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# Midwifery

# Lack of partner impacts newborn health through maternal depression: A pilot study of low-income immigrant Latina women

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## ARTICLE INFO

## ABSTRACT

*Introduction:* Latina women have a high burden of depression and other mental health issues, particularly in the perinatal period. Suboptimal maternal mental health can have adverse developmental and physiological impacts on child growth. The present study examines the impact of unplanned pregnancy and pregnancy relationship status on prenatal maternal depression in a sample of low-income Latina women. We hypothesized that the association between these prenatal stressors and newborn health would be mediated through prenatal depression.
*Method:* The present study included a sample 201 Latina mothers and their children recruited from prenatal clinics during their second or third trimesters. Depression symptomology, relationship status were collected prenatally. At birth, several indices of newborn health were examined, including head circumference percentile and birthweight. Finally, planned pregnancy status was retrospectively collected when the child was between 1 and 2 years old.
*Results:* Structural equation modelling revealed that single women, compared to partnered women, had higher levels of depression. Higher levels of depression, in turn, predicted poorer newborn health. Unplanned pregnancy was not significantly associated with newborn health.
*Discussion:* These results suggest that relationship status may be an important screening question for medical examiners to ask to pregnant Latina women during prenatal visits. These results are consistent with past research investigating the effects of maternal mental health on adverse birth outcomes that propose that stressful early environments shape developmental trajectories.

## Introduction

Pregnancy can engender intense physical and emotional upheavals in women. Psychosocial and cultural factors may not only exacerbate or diminish pregnancy-related stressors (Dunkel Schetter, 2011), but may buffer their effects on pregnancy outcomes. Evolutionary perspectives (Ellis, 2004; Hrdy, 2000) suggest that instrumental and social support from one's partner and family are of importance and can impact child health and development (Ellis, 2004; Flinn, 2006). The intense physiological and temporal burden of pregnancy orients women to be selective of *when* and with *whom* they have a child (Ellison, 2003; Trivers, 1972). Medical anthropological frameworks similarly emphasize the role men play as mates and fathers in matters of maternal and infant health (Dudgeon and Inhorn, 2004). Succinctly put, the *men as partners* framework posits that men, directly and indirectly, help shape the health of women and infants during pregnancy (Dudgeon and Inhorn, 2004).

The impact of partner presence (i.e., maternal relationship status) and maternal relationship health on physical development, interpreted through an evolutionary perspective, has been mainly focused on physical health and development in adolescence (Ellis et al., 1999; Ellis and Garber, 2000). For instance, both maternal mental health and partner absence was implicated in early pubertal development in girls. As such, we argue that the effects of father presence (i.e., maternal relationship status), may have a similar effect on physical health in newborns, through maternal mental health.

Maternal mental health and the presence of prenatal stressors are critical in shaping newborn health (Diego et al., 2006; Dole, 2003; Grote et al., 2010). Depression may play an especially important role for Latina women given findings that the prevalence of depression among preg-

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nant Latinas is at 32.4% (Lara et al., 2009). Additionally, current theoretical conceptualizations propose that maternal mental health during pregnancy may communicate or convey contextual information to the developing child regarding the quality of the psychosocial environment (Del Giudice, 2012; Dunkel Schetter and Tanner, 2012). The quality or supportiveness of the psychosocial context (conveyed through maternal mental health) should impact infant well-being.

For this reason, we investigate in a sample of Latina women two prenatal stressors that capture the condition of the mother's environment and indicate whether her social support and material resources are sufficient. The current study investigates the effects of two common stressors on prenatal depression – maternal relationship status and planned pregnancy status – and the impact of depression on newborn health in a sample of low-income Latina women. Both single motherhood and an unwanted or unplanned pregnancy have been linked to neonatal mortality and poorer maternal and child health (Angel and Worobey, 1988; Berkman et al., 2015; Gaudino et al., 1999). Infants without a reported father on their birth certificate were at increased risk for infant mortality, when controlling for other risk factors (Gaudino et al., 1999). We hypothesized that

1. Single women and women reporting an unplanned pregnancy will report greater depression than women in relationships or women reporting planned pregnancies,
2. Greater maternal depression will predict poorer newborn health,
3. Maternal depression will mediate the relationship between maternal relationship status and unplanned pregnancies with newborn health.

## Method

### Participants

Two-hundred and one mothers and their newborns (50% female) participated in the current study. The mothers were all Latina (37.32% South/Central American; 61.19% Mexican; 1.00% Puerto Rican, and 0.50% other) with a mean age of 34.6 (SD = 5.10; range = 25–55). Maternal marital status prior to the birth of their child was as follows: cohabiting, 52.79%; married, 31.47%, divorced, 1.02%; single, 14.72%; 4 cases were missing). The majority of the mothers reported speaking primarily Spanish (93.5%; English, 6.5%), not having formal employment (71.64%; employed, 28.36%), being enrolled in the Women Infants and Children's program (WIC, 92.04%; no WIC, 7.96%) and having a high school education (77.55%; some college, 17.35%; College, 3.05%; Post-college, 2.04%). Most women in the sample were first time mothers (47.26; 1 child, 30.85%; 2 children, 15.42%; 3 children, 4.98%; 4 children, 1.0% 5 children, 0.50%). The majority of the women who answered whether the pregnancy was planned reported it as not being planned (57.06%; the pregnancy was planned, 42.94; 38 cases did not report this). The cohort (Hispanic, Eating and Nutrition cohort (HEN)) used in the present secondary data analysis has been previously described (Wojcicki et al., 2011a, 2011b).

### Procedures

The study and its procedures were approved by the Committee on Human Research and the Institutional Review Board at University of California, San Francisco and San Francisco General Hospital (SFGH). Pregnant women who were in their second or third trimesters were recruited from prenatal clinics at UCSF and San Francisco General Hospital, California between May 2006 and May 2007. Written consent was obtained from all women in either Spanish or English. Women were ineligible to participate in the study if they: were abusing drugs/alcohol, had a history of diabetes or presently were experiencing gestational diabetes, suffered from polycystic ovarian syndrome, had an eating disorder or another health issue that could impact breast-feeding. If infants of the mother had special care needs or had an Apgar score below 7

at five minutes after delivery, the family was excluded from the study. Women were interviewed by trained research assistants. The research assistants were all fluent in Spanish, had university degrees and had received training from the committee on Human Research on human subjects protection training. See Wojcicki et al. (2011a), (2011b), for more information about the sample or procedure.

*Missing Data Analysis.* Missing data on the variables of interest ranged from 4 to 38 cases. Mothers with missing data did not significantly differ from those not missing data on total Center for Epidemiologic Studies Depression Scale score ($p = 0.4174$), and total Edinburgh Postnatal Depression Scale score ($p = 0.6275$). Mothers with more education ($r = 0.16$, $p < 0.03$) and English speakers ($r = 0.16$, $p < 0.02$) were more likely to have missing data. Planned pregnancy question was individually examined for missingness because it had the most missing data. Women with higher levels of education were more likely to not answer the planned pregnancy question ($r = 0.18$, $p < 0.01$). Missing cases were handled with robust maximum likelihood estimation.

### Screening for covariates

Prior to computing Structural Equation Models, we examined possible maternal and sociodemographic confounders that may impact infant health. We ran multiple regression models of covariates predicting components of newborn health and included relationship status and planned pregnancy status (see Supplemental Table S1). The models predicting birth weight, $F (11, 127) = 0.92$, $p = 0.52$, and head circumference, $F (11, 120) = 1.50$, $p = 0.14$, were both non-significant. The covariate model predicting gestational age was significant, $F (11, 124) = 1.86$, $p = 0.05$. The only covariate that significantly predicted head circumference was maternal employment status at pregnancy. Women who reported being employed (yes = 1) had babies with younger gestational age ($\beta = -0.31$, $p < 0.001$). Based on these results, we included employment status (yes, employed/no, not employed) as a covariate in a sub-analysis of our model.

### Measures

*Maternal Relationship Status.* Maternal prenatal relationship status was dichotomously coded to represent whether the mother was single (i.e., single or divorced) or in a relationship (i.e., married or cohabiting). Women who reported being single or divorced were coded as being single (0); women who reported being married or in a cohabiting relationship were coded as being in a relationship (1).

*Planned Pregnancy.* Planned pregnancy was a dichotomous one-item question ("*Had you planned beforehand to become pregnant at that time?*") asking mothers to report whether the pregnancy was planned ("*Yes, I had planned to become pregnant*"= 1) or not planned ("*No, I didn't plan to become pregnant*" = 0).The question was collected retrospectively, when the children were 12 months to 2 years.

*Depression.* Mother's level of prenatal depression was assessed utilizing two measures of depression: (1) Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), and (2) Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). The CES-D ($\alpha = 0.88$) consisted of twenty items scored on a 4-point scale from "Rarely or none of the time, < 1 day" (0) to "Most of the time, 5–7 days" (3). The EPDS ($\alpha = 0.80$) consisted of ten items scored on a 4-point scale, with appropriate items reversed-coded. Higher scores on each of the scales denoted higher levels of depression symptomology.

*Newborn Health.* Previous health research provided the justification for the aggregation of sets of variables. For instance, aggregated constructs that capture mental and physical health-enhancing factors, such as *slow life history in adulthood* (Figueredo et al., 2005), *ideal cardiovascular health* (Lloyd-Jones et al., 2010), and *multi-system resiliency* (Puterman and Epel, 2012), have been used as outcomes and predictors in prior models of health. Likewise, the creation of health-risking indices has also been used. The most notable example is the *allostatic load*, which