SELF-RATED HEALTH, DEPRESSION, AND ANXIETY AMONG PERINATAL LATINAS

BY

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THESIS

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ABSTRACT

Introduction: Poorer self-rated health is associated with depression and anxiety symptoms. Poorer self-rated health is also associated with worse health outcomes, including premature mortality. Few studies have investigated how Latina mothers rate their health during the perinatal period and how those ratings are associated with risk for depression and anxiety. This study addresses this gap in the literature. Specifically, we examined whether poor and fair self-rated health is associated with depressive and anxiety symptoms in pregnancy and six weeks postpartum. **Methods:** This secondary analysis consisted of 153 Latina women recruited from a public health clinic and followed from pregnancy to six weeks postpartum. Data on current self-rated health, health before pregnancy, psychosocial stressors, and demographic characteristics were collected during pregnancy. Depressive and anxiety symptoms were assessed in pregnancy and at six weeks postpartum. Linear regressions were used to assess the association between change in self-rated health from pre-pregnancy to during pregnancy and depressive and anxiety symptoms at both time points. **Results:** While controlling for psychosocial stressors, women who consistently reported fair health, on average, reported higher scores of prenatal depressive symptoms ($p = 0.002$) compared to the other women. Women who reported a decline in their health, on average, reported lower scores of depressive symptoms at six weeks postpartum ($p = 0.04$) compared to other women. Women whose self-rated health declined ($p = 0.001$) and remained fair ($p = 0.01$), on average, reported higher scores of prenatal anxiety symptoms compared to their counterparts. Women who reported a decline in their health, on average, reported lower scores of postpartum anxiety symptoms at six weeks ($p = 0.04$) compared to others. Women who reported more life stressors, on average, reported higher scores of prenatal depressive symptoms ($p < 0.001$) and prenatal anxiety symptoms ($p = 0.01$) compared to their counterparts. **Conclusions:** Consistently fair and declining self-rated health were significantly

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associated with perinatal depression and anxiety. Latina women who consistently rated their health as fair were significantly associated with prenatal depressive and anxiety symptoms and should be considered when identifying women at risk for poor mental health. These results also emphasize the importance of understanding the health of Latinas and their risk for depression and anxiety during the perinatal period, which can have implications for clinical care.

Keywords: self-rated health, perinatal, prenatal, postpartum, depression, anxiety

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CHAPTER 1: INTRODUCTION

Self-Rated Health

Self-rated health is known to be a predictor for premature mortality (Idler & Benyamini, 1997). A meta-analysis identified that self-rated health was associated with mortality. Specifically, individuals who rated their health as poor had increased risk for earlier death compared to those that rated their health as excellent (DeSalvo, Bloser, Reynolds, He, & Muntner, 2006; Idler & Benyamini, 1997). The U.S. has a population of 59.9 million Latinos, which continues to grow every year (Flores, Lopez, & Krogstad, 2019). In a sample of 1,311 ethnically diverse adults, Latinos reported their health as worse compared to non-Hispanic whites (Benjamins, Hirschman, Hirschtick, & Whitman, 2012).

Factors such as acculturation, socioeconomic status, and education may explain the disparities in self-reported health observed between Latinos and non-Hispanic whites. In a sample of 45,076 Latino adults living in the U.S., Latinos that were less accultured were more likely to rate their health as worse compared to Latinos that were more accultured (DuBard & Gizlice, 2008; Finch & Vega, 2003). Latinos are also more likely to live below the federal poverty level compared to other racial and ethnic groups, making them more vulnerable to poor health (Pew Research Center, 2019). It is well known that low-income mothers are more likely to report their health as poor or fair compared to higher-income mothers (Sumner et al., 2011). Latina mothers are more likely to have less than a high school education compared to non-Hispanic whites (Martin, 2012), which can affect how they view their own health. In a sample of 55,428 diverse adults, Latinas reported their health as being more affected by psychosocial stressor such as discrimination than non-Latina whites (D'Anna, Ponce, & Siegel, 2010). Thus,

these psychosocial stressors may significantly contribute to how Latina mothers rate their own health during their pregnancy and after delivery.

Perinatal Period

The perinatal period, defined as pregnancy and one-year post-delivery (Garcia & Yim, 2017) is a vulnerable period for women since pregnancy creates profound changes to a woman's body (Rodriguez, Bohlin, & Lindmark, 2001). This period can also carry significant negative effects, such as maternal stress on the woman and lower birth weight and impaired learning development for her infant (Garcia & Yim, 2017; Lupien, McEwen, Gunnar, & Heim, 2009) Mothers are learning to navigate this period while other factors such as a history of mental illness, lack of social support, and history of childhood sexual abuse are present (Leigh & Milgrom, 2008; Lewis, Galbally, & Bailey, 2012). Evidence shows that mothers can be vulnerable to mental illness such as depression and anxiety during the perinatal period (Alhusen & Alvarez, 2016; Fawcett, Fairbrother, Cox, White, & Fawcett, 2019). Moreover, mothers that experience psychological distress can further delay their child's development (Kingston, Tough, & Whitfield, 2012).

Self-Rated Health and Latinas

The perinatal period is a vulnerable period for many mothers, including Latinas. Few studies have reported on how Latina mothers rate their health during the perinatal period. Lara-Cinisomo and colleagues (2018) found that in a sample of 34 perinatal Latinas, Latinas rated their health as worse during pregnancy than before their pregnancy (Lara-Cinisomo, Swinford, Massey, & Hardt, 2018). Researchers have found that Latinas are vulnerable to psychological factors such as having higher rates of depression and anxiety compared to non-Latinas (de Mendoza, Harville, Theall, Buekens, & Chasan-Taber, 2016; Jesse & Swanson, 2007). Self-rated

health could be an additional risk factor during this crucial period. Findings from a previous study suggest that poor self-rated health can have negative obstetrical implications such as premature birth and can negatively affect the mother's experience during childbirth and after the delivery (Schytt & Waldenstrom, 2007). Therefore, it is important to investigate how Latina mothers view their health during this crucial period and the implications that poor or fair self-rated health can have on the mental health of perinatal Latinas.

Perinatal Depression and Anxiety

Untreated perinatal depression and anxiety are concerning health issues. Mothers that experience depression or anxiety during the perinatal period can experience negative outcomes that affect the mother and infant, such as increasing the risk of preterm birth (Field, 2017) and poor mother-infant relationship (Koleva, Stuart, O'Hara, & Bowman-Reif, 2011). Perinatal depression, also known as prenatal and postpartum depression, includes major and minor depressive episodes during pregnancy up to the first year postpartum (American Psychiatric Association, 2013). Perinatal depression affects over 12-19% of mothers in the perinatal period (Gavin et al., 2005) and is one of the most common disorders occurring in the perinatal period (Committee on Obstetric Practice, 2015). Among Latinas, the rate of perinatal depression is higher compared to other minority groups in the U.S (Surkan, Peterson, Hughes, & Gottlieb, 2006). Latinas in the U.S. reported a higher estimated rate of perinatal depression at 30-53% compared to non-Hispanic women (Kieffer et al., 2013; Lucero, Beckstrand, Callister, & Sanchez Birkhead, 2012).

Perinatal anxiety is characterized as the presence of anxiety during the perinatal period: first, second, and the third trimester of pregnancy to the first postpartum year (Garcia & Yim, 2017). The rate of perinatal anxiety has been identified as 21-24% during pregnancy and 2-45%

in the first year after delivery (Enatescu et al., 2014; Martini et al., 2013). The rate of perinatal anxiety among Latinas is not fully established as with perinatal depression. In a study of 1,575 Latinas, de Mendoza et al. (2016) reported higher mean anxiety scores during the early stages of pregnancy compared to late pregnancy (de Mendoza et al., 2016). Studies on the rate of perinatal anxiety among Latinas are limited.

Predictors of perinatal depression and anxiety among Latinas in the U.S. include immigration status, acculturative stress, poverty, discrimination, and trauma (Lara-Cinisomo, Girdler, Grewen, & Meltzer-Brody, 2016). Meanwhile, low levels of resilience, cesarean delivery and stressful life events (Clout & Brown, 2015; Ricardo-Ramírez, Álvarez-Gómez, Ocampo-Saldarriaga, & Tirado-Otálvaro, 2015; Roos, Faure, Lochner, Vythilingum, & Stein, 2013) have been identified as predictors for perinatal anxiety among women from Colombia, South Africa, and Australia. Self-rated health has been found to be associated with perinatal depression among Latinas with diabetes (Lara-Cinisomo et al., 2018).

Research Objective

Researchers suggest that having a poorer perinatal mental health is associated with poorer self-rated health (Orr, Blazer, James, & Reiter, 2007; Schytt & Waldenström, 2007; Sonkusare & Hebbar, 2007). Yet, there is limited literature describing how self-rated health can predict depression and anxiety in perinatal women, particularly Latinas who have a high risk for these adverse outcomes. It is important to understand how poor self-rated health is associated with perinatal depression and anxiety symptoms to inform perinatal interventions specifically for Latinas. It is known that untreated symptoms can have negative consequences to the mother and infant (Field, 2011, 2017). However, little is known on how this vulnerable population perceives their health. Therefore, this study aims to explore associations between poor and fair self-rated

health ratings with perinatal depression and anxiety among Latinas in the U.S. We focused on

the poor and fair health ratings as these health statuses are the worse health status (Benjamins et

al., 2012; Idler & Angel, 1990) and can provide an understanding of how Latinas perceive their

health status.

CHAPTER 2: METHODS

Data Source & Study Participants

This is a secondary analysis of data from a longitudinal parent study conducted between July 2008 and August 2012 in Raleigh, North Carolina. Approximately 325 prenatal women were screened, and 216 completed three waves of data collection. Mothers were screened at 31-33 weeks and assessed at 35-36 weeks during home visits at the three waves: late pregnancy (35-36 weeks of pregnancy), six weeks postpartum, and 12 weeks postpartum. Women were excluded from the parent study if they had a lifetime history of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) psychotic, bipolar, cyclothymic, somatoform or dissociative disorder, a body mass index (BMI) of > 35 or < 18, chronic or acute serious medical illness or pregnancy complications, smoked ten cigarettes per day, and if they could not write or speak English or Spanish. Out of the 216 who completed the study, 153 self-identified as Hispanic/Latina and were included in the analytic sample of the current study. Participants provided written consent to participate in the parent study. Demographic data was collected from mothers during the first wave at 35-36 weeks of pregnancy via a survey. Information obtained included age, marital status, family income level, and education level. All the measures were available either in English or Spanish.

Measures

Demographics: Age, family income, and education were collected in the demographic questionnaire at the 35-36 weeks wave. For this study, age was modeled as a continuous variable. Family income was categorized into the following groups: less than $10,000, $10,001-$20,000, $20,001-$30,000, and more than $30,001 (the reference group). Education level was categorized as high school or less and college and more, with college and more serving as the reference.

Self-Rated Health: Data on self-rated health were collected in the demographic questionnaire. During the first wave, 35-36 weeks, mothers reported how they perceive their physical health since being pregnant and before their pregnancy. Mothers were also asked to rate their physical health before pregnancy. Since the measures of self-rated health employed a 5-point scale ranging from poor (5) to excellent (1), responses were reverse-scored with poor rated as 1, fair rated as 2, good rated as 3, very good rated as 4, and excellent rated as 5. To study the change in self-reported health between the pre-pregnancy period and pregnancy, a pre-post test was conducted. Participants were categorized into three groups: decline, consistent, and other. The decline group includes women whose self-rated health declined to either "poor" or "fair" from before pregnancy to pregnancy regardless of their pre-pregnancy rating. The consistent group represents women who experience no change in their "poor" or "fair" ratings from pre-pregnancy to pregnancy. The other category included the rest of the sample and was labeled as the reference group. These women are those that had consistent ratings of self-reported health as very good, good, or excellent between the pre-pregnancy and pregnancy.

Depressive symptoms: At each wave, mothers completed either a Spanish or English validated version of the Edinburgh Postnatal Depression Scale, EPDS (Cox, Holden, & Sagovsky, 1987) to determine the presence of depressive symptoms. The EPDS is a 10-item screener used to determine how the participant has felt in the last seven days before the assessment. Items are scored from 0-3 with some items reverse-scored. Scores range from 0-30 with a cut-off score of ≥ 10 for possible depression (Cox et al., 1987). The EPDS has also been validated in previous studies, including low-income and Spanish-speaking Latinas (Carter, Bond, Wickham, & Barrera, 2019; Lara-Cinisomo, Fujimoto, Oksas, Jian, & Gharheeb, 2019). EPDS scores were modeled as a continuous variable.

Anxiety Symptoms: Participants also completed the 20-item trait portion of the State-Trait Anxiety Inventory to assess anxiety symptoms (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) at each wave. The trait portion measures how the participant generally felt in the past seven days. Each item rates how the participant feels about each statement where 1-almost never, 2-sometimes, 3-often, and 4-almost always. The ranges range from 20-80, with higher scores indicating higher anxiety (Spielberger et al., 1983). High anxiety is often considered a score of 40 or more (Dennis, Coghlan, & Vigod, 2013). In this sample, STAI-T scores were also modeled as a continuous variable. STAI-T has been used in studies with low-income Spanish-speaking Latina mothers (Lara-Cinisomo et al., 2018).

Stressors: A modified version of the Life Experiences Survey (LES) (Sarason, Johnson, & Siegel, 1978) was administered at baseline and the 12-week postpartum visits. The 29-item scale assesses the presence of stressful life events during the last six months. Mothers indicated whether an event occurred using yes (1) or no (0) responses. Once an event was reported, participants rated how stressful or difficult the event was; responses ranged from extremely stressful (1), very stressful (2), moderately stressful (3), a little stressful (4), not stressful (5). For the study, stressful life events were defined by the total number of life stressors with a higher score indicating higher stressful events. The LES has been used among low-income and young Latina mothers (Grau et al., 2017; Zayas, Jankowski, & McKee, 2003).

Statistical Analysis Plan

Descriptive statistics were run on all variables, with mean and standard deviations for continuous variables and percentages for categorical variables. Depression and anxiety scores during pregnancy and six months postpartum were the primary outcome variables. Correlations were conducted to assess associations between anxiety during pregnancy (STAI-T), depression

during pregnancy (EPDS), self-rated health, and number of life stressors, depression and anxiety at six weeks. Data for outcome variables were reviewed for normality and outliers. Crude and multivariate linear regression were used to determine if self-reported health (consistent vs. decline vs. other) is associated with perinatal depressive and anxiety symptoms. Several models were fitted for each outcome measure. Model 1 represents the crude linear regression model that tested the association between self-rated health and perinatal depressive symptoms and perinatal anxiety symptoms. Model 2 is Model 1 controlling for demographic variables, including education, family income, and age. Model 3 is Model 2 adjusted for number of life stressors. Model 4 is adjusted for only number of life stressors. For the six-week models, we also controlled for prenatal anxiety and prenatal depression in Model 2. Statistical analyses were performed using the SPSS version 25.0 software using a significance level of 0.05.

CHAPTER 3: RESULTS

Sample Characteristics

A total of 153 women who self-identified as Latina/Hispanic were included in this study. The mean age of the sample was 26.88 years (SD = 5.41) (see Table 1). Most of the sample had less than a high school education (90.2%). About 39.2 % of the women reported having a family income between $10,001-$20,000. Most of the women indicated rated their health before pregnancy as good (46.40%). Similarly, about half the sample, 53.60%, rated their health as good since their pregnancy. The mean EPDS scores during pregnancy were 6.71 (SD = 4.64) and at 6 weeks was 5.58 (SD = 4.74). Twenty-six percent of the sample met the cut-off for risk for depression during pregnancy and 21.10% met the cut-off at the six weeks postpartum. The mean STAI scores during pregnancy were 35.91 (SD = 9.21) and at 6 weeks 32.49 (SD = 8.80). Thirty-five percent of women reported high prenatal anxiety symptoms. At six weeks, 22.50% met the cut-off for high postpartum anxiety symptoms.

Self-Rated Health and Perinatal Depression and Anxiety

In table 2, the crude and multivariate linear regression were used to calculate the association between self-rated health and prenatal depressive symptoms. In Model 1, the crude results indicated that women who consistently rated their health as fair, on average, reported higher scores of prenatal depressive symptoms compared to the other women ($B = 4.10$, SE = 1.36, $p = 0.003$). Women with a decline in their health, on average, reported higher scores of prenatal depressive symptoms compared to the other women ($B = 2.31$, SE = 1.06, $p = 0.03$). While controlling for education, family income, and age, we found that women who consistently rated their health as fair, on average, reported higher scores of prenatal depressive symptoms compared to the other women ($B = 4.10$, SE = 1.41, $p = 0.005$). Women with a decline in their health, on average, reported higher scores of prenatal depressive symptoms compared to the

other women ($B = 2.45$, SE $= 1.07$, $p = 0.02$). In Model 3, age, education, family income, and number of life stressors were included. Women that consistently rated their health as fair, on average, reported higher scores of prenatal depressive symptoms ($B = 4.06$, SE $= 1.36$, $p = 0.003$) compared to other women. Women with a decline in their health, on average, reported higher scores of prenatal depressive symptoms than the other women ($B = 2.07$, SE $= 1.04$, $p = 0.05$). Women that reported more life stressors, on average, reported higher scores of prenatal depressive symptoms compared to women with fewer stressors ($B = 0.69$, SE $= 0.20$, $p = 0.001$). In Model 4, only number of life stressors were included. Women who consistently rated their health as fair, on average, reported higher scores of prenatal depressive symptoms compared to the other women ($B = 4.11$, SE $= 1.31$, $p = 0.002$). Women who reported more life stressors, on average, reported higher scores of prenatal depressive symptoms compared to women that reported fewer stressors ($B = 0.72$, SE $= 0.20$, $p < 0.001$).

The unadjusted linear regression shown in Model 1 (Table 3) shows that women who consistently reported their health as fair, on average, reported higher scores of prenatal depressive symptoms compared to the other women. ($B = 3.87$, SE $= 1.47$, $p = 0.009$). In Model 2, we controlled for prenatal depressive symptoms, and found that women who reported a decline in their health, on average, reported lower scores of postpartum depressive symptoms at the six weeks ($B = -1.79$, SE $= 0.90$, $p = 0.05$) compared to the other women. Mothers who reported higher prenatal depressive symptoms, on average, reported higher scores of depressive symptoms at six weeks postpartum compared to women who reported fewer symptoms ($B = 0.66$, SE $= 0.07$, $p = 0.07$). Model 3 controlled for age, education, family income, and prenatal depression. The model showed that at six weeks postpartum, women that reported higher prenatal depressive symptoms, on average, reported higher scores of depressive symptoms

compared to women who reported low symptoms ($B = 0.66$, SE $= 0.07$, $p < 0.001$). While controlling for education, age, family income, number of life stressors, and prenatal depressive symptoms (shown in Model 4), women who had a decline in their health, on average, reported lower scores of postpartum depressive symptoms ($B = -1.84$, SE $= 0.90$, $p = 0.04$) compared to the other women. Those that reported higher prenatal depressive symptoms, on average, reported higher scores of postpartum depressive symptoms ($B = 0.62$, SE $= 0.07$, $p < 0.001$) compared to women that reported low symptoms. Model 5 included only number of life stressors. Women who had a decline in their health, on average, reported lower scores of postpartum depressive symptoms than the other group of women ($B = -1.89$, SE $= 0.89$, $p = 0.04$). Women who reported higher prenatal depressive symptoms, on average, reported higher scores of depressive symptoms ($B = 0.63$, SE $= 0.07$, $p < 0.001$) compared to women who report low symptoms.

The crude linear regression in Model 1 was used to determine the association between self-rated health and prenatal anxiety symptoms (shown in Table 4). Women who consistently rated their health as fair, on average, reported higher scores of prenatal anxiety symptoms compared to the other women ($B = 6.43$, SE $= 2.67$, $p < 0.001$). Similarly, participants who reported a decline in their health, on average, reported higher scores of prenatal anxiety symptoms ($B = 7.29$, SE $= 2.08$, $p = 0.02$) compared to the other women. The second regression model controlled for family income, education, and age found in Model 2. The mothers who consistently rated their health as fair, on average, reported higher scores of prenatal anxiety symptoms compared to the other women ($B = 6.03$, SE $= 2.77$, $p = 0.03$). The women who had a decline in their health, on average, reported higher scores of prenatal anxiety symptoms ($B = 7.50$, SE $= 2.10$, $p < 0.001$) compared to the other women. In Model 3 we controlled for age, education, and family income. Participants who consistently rated their health as fair, on average,

reported higher scores of prenatal anxiety symptoms than the other women ($B = 6.10$, SE = 2.73, $p = 0.03$). Women with a decline in their health, on average, reported higher scores of prenatal anxiety symptoms compared to the other group of women ($B = 6.99$, SE = 2.09, $p = 0.001$). Women that reported more life stressors, on average, reported higher scores of prenatal anxiety symptoms compared to women who reported fewer stressors ($B = 0.90$, SE = 0.41, $p = 0.03$). While only controlling for number of life stressors, women who consistently rated their health as fair, on average, reported higher scores of prenatal anxiety symptoms ($B = 6.44$, SE = 2.62, $p = 0.01$) compared to the other women. For women with a decline in their health, on average, reported higher scores of prenatal anxiety symptoms compared to the other women ($B = 6.77$, SE = 2.06, $p = 0.001$). Women that reported more stressors, on average, reported higher scores of prenatal anxiety symptoms compared to women with fewer stressors ($B = 0.99$, SE = 0.40, $p = 0.01$).

The crude linear regression in Model 1 examined the association between self-rated health and postpartum anxiety symptoms at six weeks (shown in Table 5). Women who consistently rated their health as fair, on average, reported higher scores of postpartum anxiety symptoms at six weeks compared to the other women ($B = 7.03$, SE = 2.74, $p = 0.01$). The second model controlled for prenatal anxiety symptoms. Women who reported higher prenatal anxiety symptoms, on average, reported higher scores of anxiety symptoms at six weeks postpartum ($B = 0.63$, SE = 0.06, $p < 0.001$) compared to women who reported low symptoms. Women who reported a decline in their health, on average, reported lower scores of anxiety symptoms at six weeks compared to the other women ($B = -3.35$, SE = 1.70, $p = 0.05$). The third linear regression, shown as Model 3, controlled for age, education, family income, prenatal anxiety for postpartum anxiety symptoms at six weeks. Women who reported higher prenatal

anxiety symptoms, on average reported higher scores of postpartum anxiety symptoms at six weeks ($B = 0.63$, SE $= 0.06$, $p = < 0.001$) than women who reported low prenatal anxiety symptoms. Model 4 controlled for education, family income, age, prenatal anxiety symptoms, and number of life stressors. Mothers that reported higher prenatal anxiety symptoms, on average, reported higher scores of anxiety symptoms compared to women who reported low prenatal anxiety symptoms ($B = 0.61$, SE $= 0.06$, $p < 0.001$). Women that had a decline in their health, on average, reported lower scores of postpartum anxiety symptoms at six weeks compared to the other women ($B = -3.44$, SE $= 1.69$, $p = 0.04$). In Model 5, only number of life stressors were included. Women who had a decline in their health, on average, reported lower scores of postpartum anxiety symptoms at six weeks ($B = -3.48$, SE $= 1.69$, $p = 0.04$) compared to the other women. Women with higher prenatal anxiety symptoms, on average reported higher scores of postpartum anxiety symptoms compared to women who reported low symptoms ($B = 0.62$, SE $= 0.06$, $p = < 0.001$).

CHAPTER 4: DISCUSSION

A decline in self-rated health was associated with higher prenatal anxiety symptoms and less postpartum depressive and anxiety symptoms. Research has focused on how depressive symptoms and anxiety symptoms are factors for poor self-rated health (Orr et al., 2007; Schytt & Waldenström, 2007; Sonkusare & Hebbar, 2007). Yet this study has identified women who reported a decline in their health had higher anxiety symptoms during pregnancy but were less anxiety and depressive symptoms at six weeks postpartum. Studies should consider women who report a decline in their health during pregnancy as they can be at risk for high anxiety symptoms. Women who consistently rated their health as fair were associated with higher depressive symptoms and anxiety symptoms during the prenatal period (35-36 weeks of pregnancy). Previous studies have overlooked women who consistently rate their health as fair yet are still at risk for poor mental health (Idler & Angel, 1990; Lindström, 2009). These findings highlight the need to focus on women who do not report an improvement in their health in pregnancy and offers empirical evidence on those who consistently rate their health as fair or poor.

We also found that anxiety declines over time: 35.30% of prenatal had anxiety symptoms compared to 22.50% at six weeks postpartum. However, the rate of prenatal anxiety symptoms reported in this study was higher than the rates in the literature that is between 21%-24% (Enatescu et al., 2014; Martini et al., 2013). These findings show that Latina women report higher anxiety symptoms in pregnancy. Therefore, prenatal care providers should assess for risk of anxiety among these women as they are more vulnerable to prenatal anxiety symptoms. Meanwhile, the rates of depressive symptoms fell below the estimated depression rates for Latinas at 26.10% in pregnancy and 21.10% at postpartum, but higher than the general

population of perinatal women. Studies have reported that Latinas have the highest rate of perinatal depression compared to other minority groups at 30-53% (Kieffer et al., 2013; Lucero et al., 2012). Still, future studies should continue to assess for depression among Latinas since rates are higher than the general population in the U.S.

No significant associations were found between the demographic characteristics and perinatal depressive and anxiety symptoms. More life stressors were statistically associated with prenatal depressive and anxiety symptoms but not at six weeks postpartum. These findings show that more life stressors can negatively impact women's mental health during pregnancy, which can increase their anxiety and depressive symptoms. A previous study found that life stressors were significantly associated with prenatal depressive symptoms (Lancaster et al., 2010). Life stressors can negatively affect how women cope with poor mental health and their pregnancy. Therefore, practitioners should assess for life stressors during the prenatal period to identify women for depressive symptoms and anxiety symptoms. In this study, higher prenatal depressive symptoms were also associated with postpartum depressive symptoms among Latinas, which supports the literature that prenatal depression is statistically associated with postpartum depression (Koutra et al., 2014). Similarly, higher prenatal anxiety symptoms were significantly associated with postpartum anxiety. Research has shown that anxiety and depression can be comorbid (Lamers et al., 2011). Although we did not identify women who had both prenatal anxiety and depressive symptoms at the same time, we recommend for studies to assess for both prenatal depression and anxiety symptoms as factors can be present among Latinas.

The strengths and limitations of this study should be noted. We grouped the health ratings of these women to be more specific towards our groups of interest. We grouped women who had consistently fair health and grouped women who had a decline in their health. Previous studies

have only included poor, fair, or very poor ratings as the worse category (Idler & Angel, 1990; Lindström, 2009) or treated self-rated health as continuous (Stepanikova, Kukla, & Svancara, 2016) when investigating self-rated health. This study included the group of women that did not have an improvement in their health ratings and were still considered vulnerable to perinatal depressive and anxiety symptoms. Given that women who consistently rated their health as fair had more anxiety and depressive symptoms in the prenatal period, studies should consider this group at risk for poor perinatal mental health. This study also used valid and reliable measures that assess depression and anxiety symptoms which are often used in the field. The Edinburg Postnatal Depression Scale and the State-Trait Anxiety Inventory have been validated among perinatal Latinas (Carter et al., 2019; Lara-Cinisomo et al., 2018).

The small sample size is a limitation that may have affected our ability to observe significant associations. Studies should use a larger sample of Latina women to improve statistical power and increase the likelihood of observing significant associations. Furthermore, we only explored retrospective self-rated health. Women were asked to rate their health before their pregnancy and at their current pregnancy. Women had to remember how they viewed their health before being pregnant and provide a rating that may not reflect how they perceived their health before their pregnancy. Future studies should include women that have yet to become pregnant which can allow for health ratings to be obtained and then report on their health ratings once these women become pregnant. Also, the parent study did not collect the health ratings in the postpartum period. Therefore, we could not establish if the women continued to have a fair health rating or had a decline in their health at six weeks postpartum. We recommend studies to assess self-rated health even after the birth of the infant since women can report a different health rating at the postpartum period. Studies have identified that many health problems such as back

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pain and breast problems can increase after pregnancy (Schytt, Lindmark, & Waldenström, 2005; Woolhouse, Gartland, Perlen, Donath, & Brown, 2014). Thus, these health problems could continue to occur during the postpartum year, which could affect how these women perceive their health. Due to self-rated health ratings obtained during pregnancy, this may not reflect how women rate their health at six weeks postpartum.

Clinical Implications

These findings call for continued assessment of self-rated health, depressive symptoms, and anxiety symptoms throughout the perinatal period in Latinas. Healthcare providers treating perinatal Latinas should assess for changes in self-rated health or for persistent low or fair ratings. Doing so will help healthcare professionals identify women whose perceived health has worsened or has not improved and are susceptible to depression and anxiety. Screening for these changes can allow for early detection of depressive symptoms and anxiety symptoms, which can educate these vulnerable women and provide them with the proper treatment for poor mental health.

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Table 1

Demographic Characteristics N =153

Baseline Characteristics	N	%
Education level		
High school or less	138	90.20
College or more	16	9.80
Family income		
Less than $10,000	22	14.40
$10,001-$20,000	60	39.20
$20,001-$30,000	43	28.10
$30,001	28	18.30
Health score since pregnancy		
Excellent	18	11.80
Very good	20	13.10
Good	82	53.60
Fair	30	19.60
Poor	3	2.00
Health score before pregnancy		
Excellent	31	20.30
Very good	25	16.30
Good	71	46.40
Fair	24	15.70
Poor	2	1.30

Table 1 (cont.)

Baseline Characteristics	N	%
Age, Mean (SD)	26.88	(5.41)
Number of stressors during pregnancy, Mean (SD)	2.41	(1.78)
Prenatal depression (EPDS), Mean (SD)	6.71	(4.64)
Postpartum depression at six weeks (EPDS), Mean (SD)	5.58	(4.74)
Risk for prenatal depression (EPDS ≥ 10)	40	26.10
Risk for postpartum depression (EPDS ≥ 10)	30	21.10
Prenatal anxiety (STAI-T), Mean (SD)	35.91	(9.21)
Postpartum anxiety at six weeks (STAI-T), Mean (SD)	32.49	(8.80)
Risk for prenatal anxiety (STAI-T ≥ 40)	54	35.30
Risk for postpartum anxiety at six weeks (STAI-T ≥ 40)	32	22.50

Abbreviations: EPDS- Edinburg Postnatal Depression Scale. STAI-T – State-Trait Anxiety Inventory- Trait subscale

Table 2

Crude and Multivariate Adjusted Linear Regression Models Examining Associations between Change in Self-Rated Health and Prenatal Depressive Symptoms

	Model 1		Model 2		Model 3		Model 4	
	B (SE)	*P*-Value	*B* (SE)	*P*-Value	*B* (SE)	*P*-Value	*B* (SE)	*P*-Value
SRH								
Consistent	4.10 (1.36)	0.003	4.01 (1.41)	0.005	4.06 (1.36)	0.003	4.11 (1.31)	0.002
Decline	2.31 (1.06)	0.03	2.45 (1.07)	0.02	2.07 (1.04)	0.05	1.94 (1.03)	0.06
Other	REF	REF	REF	REF	REF	REF	REF	REF
Education level								
HS or less	-	-	-1.94 (1.28)	0.13	-1.59 (1.24)	0.22	-	-
College and more	-	-	REF	REF	REF	REF	-	-
Family income								
Less than $10,000	-	-	1.00 (1.31)	0.45	0.76 (1.27)	0.55	-	-
$10,001-$20,000	-	-	-0.17 (1.04)	0.87	-0.03 (1.00)	0.97	-	-
$20,001-$30,000	-	-	-0.40 (1.11)	0.72	-0.02 (1.08)	0.98	-	-
$30,001	-	-	REF	REF	REF	REF	-	-
Age, years	-	-	0.02 (0.07)	0.78	0.03 (0.07)	0.63	-	-
Stressors	-	-	-	-	0.69 (0.20)	0.001	0.72 (0.20)	< 0.001

Notes: *B* = Coefficient; SE: Standard Error
Model 1: crude model examining the association between self-reported health and prenatal depressive symptoms
Model 2: adjusted for age, education, and family income
Model 3: adjusted for age, education, family income, and number of life stressors
Model 4: Adjusted for only number of life stressors
Abbreviations: SRH- self-rated health

Table 3

Crude and Multivariate Adjusted Linear Regression Models Examining Associations between Change in Self-Rated Health and Postpartum Depressive Symptoms at Six Weeks

	Model 1		Model 2		Model 3		Model 4		Model 5	
	B (SE)	*P*-Value	*B* (SE)	*P*-Value	*B* (SE)	*P*-Value	*B*(SE)	*P*-Value	*B* (SE)	*P*-Value
SRH										
Consistent	3.87(1.47)	0.009	1.50 (1.15)	0.20	1.40 (1.20)	0.25	1.52 (1.20)	0.21	1.61 (1.14)	0.16
Decline	-0.26 (1.16)	0.82	-1.79 (0.90)	0.05	-1.74 (0.91)	0.06	-1.84 (0.90)	0.04	-1.89 (0.89)	0.04
Other	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
Depression during pregnancy	-	-	0.66 (0.07)	< 0.001	0.66 (0.07)	< 0.001	0.62 (0.07)	< 0.001	0.63 (0.07)	< 0.001
Education level										
HS or less	-	-	-	-	-0.11 (1.03)	0.92	-0.01 (1.02)	1.00	-	-
College and more	-	-	-	-	REF	REF	REF	REF	-	-
Family income										
Less than $10,000	-	-	-	-	-1.21 (1.06)	0.26	-1.29 (1.06)	0.22	-	-
$10,001-$20,000	-	-	-	-	-0.63 (0.84)	0.45	-0.54 (0.83)	0.52	-	-
$20,001-$30,000	-	-	-	-	-1.58 (0.90)	0.08	-1.43 (0.90)	0.12	-	-
$30,001	-	-	-	-	REF	REF	REF	REF	-	-
Age, years	-	-	-	-	0.03 (0.06)	0.65	0.03 (0.06)	0.58	-	-
Stressors	-	-	-	-	-	-	0.30 (0.18)	0.10	0.31 (0.18)	0.09

Notes: *B* = Coefficient; SE: Standard Error.
Model 1: crude model examining the association between self-reported health and postpartum depressive symptoms at six weeks
Model 2: adjusted for depression during pregnancy
Model 3: adjusted for age, education, family income, and depression during pregnancy
Model 4: adjusted for age, education, family income, depression during pregnancy, and number of life stressors
Model 5: Adjusted for only number of life stressors
Abbreviations: SRH- self-rated health

Table 4

Crude and Multivariate Adjusted Linear Regression Models Examining Associations between Change in Self-Rated Health and Prenatal Anxiety Symptoms

	Model 1		Model 2		Model 3		Model 4	
	B (SE)	*P*-Value	*B* (SE)	*P*-Value	*B* (SE)	*P*-Value	*B* (SE)	P-Value
SRH								
Consistent	6.43 (2.67)	0.02	6.03 (2.77)	0.03	6.10 (2.73)	0.03	6.44 (2.62)	0.01
Decline	7.29 (2.08)	0.001	7.50 (2.10)	< 0.001	6.99 (2.09)	0.001	6.77 (2.06)	0.001
Other	REF	REF	REF	REF	REF	REF	REF	REF
Education level								
HS or less	-	-	-2.43 (2.51)	0.34	-1.97 (2.16)	0.43	-	-
College and more	-	-	REF	REF	REF	REF	-	-
Family income								
Less than $10,000	-	-	1.98 (2.57)	0.44	1.67 (2.54)	0.51	-	-
$10,001-$20,000	-	-	-0.84 (2.03)	0.68	-0.66 (2.01)	0.74	-	-
$20,001-$30,000	-	-	-2.04 (2.18)	0.35	-1.53 (2.16)	0.48	-	-
$30,001	-	-	REF	REF	REF	REF	-	-
Age, years	-	-	-0.03 (0.14))	0.84	-0.01 (0.14)	0.94	-	-
Stressors	-	-	-	-	0.90 (0.41)	0.03	0.99 (0.40)	0.01

Notes: *B*= Coefficient; SE: Standard Error.
Model 1: crude model examining the association between self-rated health and prenatal anxiety symptoms
Model 2 adjusted for age, education, and family income
Model 3: adjusted for age, education, family income, and number of life stressors
Model 4: Adjusted for only number of life stressors
Abbreviations: SRH-Self-rated health

Table 5

Crude and Multivariate Adjusted Linear Regression Models Examining Associations between Change in Self-Rated Health and Postpartum Anxiety Symptoms at Six Weeks

	Model 1		Model 2		Model 3		Model 4		Model 5	
	B(SE)	*P*-Value	*B* (SE)	*P*-Value	*B* (SE)	*P*-Value	β (SE)	*P*-Value	β (SE)	*P*-Value
SRH										
Consistent	7.03 (2.74)	0.01	3.15 (2.12)	0.14	2.65 (2.20)	0.23	2.76 (2.19)	0.21	3.23 (2.11)	0.13
Decline	1.19 (2.15)	0.58	-3.35 (1.70)	0.05	-3.27 (1.70)	0.06	-3.44 (1.69)	0.04	-3.48 (1.69)	0.04
Other	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
Anxiety during pregnancy	-	-	0.63 (0.06)	< 0.001	0.63 (0.06)	< 0.001	0.61 (0.06)	< 0.001	0.62 (0.06)	< 0.001
Education level										
HS or less	-	-	-	-	-0.42 (1.88)	0.82	-0.20 (1.87)	0.92	-	-
College and more	-	-	-	-	REF	REF	REF	REF		
Family income									-	-
Less than $10,000	-	-	-	-	-1.88 (1.94)	0.34	-2.03 (1.94)	0.30	-	-
$10,001-$20,000	-	-	-	-	0.06 (1.53)	0.97	0.20 (1.53)	0.90	-	-
$20,001-$30,000	-	-	-	-	-2.17 (1.66)	0.19	-1.94 (1.66)	0.25	-	-
$30,001	-	-	-	-	REF	REF	REF	REF	-	-
Age, years	-	-	-	-	0.14 (0.11)	0.20	0.15 (0.11)	0.18	-	-
Stressors	-	-	-	-	-	-	0.47 (0.32)	0.15	0.45 (0.32)	0.16

Notes: *B* = Coefficient; SE: Standard Error.
Model 1: crude model examining the association between self-rated health and postpartum anxiety symptoms at six weeks
Model 2: adjusted for anxiety during pregnancy
Model 3: adjusted for age, education, family income, and anxiety during pregnancy
Model 4: adjusted for age, education, family income, number of life stressors, and anxiety during pregnancy
Model 5: Adjusted for only number of life stressors
Abbreviations: SRH-Self-rated health