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REVIEW ARTICLE

A systematic review of cultural orientation and perinatal depression in Latina women: are acculturation, Marianismo, and religiosity risks or protective factors?

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Abstract

Latinas in the USA and Spanish-speaking countries experience elevated rates of perinatal depression (PND) because of high psychosocial stressors. Latinas are heterogeneous and have varying cultural practices. It is unclear whether specific cultural orientations have differential risks for PND. This systematic review aimed to determine whether degree of acculturation, *Marianismo*, and religiosity are risks or protective factors for PND in Latina women living in the USA, Latin America, and other countries. The review included PubMed, CINAHL, PsycINFO, PsycARTICLES, Academic Search Ultimate (EBSCO), and Social Services Abstracts, and used Boolean combined keywords. English and Spanish language articles were considered. The review was conducted between July 2017 and February 2018, with no boundaries on publication dates. Ten studies were selected for inclusion. Of those, two studies were conducted in Mexico and most studies conducted in the USA included women of Mexican descent. Degree of acculturation (adoption of mainstream values) was inconsistently directly associated with PND; evidence suggest indirect associations. *Marianismo*, the traditional female role of virtue, passivity, and priority of others over oneself, was inconsistently correlated with risk for depression in pregnancy, but significantly and indirectly associated with postpartum depression. Two of three studies found religiosity to be protective postpartum. Further research on protective and risk factors of specific cultural orientations, particularly degree of acculturation and Marianismo, for PND in Latinas in the USA and abroad is needed. Attention to specific perinatal periods is necessary given the inconsistent findings.

Keywords Latina · Acculturation · *Marianismo* · Religion · Depression · Perinatal

Introduction

Perinatal depression (PND), a major depressive episode occurring during pregnancy or within the first year following delivery (American Psychiatric Association 2013), is estimated at 54.2–60% in Latinas in the US (Lucero et al. 2012; Shellman et al. 2014), with similar rates in Latin-American countries (Linares 2014). Latinas are defined as women who trace their lineage to Latin America or Spanish-speaking Latin-American countries (e.g., Cuba, Mexico, Puerto Rico, and South and Central America) or cultures, and who self-identify as Latina or Hispanic regardless of race (Humes et al. 2011; Kim and Dee 2017; Lopez et al. 2013). Latinas are especially vulnerable to PND because of psychosocial risk factors, such as poverty, trauma, immigration status, acculturative stress, and discrimination (Lara-Cinisomo et al. 2016). Latinas represent several Latin-American countries, with varying levels of acculturation, beliefs about motherhood, and religion (Stacciarini 2008). Currently, it is unclear whether these cultural orientations are protective or risk factors for PND.

Acculturation, cultural adaptation, and adjustment based on interactions with other cultures (Sam and Berry 2010) have been examined in relation to PND. Degree of acculturation is important during the perinatal period as it might have implications on maternal mental and physical health, and parenting (Acevedo 2000). However, the literature surrounding the

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effects of acculturation on perinatal Latinas is varying due to inconsistencies in the acculturation measures used (Beck 2006) and limited measures of degree of acculturation. For instance, using language as the single indicator of acculturation, Beck et al. (2005) found no relationship between acculturation and postpartum depression (PPD) in Hispanic mothers. Later, a systematic review by Alhasanat and Giurgescu (2017) reported that five out of seven studies showed greater acculturation, measured by country of birth, country of residence, or language preference, was related to higher risk of postpartum depressive symptoms in Hispanic women living in the USA. However, restricting measurement of acculturation to country of birth, country of residence, and language preference limits our understanding of how degree of acculturation is associated with PND. Rather, using multidimensional instruments that examine various factors related to degree of acculturation, such as cultural integration to the dominant culture and preferences for maintaining one's heritage (Beck 2006), allow for a more comprehensive understanding of acculturation and whether it is a risk or protective factor for PND in Latinas.

Latina cultural beliefs regarding the maternal role have also been investigated in relation to depression, but to a lesser extent within the context of PND. *Marianismo*, a Latin-American cultural construct with roots in idealization of the Virgin Mary, represents a traditional female role of virtue, passivity, and priority of others over oneself (Sirulnik et al. 2014; Stevens 1973). *Marianismo*-related ideals of self-sacrifice are particularly important to PND as growing research in this area has shown that subscribing to this belief can impede seeking formal mental health treatment. Nuñez et al. (2016) reported that *Marianismo* was associated with increased negative cognitive-emotional factors. Findings indicated that endorsement of subordination to others, silencing oneself to maintain harmony in the relationship with one's partner, and serving as a source of strength for the family were positively associated with increased depression. These findings suggest that expectations concerning the maternal role could contribute to psychological burden in these women. Therefore, further investigation is needed to understand how these maternal expectations might serve as risk factors for PND.

Religiosity, defined as a pattern of beliefs, values, and practices, such as church attendance and prayer related to a higher power, is also an integral part of Latina/o culture (Sirulnik et al. 2014). Research surrounding perinatal women suggests religiosity could protect against PND. Mann et al. (2007) found that overall religiosity was significantly associated with fewer depressive symptoms in pregnant women, although this association became weaker as social support increased. In a subsequent study that examined associations postpartum, results revealed that participating in organized religious activities at least a few times a month was a protective factor for postpartum depressive symptoms, whereas overall religiosity was not (Mann et al. 2008). However, further research focusing on Latinas is limited and inconclusive. In a qualitative study by Keefe et al. (2016), African American and Latina mothers with a history of PPD reported that accepting God's guidance reduced stress and encouraged them to take action and that faith communities provided them with a social support system which helped them cope with PPD. Conversely, Mann et al. (2010) found that in a sample of perinatal Hispanic women, religiosity/spirituality was associated with increased perceived stress. Further investigation is warranted to understand the complex relationship between religiosity and PND in Latinas.

Given high rates of PND in Latina women in the USA and elsewhere, the aim of this systematic review is to examine the literature to determine if degree of acculturation, *Marianismo*, and religiosity are protective or risk factors for PND in Latinas.

Materials and methods

This systematic review used and adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist (Moher et al. 2009). Search methods and criteria, information sources, screening process, and data extraction are described in more detail below. Quality for the final sample of studies was assessed using the Critical Appraisal Skills Programme (CASP) checklist, while risk of bias for each study was assessed using the criteria listed in Table 1. This process is described in more detail in the Quality and Risk of Bias Appraisal section. Ethical approval of the study was not sought, as the research did not involve human or animal subjects.

Search methods and criteria

The electronic search was conducted by the lead author [S. L-C.] with expertise in PND in Latinas and two Master's-level researchers [E.F., J.W.]. Searches for each of the three topics were conducted by two of the three authors. Studies were searched based on the following eligibility criteria: a sample of at least 25% immigrant or native-born Latina[1] women, sample consisted of adults aged 18 years and older, English or Spanish language written publications, peer-reviewed publications, publications using quantitative methods, and a focus on one of the three areas of interest and how these are related to risk of either prenatal or postpartum depression in Latinas. A start date was not selected to ensure comprehensive results of the published research.

[1] Latina is defined as women who trace their lineage to Latin America or Spanish-speaking Latin-American countries (e.g., Cuba, Mexico, Puerto Rico, and South and Central America) or cultures and who self-identify as Latina or Hispanic regardless of race (Humes et al. 2011; Kim and Dee 2017; Lopez et al. 2013).

Table 1 Summary of systematic search strategy

Search terms	
Depression	Prenatal depression, postpartum depression, perinatal depression
Population	Latina, Hispanic, Latin American, Puerto Rico/an, Mexican, Cuban, Central American, South American, immigrant, US-born, native-born, foreign-born
Acculturation	Acculturation, culture
Religiosity	Faith, religion, religiosity
Marianismo	Marianismo, motherhood, traditional female role, womanhood
Study inclusion criteria	
Sample characteristics	At least 25% immigrant or native-born Latina women
	Adults aged 18 years and older
Publication characteristics	English or Spanish language
	Peer-reviewed
	Use of quantitative methods
	A focus on one of the three areas of interest and how these are related to PND in Latinas.
Databases searched	PubMed
	CINAHL
	PsycINFO
	PsycARTICLES
	Academic Search Ultimate (EBSCO)
	Social Services Abstracts
Data sought from each study	Sample size
	Study design (e.g., randomized control study)
	Exclusion criteria
	Measures of independent variables, where appropriate
	Outcome measures (e.g., depression/depressive symptoms)
	Control variables
	Analyses/design
	Level of evidence

Information sources

Databases searched and keywords used are listed in Table 1. The last search was run on February 20, 2018. Keywords and search terms listed in Table 1 were used individually and using Boolean combined search terms. The reviewers also conducted manual searches of reference lists of reviews and other selected articles. The reviewers did not contact any study authors to identify additional studies.

Screening process and data extraction

Data were extracted in duplicate by two investigators/co-authors per topic into separate tables for each topic [E.F. & J.W. for acculturation, S.L-C. & J.W. for Marianismo, E.F. & J.W. for religiosity]. The authors screened abstracts to determine if they met the inclusion criteria and excluded redundant studies. Studies that met the initial inclusion criteria were downloaded for a full-text review to determine eligibility. For each topic, one author extracted data from included studies and the second author reviewed the extracted data. When only one of the two reviewers deemed a study eligible, both reviewers discussed whether it met eligibility criteria until an agreement was reached. If no agreement was reached, the third author was asked to join the discussion until consensus was reached. The data sought from each study are listed in Table 1.

Quality and risk of bias appraisal

Two reviewers [E.F. & J.W.] used 10 questions from the CASP checklist to guide the quality appraisal process and agreed upon a quality rating of good, fair, or poor. Criteria for quality ratings were based on US Preventive Services Task Force Quality Rating Criteria for Randomized Controlled Trials/Cohort Studies (Goy et al. 2010). A good quality rating was assigned if the study met the following criteria, when applicable: follow-up rates of at least 80%, use of reliable and valid measurement instruments, important outcomes considered, and attention paid to confounders in

analysis. A study's quality was designated as fair if there were minor questions about the comparability of groups, they used acceptable measurement instruments, and some important outcomes and confounders were considered (but not all). A poor quality rating was assigned to studies that did not have comparable groups, used unreliable or invalid measurement instruments, or did not give key confounders adequate attention. To assess bias of the selected studies, two reviewers [E.F., J.W.] worked independently to complete a table assessing each of the following criteria for bias:

1. Method of sample selection,
2. Inclusion criteria,
3. Exclusion criteria,
4. Validity of measures,
5. Reporting bias (e.g. use of self-report measures),
6. Rate of attrition (if the study was not cross-sectional),
7. Effect of the intervention of outcomes, if applicable,
8. Generalizability of results.

The third reviewer [S.L-C.] reviewed the appraisals and confirmed ratings. Sources of bias for each study are described in the results below.

Data synthesis

Data for selected studies were grouped by the three topics of interest: acculturation, *Marianismo*, and religion. The narrative summaries for each article included the study's setting (country), sample characteristics and size, how long subjects were followed (if at all), and key findings. Because measures used to assess degree of acculturation, *Marianismo*, and religiosity as well as PND can vary across studies, particular attention was given to instruments used in discussing the results.

Results

Study selection

Two hundred three abstracts were identified across the three areas of inquiry (see Fig. 1). Of those, 135 abstracts were screened after removing duplicates, abstracts that were not peer-reviewed, and those that did not meet inclusion criteria. Eighty-five abstracts selected for screening were excluded because they did not focus on associations between any of the three areas of interest and PND in Latinas. Fifty abstracts were selected for full-text article review to determine eligibility. Of those, 31 were related to culture, 11 focused on *Marianismo*, and eight were related to religion. Review of the selected articles indicated that 40 should be excluded because they did not meet inclusion criteria reported above and Table 1. This yielded a total sample of 10 studies, with two of those using the same data.

Study characteristics

Table 2 provides study summary characteristics. Of the 10 studies selected, four studies conducted at least one interview from the prenatal period to postpartum (Albuja et al. 2017; Dalmida et al. 2010; Lara et al. 2016; Martinez-Schallmoser et al. 2003), and six relied on cross-sectional data. None of the samples were from clinical populations.

Measures

Acculturation Two studies (D'Anna-Hernandez et al. 2016; Kuo et al. 2004) used the Short Acculturation Scale for Hispanics to evaluate degree of adoption of mainstream American cultural practices via language use, use of media, and social relationships (Marin et al. 1987). Martinez-Schallmoser et al. (2003) used the Revised Measure of Acculturation, which captures degree of ethnic identity in American or Latino culture, such as use of language and engagement in ethnic activities and traditions. The fourth study (D'Anna-Hernandez et al. 2015) measured acculturation using the Mexican American Cultural Values Scale for Adolescents and Adults (Knight et al. 2010), which captures Mexican cultural orientation.

Marianismo Lara et al. (2016) and Albuja et al. (2017) used a short version of the Masculinity-Femininity Inventory (Lara 1993), a measure that assesses how much women adhere to traditional female roles or Marianismo. Gress-Smith et al. (2013) used the Prenatal Experiences Scale for Mexican Americans, a newly developed measure developed by the authors that evaluates prenatal expectations, cultural constructs, and other sociodemographic factors related to prenatal expectations.

Religiosity Dalmida et al. (2010) used the following three measures: (1) the Daily Spiritual Experiences Scale (Underwood and Teresi 2002), a 15-item instrument that assesses how religiosity is expressed via daily behaviors; (2) the Brief Multidimensional Measure of Religiousness and Spirituality (Abeles et al. 1999), a survey that captures engagement in religious activities as well as degree of religiousness and spirituality; and (3) the Santa Clara Strength of Religious Faith (Plante and Boccaccini 1997), a short questionnaire that evaluates the strength and importance of religious faith across denominations.

Jesse and Swanson (2007) used the Spiritual Perspective Scale (Reed 1986) that measures participants' spiritual views and three items from the JAREL Spiritual Well-being Scale (Hungelmann et al. 1996), to determine degree of religiosity

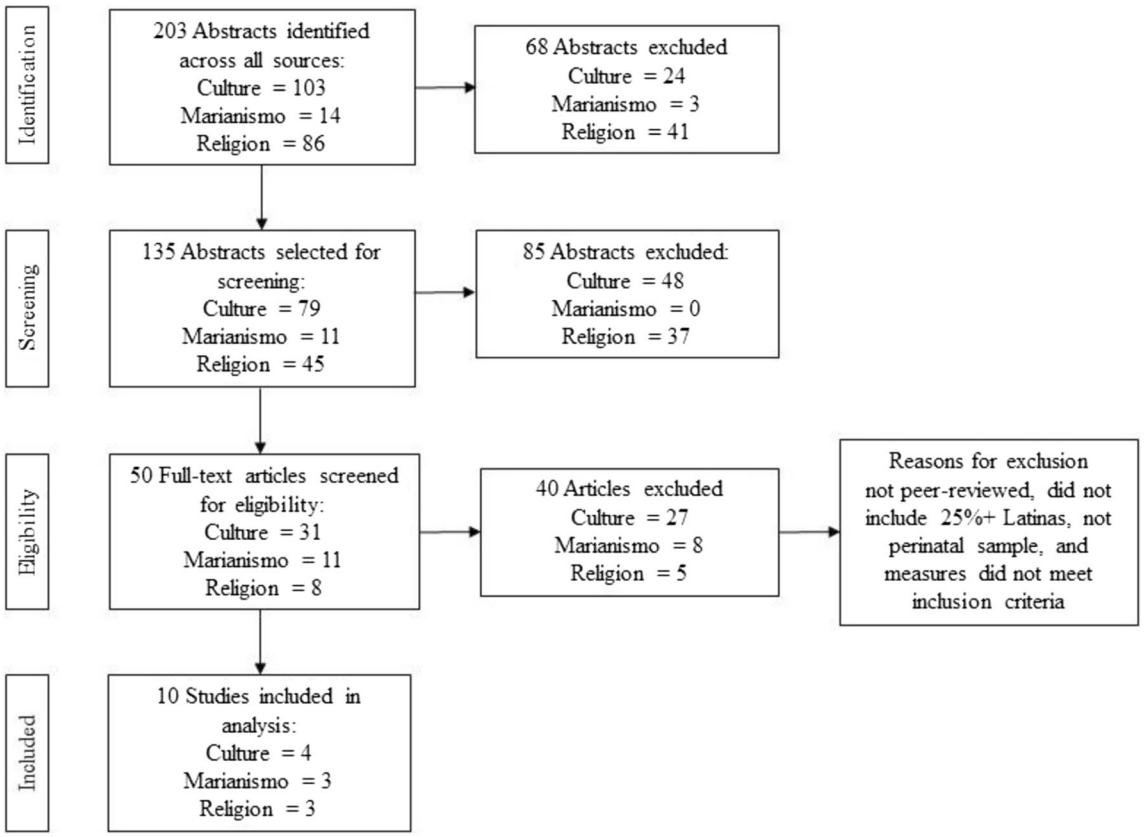

Fig. 1 PRISMA flow diagram showing the number of articles identified, screened, excluded, and included in the systematic review

and engagement in religious activities. Kim and Dee (2017) relied on the Duke University Religion Index (DUREL; Koenig and Büssing 2010), a five-item measure of engagement in religious activities.

Perinatal depression Four studies used the Center for Epidemiologic Studies Depression Scale (CES-D), a short, self-report measure of depressive symptoms in the general population (Radloff 1977). Three studies used the Edinburgh Postnatal Depression Scale (EPDS), a widely used screener for depression during the perinatal period (Cox et al. 1996). Two studies administered the Structured Clinical Interview (SCID-I) to diagnose depression based on the DSM-IV (First et al. 1996; First et al. 1995), as well as depressive symptoms using the Patient Health Questionnaire (PHQ-9), a brief measure designed for use in medical settings (Spitzer et al. 1999). One study used the Beck Depression Inventory-II (BDI-II), a widely used self-report measure of depression for clinical and nonclinical populations (Beck et al. 1996).

Study quality

Table 2 shows quality ratings for each study. Contributing factors to quality ratings were lack of generalizability and limited focus on confounding variables, such history of depression, an important predictor of PND (Robertson et al. 2004).

Degree of acculturation and perinatal depression

Three of the four studies directly assessed associations between degree of acculturation and PND. While three (Kuo et al. 2004; D'Anna-Hernandez et al. 2015; Martinez-Schallmoser et al. 2003) of the four studies used the CES-D and most included prenatal women, the results were not uniform. In a sample of 66 prenatal women recruited from an obstetric clinic, Martinez-Schallmoser et al. (2003) found a significant correlation between acculturation and depressive symptoms in pregnancy ($r = .27$, $p < .05$), but not postpartum. In contrast, in a study of 98 prenatal women recruited from a community sample, D'Anna-Hernandez et al. (2015) examined the direct association between acculturation and depression via multiple linear regression and did not find a significant correlation. However, lower levels of valued respect, an aspect of Latino culture, as well as higher acculturative stress were significantly associated with greater depressive symptoms.

Another study also found an indirect association between acculturation and prenatal depression via sleep (D'Anna-Hernandez et al. 2016). While controlling for maternal age

Table 2 Summary characteristics and quality ratings of studies included in the systematic review ($N = 10$)

Citation	Country	Participants	Measure(s)	Key findings	Quality rating
Degree of Acculturation					
Martinez-Schallmoser et al. (2003)	USA	66 perinatal Mexican descent (89% born in Mexico) recruited from obstetric clinic	Acculturation: Revised Measure of Acculturation (RMA) Depression: CES-D	Acculturation level was significantly associated with prenatal depression via bivariate analysis, but not with postpartum depression.	Fair
Kuo et al. (2004)	USA	3952 Hispanic postpartum women (Latin American or Latin Caribbean origin) recruited from three communities	Acculturation: short acculturation scale for Hispanics (SASH) Depression: CES-D	Degree of acculturation directly associated with postpartum depression risk in bivariate analysis, but not when demographic characteristics included in the model.	Fair
D'Anna-Hernandez et al. (2015)	USA	98 Mexican and Mexican descent prenatal women recruited from hospital clinic	Acculturation: Mexican American Cultural Values Scale for Adolescents and Adults (MACVS) Depression: CES-D	Mexican or Anglo cultural values were not directly associated with prenatal depression. However, indirectly associated via cultural values and acculturative stress.	Good
D'Anna-Hernandez et al. (2016)	USA	60 Mexican descent prenatal women recruited from a hospital setting	Acculturation: 12-item Short Acculturation Scale for Hispanics (SASH) Depression: EPDS	Acculturation level indirectly associated with prenatal depression via sleep quality and acculturative stress.	Good
Marianismo					
Gress-Smith et al. (2013)	USA	210 Mexican descent prenatal women (immigrant and US-born) recruited from a hospital clinic	Marianismo: Prenatal Experiences Scale for Mexican Americans (PESMA) Depression: EPDS	Higher levels were negatively correlated with prenatal depression.	Fair
Lara et al. (2016)	Mexico	210 Mexican prenatal women followed postpartum 6 weeks and 6 months when depression was assessed recruited from a hospital setting	Marianismo: Short Masculinity-Femininity Inventory (IMAFE) Depression: SCID/DSM-IV & PHQ-9	Higher Marianismo was significantly associated with depression and depressive symptoms at 6 weeks and 6 months postpartum	Fair
Albuja et al. (2017)	Mexico	210 Mexican prenatal women followed postpartum 6 weeks and 6 months when depression was assessed recruited from a hospital setting	Marianismo: Short Masculinity-Femininity Inventory (IMAFE) Depression: PHQ-9	Marianismo during pregnancy was significantly positively correlated with postpartum depression, but not when demographic variables controlled. Marianismo indirectly associated via social support (low support had bigger effect on depression with higher Marianismo)	Fair
Religiosity					
Jesse and Swanson (2007)	USA	324 racially and ethnically diverse prenatal women (30.9% Caucasian, 26.5% Hispanic, and 42.6% African American) recruited from an obstetric clinic	Religiosity: Spiritual Perspective Scale and three items from the JAREL Spiritual Well-being Scale Depression: BDI-II	As a group, lower levels of spirituality were significantly associated with higher BDI-II scores, but religious engagement in organized activities was not. Among Hispanic women, spirituality was not significant predictors of risk of depression. Religious engagement was not predictive.	Fair
Dalmida et al. (2010)	USA	69 Latina women (71.4% Mexican) recruited in pregnancy and interviewed once at 1–12 weeks postpartum, women were recruited from a health clinic	Religiosity: Daily Spiritual Experiences Scale; Brief Multidimensional Measure of Religiousness and Spirituality; and the Santa Clara Strength of Religious Faith Depression: CES-D	Postpartum depression was inversely related with all measures of spirituality and religiousness.	Fair
Kim and Dee (2017)	USA	223 Hispanic/Latina postpartum women (69.5% Catholic, 7.6% Protestant, 22% other, < 1% no religion) recruited from two rural communities	Religiosity: Duke University Religion Index (DUREL) Depression: EPDS	Religious engagement in organized (e.g., church attendance) and intrinsic activities (i.e., spirituality) reduced risk for postpartum depression.	Fair

and depression history, mediation analysis revealed that women who were more acculturated and felt less refreshed upon waking had greater depressive symptoms ($B = -0.36$, $p = .03$). As with the previous two studies, this study had self-selection and self-reporting biases. Generalizability of these results is limited because of the focus on Mexican-descended women. Martinez-Schallmoser et al. (2003) and D'Anna-Hernandez et al. (2015) relied on convenience samples and self-reported depressive symptoms, and, due to the focused sample, had limited generalizability. However, D'Anna-Hernandez et al. (2015) accounted for other predictive variables, increasing this study's robustness and quality compared to Martinez-Schallmoser et al. (2003), who relied on bivariate analysis.

In a sample of 3952 postpartum women recruited across three cities (New York, San Francisco, and Miami), Kuo et al. (2004) found significant associations between acculturation and depression in bivariate logistic regression (OR = .98, 95% confidence interval [CI] = .97, .99). However, this association disappeared when demographic characteristics (e.g., income, education, employment) were included in the model. Despite self-selection and self-reporting biases, the findings are generalizable to Latinas who reflect the sample in the study.

Associations between Marianismo and perinatal depression

Two of the three studies selected directly assessed associations between *Marianismo* and depression (Gress-Smith et al. 2013; Lara et al. 2016). Gress-Smith et al. (2013) explored associations in a sample of prenatal women, and two focused on postpartum women who were enrolled during pregnancy (Albuja et al. 2017; Lara et al. 2016).

Gress-Smith et al. (2013) examined whether levels of maternal role fulfillment (i.e., expectations about the maternal role and satisfaction with anticipated motherhood) measured using a culturally sensitive measure was associated with depression using the EPDS (Gress-Smith et al. 2013). Researchers found a negative correlation ($r = -.22$, $p \leq .01$) in a sample of 210 Mexican-descended prenatal women (23–41 weeks) recruited from a prenatal clinic. Conversely, in a sample of 210 Mexican prenatal women recruited from health clinics and followed up twice postpartum (Lara et al. 2016), univariate logistic regressions indicated that *Marianismo* was significantly associated with depression and depressive symptoms at 6 weeks postpartum (OR = 2.15, 95% CI = 1.94, 4.93; OR = 2.35, 95% CI = 1.10, 5.04, $p < .05$, respectively) and 6 months postpartum (OR = 1.91, 95% CI = 1.18, 4.46; OR = 2.33, 95% CI = 1.13, 4.83 $p < .05$, respectively). Here, Lara et al. (2016) relied on univariate logistic regressions to explore associations between *Marianismo* and depressive symptoms as well as depression. Unlike all other studies reviewed, this study did not rely on self-reported measures of depression. Instead, it included a clinical assessment of depressive symptoms using the SCID-I. However, it was limited by self-selection bias, high attrition (25% lost to follow-up), and lack of generalizability as it focused on Mexican women in Mexico recruited from a hospital setting. Gress-Smith et al. (2013) was limited by reliance on correlations, self-selection, self-report biases, and lack of generalizability. Additionally, because Gress-Smith et al. (2013) used the measure used to assess maternal role fulfillment was being tested, that measure's validity was unknown.

Using the same dataset reported by Lara et al. (2016), researchers examined whether the associations between *Marianismo* and postpartum depressive symptoms persisted when accounting for demographic characteristics (income, education, and marital status), prenatal depressive symptoms, and social support (Albuja et al. 2017). Results revealed an indirect effect, where women with lower levels of social support had higher postpartum depressive symptoms if they also reported greater endorsement of *Marianismo* during pregnancy ($\beta = -.94$, $t = -7.71$, $p < .001$) compared to those with lower *Marianismo* ($\beta = -.30$, $t = -2.17$, $p = .032$). Like one previous study reviewed here (Lara et al. 2016), this investigation was not limited by self-reported measures because it included a clinical assessment of depression, but was limited by self-selection bias, lack of generalizability, and high attrition.

Links between religiosity and perinatal depression

Two of the three studies enrolled women during pregnancy (Dalmida et al. 2010 and Jesse and Swanson 2007), with one assessing women postpartum (Dalmida et al. 2010). The third study enrolled and assessed women postpartum (Kim and Dee 2017). Jesse and Swanson (2007) examined whether religiosity was directly associated with risk for depression in pregnancy (16–28 weeks gestation) in a racially and ethnically diverse sample of 324 women, 26% of whom were Latina. Results indicated that when controlling for other demographic (race and parity) and psychosocial characteristics (e.g., stress) via multivariate logistic regressions in the whole sample, women at risk for depression (BDI-II $\geq$ 16) reported significantly lower levels of spiritual perspective (OR = 2.09, 95% CI = 1.19, 3.69, $p < .05$). However, when spiritual perspective was assessed separately by race/ethnicity, it was not significantly associated with risk of depression for any group, including Latina/Hispanic women (OR = 2.74, 95% CI = .83, 9.01). Instead, greater stress was predictive of depressive symptoms on the BDI-II; no other variables were significant. Religious engagement was not predictive of risk for depression for the whole sample or by race/ethnicity. This study was limited by the fact that it had self-selection and self-reported bias and did not specify exclusion criteria. However, generalizability was

not an issue because a racially and ethnically diverse sample of women was included.

Unlike the previous study where women enrolled and assessed prenatally, Dalmida et al. (2010) enrolled 69 Latina prenatal women (28–40 weeks gestation) recruited from the community who were evaluated postpartum (1–12 weeks). Unlike the Jesse and Swanson (2007) study, results revealed significant and negative correlations between several spirituality and religiosity variables (meditation frequency, $r = -.25$, $p = .042$; self-rated religiousness, $r = -.31$, $p = .009$; spirituality, $r = -.26$, $p = .030$; daily spiritual experiences, $r = -.30$, $p = .013$; and faith $r = -.24$, $p = .046$) and depression using the CES-D. As with many of the studies reviewed here, this investigation had self-selection and self-reporting biases, as well as a lack of information regarding exclusion criteria. Generalizability was also limited by the lack of Latina subgroup diversity. Similarly, in a sample of 223 postpartum Latinas, Kim and Dee (2017) found significant differences in religious engagement (t (221) = − 3.03, $p < .01$) and non-organized religious activities (e.g., prayer, Bible study) (t (221) = 2.22, $p < .05$), as well as intrinsic religiosity (i.e., personal experience with the Divine) (t (221) = −2.32, $p < .05$) by risk for depression (EPDS ≥ 10), suggesting that religiosity was protective. Despite having self-selection and self-reporting biases, a strength of this study was the exclusion of women with "mental health disease" and those taking psychotropic medications. Still, generalizability was lacking given the limited focus on Hispanic women in a rural region of the USA.

Discussion

Of 135 possible studies screened, this systematic review identified 10 studies (7%) for inclusion that examined associations between cultural orientations (four on degree of acculturation; three on *Marianismo*, and three on religiosity) and PND in Latinas. Given the number of studies eligible for inclusion, it clearly highlights the need for additional research in these areas. Results from this systematic review also point to the need for additional research in this line of inquiry.

Results revealed that when accounting for demographic characteristics, such as income, education, employment, direct effects of degree of acculturation disappear (Kuo et al. 2004), suggesting that other factors matter. For instance, D'Anna-Hernandez et al. (2015) found that less adoption of Latino culturally relevant behaviors (e.g., respect) coupled with acculturative stress increases a woman's depression risk. Others have found this cognitive-cultural dissonance, primarily in adolescents (Bhugra 2005; Torres and Baxter Magolda 2004); more research is needed to understand how this internal conflict manifests itself in PND in Latinas. While this study examined degree of acculturation, that is, the extent to which Latinas have integrated mainstream language, practices, values, and cultural beliefs, allowing for a more nuanced assessment of cultural integration, it is clear that other processes associated with the acculturation process must also be considered. D'Anna-Hernandez et al. (2016) also found that when acculturative stress was high and post-sleep quality was low, depressive symptoms were higher, suggesting that it is not the extent to which women are acculturated, but the consequences of that acculturation process that increase risk of PND. This systematic review also highlighted the lack of studies of longitudinal studies and lack of focus on postpartum women raising questions about potential changes in degree of acculturation during the perinatal period and implications those changes might have on risk of PND.

Our systematic review also shows that more work is needed on understanding the effect of *Marianismo* on PND. One study found that *Marianismo* was protective against prenatal depression (Gress-Smith et al. 2013). However, Lara et al. (2016) found that *Marianismo* was significantly and positively correlated with depression and depressive symptoms in the early (6 weeks) and late (6 months) postpartum period (Lara et al. 2016), though subsequent analyses of the same postpartum data showed that this association disappeared when controlling for demographic characteristics, such as income, education, and marital status (Albuja et al. 2017). Further analysis revealed a moderating effect, with higher levels of *Marianismo* and lower levels of social support in gestation significantly increasing depression and depressive symptoms postpartum, even after controlling for prenatal depression. As with the results on degree of acculturation, controlling for demographic characteristics in future studies on *Marianismo* and PND will clarify associations as will other factors, such as perinatal period.

The findings on *Marianismo* suggest that timing of the perinatal depression matters. Albuja et al. (2017) found that levels of *Marianismo* in pregnancy had a moderating effect, suggesting that the perinatal period should be an important factor in understanding observed associations. For example, Gress-Smith et al. (2013), found *Marianismo* to be protective in pregnancy, while, Lara et al. (2016) showed it had negative consequences postpartum. These findings highlight the importance of studying *Marianismo* in pregnancy and post-delivery because it may differ during these two periods, ultimately having differential effects on PND. For instance, the importance of putting your children and family first might increase health-seeking behaviors, such as prenatal care. However, during the postpartum period, it might prevent women from seeking mental health services (Le et al. 2008). Albuja et al. (2017) highlight the role social support plays in women's postpartum mental health within the context of traditional female values, noting that discordance between support expectations and giving of one's self increases women's risk for depression postpartum. Thus, understanding *how* (i.e., alone or in

combination with another predictor) and *when* (e.g., prenatal versus postpartum) *Marianismo* is protective or a risk will help clarify its role on depression risk in Latinas.

The perinatal period is also relevant to religiosity and PND risk. The only study that assessed the associations between religiosity and depression in pregnancy found an inverse association in the whole sample, but not among Latinas alone while controlling for demographic and psychosocial variables (Jesse and Swanson 2007). In contrast, the two studies examining these associations in postpartum women showed religiosity to be protective (Dalmida et al. 2010; Kim and Dee 2017). Three plausible explanations exist. First, bivariate analyses do not sufficiently tell the story. Jesse and Swanson (2007) controlled for other variables in logistic regressions evaluating associations between religiosity and depression in prenatal Latinas and did not find a significant association. In contrast, two other studies examined these associations using correlations and *t* tests, which do not control for confounding variables, limiting conclusions about how robust these associations are. Second, the timing of the perinatal period differed. Religiosity was protective for postpartum women. It is possible that religiosity becomes more significant during the postpartum period in Latinas when there might be concern about the infant's wellbeing or increased stress. Third, religiosity is simply more protective in the postpartum period. However, given the limited research on this topic in racial/ethnic minority women, particularly Latinas, it is difficult to make a definitive statement. Therefore, longitudinal studies are needed to confirm whether religiosity assumes a different role during the perinatal period. Related, future studies should control for demographic (e.g., income, education, age, and parity) and other potentially contributing factors, such as stress and health concerns, to explain any observed associations between religiosity and PND.

While this systematic review is the first to examine associations between cultural orientations (degree of acculturation, *Marianismo*, and religiosity) and PND, it was limited by the number of studies available for review. Another limitation was the presence of self-selection bias, self-report bias, and lack of generalizability in the majority of studies reviewed, limiting the strength of these studies. Additionally, the current review was largely based on studies conducted in the USA and with Mexican-descended women. However, this review did consider studies conducted outside the USA published in English or Spanish, and that included immigrant and native-born women. Another strength of this study was the focus on degree of acculturation, which required that studies examine more than one acculturation variable (e.g., language). While *Marianismo* is still a new concept to explore in the context of PND in Latinas, this was the first review of current research on this topic. Additionally, this systematic review is the first to consider the entire perinatal period compared to the vast majority of studies, which focused on either the prenatal or postpartum period. Finally, while anxiety is often comorbid with perinatal depression (Bernstein et al. 2008), we were not able to include it in this systematic review due to a lack of studies on *Marianismo* and religiosity. Future studies should include anxiety to clarify associations, if any, with cultural orientation (i.e., degree of acculturation, *Marianismo*, and religiosity) in perinatal Latinas.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval This article does not contain any studies with human participants performed by any of the authors.

Informed consent Informed consent was not necessary as human subjects were not involved in data collection.

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