Prenatal Depressive Symptoms and Postpartum Sexual Risk Among Young Urban Women of Color

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Abstract

Study Objective—To determine whether prenatal depressive symptoms are associated with postpartum sexual risk among young, urban women of color.

Design—Participants completed surveys during their second trimester of pregnancy and at 1 year postpartum. Depressive symptoms were measured using the Center for Epidemiologic Studies-Depression Scale, excluding somatic items because women were pregnant. Logistic and linear regression models adjusted for known predictors of sexual risk and baseline outcome variables were used to assess whether prenatal depressive symptoms make an independent contribution to sexual risk over time.

Setting—Fourteen community health centers and hospitals in New York City.

Participants—The participants included 757 predominantly black and Latina (91%, n = 692) pregnant teens and young women aged 14–21 years.

Interventions and Main Outcome Measures—The main outcome measures were number of sex partners, condom use, exposure to high-risk sex partners, diagnosis of a sexually transmitted disease, and repeat pregnancy.

Results—High levels of prenatal depressive symptoms were significantly associated with increased number of sex partners (β = 0.17; standard error, 0.08), decreased condom use (β = −7.16; standard error, 3.08), and greater likelihood of having had sex with a high-risk partner (odds ratio = 1.84; 95% confidence interval, 1.26–2.70), and repeat pregnancy (odds ratio = 1.72; 95% confidence interval, 1.09–2.72), among participants who were sexually active (all *P* < .05). Prenatal depressive symptoms were not associated with whether participants engaged in postpartum sexual activity or sexually transmitted disease incidence.

Conclusion—Screening and treatment for depression should be available routinely to women at risk for antenatal depression.

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Introduction

Young women who are pregnant or parenting are at increased risk for sexually transmitted diseases (STDs).[1,2] Women 15–24 years of age have the highest rates of STDs,[3] with pregnant teens approximately 5 times less likely to use condoms compared with nonpregnant teens, further increasing their risk of contracting an STD.[2] In addition to increased sexual risk behaviors, young women, especially of low socioeconomic status, have a higher likelihood of either being depressed or displaying depressive symptoms during pregnancy.[4,5] Depression is at least twice as common among women compared with men, with peak onset during childbearing years.[6] It is the most common psychiatric disorder associated with pregnancy with 10%–20% of women experiencing depression during the prenatal or the early postpartum periods.[7]

High levels of depressive symptoms are associated with risky sexual behavior, such as having multiple sex partners and not using birth control during last intercourse among adolescents.[8–10] Even depressive symptoms that do not meet the *Diagnostic and Statistical Manual* criteria for major depressive disorder have been significantly associated with increased sexual risk.[10] Most of these studies have focused predominantly on white women and report findings based on cross-sectional data. Although some studies report higher rates of major depressive disorder in white persons compared with other races or ethnicities,[11,12] most suggest that black and Latino individuals are more likely to report depressive symptoms than white individuals, particularly among youth.[13–15] Evidence also suggests that the prevalence of antenatal depressive symptoms is greater among black women compared with white women.[16–18] It is particularly important to develop a better understanding of the association between depressive symptoms and sexual risk behaviors among minority youth because they are also the population at highest risk for STDs.[3]

The objective of this longitudinal study was to determine whether prenatal depressive symptoms are associated with postpartum sexual risk behaviors and outcomes, including number of sex partners, condom use, exposure to high-risk sex partners, diagnosis of an STD, and repeat pregnancy among young, urban women of color. Depression is one of the most common complications of pregnancy; however, most of the focus has been on postpartum depression.[19] If depressive symptoms are a precursor to sexual risk behavior, pregnancy might 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, and improvement of self-management and clinical outcomes.

Materials and Methods

Data used for these analyses were obtained from a randomized control trial (trial registration number: NCT00628771) of Centering Pregnancy Plus, a group pre-natal care model that

aims to improve the reproductive and psychosocial health of young, pregnant women.[20] The curriculum consists of 10 structured sessions (120 minutes each) during which participants engage in self-care activities of weight and blood pressure assessment and participate in group discussions to address issues related to prenatal care, childbirth preparation, postpartum care, HIV prevention including sexual risk reduction, and mental health and psychosocial functioning (eg, depression, stress reduction). Fourteen community health centers and hospitals that are members of Clinical Directors Network, a primary care practice-based research network in New York City, were randomized to provide either the group prenatal care intervention or standard individual prenatal care. These analyses do not test for an intervention effect. Therefore, study condition was controlled in all analyses and all participants who completed an interview during their second trimester and at 1 year postpartum were included in the analysis.

Procedure

Between 2008 and 2011, young women (14–21 years old) who attended an early prenatal care visit at a study site were referred by a health care provider or directly approached by research staff for participation in the study. Eligibility criteria included less than 24 weeks' gestation, no medical indication of a high-risk pregnancy, younger than 21 years old at last birthday, ability to speak English or Spanish, and willingness to participate in the study procedures. Research staff explained the study to participants who were eligible, answered questions, and obtained informed consent. Participants completed surveys during the second trimester of pregnancy (14–24 weeks' gestation), third trimester (32–42 weeks' gestation), and at approximately 6 and 12 months (5–8 months and 11–14 months, respectively) postpartum using Audio-Handheld Assisted Personal Interview technology. This allowed participants to listen to questions with headphones while the questions were displayed on a computer screen. The analyses for this report use data collected at the second trimester and at the 1 year postpartum time points. Participants were paid $20 for each interview. All procedures were approved by institutional review boards at Yale University, Clinical Directors Network, and each clinical site.

Dependent Variables

Number of Sexual Partners—During the second trimester of pregnancy and at 1 year postpartum, participants reported the number of different men with whom they had sex during the previous 6 months.

Condom Use—During the second trimester of pregnancy, participants reported the percentage of times they used condoms when having sex in the 6 months before becoming pregnant. One year postpartum, they reported the percentage of times they used condoms in the previous 6 months.

High-Risk Partner—Participants were classified as having had sex with a high-risk partner if they reported any sexual partners in the past 6 months had engaged in 1 or more of the following risk behaviors: had other sexual partners, is or was an intravenous drug user, has HIV or AIDS, ever had an STD, is a man who has ever had sex with a man, or has ever been in prison.[21,22]

STD Diagnosis—Participants were classified as having a history of an STD if they reported having ever been diagnosed with any of the following STDs: chlamydia, gonorrhea, genital warts or human papilloma virus, herpes, syphilis, or trichomonas. One year postpartum, participants were tested for chlamydia and gonorrhea with urine-based ligase chain reaction. They were also asked if they were diagnosed with an STD (listed herein) since their previous interview. Participants were classified as having an incident STD if they tested positive for chlamydia or gonorrhea at the 12-month postpartum interview or they reported having been diagnosed with an STD after the 6-month postpartum interview. This approach ascertained STDs that might have been tested and treated between interviews.

Repeat Pregnancy—Participants reported whether they had become pregnant since their index pregnancy.

Main Predictor Variable

Depressive Symptoms—Participants completed the affect-only component of the Center for Epidemiologic Studies Depression Scale (CES-D).[23] This scale has been validated for use with diverse samples of adolescents[9,24] and used successfully in studies of pregnant women.[5,25,26] Participants rated over the past week how often they experienced affective components of depressed mood (eg, feelings of failure, guilt, hopelessness) on a 4-point Likert scale, ranging from none of the time (0) to all of the time (3; $\alpha = 0.87$). According to previous research with pregnant women, 5 psychophysiologic items of the CES-D related to appetite, disrupted sleep, and energy level were not included, because these indicators mirror symptoms associated with pregnancy.[25] Scores for each item were summed. Participants with a CES-D score greater than or equal to 16 were classified as having a high level of prenatal depressive symptoms. This standard cutoff point has been used as an indicator of clinically significant increased depressive symptomology for the truncated version of the scale.[25]

Control Variables

Participant Characteristics—Participants reported their date of birth (from which age in years was calculated), race/ethnicity, whether they experienced food insecurity, and were employed (as proxies for socioeconomic status), and whether they were born outside of the United States. Participants also reported whether they were in a romantic relationship and, if so, rated the level of commitment on a 4-point scale from "not at all committed" (1) to "very committed" (4). Women who reported not being in a romantic relationship or rated their relationship as "not at all committed" were coded as "not being in a committed relationship."

STD/HIV Risk Knowledge—Participants answered 11 items constituting an established measure of knowledge about STDs and HIV, including modes of transmission.[27] Response categories were changed from true/false to a 4-point Likert scale ranging from "definitely false" (0) to "definitely true" (4) to minimize guessing and account for confidence of responses. Items were reverse coded as needed and summed, with higher scores indicating greater sexual risk knowledge.

Condom Use Norms, Attitudes, and Barriers—Participants completed the Sexual Risk Behavior Beliefs and Self-Efficacy scale's 3 subscales that assess norms about sexual intercourse, attitudes about sexual intercourse, and self-efficacy in refusing sex.[28] Participants responded to the 9 items comprising these 3 subscales (3 questions each) on a 5-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). Items were reversed scored as needed and a mean was created for each subscale, with higher values indicating more positive norms and attitudes, and fewer barriers.

Condom Use Self-Efficacy Scale—Participants completed the 14-item Condom Use Self-Efficacy Scale.[29] The Condom Use Self-Efficacy Scale uses a 5-point Likert scale that ranges from "strongly disagree" (1) to "strongly agree" (5). Items were reverse coded as needed and summed, with higher scores indicating greater condom use self-efficacy.

Data Analyses

Logistic regression analyses were used to test the association between prenatal depressive symptoms and binary outcomes, including postpartum sexual activity, and among those who were sexually active postpartum, whether sex occurred with a high-risk partner, STD acquisition, and repeat pregnancy. Linear regression analyses were used to assess the association between prenatal depressive symptoms and number of sexual partners and percentage of condom use among those who were sexually active. Analyses controlled for known predictors of sexual risk including age, race/ethnicity, food insecurity, and employment (socioeconomic indicators), US nativity, and relationship status.[30] Baseline (second trimester) outcome variables were included in the models to assess whether prenatal depressive symptoms make an independent contribution to sexual risk in this sample over time. Analyses also controlled for site clustering, and study condition (ie, assignment to group vs individual care). Analyses were performed using SPSS version 19 (IBM Corp., Armonk, NY).

Results

Participant Characteristics

Of 1549 women eligible to participate in the study, 1233 enrolled (participation rate, 80%). Those who agreed to participate were slightly younger (mean ± SD,18.63 ± 1.73 vs 19.00 ± 1.67; $t(1548) = -3.46$; $P=.001$), and more likely to be black (38% vs 27%; $\chi^2(1) = 23.36$; $P<.001$). The analyses for this report include 757 (61%) who completed the second trimester and the 12-month postpartum surveys and answered all questions for the main predictor variable. Women included in the analytic sample were significantly more likely than the 476 who were excluded to be black (37% vs 28%), have experienced food insecurity (45% vs 37%), and have a low level of depressive symptoms (58% vs 48%); all $P < .05$. Survey completion rates did not vary according to study condition.

In Table 1 the sample characteristics according to level of depressive symptoms are listed. The mean age of all the participants was 18.6 ± 1.76 years. Six hundred ninety-two (91%) self-identified as black or Latina, 260 (34%) were born outside of the United States, and 446 (59%) reported being in a very committed relationship. Based on a CES-D cutoff score of 16

or higher, 322 (43%) of participants had a high level of prenatal depressive symptoms. In bivariate analyses, a high level of depressive symptoms was significantly associated with younger age (t[755] = 2.30; P = .02), greater likelihood of having experienced food insecurity (χ^2(1) = 27.12; P < .001), less likelihood of being in a very committed relationship (χ^2(3) = 25.02; P < .001), greater perceived barriers to condom use (t(752) = 3.28; P = .001), and lower levels of condom use self-efficacy (t(751) = 2.42; P = .02).

At 12 months postpartum, 670 participants (89%) reported having had at least 1 male sex partner in the previous 6 months. Those who were sexually active had an average of 1.3 different sex partners (range,1–13; SD =0.94) with whom they used condoms on average for 38% of the times they had sex (range, 0–100%; SD =41.73). Two hundred thirty-six (35%) had at least 1 high-risk sex partner. At 12 months postpartum, 129 (19%) of sexually active participants had received a positive STD diagnosis in the previous 6 months and 103 (15%) had become pregnant again since giving birth. In bivariate analysis, a high level of depressive symptoms was significantly associated with higher numbers of sex partners (t[668] = −3.84; P < .001), lower rates of condom use (t[666] = 2.00; P = .05), greater likelihood of having had sex with a high risk partner (χ^2[1] =18.70; P <.001), and greater likelihood of having had a repeat pregnancy (χ^2[1] = 4.67; P = .03).

Relationship Between Prenatal Depressive Symptoms and Postpartum Sexual Risk

Table 2 shows the results of the unadjusted analyses for the relationship between participant characteristics and postpartum sexual risk. Table 3 shows the results of the multivariable logistic and linear regression analyses. Level of prenatal depressive symptoms did not predict whether or not participants were sexually active postpartum. Among those who had at least 1 male sexual partner, a high level of prenatal depressive symptoms was significantly associated with having a greater number of different sex partners (β = 0.17; standard error = 0.08) and decreased condom use (β = −6.85; standard error = 3.34), even when controlling for participant characteristics, STD/HIV risk knowledge, condom use norms, attitudes, barriers, condom use self-efficacy, baseline risk behaviors, and study group assignment. A high level of prenatal depressive symptoms, compared with low, was also independently significantly associated with increased odds of sexually-active participants having had at least 1 high-risk sex partner (odds ratio [OR] = 1.84; 95% confidence interval [CI], 1.26–2.69) and repeat pregnancy (OR = 1.75, 95% CI, 1.11–2.76). Level of prenatal depressive symptoms did not predict postpartum STD acquisition (OR = 0.98; 95% CI, 0.63–1.53).

Discussion

Several important associations between depressive symptoms and sexual risk were found in this study. Among participants who reported having been sexually active between 6 and 12 months postpartum, high levels of prenatal depressive symptoms were significantly associated with increased number of sex partners and decreased condom use. They also had a significantly greater likelihood of having engaged in sex with a high-risk partner or having a repeat pregnancy within 1 year of giving birth.

These findings are consistent with those of other studies that have shown high levels of depressive symptoms to be associated with risky sexual behavior in adolescents,[8–10] and

extend the literature with a longitudinal focus regarding depressive symptoms during pregnancy and postpartum risk. Depression might negatively affect self-determination and negotiation skills, which leads to risky sexual behavior.[10] Further, feelings of worthlessness, decreased self-esteem, and reduced confidence, all of which are symptoms of depressive episodes listed in the *Diagnostic and Statistical Manual*, Fourth Revision,[31] might contribute to increased alcohol and drug use, decreased condom use, and increased number of sex partners.[9,10]

Several studies among low-income and minority women suggest that those who screen positive for depression are less likely to use contraception consistently or at all compared with those without symptoms.[32–34] Further, women who screen positive for depression are more likely than those without depressive symptoms to select less effective contraceptive methods such as withdrawal or periodic abstinence vs hormonal (eg, oral contraceptives, patch, injectable, implant) or barrier (eg, condoms) methods or an intrauterine device.[32,33,35] In a study of 2476 predominantly black and Latina women who sought care at 8 reproductive health centers in New York City, Garbers and colleagues found that even among patients who chose a more effective method, a positive screen for depression was associated with 39% lower odds of selecting hormonal methods and 45% higher odds of selecting condoms.[33] Likewise, a recent population-based cohort study of 689 young women aged 18–20 years in Michigan found those with moderate/severe depression had lower relative risks of using longer-acting methods compared with oral contraceptives.[34] Less effective or no contraceptive use among women with depressive symptoms is concerning because it not only puts them at greater risk for unintended pregnancies but also STDs.

The level of prenatal depressive symptoms was not associated with postpartum sexual activity. This finding is contrary to at least 1 study that found high levels of depressive symptoms to be associated with higher odds of having had sexual intercourse.[9] Conflicting data exist about whether depressive symptoms have an effect on libido. Although some research suggests that depressive symptoms might decrease a woman's sex drive and lead to sexual dysfunction,[36,37] other studies have shown that depressive symptoms can either increase or decrease desire for sexual activity.[38,39]

Contrary to previous research using National Longitudinal Study of Adolescent Health data that showed depressive symptoms to predict increased risk for an STD diagnosis within 1 year,[10] in this study we did not find an association between level of prenatal depressive symptoms and future STD risk. During the second trimester, a large portion of the current sample (37%) reported ever having an STD. Because of the potentially high prevalence of STDs among participants' sexual networks, there might not have been sufficient power to detect differences between those with low vs. high levels of depressive symptoms.

This study was conducted among an urban sample of predominantly black or Latina pregnant young women, therefore, the findings, might not be generalizable across all populations. Participants included in the final analytic sample for this report differed from those excluded because of loss in terms of race/ethnicity, experience with food insecurity, and levels of depressive symptoms, which indicates a potential selection bias. This study also relied on self-report data regarding sexual risk behaviors, repeat pregnancy and, to some

extent, STD acquisition, which might be subject to social desirability bias. Despite these limitations, however, the current investigation extends past work in several ways. The longitudinal nature of the data allowed for prospective assessment of the relationship between prenatal depressive symptoms and postpartum sexual risk, while controlling for those same outcomes at earlier time points. Doing so addressed temporality issues, which limited the inferential possibility for previous cross-sectional studies that found associations between depressive symptoms and sexual risk. Moreover, this study focused specifically on pregnant women who, during pre-natal visits, might be readily targeted for intervention.

Screening for depressive symptoms is currently not routine during prenatal visits; only 32% of obstetricians reported using a validated measure to assess depression during pregnancy.[40] Antenatal depression has been associated with adverse pregnancy outcomes such as preterm birth, fetal growth restriction, preeclampsia, and fetal death.[17,41–43] It might also negatively affect depressed women's offspring with regard to emotional, cognitive, and physical well-being.[44] Findings from the current study suggest that screening and providing treatment to women at risk for depression during pregnancy might also benefit their sexual and reproductive health outcomes up to 1 year postpartum.

Many depression inventories (Beck Depression Inventory, CES-D, Patient Health Questionnaire-2 and Patient Health Questionnaire-9) only require 5–10 minutes to complete, and are available in Spanish, which make these relatively easy to administer in a clinical setting.[45] Most pregnant women seek some form of prenatal care, which makes prenatal visits an ideal time to screen for depressive symptoms and to provide linkages to appropriate care for those who exhibit high levels of depressive symptoms.

Acknowledgments

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Table 1

Participant Characteristics

Characteristic	Low Level of Depressive Symptoms	High Level of Depressive Symptoms	Statistical Test	P
All participants	n = 435	n = 322		
Age (range, 14–21 years) [*]	18.7 (1.70)	18.4 (1.83)	$t(755) = 2.30$	.02
Race/ethnicity			$\chi^2(2) = 2.87$	.24
Latina	246 (56.6)	166 (51.6)		
Black, non-Latina	157 (36.1)	123 (38.2)		
White or other, non-Latina	32 (7.4)	33 (10.2)		
Employment	98 (22.6)	66 (20.6)	$\chi^2(1) = 0.41$	.52
Food insecure [*]	157 (36.5)	178 (55.6)	$\chi^2(1) = 27.12$	<.001
Born outside United States	154 (35.4)	106 (32.9)	$\chi^2(1) = 0.51$	.48
Relationship commitment level [*]			$\chi^2(3) = 25.02$	<.001
Not in a committed relationship	81 (18.8)	87 (27.4)		
A little committed	11 (2.6)	23 (7.2)		
Somewhat committed	51 (11.9)	49 (15.4)		
Very committed	287 (66.7)	159 (50.0)		
STD/HIV knowledge (range, 6–44)	35.4 (6.08)	35.1 (6.14)	$\chi^2(755) = 0.57$	.57
Condom norms (range, 1–50)	3.8 (0.99)	3.8 (1.00)	$t(745) = 0.83$	.41
Condom attitudes (range, 1–5)	4.2 (0.83)	4.2 (0.83)	$t(751) = 0.35$	.73
Condom barriers (range, 1–5) [*]	4.1 (0.99)	3.86 (1.09)	$t(752) = 3.28$	.001
Condom use self-efficacy (range, 8–56) [*]	43.2 (10.32)	41.4 (9.54)	$t(751) = 2.42$	.02
Participants sexually active 12 months postpartum	n = 390	n = 280		
Number of sex partners (range, 1–13)	1.2 (0.51)	1.3 (1.31)	$t(668) = -3.84$	<.001
Percent condom use	40.9 (43.28)	34.4 (39.23)	$t(666) = 2.00$	.05
High-risk sex partner	111 (28.5)	125 (44.6)	$\chi^2(1) = 18.70$	<.001
STD diagnosis	72 (18.5)	57 (20.4)	$\chi^2(1) = 0.36$	.55
Repeat pregnancy	50 (12.8)	53 (18.9)	$\chi^2(1) = 4.67$	.03

STD, sexually transmitted disease. Data are presented as n (%) or mean (SD).

[*] P < .05 for difference between groups.

Table 2

Unadjusted Analyses on the Relationship Between Prenatal Depressive Symptoms and Postpartum Sexual Risk

Variable	All participants (n = 757) Sexually active, OR (95% CI)	Sexually active participants 12 months Postpartum (n = 670)				
		Number of Partners, β (SE)	Condom Use %, β(SE)	High-Risk Partner, OR (95% CI)	Positive STD Diagnosis, OR (95% CI)	Repeat Pregnancy, OR (95% CI)
High level of prenatal depressive symptoms (vs low)	0.72 (0.45–1.16)	0.28 (0.07)*	−6.96 (3.22)*	2.02 (1.45–2.80)*	1.15 (0.78–1.70)	1.58 (1.03–2.41)*
Age	1.14 (1.01–1.29)*	−0.03 (0.02)	0.99 (0.92)	0.87 (0.79–0.95)*	0.87 (0.78–0.98)*	0.94 (0.83–1.06)
Minority race/ethnicity (vs not)	1.27 (0.58–2.78)	0.11 (0.13)	−0.49 (5.90)	1.44 (0.77–2.69)	1.05 (0.51–2.17)	0.92 (0.43–1.96)
Employed (vs not)	3.02 (1.43–6.39)*	−0.02 (0.09)	1.69 (3.75)	1.12 (0.77–1.63)	1.25 (0.80–1.94)	0.86 (0.51–1.43)
Food insecure (vs not)	1.01 (0.65–1.59)	0.20 (0.07)*	1.72 (3.22)	1.49 (1.08–2.05)*	1.29 (0.87–1.90)	0.93 (0.61–1.43)
Born outside of the United States (vs not)	0.81 (0.51–1.29)	−0.15 (0.08)	2.46 (3.57)	0.44 (0.30–0.63)*	0.98 (0.64–1.50)	0.78 (0.48–1.26)
In a very committed relationship (vs not)	2.12 (1.31–3.45)*	−0.20 (0.08)*	5.15 (3.30)	0.61 (0.44–0.85)*	0.86 (0.58–1.28)	0.92 (0.60–1.42)
STD/HIV risk knowledge	1.05 (1.02–1.09)*	0.00 (0.01)	0.25 (0.29)*	1.07 (1.04–1.11)*	1.00 (0.97–1.04)	1.02 (0.98–1.06)
Condom use norms	0.84 (0.66–1.06)	−0.04 (0.04)	5.82 (1.54)*	0.88 (0.75–1.03)	0.97 (0.81–1.17)	0.91 (0.75–1.12)
Condom use attitudes	0.92 (0.68–1.24)	0.07 (0.05)	11.78 (2.03)*	1.13 (0.91–1.40)	1.02 (0.79–1.32)	0.76 (0.59–0.98)*
Condom use barriers	1.19 (0.97–1.47)	0.01 (0.04)	3.07 (1.69)	1.14 (0.95–1.36)	0.80 (0.67–0.97)*	1.09 (0.86–1.37)
Condom use self-efficacy	1.03 (1.01–1.05)*	0.00 (0.00)	0.52 (0.18)*	1.01 (0.99–1.03)	0.97 (0.95–0.99)*	0.99 (0.97–1.01)
Outcome during second trimester	—	0.33 (0.04)*	0.24 (0.06)*	4.94 (3.49–7.00)*	3.07 (2.02–4.67)*	—
Intervention group (vs control)	1.43 (0.91–2.24)	0.08 (0.09)	−4.46 (5.75)	1.00 (0.60–1.69)	1.25 (0.80–1.94)	1.27 (0.69–2.34)

OR, odds ratio; SE, standard error; STD, sexually transmitted disease.

*
  P< .05.

Table 3

Adjusted Analyses on the Relationship Between Prenatal Depressive Symptoms and Postpartum Sexual Risk

Variable	All participants (n = 757)	Sexually active participants 12 months Postpartum (n = 670)				
	Sexually active, OR (95% CI)	Number of Partners, β (SE)	Condom Use %, β(SE)	High-Risk Partner, OR (95% CI)	Positive STD Diagnosis, OR (95% CI)	Repeat Pregnancy, OR (95% CI)
High level of prenatal depressive symptoms (vs low)	0.91 (0.55–1.49)	0.17 (0.08) *	−6.85 (3.34) *	1.84 (1.26–2.69) *	0.98 (0.63–1.53)	1.75 (1.11–2.76) *
Age	1.08 (0.94–1.24)	−0.03 (0.02)	0.51 (0.96)	0.87 (0.77–0.97) *	0.88 (0.77–1.01)	0.95 (0.84–1.09)
Minority race/ethnicity (vs not)	1.34 (0.59–3.07)	0.17 (0.14)	−8.48 (6.18)	1.16 (0.56–2.41)	0.91 (0.41–2.04)	0.82 (0.37–1.83)
Employed (vs not)	2.94 (1.32–6.58) *	−0.02 (0.09)	1.02 (3.81)	1.14 (0.73–1.76)	1.23 (0.74–2.04)	0.86 (0.50–1.47)
Food insecure (vs not)	0.97 (0.60–1.59)	0.14 (0.07)	3.21 (3.25)	1.30 (0.89–1.89)	1.08 (0.69–1.68)	0.79 (0.51–1.25)
Born outside of the United States (vs not)	1.21 (0.69–2.10)	−0.07 (0.08)	2.36 (3.79)	0.56 (0.36–0.88) *	0.90 (0.54–1.51)	0.74 (0.43–1.28)
In a very committed relationship (vs not)	1.86 (1.13–3.06) *	−0.12 (0.08)	2.11 (3.37)	0.70 (0.48–1.04)	1.04 (0.66–1.62)	0.93 (0.59–1.47)
STD/HIV risk knowledge	1.03 (0.98–1.07)	0.00 (0.01)	−0.28 (0.32)	1.07 (1.03–1.11) *	1.01 (0.97–1.06)	1.02 (0.98–1.07)
Condom use norms	0.73 (0.52–1.01)	−0.08 (0.04)	1.52 (1.79)	0.78 (0.64–0.96) *	1.07 (0.84–1.37)	1.04 (0.81–1.34)
Condom use attitudes	0.96 (0.63–1.46)	0.10 (0.06)	9.95 (2.50) *	1.36 (1.01–1.82) *	1.05 (0.74–1.49)	0.74 (0.53–1.02)
Condom use barriers	0.86 (0.64–1.16)	0.03 (0.04)	−0.02 (1.97)	1.25 (0.98–1.59)	0.90 (0.69–1.18)	1.31 (0.97–1.77)
Condom use self-efficacy	1.03 (0.99–1.07)	0.00 (0.01)	0.27 (0.25)	0.98 (0.95–1.00)	0.97 (0.94–1.00)	0.98 (0.95–1.01)
Outcome during second trimester	–	0.32 (0.04) *	0.20 (0.06) *	4.32 (2.96–6.30) *	3.51 (2.24–5.51) *	–
Intervention group (vs control)	1.49 (0.91–2.44)	0.06 (0.08)	−3.26 (5.29)	0.99 (0.67–1.45)	1.22 (0.65–2.29)	1.18 (0.65–2.14)

OR, odds ratio; SE, standard error; STD, sexually transmitted disease.

*
P < .05.