BDI-FS		AAS	Present	Present	symptoms compared with nonvictims	7	
Stevens et al. (2002)	USA	Clinical (first-time mothers in home visitation for risk for child abuse)	123	Abuse (childhood and adulthood)	BDI-II	Specific survey			Present		Adjusted for mastery, other trauma, age, language, and site	4
Gomez-Beloz et al. (2009)	Peru	Community	2,394	IPV	PHQ-9			Specific survey	Present	Adjusted for age, marital status, education, and employment	6	
Beydoun et al. (2010)	Canada	Community	6,421	IPV	EPDS			MES	Present	Association of PND with recent IPV after adjusting for confounders	7	
Abbaszade and Safizade (2011)	Iran	Community	400	IPV	EPDS			AAS	Present	Association of PND with IPV in pregnancy after adjusting for confounders	6	
Buist (1998)	Australia	Clinical	56	Childhood SA vs. childhood PA and/or EA	HDRS and BDI			Otago women's health survey	Present	Association of BDI scores with childhood SA and PA/EA.	3	
Nasreen et al. (2011)	Bangladesh	Community	720	IPV	EPDS			Specific survey	Present	No association of HDRS scores with childhood SA and PA/EA	6	
Records and Rhee (2007)	USA	Community	139	IPV and lifetime abuse	CES-D			SVAWS, specific survey assessing lifetime physical and sexual abuse	Present	Adjusted for confounders	6	

Note. QR quality rating by means of the Newcastle-Ottawa Scale (NOS), a score of 7 to 9 indicates high methodological quality, a score of 4 to 6 indicates moderate quality and a score of 0 to 3 indicates low quality). SA sexual abuse, EA emotional abuse, PA physical abuse, DV domestic violence, IPV intimate partner violence, CES-D Center for Epidemiologic Studies Depression Scale, BDI Beck Depression Inventory, BDI-II Beck Depression Inventory—Second Edition, BDI-FS Beck Depression Inventory—Fast Screen, EPDS Edinburgh Postnatal Depression Scale, ICD-10-PC International Classification of Diseases 10 Primary Care, HADS Hospital Anxiety and Depression Scale, PHQ-9 nine-item depression scale of the Patient Health Questionnaire, HDRS Hamilton Depression Rating Scale, CTS Conflict Tactics Scale, AAS Abuse Assessment Screen, PMWI Psychological Maltreatment of Women Inventory, SEMI Short Explanatory Model Interview, CTS-2 Revised Conflict Tactics Scale, SES Sexual Experiences Scale, ISA Index of Spouse Abuse, APQ Antenatal Psychosocial Questionnaire, PTDS Posttraumatic Questionnaire, MES Maternity Experience Survey, SVAWS Severity of Violence Against Women Scales

Table 3 General characteristics of longitudinal studies

ID	Study	Country	Sample	Number	Type of abuse	Measurement			Results			QR
						Depression		Abuse	Abuse and depression association		Observations	
						Antenatal	Postnatal		Antenatal	Postnatal		
	Records and Rice (2005)	USA	Community	50	IPV and childhood abuse	CES-D and EPDS	Chart audit	ISA, chart audit	Present	Association between depressive symptomatology and abuse at 1 week, 2 and 3 months postpartum, but not at 4 months postpartum	5	
	Leung et al. (2002)	China	Community	838	IPV	EPDS	AAS	AAS	Present	No association after adjusting for other risk factors. IPV was predictor of chronic depression (6 month follow-up). IPV was associated to depression if the infant was a girl	6	
	Patel et al. (2002)	India	Community	270	IPV	EPDS	Open questions	Open questions	Present	2 cohorts matched by age, education, occupation, income, marital status, parity, and unwanted pregnancy	7	
	Dolatian et al. (2010)	Iran	Community	240	IPV	EPDS	Combination of AAS, ABI, CAS, MWA, CTS-2, and SVAWS	Combination of AAS, ABI, CAS, MWA, CTS-2, and SVAWS	Present	Multivariate analysis: the only antenatal risk factor found to predict PND was childhood emotional abuse	5	
	Edwards (2008b)	Australia	Community	421	Childhood PA, EA, and SA. IPV	EPDS	APQ	Standardized questionnaire from the WHO multi country study	Present	Adjusted for socioeconomic factors, social support, and history of mental illness	8	
	Ludermir et al. (2010)	Brazil	Community	1,045	IPV	EPDS			Present	Sexual abuse was associated with depression in pregnancy. Childhood abuse was not associated with 1-year postpartum depression	4	
	Lang et al. (2006)	USA	Community	44	Childhood: PA, EA, SA, and neglect IPV	BDI-II	BDI-II	CTQ	Present	Psychological IPV was associated to PND after adjusting for confoundings	6	
	Tiwari et al. (2008)	China	Community	3,245	IPV	EPDS	AAS	AAS	Present		4	
	Hayes et al (2010)	Australia	Community (aboriginal)	92	Abuse (child abuse and IPV)	EPDS	Specific survey	Specific survey	Present		7	
	Dennis and Ross (2006)	Canada	Community	594	Abuse (childhood and adulthood)	EPDS	ALPHA questionnaire	ALPHA questionnaire	Present		7	
	Valentine et al. (2011)	USA	Community	210	IPV	BDI-FS	AAS	AAS	Present	Recent IPV associated to PND after adjusting for confoundings.	7	
	Rodriguez et al. (2010)	USA	Community	210	IPV	BDI-FS	AAS	AAS	Present		7	
	Silverman et al. (2010)	USA	Community	884	PA and SA	EPDS	Self-report inventory	Self-report inventory	Present		5	

Table 3 (continued)

ID	Study	Country	Sample	Number	Type of abuse	Measurement		Results		QR	
						Antenatal	Postnatal	Abuse	Adult		Abuse and depression association
	Records and Rice (2009)	USA	Community	139	IPV and lifetime abuse	EPDS and CES-D	Adult	SVAWS	Present	Association of IPV with PND only at 4 and 6 months assessment. No association of IPV with PND at 2 and 8 months assessment	

Note. QR quality rating by means of the Newcastle-Ottawa Scale (NOS); a score of 7 to 9 indicates high methodological quality, a score of 4 to 6 indicates moderate quality, and a score of 0 to 3 indicates low quality), SA sexual abuse, EA emotional abuse, PA physical abuse, IPV intimate partner violence, CES-D Center for Epidemiologic Studies Depression Scale, BDI-II Beck Depression Inventory—Second Edition, BDI-FS Beck Depression Inventory—Fast Screen, EPDS Edinburgh Postnatal Depression Scale, AAS Abuse Assessment Screen, CTS-2 Revised Conflict Tactics Scale, ISA Index of Spouse Abuse, APQ Antenatal Psychosocial Questionnaire, SYAWS Severity of Violence Against Women Scales, ABI Abusive Behavior Inventory, CAS Composite Abuse Scale, MWA Measurement of Wife Abuse, CTQ Childhood Trauma Questionnaire

articles found an association specifically for depressive symptoms during pregnancy but not during postpartum period (Lang et al. 2006). Childhood sexual abuse has been specially associated with more severe depressive symptoms in the antepartum period (Benedict et al. 1999).

One study in particular found that depressive symptoms were related to the number of violent traumas (violence victim, rape, physical abuse, and sexual abuse) but were unrelated to the number of nonviolent traumas (Stevens et al. 2002). Dennis and Ross (2006) found that not only lifetime sexual or physical abuse was related to depressive symptoms but also that childhood sexual abuse distinguished between women with persisting and women with remitting depressive symptoms. The results are consistent with findings by Buist (1998) who studied women hospitalized with severe postpartum symptoms and showed that mothers with a childhood abuse history had a longer length of stay and higher depression scores during hospitalizations.

Relationship between IPV and perinatal depression

Within the group of mothers with a history of lifetime abuse, the subgroup of women with a history of IPV deserves special mention because of the increased number of studies that have been published in recent years. Eight articles found an association of interpersonal partner violence (physical, sexual, or emotional) and antepartum depressive symptoms. Thirteen articles found associations with postpartum depressive symptoms and two articles found an association with both antepartum and postpartum depression.

The association between depressive symptoms and IPV was particularly strong when abuse occurred both before and during pregnancy and consisted of both physical or sexual abuse (Dolatian et al. 2010; Gao et al. 2010; Leung et al. 2002; Ludermir et al. 2010; Martin et al. 2006; Patel et al. 2002; Savarimuthu et al. 2010; Thananowan and Heidrich 2008; Urquia et al. 2011; Valentine et al. 2011; Varma et al. 2007). However, one article found that violence during pregnancy was a contributor of general anxiety but not depressive symptoms (Nasreen et al. 2011).

In three studies, the sole impact of intimate partner psychological abuse during pregnancy was found to be strongly associated with postnatal depression, independently of physical or sexual violence (Ludermir et al. 2010; Martin et al. 2006).

Some articles made a distinction between IPV and non-IPV (Valentine et al. 2011); however, this non-IPV group included any kind of violence other than IPV (including any past physical or verbal lifetime abuse including childhood abuse). In this comparison, the strongest predictor of depressive perinatal symptomatology was IPV with the association remaining up to 1 year postpartum (Valentine et al. 2011). In one study conducted in India, IPV was only associated with

postnatal depression if the baby was a girl. Regardless of gender, however, IPV was predictor of depression chronicity (Patel et al. 2002).

Studies that did not find expected associations between maternal trauma and depression

Five of the reviewed articles did not find expected association between abuse and perinatal depression (Edwards et al. 2008b; Cohen et al. 2002; Tiwari et al. 2008; Jesse et al. 2005; Lang et al. 2006). There are particularities in the design of these studies that may explain these results.

Three of the studies examined the impact of sexual, physical and emotional impact on depressive symptoms, however only emotional abuse predicted postnatal depression. One of these articles (Edwards et al. 2008b) did not, however, give details about the methods used in assessing childhood abuse. In another article (Cohen et al. 2002), information about physical, sexual, or emotional abuse was obtained by telephone calls and based on modified questions from different survey instruments, including an open-ended question for childhood emotional abuse. The sample consisted of Canadian women of high socioeconomic status. Adult emotional abuse was evaluated by indirect questions and defined by investigators, however physical or sexual abuses were assessed by direct questions. This lack of homogeneity in the abuse assessment and the sociodemographic characteristics of sample may have affected the results. Tiwari et al.'s study (2008) was carried out in China. It evaluated the effect of psychological abuse alone and the effect of physical or sexual abuse. Contrary to the hypothesis, only psychological abuse was associated with higher depression score. One of the possible explanations of the results was based on cultural aspects given that preservation of face and maintenance of harmonious relationships are highly valued in Chinese culture (Bond and Hwang 1986). It is possible then that Chinese women are more vulnerable to the effect of psychological abuse, as it causes a loss of face and disharmony within the marital couple.

Only one article did not find an association between history of abuse and antenatal depressive symptoms after adjusting for confounders (Jesse et al. 2005). In this study, high levels of social support in this sample may have buffered depressive symptoms. Finally, Lang et al. (2006) did not find a significant relationship of abuse with postpartum depression but it did find an association with depression during pregnancy. However, power to detect significant effects was limited as the sample consisted of only 44 women.

In many studies, a lack of social support emerged as a significant contributor to depression symptoms in abused women (Beydoun et al. 2010; Cohen et al. 2002; Gomez-Beloz et al. 2009; Karaçam and Ançel 2009; Ludermir et al. 2010; Records and Rice 2007; Valentine et al. 2011).

Discussion

Summary of evidence

Taken together, despite variability in definitions of abuse, the available literature suggests increased scoring of depressive symptoms during pregnancy and/or postpartum period in women with any lifetime abuse. This association persists after adjusting for important possible confounding factors, such as history of psychiatric illness, social support, or maternal status. When the definition of abuse was narrowed to childhood, the association was clearer in the antepartum period (Benedict et al. 1999; Chung et al. 2008; Lang et al. 2006; Mezey et al. 2005; Nelson et al. 2010) and was especially severe in the case of sexual abuse (Benedict et al. 1999).

Some of the effects of early adverse exposures can be buffered by conditions in adulthood, such as positive maternal relationship (Chung et al. 2008) and social support (Cohen et al. 2002; Edwards et al. 2008b). However, according to the theory of accumulation of trauma (Follette et al. 1996), childhood abuse creates a vulnerability to re-traumatization in adulthood (Mezey et al. 2005) with more damaging consequences. The coexistence then of childhood and adult abuse resulted not only in more severe depressive symptoms (Benedict et al. 1999; Chung et al. 2008; Nelson et al. 2010) but also longer duration of symptoms (Dennis and Ross 2006).

The association of any form of lifetime IPV, such as psychological, sexual, or physical aggression, with antenatal or postpartum depressive symptoms is evident. IPV emerges as one of the strongest predictor of depressive symptomatology during the perinatal period, especially when it occurs during pregnancy (Ludermir et al. 2010; Martin 2006).

The second objective of this article could not be achieved because none of the reviewed articles examined the association of only childhood abuse with perinatal depression (by comparing it to abuse that occurred during adulthood only). Some of the articles studied the relation between childhood abuse and perinatal symptoms comparing it to no abuse. These articles showed a clear relation between childhood abuse and perinatal depression comparing with women without history of abuse.

Other kind of studies included childhood abuse as a covariable adding a strongest effect to the association between adult abuse and perinatal depression. Future studies will need to examine particular effect of childhood abuse on perinatal depression in comparison to abuse during adulthood only.

Limitations

There are four main limitations to this review study. First, in several of the reviewed articles, abuse was inconsistently defined, and exposure was self-reported and retrospectively

assessed. Accuracy of data might therefore have been affected by recall bias. Second, important risk factors for antenatal or postnatal depression, such as history of psychiatric illness, social support, or maternal status were not adequately considered in several studies. Third, most studies used screening tests for the assessment of depression. Only one study included a validated diagnostic assessment tool for major or minor depression. As a result, our review is unable to address a potential relationship between abuse and clinically diagnosed perinatal depression. Depression-screening tools may result in more “false positives” than more rigorous clinical diagnostic psychiatric assessments. In addition, only some of the studies for childhood abuse used validated tools. Finally, despite the increase in the number of multicultural studies, most of the studies examined Caucasian women.

Despite these limitations, the reviewed studies provide important information concerning the potential relationship between women’s lifetime abuse and depression occurring during the perinatal period. However, future studies should proportionate more comprehensive procedures such as diagnosing depression based on clinical interviews using the Diagnostic and Statistical Manual of Mental Disorders or ICD-10 (American Psychiatric Association 2000; World Health Organization 1992) to identify causal pathways between IPV and maternal depression and possible mediating effects of sociocultural variables. Abuse needs to be assessed with standardized tools and by professionals in face-to-face interviews rather than by telephone to increase accuracy.

Although this research focuses solely on depression as the outcome of interest, there are many other components of postnatal emotional adjustments that should be considered in future research in order to enable a complete understanding of the complex, multifactorial nature of perinatal adjustment. In particular, emerging research in the area of perinatal mental health has emphasized the prevalence of anxiety disorders among both clinical and community samples. Future studies should thus endeavor to assess both depression and anxiety using reliable and validated instruments. More detailed investigations are needed to identify causal pathways between abuse and maternal depression and possible mediating effects of sociocultural variables.

Conclusions

The results of this systematic review suggest that women who suffered lifetime abuse are at significantly elevated risk for postpartum and antepartum depression, in comparison to women with no lifetime abuse.

IPV is a form of abuse that was found to be most predictive of perinatal depression. However, childhood or other adult forms of abuse (physical or sexual) are associated with higher

depressive scores also. The association is even stronger when there is coexisting childhood abuse and current violence although rigorous comparisons between adult and childhood abuse still have to be done.

Collaboration between obstetrical, pediatric, and psychiatric health professionals is required to facilitate adequate evaluation of pregnant women and mothers in the postpartum period to identify high-risk populations. This evaluation for early identification of perinatal depression should encompass information about a history of lifetime abuse, including childhood abuse, in order to allow for most efficient and effective management treatment of women at risk.

Acknowledgments This study was supported by the Alicia Koplowitz Foundation (Spain). We thank Fritz Dement for bibliographic support.

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