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Prenatal Depressive Symptoms And Sexual Risk Among Young Urban Pregnant Women Of Color

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Running head: PRENATAL DEPRESSIVE SYMPTOMS AND SEXUAL RISK

**Prenatal Depressive Symptoms and Sexual Risk among
Young Urban Pregnant Women of Color**

Abigail Taylor

Abstract

Objective: To determine whether prenatal depressive symptoms are related to sexual risk outcomes 12 months postpartum.

Methods: Participants included 757 pregnant women aged 14-21 years, mainly Latina (54.4%) and Black, non-Latina (37.0%). Women completed structured interviews during the second and third trimester of pregnancy and one-year postpartum. Depressive symptoms were measured using the affect-only items of the Center for Epidemiologic Studies-Depression Scale (CES-D). Outcomes included sexual risk behavior (percent condom use, number of partners) and sexually transmitted diseases (STDs) measured via laboratory testing.

Results: Prenatal depressive symptoms significantly predict a decrease in condom use one-year postpartum, even when controlling for previous risk behavior and current knowledge. There is no significant association between prenatal depressive symptoms and number of partners or diagnosed STDs.

Conclusions: Results indicate a large young, urban, pregnant women of color experience depressive symptoms, which may in turn negatively impact their condom use behaviors. Further research on prenatal depressive symptoms and its effects is needed to determine the value of screening for depression during pregnancy.

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Introduction

Young women who are pregnant or mothering are at increased risk for sexually transmitted diseases (STDs) (Ethier et al., 2006; Meade & Ickovics, 2005; Niccolai, Ethier, Kershaw, Lewis, & Ickovics, 2003). Females 15-19 years of age have the highest rates of STDs, with pregnant teens about five times less likely to use condoms compared to non-pregnant teens, further increasing their risk of contracting an STD (Crosby, DiClemente, Wingood, Rose, & Lang, 2003; Kershaw, Niccolai, et al., 2003). In addition to elevated risk of STDs, young women also have a higher likelihood of either being depressed or displaying depressive symptoms, especially during pregnancy (Hobfoll, Ritter, Lavin, Hulsizer, & Cameron, 1995). Depression is at least twice as common in women compared to men, with peak onset during childbearing years (Andersson et al., 2003; Health, 2014; Llewellyn, Stowe, & Nemeroff, 1997). Some research suggests that up to 70% of pregnant women experience depressive symptoms, of which 10-16% meet the Diagnostic and Statistical Manual (DSM) criteria for a major depressive episode (Llewellyn et al., 1997; Management., 2010). In some studies of adolescent females, depressive symptoms has been associated with risky sexual behavior, but temporality has been difficult to determine (Sandhya, Avshalom, Nigel, Terrie, & Charlotte, 2000; Shrier, Harris, Sternberg, & Beardslee, 2001).

Understanding the association between depressive symptoms and sexual risk behavior is valuable in young, pregnant women, as they are at high risk for both depression and STDs. In previous studies, depression has been associated with sexual risk behaviors, such as having multiple sex partners and not using birth control during last intercourse (Berenson, Breitkopf, & Wu, 2003; Sandhya et al., 2000; Shrier et al., 2001; Small & Luster, 1994). Even depressive symptoms that do not meet the DSM criteria for major depressive disorder have been significantly associated with sexual risk behaviors (Shrier et al., 2001). If depressive symptoms, whether moderate or severe, are a precursor to sexual risk behavior, pregnancy may be an optimal time to intervene. Most women seek some form of prenatal care, and can be screened and subsequently treated for depression, potentially averting future risky sexual behavior.

This study aims to determine whether prenatal depressive symptoms are associated with sexual risk outcomes, specifically number of sex partners, condom use, and diagnosis of a sexually transmitted diseases one year postpartum among a group of young, urban women of color. Previous studies have found associations between depression and sexual risk among adolescent, mostly White populations using cross-sectional data. This study expands upon previous research by focusing on pregnant women, primarily Latina or Black, and uses longitudinal data to better assess temporality.

Methods

Data were taken from a randomized control trial (RCT) of *CenteringPregnancy Plus*, a group prenatal care model that aims to improve the reproductive and psychosocial health of young, pregnant women (Ickovics, 2007). Fourteen clinical sites were randomized to provide either the group prenatal care intervention or standard

individual prenatal care. The fourteen sites consisted of community hospitals and health centers across New York City. Because this investigation does not test for an intervention effect, all participants who completed an interview one year postpartum are included in the analysis (n=757).

Procedure

Between 2008 and 2011, young women (14-21 years old), were referred by a health care provider or directly approached by research staff for participation in this study during their first prenatal care visit. To meet inclusion criteria, women had to be less than 24 weeks gestation, have no indication of a high-risk pregnancy, be able to speak English or Spanish, and be willing to participate in the study. Research staff explained the study to participants who were eligible, answered participant's questions, and obtained informed consent. Baseline interviews with 1233 eligible participants who consented were conducted during the second trimester of pregnancy (14-24 weeks gestation). Follow-up interviews were conducted during the third trimester (32-42 weeks gestation) as well as six and twelve months postpartum.

Structured interviews using Audio-Handheld Assisted Personal Interview technology were completed in English or Spanish. This technology allows participants to listen to questions with headphones while also seeing the questions on a computer. Participants were paid \$20 for each interview. All procedures were approved by Institutional Review Boards at Yale University, Clinical Directors Network, and at each clinical site.

Participants

The sample for these analyses was limited to those who had completed an interview at 12 months postpartum. Of the 757 women, 54.4% (412) identified as Latina, 37.0% (280) as Black, non-Latina, and 8.6% (65) as White or other. Thirty-four percent (260) of the sample was born outside of the US. Participants' ages ranged from 14-21 years, with the average age being 18.6 (SD = 1.76).

Measures

Main predictor variable: Depressive Symptoms: Participants completed the Center for Epidemiologic Studies Depression Scale (CES-D), a validated self-report scale assessing current depressive symptoms (Radloff, 1977). They rated how often they experienced components of depressed mood and psychophysiologic indicators on a 4 point scale, where 0 equals less than one day, 1 equals 1-2 days, 2 equals 3-4 days, and 3 equals 5-7 days.

Following prior research with pregnant women, five psycho-physiologic items related to appetite, disrupted sleep and energy level were not included. These indicators mirror symptoms of pregnancy. Cronbach's alpha for this 15-item "affect only" scale is 0.85, indicating high reliability. This scale has been validated in community samples (Comstock & Helsing, 1976) and used successfully in studies with pregnant women

(Marcus, Flynn, Blow, & Barry, 2003; Orr & Miller, 1995; Westdahl et al., 2007).

The standard cutoff score for the CES-D is 16, which indicates high levels of depressive symptoms that may require further psychological evaluation (Marcus et al., 2003; Orr & Miller, 1995). This cutoff score has also been used specifically with pregnant populations, and may even be a more conservative cutoff given that the five psycho-physiologic items were dropped (Beeghly et al., 2002; Marcus et al., 2003; Westdahl et al., 2007). Using this cutoff score, depressive symptoms was dichotomized to low (CES-D <16 during second and third trimester) or high (CES-D \geq 16 during second or third trimester).

Outcome Variables: Percent condom use. At their one-year postpartum follow up, participants were asked “since your last interview, of the times you had sex, on a scale from 0% (never) to 100% (always), what percent of the time did you use condoms?” Responses to this variable were left continuous.

Number of partners. Participants were asked “in the last six months, how many men have you had sex with?” at their one year postpartum interview. Responses ranged from 0-13.

Diagnosed STDs. At their one year postpartum visit, participants were offered laboratory testing for gonorrhea and chlamydia. Testing was done using urine-based ligase chain reaction (LCR). Urine samples were collecting during the visit, and LCR testing was completed at a central laboratory. If the urine sample tested positive for either gonorrhea or chlamydia, participants were classified as having a diagnosed STD.

Control variables: Participant characteristics. Race, ethnicity, date of birth, food insecurity (used as a proxy for socioeconomic status), and history of sexually transmitted disease were reported by participants during the first interview. Level of commitment was also controlled for at one year postpartum, as whether or not the woman is in a committed relationship may directly impact the outcomes being analyzed. Participants were asked to categorize their relationship with their primary sexual partner as not at all committed, a little committed, somewhat committed, or very committed. Those who stated they were not currently involved in a romantic relationship were categorized as not at all committed.

STD/HIV risk knowledge: This established 11-item measure assessed participants’ knowledge about sexually transmitted diseases and HIV, including modes of transmission (Sikkema et al., 1996). The scale was changed from true/false to definitely false, probably false, don’t know, probably true, definitely true to minimize guessing and account for confidence of responses. Responses were summed, with higher scores suggesting greater sexual risk knowledge. Twelve month postpartum scores are included in this analysis.

Condom use norms, attitudes, and barriers: Participants answered the Sexual Risk

Behavior Beliefs and Self-Efficacy (SRBBS) Scale's three subscales to assess norms about sexual intercourse, attitudes about sexual intercourse, and self-efficacy in refusing sex (Basen-Engquist et al., 1999; Jackman, 2012). The scale ranged from 1 (strongly disagree) to 5 (strongly agree). Means were created for each subscale, with higher items suggesting more positive norms and attitudes regarding condom use, and fewer barriers to condom. Twelve month postpartum scores are included in this analysis.

Condom use self-efficacy (CUSES): This 14-item validated scale is used to assess individual's perception of her ability to use condoms (Brafford & Beck, 1991; Kershaw, Ethier, Niccolai, Lewis, & Ickovics, 2003). Four subscales included mechanics (putting a condom on self or other), partner disapproval (use of a condom with a partner's approval), assertiveness (ability to persuade partner to use condom), intoxicants (ability to use condoms while under the influence). The reference alpha for this scale is 0.81 (Brafford & Beck, 1991). Participants could choose either strongly disagree, disagree, undecided, agree, strongly agree, or refuse to answer. Twelve month postpartum scores are included in this analysis.

Data Analysis

Logistic regression analyses were used to determine whether prenatal depressive symptoms are a significant predictor of being diagnosed with a sexually transmitted disease at the twelve month follow-up visit. Linear regression analyses were used to determine whether prenatal depressive symptoms was a significant predictor of percent condom use and number of partners. Analyses controlled for race/ethnicity, age, food insecurity, born outside the US, level of commitment, sexual risk knowledge, condom use norms, attitudes, and barriers, and condom use self-efficacy. Analyses also controlled for baseline risk behaviors (number of sexual partners and percent condom use) as well as site clustering and study condition. Analyses were performed using SPSS.

Results

Risk characteristics

At the one year follow-up, the mean number of sex partners was 1.14 (SD 0.97), with a range of 0-13 partners. Mean percent condom use was 34.2% (SD 41.19), with 35.1% engaging in sexual activity with a high risk partner. Sixty-two women (9.7%) were diagnosed with gonorrhea, chlamydia, or both at one-year postpartum through lab-tested urine screening.

Depressive symptoms

A substantial proportion of women (42.5%, n=322) had CES-D scores ≥ 16 , demonstrating high levels of depressive symptoms during pregnancy. CES-D scores ranged from 0-43, with the highest possible score being a 45. While reaching the cutoff

score of 16 does not equate to a clinical diagnosis of depression, this level of depressive symptoms has been associated with sexual risk behaviors (Shrier et al., 2001).

Outcomes

Results of the linear and logistic regression analyses are presented in Table 2. Prenatal depressive symptoms significantly predicts less condom use ($\beta = -7.16$, SE 3.08), even when controlling for participant characteristics, STD/HIV risk knowledge, condom use norms, attitudes, barriers, condom use self-efficacy, baseline risk behaviors (percent condom use and number of sexual partners), and study group (intervention versus control). Prenatal depressive symptoms were not significantly associated with number of partners or positive STD diagnosis in the adjusted models.

Discussion

Prenatal depression was significantly associated with less condom use one year postpartum even after adjusting for clinical, behavioral and demographic risk factors. Depression may negatively affect self-determination and negation skills (Shrier et al., 2001). Further, women who experience depressive Symptoms may not take part in many self-care behaviors due to feelings of worthlessness associated with their mental state. Feelings of worthlessness, decreased self-esteem, and reduced confidence, all of which are symptoms of depressive episodes listed in the DSM-IV, may contribute to decreased condom use (Association, 2013).

We found no associations, however, between prenatal depressive symptoms and number of partners or diagnosed STD. This may be in part because this was a high risk sample to begin with, as 36.2% reported a history of an STD, and all engaged in sexual intercourse without contraceptive at some point close to entering the study as this was a group of pregnant women. About 16% (n=120) women did not complete the urine test for gonorrhea and chlamydia, which could have led to an underreporting of diagnosed STDs. Further, depressive symptoms have been shown to decrease a woman's sex drive and lead to sexual dysfunction, which may explain why there was no significant increase in sexual partners (Fabre & Smith, 2012). On average, women in this analysis had 1.14 partners, so even though condom use was less for those displaying depressive symptoms, their chances of contracting an STD was also not as high as it would have been if they had multiple partners. It is telling, however, that condom use increase by over 20% from the first interview to one year postpartum for the general sample, but still decreased by 7.16% for those displaying depressive symptoms. Depressive symptoms may play a greater role in condom negotiation skills and self-care than in increased number of sex partners.

Limitations and Future Directions

Currently, screening for depressive symptoms is not routine during prenatal visits. Several studies have assessed screening practices among pediatricians and obstetrician-gynecologists (OB/GYNs). Only 32% of OB/GYNs reported using a validated measure to assess depression during pregnancy, and only 8% of pediatricians reported routinely asking about maternal depression (Management, 2010).

These results may suggest increased screening for depression during pregnancy, as even moderate levels of depressive symptoms may negatively impact some sexual risk behaviors, such as condom use (Shrier et al., 2001). Further, many depression inventories (Beck Depression Inventory, CES-D, Patient Health Questionnaire-9) only require 5-10 minutes to complete, and are available in Spanish, making this a relatively easy test to administer to a large subset of the American population (Gynecologists, 2010). Most women seek some form of prenatal care, which makes prenatal visits an ideal time to screen for depressive symptoms with linkages to appropriate resources for those who test high. Depression has been cited as one of the most common complications of pregnancy, even though much of the focus has been on postpartum depression (Lancaster et al., 2010). Future research should focus on prenatal depressive symptoms and their impact on the physical, mental, and sexual health of the woman.

While this study had many strengths such as a large sample size, high retention rate (67.8%), and data from multiple time points, it is not without limitations. First, all data collected with the exception of lab tested STDs was done through self-report. This may have introduced recall bias or social desirability bias into the results. It is likely, however, that this would have biased the results toward the null, making our results more conservative than the true effect. Further, this sample was mainly limited to those who identified as Latina or Black, non-Latina, as well as those from low socioeconomic status and urban environments and, therefore, may not be generalizable across all populations. Many previous studies, however, were comprised of mainly White, non-pregnant females, so this analysis should further add to existing findings.

Conclusion

Prenatal depressive symptoms significantly predict less condom use among young, urban, socially disadvantaged, predominately Black or Latina women. A large number of women are experiencing prenatal depressive symptoms that are not being diagnosed due to the similarities depressive symptom indicators share with pregnancy, and the current lack of routine screening for depression. This study suggests there are negative health consequences to prenatal depressive symptoms that future research should assess.

Table 1. Participant characteristics (n = 757)

	T1		T4	
	% (n) or M (SD)	n	% (n) or M (SD)	n
Race/Ethnicity				
Latina	54.4 (412)	757	-	-
Black, non-Latina	37.0 (280)			
White or other, non-Latina	8.6 (65)			
Age (Range: 14-21 years)	18.6 (1.76)	757	-	-
Years education (Range: 1-16 years)	10.8 (2.21)	753	-	-
Food insecurity	44.7 (335)	750	-	-
Born outside US	34.3 (260)	757	-	-
Commitment level				
Not in a committed relationship	22.5 (168)	748	29.0 (219)	755
A little committed	4.5 (34)		3.6 (27)	
Somewhat committed	13.4 (100)		17.1 (129)	
Very committed	59.6 (446)		50.3 (380)	
Prenatal Depression Symptomatology (CESD \geq 16) (Range: 0-45)				
Low	57.5 (435)	757	-	-
High	42.5 (322)			
History STD	36.2 (246)	679	-	-
STD/HIV knowledge (Range: 6-44)	35.3 (6.10)	757	37.59 (5.90)	756
Condom norms (Range: 1-50)	3.82 (0.99)	747	4.0 (1.01)	752
Condom attitudes (Range:1-5)	4.2 (0.83)	753	4.36 (0.78)	749
Condom barriers (Range:1-5)	4.0 (1.04)	754	4.21 (0.98)	748
Condom use self-efficacy (Range: 8-56)	42.5 (10.0)	753	45.8 (9.44)	751
# sex partners (Range: 0-13)	1.26 (0.81)	737	1.14 (0.97)	747
High risk sex partner	44.8 (338)	755	35.1 (238)	679
% Condom Use	10.8 (26.3)	752	34.2 (41.19)	751
Positive CT/GC urine test	-	-	9.7 (62)	637

Table 2. Relationship between prenatal depression Symptoms and sexual risk outcomes^a

	% Condom Use, B (SE) (n=747)	Number Partners, B (SE) (n=751)	Positive STD Diagnosis OR (CI) (n=637)
Prenatal Depressive Symptoms (CESD ≥16)	-7.16 (3.08)*	.13 (.07)	1.58 (.87-2.88)

*p < .05

^a Controls: Race/ethnicity, age, whether US nativity, food insecurity (as a proxy for SES), level of relationship commitment, STD/HIV risk knowledge, condom use norms, condom use attitudes, condom use barriers, condom use self-efficacy, and study group (intervention versus control).

T4 used for level of relationship commitment, STD/HIV risk knowledge, condom use norms, condom use attitudes, condom use barriers, and condom use self-efficacy.

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