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Psychiatry and Primary Care

Recent epidemiologic studies have found that most patients with mental illness are seen exclusively in primary care medicine. These patients often present with medically unexplained somatic symptoms and utilize at least twice as many health care visits as controls. There has been an exponential growth in studies in this interface between primary care and psychiatry in the last 10 years. This special section, edited by Jürgen Unutzer, M.D., will publish informative research articles that address primary care-psychiatric issues.

Racial differences in the prevalence of antenatal depression

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Abstract

Objective: This study examined whether there were racial/ethnic differences in the prevalence of antenatal depression based on *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, diagnostic criteria in a community-based sample of pregnant women.

Method: Data were drawn from an ongoing registry of pregnant women receiving prenatal care at a university obstetric clinic from January 2004 through March 2010 ($N=1997$). Logistic regression models adjusting for sociodemographic, psychiatric, behavioral and clinical characteristics were used to examine racial/ethnic differences in antenatal depression as measured by the Patient Health Questionnaire.

Results: Overall, 5.1% of the sample reported antenatal depression. Blacks and Asian/Pacific Islanders were at increased risk for antenatal depression compared to non-Hispanic White women. This increased risk of antenatal depression among Blacks and Asian/Pacific Islanders remained after adjustment for a variety of risk factors.

Conclusion: Results suggest the importance of race/ethnicity as a risk factor for antenatal depression. Prevention and treatment strategies geared toward the mental health needs of Black and Asian/Pacific Islander women are needed to reduce the racial/ethnic disparities in antenatal depression.

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Keywords: Racial disparity; Pregnancy; Depression; Black; Asian/Pacific islander

1. Introduction

Antenatal major depression is a well-established public health concern [1,2]. Results from a study that included a nationally representative sample of 14,549 women revealed that 12-month prevalence of depressive disorder was 8.4% among women who had been pregnant during the prior 12 months [3]. Major depression during pregnancy has been identified as one of several risk factors for postpartum depression [4,5]. Antenatal depression has also been linked to adverse pregnancy outcomes such as preterm birth [6–8],

fetal growth restriction, preeclampsia and fetal death [9]. The effects of antenatal depression have been found to influence the emotional, cognitive and physical outcomes for the offspring of depressed women [10]. Given these serious consequences, it is imperative that universal screening, early diagnosis and treatment interventions be available to women at risk for antenatal depression.

Despite our growing recognition of the prevalence of antenatal major depression, our understanding of how maternal characteristics, such as race/ethnicity, may contribute to disparities in the prevalence of antenatal major depression remains unclear [11].

There is some evidence that the prevalence of antenatal depressive symptoms is higher among Black women

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compared to White women [6,12,13]. However, a number of antenatal studies suggest that, compared to White women, Black women, Latinas and Asian women are not at increased risk to experience antenatal depression [14–23]. The finding that race/ethnicity is not a risk factor for depression appears counterintuitive because, historically, Blacks, Latinas and Asians report lower levels of socioeconomic status (SES) compared to Whites [24], and individuals from lower-SES backgrounds have a higher risk of major depression compared to high-SES individuals [25]. Differences in study design and methodology including the use of various screening instruments, variable timing of screening during pregnancy and differences in sample composition may explain the inconsistent results. However, determining which study design elements are most problematic is difficult because comparisons cannot be made across studies. A potential explanation for the mixed results may be that prior studies exclusively relied upon self-report assessments of depressive symptoms rather than assessments of depressive symptoms based on *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV), diagnostic criteria. This distinction is important because findings from nationally representative nonpregnant samples suggest that Blacks, Latinas and Asians report a lower 12-month and lifetime prevalence of DSM-IV major depression than non-Hispanic Whites [26–30]. Findings from one study reveal that non-Hispanic White women report the highest 12-month prevalence of DSM-IV major depression compared to Black, Latinas and Asian women [26]. Shen and colleagues [14], using a national data set comprised of 877,579 pregnant women, reported that Black women and Latinas were less likely to present with antenatal depression at hospital admission for deliveries than were White women. These findings suggest that the prevalence of antenatal depression among Black women and Latinas mirrors that in nonpregnant populations. However, a limitation of this study was its reliance upon administrative health data, with key covariates missing and inconsistent measurement of risk exposures.

The purpose of our study was to determine whether there were racial/ethnic differences in the prevalence of antenatal depression among a racially diverse clinic-based sample of pregnant women, after adjusting for a variety of covariates. Specifically, we measured antenatal depression using DSM-IV diagnostic criteria. Based on previous studies that used DSM-IV diagnostic criteria to assess depression, we hypothesized that Black women, Latinas and Asian/Pacific Islander (API) women would report a lower prevalence of antenatal major depression compared to non-Hispanic White women.

2. Methods

2.1. Study setting and population

We used data from an ongoing longitudinal study of women who received prenatal care at a single university-

based delivery hospital from January 2004 to March 2010. The clinic serves a diverse group of women with respect to race, SES and medical risk, with 46.5% reporting private health insurance coverage and 51.6% reporting publically funded health insurance [31].

During the study period, 3347 women completed at least one psychosocial questionnaire as part of their routine antenatal care. Staff were present in clinic to consent 2577 women (77%) for participation in the study. The total number of women who declined to participate in the study was 227 (6.8%). Due to Health Insurance Portability and Accountability Act regulations, it was not possible to compare characteristics of participants with those who declined enrollment or were not approached by clinic staff to participate in the study.

For the present analysis, we included only those women who completed at least one antenatal clinical questionnaire. The final sample for the present analysis includes 1997 women who had complete information on all study variables. The mean gestational age when the questionnaire was completed was 27.4 weeks.

2.2. Procedures

Questionnaires measuring antenatal psychiatric disorders, including depression and panic disorder based on DSM-IV diagnostic criteria, as well as suicidal ideation and sociodemographic and psychosocial factors, were introduced in January 2004 and designed to be distributed by clinical staff as part of routine clinical care. The screening protocol mandates that all patients must receive at least one questionnaire during pregnancy with the goal of two times; first during the early second trimester (approximately 16 weeks) and again in the third trimester (approximately 36 weeks). Questionnaires were self-administered, and patients could complete them in either English or Spanish. Interpreters were also available to patients who spoke neither language. All women receiving ongoing obstetric care who also completed at least one antenatal questionnaire were eligible for inclusion in the study. Exclusion criteria for the study included age less than 15 years at the time of delivery, those who did not receive ongoing prenatal care and inability to complete the clinical questionnaire due to mental incapacitation or language difficulties (i.e., no interpreter available). Clinic staff were asked to contact and consent potentially eligible respondents at the time of the screen completion. Written consent was obtained in order to examine questionnaire data as well as automated medical records. All study procedures were approved by the University of Washington Institutional Review Board prior to the beginning of the study, with initial approval on September 12, 2003. The following clinic protocol was followed for women who screened positive for antenatal depression or endorsed suicidal ideation. Clinicians evaluated and managed depression during the course of antenatal care (i.e., referral to social

work, therapy or specialty mental health; initiation of antidepressant medication; watchful waiting). Women reporting suicidal ideation were evaluated, followed and referred to mental health services based on their level of suicide risk.

2.3. Measures

Data collection included assessing probable antenatal major depression and panic disorder [32], psychosocial stress [33,34], tobacco use [35], alcohol use [36], drug use [37] and domestic violence [38] using validated measures. In addition, information on preexisting medical conditions and past obstetrical complications was also collected. Maternal age and parity were obtained from the automated medical record. The inclusion of confounding factors for antenatal depression was based on earlier studies [1].

2.3.1. Major depression, panic disorder and suicidal ideation

Major depression was measured by the Patient Health Questionnaire (PHQ) short form (15 items), which yields a diagnosis for probable major depression and panic disorder [32]. According to DSM-IV criteria for major depression on the PHQ, the subject is required to have, for at least 2 weeks, five or more depressive symptoms present for more than half the days, with at least one of these symptoms being depressed mood or anhedonia. The criteria for probable panic disorder require affirmative answers to 5 panic symptoms and follow the DSM-IV. In a study of 3000 OB/GYN patients, the PHQ demonstrated high sensitivity (73%) and specificity (98%) for a diagnosis of major depression based on the Structured Clinical Interview for DSM-IV as well as for a diagnosis of panic disorder (sensitivity 81%, specificity 99%) [39]. Suicidal ideation was assessed based on item 9 of the PHQ which asks “over the last 2 weeks how often have you been bothered by ... thoughts that you would be better off dead or of hurting yourself in some way?” Response options included “not at all” (0), “several days” (1), “more than half the days” (2) and “nearly every day” (3). Respondents were considered positive for suicidal ideation if they gave a response of “several days” (1) or higher. Previous studies have used item 9 from the PHQ to assess suicidal ideation in clinical populations [40]. In the present study, structured psychiatric interviews were not conducted to confirm clinical diagnoses. Therefore, antenatal depression is reported as “probable antenatal major depression.” Additionally, women who met the DSM-IV criteria for panic disorder were classified as having “probable antenatal panic disorder.”

2.3.2. Health behaviors

Tobacco use was assessed using the Smoke-Free Families Prenatal Screen, which was specifically developed to maximize disclosure of smoking status during pregnancy [35]. On this screen, any current smoking is classified as tobacco use.

2.3.3. Psychosocial stress

Psychosocial stress was measured using the Prenatal Psychosocial Profile, which has demonstrated validity and reliability for use in diverse pregnant populations [33,34]. It is an 11-question survey using a Likert response scale with possible scores ranging from 11 through 44, with high stress in our population having previously been established as a score of ≥ 23 [41].

2.3.4. Antenatal domestic violence

The 3-question Abuse Assessment Screen assesses physical and sexual violence during the past year and during pregnancy [38]. This screen has been used both as a clinical screening tool with established validity and test-retest reliability, and for research purposes as a dichotomous measure of abuse [42]. In the present study, women were determined to have experienced antenatal domestic violence if they answered “yes” to the question regarding antenatal physical or sexual abuse.

2.3.5. Preexisting medical conditions and pregnancy-related complications

Women were determined to have compromised health status if they self-reported ≥ 2 chronic medical problems prior to pregnancy (e.g., asthma, hypertension, diabetes or cardiovascular problems). Patients who self-reported one or more pregnancy-related complications (e.g., gestational diabetes, preeclampsia, eclampsia, preterm delivery or placental abruption) in a prior pregnancy were determined to have a history of pregnancy-related complications.

Available demographic data included self-reported race/ethnicity, partner status, educational attainment and current employment status. Self-reported race/ethnicity in the study was categorized as follows: non-Hispanic White, API, Black and Latina. In the present analysis, we chose to include those respondents who selected only one racial/ethnic category. Partner status was analyzed as a binary variable (married or living with partner vs. single/separated/divorced or not living with partner). Educational attainment was measured as a binary variable (<12 years vs. ≥ 12 years) from self-reported data regarding the highest level of formal education received. Current employment status was assessed as a binary variable (employed vs. not employed/not in labor force).

2.4. Statistical analyses

All analyses used STATA software [43]. In analysis stratified by race/ethnicity, sample means and percentages were used to describe characteristics of the sample. χ^2 and t tests were conducted to determine whether there were significant racial differences in the correlates and prevalence of antenatal depression. All significance tests were evaluated at the .05 level with two-sided tests. Select covariates were included in the models if they were statistically (at the .05 level) associated with antenatal depression in the bivariate analyses. Logistic regression models were specified to examine the main effect of race/ethnicity unadjusted and

adjusted for sociodemographic, behavioral and clinical covariates. First, we examined the effect estimate of race/ethnicity controlling for partner status, educational attainment and employment status. Next, we examined the association between race/ethnicity and antenatal depression adjusting for sociodemographic characteristics, antenatal suicidal ideation, antenatal stress and antenatal domestic violence. Lastly, we adjusted for all covariates including current smoking and medical comorbidities. Questionnaire data for each subject were entered and stored using Filemaker Pro [44].

3. Results

Table 1 shows the sociodemographic, clinical and psychosocial characteristics of the sample stratified by race/ethnicity. Overall, 5.1% ($n = 103$) of women in the sample reported probable antenatal depression. Among the 1997 study participants, mean age was 30.6 ± 6.1 years, with a range of 15–51 years. Racial identification was 68.7% non-Hispanic White, 13.6% API and 7.5% Black. Latinas comprised 10.1% of the sample. There were racial/ethnic differences in the prevalence of probable antenatal depression. Black women (15.3% vs. 3.6%, $\chi^2 = 40.45$, 1 *df*, $P < .001$) and Latinas (6.9% vs. 3.6%, $\chi^2 = 4.87$, 1 *df*, $P < .05$) were more likely to report probable antenatal depression than non-Hispanic White women. In Table 1, we also examined whether there were racial/ethnic differences in the prevalence of several risk factors associated with probable antenatal depression. We found that non-Hispanic White women were less likely to report less than 12 years of education (13.3% vs. 50.0%, $\chi^2 = 129.09$, 1 *df*, $P < .001$) compared to Black women and Latinas (13.3% vs. 48.5%, $\chi^2 = 148.56$, 1 *df*, $P < .001$) and more likely to be employed than Black women (55.5% vs. 39.8%, $\chi^2 = 13.16$, 1 *df*, $P < .001$), Latinas (55.5% vs. 33.8%, $\chi^2 = 33.06$, 1 *df*,

$P < .001$) and API women (55.5% vs. 46.3%, $\chi^2 = 7.71$, 1 *df*, $P < .01$). Black women (40.0% vs. 9.9%, $\chi^2 = 108.10$, 1 *df*, $P < .001$) and Latinas (20.3% vs. 9.9%, $\chi^2 = 18.63$, 1 *df*, $P < .001$) were more likely to be unmarried or not cohabitating with a partner. Compared to non-Hispanic White women, Black women were more likely to have reported a higher level of psychosocial stress (12.6% vs. 5.9%, $\chi^2 = 9.76$, 1 *df*, $P < .01$), were more likely to report antenatal domestic violence (6.7% vs. 2.9%, $\chi^2 = 5.71$, 1 *df*, $P < .01$) and were more likely to be current smokers (17.2% vs. 7.2%, $\chi^2 = 16.40$, 1 *df*, $P < .001$). Further, both Black women (6.0% vs. 1.9%, $\chi^2 = 10.14$, 1 *df*, $P < .01$) and API women (4.0% vs. 1.9%, $\chi^2 = 4.71$, 1 *df*, $P < .05$) were more likely to endorse antenatal suicidal ideation compared to non-Hispanic White women.

In Table 2, we examined whether race/ethnicity is a risk factor for probable antenatal depression among women in the sample. In the unadjusted model (model 1), compared to non-Hispanic White women, Black women reported an almost fivefold increased odds (95% confidence interval [CI]: 2.82, 8.10) of probable antenatal depression, while Latinas experienced a nearly twofold increased odds (95% CI: 1.07, 3.63). In model 2, we examined the association between race/ethnicity and probable antenatal depression while controlling for sociodemographic risk factors. Again, we found that Black women (odds ratio [OR]=2.27; 95% CI: 1.26, 4.08) reported higher odds of experiencing probable antenatal depression compared to non-Hispanic White women. We also found that women who were unmarried or not cohabitating with a partner (OR=2.93; 95% CI: 1.78, 4.81) and those with less than 12 years of education (OR=2.35; 95% CI: 1.41, 3.93) were more likely to experience probable antenatal depression compared to their counterparts. In model 3, for which we controlled all covariates (including sociodemographic, psychiatric, behavioral and clinical characteristics), we found that Black women (adjusted [AOR]=2.93; 95% CI: 1.38, 6.18) and API women (AOR=2.14; 95% CI:

Table 1
Characteristics of respondents and univariate analyses

Characteristic	Total ($n = 1997$)	Non-Hispanic White ($n = 1372$)	Black ($n = 150$)	Latina ($n = 202$)	API ($n = 273$)
Antenatal depression, % (n)	5.1 (103)	3.6 (50)	15.3 (23)***	6.9 (14)*	5.8 (16)
Panic disorder, % (n)	3.2 (64)	3.2 (44)	5.3 (8)	4.4 (9)	1.1 (3)
Age, mean (S. D.)	30.6 (6.1)	31.3 (5.8)	26.8 (6.6)	28.4 (6.6)	31.3 (5.4)
Education (<12 years), % (n)	19.8 (396)	13.3 (183)	50.0 (75)***	48.5 (98)***	14.6 (40)
Currently employed, % (n)	50.9 (1,013)	55.5 (760)	39.8 (59)***	33.8 (68)***	46.3 (126)**
Unmarried or not cohabitating, % (n)	12.8 (256)	9.9 (137)	40.0 (60)***	20.3 (41)***	6.5 (18)
Stress (high), % (n)	6.4 (129)	5.9 (82)	12.6 (19)**	7.4 (15)	4.7 (13)
Antenatal domestic violence, % (n)	3.1 (61)	2.9 (41)	6.7 (10)*	3.9 (8)	0.74 (2)*
Antenatal suicidal ideation, % (n)	2.5 (50)	1.9 (26)	6.0 (9)**	1.9 (4)	4.0 (11)*
Current smoker, % (n)	7.2 (140)	7.2 (98)	17.2 (23)***	6.5 (12)	2.6 (7)***
Preexisting medical conditions (≥ 2), % (n)	18.3 (367)	19.7 (271)	20.6 (31)	17.8 (36)	10.6 (29)
Pregnancy-related complications (≥ 1), % (n)	32.8 (653)	32.3 (442)	39.6 (59)	37.6 (76)	27.9 (76)
Parity (0 vs. ≥ 1), % (n)	40.0 (799)	41.4 (568)	36.6 (55)	33.6 (68)*	39.5 (108)

* $P < .05$.

** $P < .01$.

*** $P < .001$.

Table 2
Unadjusted and adjusted ORs for risk of antenatal depression

Variables	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)
Non-Hispanic White	Ref.	Ref.	Ref.
Black	4.78 (2.82, 8.10)	2.27 (1.26, 4.08)	2.93 (1.38, 6.18)
Latina	1.96 (1.07, 3.63)	0.98 (0.50, 1.92)	1.68 (0.76, 3.69)
API	1.64 (0.92, 2.93)	1.57 (0.85, 2.88)	2.14 (1.02, 4.52)
Maternal age		1.00 (0.96, 1.03)	0.99 (0.95, 1.04)
Unmarried or not cohabiting		2.93 (1.78, 4.81)	1.50 (0.79, 2.82)
Education (<12 years)		2.35 (1.41, 3.93)	1.91 (1.03, 3.53)
Currently employed		0.44 (0.27, 0.72)	0.73 (0.40, 1.31)
Antenatal suicidal ideation			13.34 (6.19, 28.73)
Antenatal panic disorder			1.12 (0.44, 2.82)
Stress (high)			8.64 (4.83, 15.46)
Antenatal domestic violence			2.91 (1.24, 6.79)
Current smoking			1.70 (0.86, 3.35)
Preexisting medical conditions (≥ 2)			2.61 (1.51, 4.51)

Ref.=referent group.

Model 1: unadjusted model.

Model 2: adjusted for maternal age, partner status, educational attainment and employment status.

Model 3: adjusted for maternal age, partner status, educational attainment, employment status, antenatal suicidal ideation, stress, antenatal domestic violence and current smoking.

1.02, 4.52) were more likely to experience probable antenatal depression than non-Hispanic White women. Additionally, women with lower educational attainment (<12 years); those who reported antenatal suicidal ideation, high levels of psychosocial stress, and antenatal domestic violence and those who reported preexisting medical conditions (≤ 2) were at increased risk for probable antenatal depression. Finally, we ran parallel models examining racial differences in antenatal depression excluding the antenatal suicidal ideation measure because the suicidal ideation measure is one component of the depression measure. Results remained substantively similar (data not shown).

4. Discussion

In this study, we examined whether there were racial/ethnic differences in the prevalence of probable antenatal depression based on DSM-IV diagnostic criteria in a large community-based sample of pregnant women. We found that the overall prevalence of probable antenatal depression was 5.1%; however, the prevalence of depression differed based on race/ethnicity. The prevalence of probable antenatal depression was significantly higher among Black women (15.3%) and Latinas (6.3%) compared to non-Hispanic White women (3.6%). Our findings also suggest that Black women and API women had significantly higher odds of experiencing probable antenatal depression compared to non-Hispanic White women after controlling for sociodemographic, psychiatric, behavioral and clinical characteristics.

In our study, high levels of psychosocial stress, antenatal domestic violence, lower educational attainment (<12 years) and preexisting medical conditions were significantly associated with higher risk of antenatal depression. These

findings suggest that disparities other than race/ethnicity may increase the risk of depression among pregnant women. The identification of risk factors associated with antenatal depression is important because clinicians may be better equipped to identify those women at high risk for antenatal depression. Our findings also suggest that antenatal suicide ideation was a significant risk factor for antenatal depression. Although it is rarely examined in studies of antenatal depression, suicidal ideation or thoughts of self-harm — a precursor to suicide in most cases — is a common aspect of major depressive disorder, and rates among both nonpregnant and pregnant populations are similar [45,46]. Previous studies found that antenatal suicidal ideation was associated with psychiatric disorders, including a history of and current major depression [47,48]. Given the serious health consequences for both mothers and their children, prenatal clinical encounters should include assessments for depression as well as suicidal ideation.

Our findings are similar to previous studies that also report that race/ethnicity is a risk factor for antenatal depressive symptoms [6,12,13]. It has been posited that Black and API women may be at increased risk for antenatal depression due to their lower SES. However, a recent study found that low SES was not associated with DSM-IV major depressive disorder among Black women, Latinas and Asian nonpregnant women [26]. These findings suggest that low SES may not explain the racial differences in antenatal depression. Future studies are needed to prospectively examine additional risk factors that in part explain the higher risk of antenatal depression among these groups of pregnant women.

The literature on race/ethnicity and antenatal depression has been inconsistent, with most, but not all, studies suggesting a nonsignificant association [14–23]. However, it is clear from our study that race/ethnicity may be a

significant risk factor for antenatal depression. Potential explanations for the divergent findings may include differences in study design. Previous studies primarily screened women for depressive symptoms, based not on clinical diagnostic criteria, but rather a variety of brief screening instruments including the Centers of Epidemiologic Studies (CES-D) scale, the Beck Depression Inventory and the Edinburgh Postnatal Depression Scale. In addition, the cutoff points used to assess elevated antenatal depression varied across studies. For example, while some studies that assessed depressive symptoms relied upon the CES-D scale using the standard cut point of 16 or more, other studies used a continuous assessment of CES-D scores [6,12,13,15,17,21,23]. Previous findings suggest that type of depression screening instrument and selected cut points for detecting elevated depressive symptoms may influence antenatal depression prevalence estimates [49].

In the present study, we found a lower prevalence of antenatal depression than reported in earlier studies that assessed antenatal depression based on DSM-IV criteria [3,50,51]. However, the prevalence of antenatal depression reported in our study was slightly higher than those reported in other studies [52,53]. There are a number of reasons why results varied. First, although all studies assessed depression based on DSM-IV diagnostic criteria, different depression screening instruments were used. Second, our sample consisted of women who sought prenatal care that were screened for depression in midpregnancy, while one study relied upon self-reported pregnancy status. Third, the timing of depression assessment also varied. Finally, some prior studies did not include data on pregnancy comorbidities (e.g., domestic violence, smoking status, maternal anxiety) that have been shown to be associated with antenatal depression [1]. It should be noted that the prevalence of antenatal depression in our study is similar to both 30-day and 12-month prevalence estimates of DSM-III/IV major depression among nationally representative samples of nonpregnant women [29,54].

Strengths of our study include the large sample size and the use of a routine screening protocol with a high level of subject participation and accurate measurement of and adjustment for multiple potential biomedical, demographic, psychosocial and behavioral confounding factors in our models. Despite these strengths, our study has several limitations. First, we did not have access to detailed information on prior mental health disorders, psychiatric medications and household income. Second, we examined the association between race/ethnicity and antenatal depression using cross-sectional data, which limit our ability to establish the causal nature of the association. Third, the majority of our data was based on self-report, which could lead to overidentification or under-reporting of stigmatized behaviors, such as substance use and antenatal suicidal ideation. Fourth, the use of a single clinic sample, although locally representative, may limit the generalizability to other populations of pregnant women. Fifth, we did not use structured psychiatric interviews to

confirm PHQ diagnoses for depression and panic disorder. Finally, although we have a very high rate of participation, information on nonparticipants was unavailable.

5. Conclusions

The study presents racial/ethnic differences in depression among a large community-based sample of pregnant women. Findings from the study suggest that race/ethnicity is a significant risk factor for antenatal depression. Prevention and intervention strategies during pregnancy are needed to address the mental health needs of Black and API women.

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