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Success of mental health referral among pregnant and postpartum women with psychiatric distress

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Abstract

Objective—This study measured rates of and determined factors associated with mental health service use among a cohort of 465 pregnant and postpartum women receiving care at publicly funded obstetrical clinics.

Methods—Women underwent a diagnostic evaluation, were provided with at least one mental health referral, and were encouraged to seek treatment; follow-up with provision of additional referrals occurred at 1, 3, and 6 months after the initial assessment. Logistic regression was used to estimate the relationship between clinical and psychosocial factors and self-reported mental health service use.

Results—38.1% of referred women attended at least one mental health visit while only 6% of women remained in treatment during the entire 6-month follow-up interval. Postpartum women were more likely than pregnant women to attend a mental health treatment visit (O.R. = 4.17). Being born in the United States (O.R. = 2.06), exposed to interpersonal violence (O.R. = 2.52), and unemployed (O.R. = 2.69) were associated with attending at least one mental health care visit. Women who received a behavioral health referral to the same site as their prenatal or postpartum care were more likely than those women referred offsite to attend a mental health treatment visit (O.R. = 3.23).

Conclusions—Despite active follow-up, rates of accessing and particularly continuing in mental health treatment were low. More work is needed to support the integration of specialty behavioral health services in primary care settings accessed by perinatal women.

Keywords

pregnancy; postpartum; depression; service use

Introduction

Epidemiological data, based upon retrospective reports, suggest that only one-third of persons suffering from a mood, anxiety or substance-abuse disorder in the United States will receive treatment in the year prior to a mental health assessment (1). Women and those with higher incomes are more likely to seek services than are men, or individuals from disadvantaged socio-economic backgrounds (2-6). Pregnant and recently delivered women typically have insurance coverage and receive regular medical care, both of which are mediators of mental health treatment (6). Yet, two cross-sectional studies found that only 25-35% of perinatal women with a current psychiatric mood or anxiety disorder were receiving or had received mental health treatment (7) (8). However, these studies were limited in their ability to examine factors associated with receipt of treatment.

The current study adds to the extant literature by exploration of the correlates of treatment attendance at several time points in pregnancy and the postpartum period. It specifically used a prospective design, to evaluate mental health care utilization. We examined rates of mental health follow-up after referral, and evaluated determinants of mental health service utilization in perinatal women. Analyses specifically explored the influence of four domains on treatment attendance: (1) the predisposition of the individual to use services (predisposing factors); (2) the individual's ability to secure services (enabling factors); (3) illness level (perceived need and medically evaluated need); and (4) use of general health services (degree of contact with the medical system) (9-11). Based on a review of the literature, we hypothesized that postpartum women would be influenced disproportionately by enabling factors such as the competing demands of child care responsibilities and thus less likely to attend treatment than pregnant women. We suspected women with a greater number of psychiatric diagnoses would be more likely to attend treatment than those women with fewer or no diagnoses. Additionally, we hypothesized that predisposing factors such as language and enabling factors such as insurance, would result in higher attendance rates among English vs. Spanish-speaking women and women with insurance compared to those without insurance. We assumed that characteristics of the health care delivery system and need for services would also influence attendance such that women without a history of mental health service use (due to lack of familiarity with the system of care) would have lower treatment attendance rates. Conversely, we anticipated that women with more severe symptoms and a history of prior mental health care would be more likely to attend treatment independent of pregnancy status (12,13).

Methods

Institutional Review Board approval for this study was obtained through Yale University School of Medicine and each of the collaborating obstetrical clinics. Subjects included English and Spanish speaking women referred to the New Haven Healthy Start Mental health Outreach for Mothers Hotline (MOMSline) between April 2001 and June of 2005 (n=465). Participants were part of a larger group of pregnant and postpartum women who received care coordination services through the New Haven Healthy Start Initiative (NHHS). The NHHS operated in OB/GYN clinics and the Medicaid enrollment center of the New Haven Health Department. Women who were referred to the MOMSline were those who screened positive for psychiatric distress (see below). The population that forms the focus of this study included only English or Spanish speaking women who were not receiving mental health services at the first assessment. Additionally, women who had a miscarriage (defined as a spontaneous or therapeutic abortion) at the time of their referral to the MOMSline (n=20) and during the period of the project (n=8) were excluded from this analysis; there were no other exclusionary criteria. All women provided verbal and written informed consent. After initial assessment, women were re-contacted by phone at 1, 3 and 6 months. The success of follow up at each point was 85.4% (n=269), 71.75% (n=226) and 65.71% (n=207), respectively. Administrative loss

occurred at follow points because enrollment continued up to the end of the project period but follow up was terminated prematurely for some at the end of the funding period. Thus, 19 women at the 3-month, and 43 women at the 6-month time-points resulting from this loss are excluded in the above calculations.

Procedure

Upon enrollment to NHHS, participants were administered a standardized risk assessment and demographic questionnaire by case managers that included information on: self-identified race/ethnicity, language, age, insurance status, marital status, nativity, ages of children in the home, availability of transportation (reliable, unreliable, variable), education, employment status, general medical history, substance use, interpersonal violence, depression and related psychiatric illness and pregnancy history. Workers were asked to contact the “MOMsline” if, on the risk assessment, a patient scored at least probable for a depressive disorder, endorsed suicidal feelings, reported a traumatic event and re-experienced that event with “intense fear, helplessness, or horror,” and/or responded affirmatively to a question that they would “like help with a mental health problem.”

Initial Assessment—Bilingual (English/Spanish) masters and doctoral level social workers and psychologists assessed women referred to the MOMsline over the telephone (using instruments detailed in the “Diagnostic Assessment and Follow Up” section) for the following: major depressive disorder, dysthymia, suicidality, panic disorder, post-traumatic stress disorder (PTSD), alcohol dependence and abuse, substance (non-alcohol) dependence and abuse, psychotic disorders, and generalized anxiety disorder. Information was collected on basic demographics, medical conditions, past mental health history and service use. All participants (n=465) were told the results of their assessment and the majority (74%) were given at least two mental health treatment referrals. Women not given referrals were those who declined to accept them (n=122); this group was not included in the analysis.

Follow-Up Assessments—When possible, the same clinician who assessed the woman at her initial intake called the woman at 1, 3, and 6 months after her first assessment and administered a structured depression questionnaire. Women were asked whether or not they had attended treatment since their last contact and the name and location of the treatment site. Additional referrals were given if necessary.

Psychiatric Screening Measures—Women were administered the Primary Care Evaluation of Mental Disorders (PRIME-MD) Brief Patient Health Questionnaire (14), which screens for a depressive or anxiety disorder. Although this is a self-report questionnaire, it was administered to ensure accurate information for women unable to read. Additionally, women were administered questions from the PTSD module from the MINI International Neuropsychiatric Interview (MINI) Version 5.0 (15) to identify possible PTSD.

Diagnostic Assessment and Follow-Up—Presence of psychiatric disorders was determined using the MINI (15) (excluding eating disorder modules and antisocial personality disorder) during a subsequent phone evaluation. Depression severity was measured with the Edinburgh Postnatal Depression Scale (EPDS), a 10-item questionnaire used widely to assess depression severity in pregnant and postnatal women (16). The EPDS was re-administered by phone at 1, 3, and 6 months after initial assessment.

Chart Review—The subject’s medical chart was reviewed to confirm delivery dates and obtain information on concurrent substance abuse or dependence and behavioral health treatment.

Analysis

Dependent variable—Treatment was operationalized dichotomously as receiving mental health care through any of the following: psychotherapy or pharmacotherapy with a behavioral health specialist in private practice (at least 1 visit), clinic or hospital, a prescription for psychiatric medication given by a general medical care provider (including obstetrics provider), and/or substance abuse counseling. For purposes of this analysis, self-help groups, complimentary and alternative medicine therapies and peer-group meetings were not included in the definition of mental health treatment as this information was not routinely collected.

Independent variables—Results of bivariate associations between treatment attendance and individual predictors of attendance were grouped according to the four domains outlined in the modified Behavioral Model of Health Service Use (11).

Predisposing factors are those found to be important predictors of seeking mental health care and included: age (18 and over vs. 17 and under), race (white vs. non-white), history of mental health diagnosis (positive past vs. no past diagnosis), and language (monolingual English vs. monolingual Spanish or bilingual English/Spanish), citizenship (U.S. citizen vs. non-U.S. citizen), marital status, (single/divorce/dating/engaged/other vs. married/living with a partner), education (greater than high school education), employment (employed vs. unemployed), and interpersonal violence (no interpersonal violence vs. past or current interpersonal violence).

The *enabling* domain included attributes of the woman's environment that facilitated or hindered her disposition to seek mental health care (11) including: 1) income (defined as income above the sample mean); 2) insurance status (defined as private insurance with mental health benefits, or Medicaid vs. no insurance); 3) transportation (defined as reliable transportation vs. no transportation); 4) childcare (women with children who did vs. did not have available childcare); and 5) presence of other children (women with vs. without other children).

Perceived need variables included: number of comorbid psychiatric disorders defined as: 0 disorders, mild (1 disorder), moderate (2 disorders), severe (3 or more disorders). Any suicide risk (low, medium or high) according to the MINI suicidality module was considered a single disorder for purposes of this analysis. Expressed need was measured using the question from the New Haven Healthy Start Risk Assessment "Would you like help with a mental health problem" (yes/no).

Need for mental health services was further classified according to the Andrews (2000) model (17,18). *Met need* is defined as the proportion of women with a psychiatric disorder at initial assessment that attended at least one mental health treatment visit during the study period. Women were not included in this analysis of met need if they could not be contacted at follow-up. *Unmet need* was defined as the proportion of women who met criteria for a psychiatric disorder but did not attend a mental health treatment visit. *Met unneed* was the proportion of women without a diagnosable mental disorder at baseline assessment who attended a mental health treatment visit. *Unmet unneed* was defined as the proportion of women who did not meet criteria for a psychiatric disorder and who did not attend a mental health treatment visit.

Health service system—This domain included use of mental health services prior to assessment by the MOMSline and location of behavioral health referral as onsite (at the same location as obstetrical care) or offsite (at a separate location). Two of the obstetrical clinics participating in the study offered onsite mental health services.

Logistic regression (SAS proc logistic) was used to estimate which predictors from each of the four domains increased the likelihood of treatment attendance among both pregnant and

postpartum women. Odds ratios were computed with 95% confidence intervals for all independent variables entered into the model and included variables from the predisposing, enabling, need, and health services use domains. The final model predicting treatment attendance included only covariates significant at <0.10 .

Pregnancy due dates were used to classify a woman's pregnancy status at baseline, 1-month, 3, and 6-month time points with a pregnancy/postpartum indicator variable. Bivariate analyses were performed examining the association between pregnancy status at baseline and treatment attendance at any time during the study, and then subsequently for pregnancy status at each time point (1, 3, 6 months) as it predicted treatment attendance. Associations significant at a 0.10 level were included in a multivariate logistic regression model with treatment attendance as an outcome. The same predisposing, enabling, perceived need, and health service system variables as used above were included in the development of the model. Additionally, we wanted to examine the effect of delivery on treatment attendance for pregnant women who delivered anytime during the 6-month follow-up period. Therefore, we examined differences in treatment attendance between women who delivered ($n=179$) and women who remained pregnant for each follow-up time points and the overall follow-up period.

Results

Overall mental health treatment attendance

At the initial assessment point, 465 women were interviewed. A total of 122 women declined a referral to a behavioral health provider from the MOMSline. Additionally, 28 women were excluded from this analysis because they miscarried at some point during the study period. Therefore, the total sample size included in this analysis was 315. An average of 6.7 contacts was made to reach women for a follow-up assessment. Women who were contacted 3 or more times by study personnel were no more likely to attend treatment than those who received less than 3 contacts ($p=0.567$). At the 3-month follow-up, some women were significantly more likely to be recontacted than others including: those who had PTSD ($p=0.044$), and women who spoke only Spanish compared with those who were bilingual English/Spanish or monolingual English ($p=0.005$). No significant differences were detected in likelihood of follow-up at the 1- and 6-month time points. Of the women contacted for follow-up ($N=315$), 38.1% (120) attended one or more mental health treatment visits at 1, 3, or 6 months; nineteen women (6%) reported receiving mental health treatment at all 3 intervals.

Met need—The overall met need was 35.6% when examining treatment attendance at any time point. That is, 112 women with a diagnosed disorder attended at least one mental health treatment visit. The met need was highest for substance dependence disorders (66.7%, $N=20$) followed by panic disorder (56.5%, $N=26$). Met need was also greater for women who were postpartum at baseline assessment (61.5%, $N=40$) (28.9%, $N=79$).

Unmet need—The unmet need (diagnosis at baseline and no treatment attendance at any time point) for this population was 48% (151). The overall unmet need was highest for dysthymic disorder (67.4%, $N=33$). At one-month and three-month follow-up time points, unmet need was significantly higher for pregnant women (65%, $N=161$ at 1-month, and 65%, $N=136$, at 3-months) as compared to postpartum women (42%, $N=27$ at 1-month and 59%, $N=30$ at 3-months). Met unmet: The overall rate of met unmet was 2% ($n=7$). Unmet unmet: The overall rate of unmet unmet was 14% ($n=44$).

Demographic and clinical factors associated with treatment attendance

Sample characteristics are presented in Table 1. Variables found to significantly differ between pregnant and postpartum women included: meeting criteria for major depressive disorder (74%

of postpartum women and 60% of pregnant women, $p=0.0116$); insurance status (86% of postpartum women and 74% of pregnant women, $p=0.0381$); and African American race/ethnicity (33% of postpartum women and 24% of pregnant women, $p=0.0470$).

The mean EPDS scores over the study period were: 13.1 (SD=6.5) at baseline, 8.7 (SD=7.3) at 1-month, 7.2 (SD=7.0) at 3 months, and 6.4 (SD=6.7) at 6 months. MINI diagnoses at baseline that predicted treatment attendance at any time point were: major depressive disorder (O.R. = 2.48, 95% C.I. 1.51, 4.06), panic disorder (O.R. = 2.43, 95% C.I. 1.29, 4.59), PTSD (O.R. = 1.89, 95% C.I. 1.12, 3.18), and substance dependence/abuse (O.R. = 2.47, 95% C.I. 1.28, 4.78) (see Table 1).

Multivariate analysis demonstrated that pregnancy status at baseline predicted treatment attendance at any follow-up time point. However, contrary to our hypothesis, women who were pregnant at their initial assessment were less likely to attend mental health treatment visits at follow-up time periods as compared to women who were postpartum at baseline assessment (O.R.= 0.23, 95% C.I. 0.13-0.41). When controlling for severity and number of follow-up assessments, this effect persisted (O.R. = 0.23, 95% CI 0.13-0.42). After controlling for severity and time since baseline, this effect persisted at the 1-month and 3-month, but not at the 6-month follow-up time points. After controlling for significant variables, (insurance status, Major Depressive Disorder, and African American race/ethnicity), results showed that women who were pregnant at their initial assessment were less likely to attend mental health treatment visits at follow-up time periods as compared to women who were postpartum at baseline. In addition, when controlling for pregnancy and insurance status, women with major depressive disorder were more likely to attend mental health treatment visits at 1-month (O.R. = 3.35, 95% C.I. 1.70, 6.61) and 3-months (O.R. = 3.45, 95% C.I. 1.56, 7.64).

Additional analyses examining the effects of delivery on behavioral health treatment attendance showed no significant differences between the women who were pregnant at baseline and delivered within the 6 months of follow-up and those that remained pregnant during the entire follow-up period ($p = 0.6838$).

The absolute number of diagnoses at baseline consistently predicted treatment attendance at 1 month (O.R. = 1.47, 95% C.I. 1.15, 1.87), 3 months (O.R. = 1.54, 95% C.I. 1.14, 2.09) and 6 months (O.R. = 1.82, 95% C.I. 1.30, 2.55).

Enabling, predisposing, need factors and healthcare services use as predictors of treatment attendance

Factors predicting service use, by domain, are presented in Table 2. In a univariate model, the most robust predictors of treatment attendance were variables in the Health Services Use domain including: women with previous mental health treatment (O.R. = 2.18, 95% C.I. 1.36, 3.48) and referral to the same location as a woman's prenatal or postpartum care site as compared to a location separate from obstetrical or postpartum care (O.R. = 3.08, 95% C.I. 1.71-5.54). These effects persisted when controlling for severity of disorder.

The final logistic regression model predicting treatment attendance at any time point during the study period is presented in Table 3. The most robust predictor of treatment attendance was location of behavioral health referral. Women who were referred to a behavioral health provider located at the same site as their prenatal/postpartum care were over four times more likely (O.R. = 4.03, 95% C.I. 1.68, 9.66) to attend treatment than those women referred to a behavioral health provider at different location. Unemployed women were more likely to attend treatment (O.R. = 2.69, 95% C.I. 1.28, 5.68) than employed women and women with past or current interpersonal violence were more likely to attend treatment (O.R. = 2.52, 95% C.I. 1.07, 5.95) than women who did not endorse past or current interpersonal violence. Interestingly, women

who were Born in the U.S. were more likely to attend a behavioral health care appointment than women who were not born in the U.S. (O.R. = 2.06, 95% C.I. 1.02, 4.17). Severity of depression, based on number of comorbid psychiatric diagnoses, did not significantly predict treatment attendance, nor did history of mental health treatment.

Discussion

The results demonstrate that the level of unmet need for psychiatric care is high (48%) among a perinatal cohort who received obstetrical care at a publicly-funded clinic. Only 38.1% percent of pregnant and postpartum women who were referred to the MOMsline attended a mental health treatment visit at any point during the study and 6% received sustained treatment. This finding is especially disconcerting given that at baseline assessment, 32% of the cohort of referred women endorsed current suicidality, and 84% met criteria for one or more psychiatric disorders. Our prospectively determined rate of treatment attendance is similar to that based upon retrospective report over a 12-month interval, for individuals with a DSM-IV disorder from a national sample (41%) (1).

Even though we found that only 36% of women who needed mental health treatment were able to attend at least one behavioral health care visit, our rate was higher than that found by others for psychiatrically distressed women from similar reproductive settings (17%-19%) (12,19). Differences may be due to the fact that our women were either pregnant or recently postpartum and they received active follow-up and referral through this project. Perinatal women may have greater predisposition toward adopting healthy habits, which may include medical visits, and this may further contribute to differences.

After adjustment for the number of comorbid psychiatric disorders, postpartum women, compared with pregnant women, were more likely to attend a mental health treatment visit (O.R. = 4.16 95% C.I. 2.3, 7.51). This finding is not only contrary to our hypothesis but differs from the substance abuse treatment literature that demonstrates a postpartum woman's propensity to receive substance abuse and mental health services is often limited by childcare responsibilities (20,21). Several reasons may explain why pregnant women may be less likely to attend mental health treatment for problems other than hazardous substance use: pregnant women may be more likely to attribute symptoms of psychiatric disorder to pregnancy, face competing demands of prenatal care visits, perceive prenatal visits as sufficiently beneficial or fear the effects of medication on offspring. We hypothesized postpartum women would bear a larger burden of not only caring for the infant they had just delivered, but also caring for any other additional children at home. Postpartum women may be more willing to take medication once they have delivered, a fact supported by a recent study showing 49% of women using antidepressants before pregnancy discontinued use upon becoming pregnant (22).

Importantly, predisposing factors (country of birth, employment status, and interpersonal violence) as well as characteristics of the healthcare delivery system (location of behavioral health referral t) were found to be associated with attendance at one or more mental health care visits over the course of the study. This replicates findings across different types of healthcare service sectors (23) (1,23). This finding is noteworthy because use of mental health services, if equitably distributed, should not differ by factors other than need (evaluated and expressed). Because depression during pregnancy and the postpartum period can have deleterious effects on women, their families, and perhaps their unborn children, it is important to use these findings to increase treatment engagement among perinatal women.

The odds of receiving treatment on-site at a subject's perinatal care setting was four times higher than obtaining treatment at a different site. Such results suggest system changes that could be made in the delivery of healthcare services to pregnant and postpartum women that

could increase engagement in mental health treatment. Primarily, mental health care delivery services may be integrated with pregnancy-related care. Several programs integrating primary care with mental health care have already proven successful and cost effective (24,25). Additionally, initiatives are needed to increase treatment engagement specific to perinatal women's needs such as flexible scheduling of mental health care appointments.

The findings that psychiatric comorbidity and expressed need did not significantly predict service use are not consistent with studies from primary care and community settings that showed a greater likelihood of treatment attainment among patients with comorbid disorders compared to those without comorbid disorders (26-28), (19,29-32). This finding may be due to the fact that the results presented here are from a sample of predominately African American and Hispanic women who received obstetrical and postpartum care at publicly funded clinics. Previous research suggests factors such as stigma, employment status, and cultural beliefs regarding behavioral health treatment play a predominant role in behavioral health treatment attendance (13,33)

While the increased odds of treatment for major depressive disorder (O.R.=2.48, 95% C.I. 1.51, 4.06), and PTSD (O.R.=1.89, 95% C.I. 1.12, 3.18) should be interpreted in the context of generally low rates of treatment for all diagnosed women, this result differs from other findings that current mood and anxiety disorders do not predict mental health treatment attendance (6, 34). Possible explanations are that major depressive disorder and PTSD lead to greater impairment for perinatal women than in other populations, and/or pregnant women are more likely to be detected due to their frequent medical visits.

The results presented here should be interpreted with the following 3 limitations: First, our study was susceptible to bias resulting from non-random attrition of subjects between follow-up time periods. Although subjects in the 3-month follow-up point differed from those in the 1 and 6-month follow-up points in terms of language, women lost to follow-up did not differ from women contacted in any of the other main study variables such as psychiatric comorbidity or pregnancy status. Thus, attrition cannot be invoked as an explanation for the effect of pregnancy status on use of mental health services. Second, our measure of treatment engagement was based on self-report, which is subject to uncertain validity and possibly social desirability bias. However, because our program was separate from entitlement (welfare), prenatal/postpartum care, and punitive (social services, immigration and naturalization) programs, there is less apparent reason women would feel pressure to over or underreport treatment engagement. Third, we realize that with mental health treatment, the range of culturally available and acceptable strategies of coping with emotional problems is more diverse than the definition used in this study, and includes: alternative and complementary medicine, the use of informal, social support networks, problem-focused, cognitive strategies, and the use of complimentary medicine. Future studies should also examine the diverse forms of mental health treatment used among this population.

Despite active follow-up, rates of accessing and particularly continuing in mental health treatment among pregnant and postpartum women were low. More work is needed to understand how best to engage symptomatic, perinatal women in mental health treatment. Results suggest a system change that could be made to increase engagement in mental health treatment would be to integrate behavioral health care with pregnancy-related care.

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Table 1
Characteristics associated with mental health treatment in a sample of perinatal women

Characteristic	Total Sample (N)	Pregnant N (%)	Postpartum N (%)	Odds Ratio	95% CI	Treatment N (%)	No treatment N (%)	Odds Ratio	95% CI
Current alcohol & drug use	50	41 (16.5)	9 (14.3)	1.19	0.54 - 2.60	23 (46.0)	27 (54.0)	1.51	0.82 - 2.79
Current suicidality	100	74 (29.7)	26 (40.0)	0.63	0.36 - 1.12	44 (44.0)	56 (56.0)	1.46	0.90 - 2.36
Major depressive disorder	189	141 (56.6)	48 (73.9)	0.46	0.25 - 0.85*	87 (46.0)	102 (54.0)	2.48	1.51 - 4.06***
Dysthymia	49	37 (14.9)	12 (18.5)	0.77	0.38 - 1.58	16 (32.7)	33 (67.3)	0.76	0.40 - 1.46
EPDS ≥ 12	309	144 (60.9)	39 (58.8)	0.91	0.52 - 1.61	79 (43.2)	104 (56.8)	1.76	1.09 - 2.84*
Generalized Anxiety Disorder	81	70 (28.2)	11 (16.9)	1.93	0.95 - 3.91	32 (39.5)	49 (60.5)	1.09	0.65 - 1.83
History of mental health treatment	133	108 (44.1)	25 (40.3)	1.17	0.66 - 2.06	64 (55.2)	69 (36.1)	2.18	1.36 - 3.48**
Panic disorder	46	35 (14.1)	11 (16.9)	0.81	0.39 - 1.69	26 (56.5)	20 (43.5)	2.43	1.29 - 4.59**
PTSD	77	63 (25.7)	14 (21.9)	1.24	0.64 - 2.39	38 (49.4)	39 (50.6)	1.89	1.12 - 3.18*
High school education or higher	147	112 (48.1)	35 (57.4)	0.69	0.39 - 1.21	62 (55.4)	85 (46.7)	1.42	0.88 - 2.27
Age < 20	67	56 (22.4)	11 (16.9)	1.42	0.69 - 2.89	99 (39.9)	149 (60.1)	1.46	0.82 - 2.59
Born in US	145	116 (50.0)	29 (47.5)	0.91	0.52 - 1.59	63 (55.8)	82 (45.6)	1.51	0.94 - 2.42
Insurance (Public or Private)	240	184 (73.9)	56 (86.2)	0.46	0.21 - 0.97*	97 (81.5)	143 (73.3)	1.60	0.91 - 2.81
Smoked During Pregnancy	68	56 (23.4)	12 (20.0)	1.22	0.61 - 2.46	32 (47.1)	36 (52.9)	1.78	1.03 - 3.08*
Language: Monlingual Spanish	82	69 (27.6)	13 (20.0)	0.72	0.35 - 1.48	21 (17.5)	61 (31.3)	1.22	0.71 - 2.07*
Monolingual English	145	115 (46.0)	30 (46.2)	.	.	59 (49.2)	86 (44.1)	.	.

Characteristic	Total Sample (N)	Pregnant N (%)	Postpartum N (%)	Odds Ratio	95% CI	Treatment N (%)	No treatment N (%)	Odds Ratio	95% CI
Bilingual (English/Spanish)	88	66 (26.4)	22 (33.9)	1.28	0.68 - 2.39	40 (33.3)	48 (24.6)	0.50	0.28 - 0.91**
<i>Marital Status:</i>									
Single, divorced, dating, engaged, other	187	151 (61.4)	36 (59.0)	1.10	0.62 - 1.95	45 (39.5)	75 (38.9)	0.97	0.61 - 1.57
Married, living with partner	120	95 (38.6)	25 (41.0)	.	.	69 (60.5)	118 (61.1)	.	.
<i>Race Ethnicity:</i>									
African American	81	60 (24.5)	21 (32.8)	5.60	1.23 - 25.41*	37 (31.1)	44 (23.2)	1.36	0.60 - 3.08
Caucasian	34	32 (13.1)	2 (3.1)	.	.	13 (10.9)	21 (11.0)	.	.
Hispanic	185	145 (59.2)	40 (62.5)	4.41	1.01 - 19.21	65 (54.6)	120 (63.2)	0.88	0.41 - 1.86
Other	9	8 (3.3)	1 (1.6)	2.00	0.16 - 24.92	4 (3.4)	5 (2.6)	1.29	0.29 - 5.71

* = p<0.05

** = p< 0.01

*** = p<0.001

Table 2

Predictors of mental health treatment in a sample of perinatal women

Domain	Characteristic	Odds Ratio	95% CI
Enabling	Income	1.14	0.71 - 1.82
	Insurance	1.60	0.91 - 2.81
	Reliable transportation	0.92	0.53 - 1.59
	Childcare	1.25	0.69 - 2.27
	Presence of other children at home	1.66	1.01 - 2.73*
Predisposing	Adult	1.19	0.53 - 2.65
	White vs. non-White	0.99	0.47 - 2.05
	English	1.23	0.78 - 1.93
	Born in US	1.51	0.94 - 2.42
	Marital status: single, divorced, dating, engaged	0.97	0.61 - 1.57
	High school education	1.42	0.88 - 2.27
	History of mental health diagnosis	1.75	1.09 - 2.81*
	Unemployed	1.64	0.98 - 2.74
	Interpersonal violence	2.02	1.00 - 4.06*
Perceived Need	Number of comorbid psychiatric disorders	1.53	1.23 - 1.90***
	EPDS Score	1.06	1.02 - 1.10**
	Expressed need	2.37	1.29 - 4.37**
Health Service System	History of mental health treatment	2.18	1.36 - 3.48**
	Referral to the same site as prenatal/postpartum care	3.08	1.71 - 5.54***

* = p<0.05

** = p< 0.01

*** = p<0.001

Table 3

Adjusted model of predictors of mental health treatment in a sample of perinatal women

Characteristic	Odds Ratio	95% CI
Born in US	2.06	1.02 - 4.17*
Unemployed	2.69	1.28 - 5.68**
Interpersonal violence	2.52	1.07 - 5.95*
Referral to the same site as prenatal/postpartum care	4.03	1.68 - 9.66**

*
= p<0.05**
= p< 0.01***
= p<0.001