Variation of Behavioral Health Care by Behavioral Health Symptom Profile Among a Diverse Group of Pregnant and Parenting Mothers

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Abstract

This study examines the association between behavioral health symptoms and use of behavioral health care (BHC; i.e., past year counseling and/or regular use of psychiatric medication) among a diverse group of mothers of toddlers. Data were from the Fragile Families and Child Wellbeing study (N = 4205 mothers). The association between symptom profiles (i.e., depressive, anxiety, and alcohol and drug dependence) and use of BHC was estimated with logistic regression models. Potential moderation by race/ethnicity was examined. Complex symptom profiles, older age, functional limitations, prior behavioral health symptoms, and having Medicaid were associated with increased BHC use. While BHC use varied by symptom profile (but not by race/ethnicity), BHC use was low across profiles. Pregnant women and women of color were most likely to have unmet needs, underscoring the need to improve screening and management systems for these populations.

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Introduction

Behavioral health problems, such as depression, anxiety, and alcohol misuse, affect 10 to 20% of US mothers at any given time, with even more mothers affected by subclinical symptoms, which can also be impairing.[1–3] The negative impacts of maternal behavioral health problems are well-established, including elevated risk for suicide[4] and relationship problems[5] for mothers, and increased rates of preterm birth,[6, 7] behavior problems,[8, 9] and inadequate preventive health care for children.[10] Mental health and substance use services (i.e., behavioral health care, BHC) use can reduce symptoms, improve family functioning and coping skills,[7] and potentially fortify against symptom recurrence.[8] Pregnancy provides an excellent opportunity to deliver preventative services to women as they are more frequent utilizers of health care in that period and are already receiving other anticipatory guidance regarding their health.

Despite national medical and public health guidelines to screen regularly for maternal depression and anxiety and implement appropriate disorder management,[1, 2] unmet need remains high.[3] For example, only half of reproductive-aged women in the USA with clinically meaningful depressive symptoms receive a diagnosis.[4] Moreover, and despite seeing medical providers more frequently, less than half of pregnant women are screened for depression and, among those with significant symptoms, only 13–15% receive treatment.[5] Unmet need is greatest among women of color.[6]

Predictors and moderators of behavioral health care use

Andersen's Behavioral Model (ABM) is commonly used to describe factors that contribute to disparities in mental health care (non)use.[9, 10] The ABM posits three dynamic factors influencing use of health care services, namely predisposing, enabling, and need characteristics.[11]

Predisposing factors include individual characteristics that existed prior to the onset of the current health care need episode. The strongest and most consistently demonstrated predisposing factor for BHC use among mothers is having a prior history of mental health problems.[12] BHC use is also influenced by age of symptom onset,[13] transition to parenthood, parity,[14] pregnancy and obstetrical complications,[13, 15] and physical health.[16]

Enabling characteristics are factors that potentially foster or impede access to care, such as social support,[17] health insurance,[11] transportation, work schedule flexibility, and childcare availability.[18] Medicaid is the largest provider of health insurance for both low-income populations and those with behavioral health problems.[19] Furthermore, Medicaid covers nearly half of the perinatal medical care in the USA,[20] underscoring the profound impact Medicaid reimbursement policy has on health care for low-income mothers.

Need factors related to BHC use include disorder type, severity, and complexity.[11, 21] For example, analyses from the 2012 National Survey on Drug Use and Health found that 62.9% of the US adult population with "serious mental illness" received some treatment, compared with 45.9% with "moderate mental illness," 29% with "low/mild mental illness," and 8.5% with no mental illness.[22] In that study, individuals with major depressive disorder were most likely to receive care within a year of symptom onset; those with substance use disorders were the least likely to receive care.[23] In addition to severity and disorder type, having symptoms characteristic of complex or comorbid conditions likely impacts BHC use. However, a majority of studies of maternal mental health focus on a single behavior or probable disorder. In a prior study of mostly unmarried mothers of color in the USA, the authors employed latent class analysis to identify subgroups of mothers based on their reports of 33 depressive, anxiety, alcohol dependence, and drug dependence symptoms.[24] Among 4205 mothers of 3-year-olds, the authors identified five mutually exclusive and exhaustive symptom profiles that best represented mothers' experiences of their symptoms: (1) "Currently symptom free" (76.5%); (2) "Depression only" (14.5%); (3) "Severe depression and anxiety" (5.3%); (4) "Anxiety only" (2.2%); and (5) "Depressed with substance use" (1.4%). They

found that when depressive symptoms co-occurred with substance use symptoms, those symptoms were less severe than when mothers only reported depressive symptoms. Conversely, among mothers reporting depressive symptoms and anxiety symptoms (i.e., "Severe depression and anxiety"), their depressive symptoms were more severe, compared with the mothers who only reported depressive symptoms (i.e., "Depression only" profile). To the authors' knowledge, no study of mothers has examined the extent to which behavioral health symptom need profiles are associated with a likelihood of using behavioral health services.

Identifying predisposing, enabling, and need factors associated with mothers' BHC use could inform planning and tailoring of screening and treatment services to reduce unmet need use among mothers during a critical stage in their family's life cycle. Thus, this study aimed to (1) describe how distinct maternal behavioral health symptom profiles (i.e., need factors) predicted BHC use, (2) identify what predisposing and enabling maternal characteristics were associated with BHC use, and (3) estimate racial/ethnic differences in the association between symptom profiles and probability of BHC use.

Methods

This study included 4205 mothers of toddlers who reported their behavioral health symptoms at the year 3 wave of the Fragile Families and Child Wellbeing (FFCW) study. The FFCW is an ongoing birth cohort that began with 4898 families (biological mother, father, and child) from 1998 to 2000 based on randomly selected births sampled from 75 hospitals in 20 US cities with populations larger than 200,000.[25] Unmarried families (i.e., "fragile families") were oversampled such that three quarters of the sample were unmarried; overall, among US mothers at the time, 33% were unmarried.[26] Mothers were assessed in-person at study enrollment (within days of the child's birth), and over the phone at year 1 and year 3.

Primary outcome: behavioral health care use

Women were considered to be users of BHC (i.e., primary outcome) if they reported in year 3 that in the past 12 months, they regularly took psychiatric medication for either depression or anxiety and/or received counseling or therapy for "personal problems," such as mental health or substance use.

Primary predictor: symptom profiles (i.e., need)

To characterize current behavioral health *need*, women were assigned to the aforementioned symptom profiles when their children were toddlers (i.e., year 3): (1) currently symptom free; (2) depression only; (3) severe depression and anxiety; (4) anxiety only; and (5) depressed with substance use. Profiles were treated as a manifest variable and dummy-coded.

Predisposing factors

Predisposing characteristics of year 3 BHC use included maternal age, maternal education, parity, a recent fetal loss, and a "physical or mental health condition that limits the work you can do" in year 1 and year 3. At year 1, symptoms reported in the postpartum year were used to identify probable major depressive disorder (MDE), probable generalized anxiety disorder (GAD), and substance use risk. MDE was defined as when a woman endorsed either dysphoria ("feeling sad, blue or depressed") or anhedonia ("loss of interest in hobbies or work") on most days, for most of the day for at least a 2-week period in the past year, and the co-occurrence of at least three of the DSM vegetative or mood symptoms. GAD was defined as endorsing *both* (1) feeling worried or

anxious for at least a 6-month period in the past year, that worrying being excessive, and on the majority of days; and (2) lacking control over worries, and endorsing at least 3 additional symptoms. Postpartum (year 1) substance use risk was identified if the mother endorsed any of the following: past year binge drinking (5+ drinks per occasion), past month hard drug use, past month marijuana use, and smoking cigarettes while pregnant.

Enabling factors

Enabling characteristics of year 3 BHC use included current relationship status with the focal father, household income as a percentage of the federal poverty line, health insurance coverage, and instrumental social support, based on the question "Do you have someone who can provide you with a) emergency childcare, b) a place to live, and c) a loan for $200?" in the year 3 survey. Mothers' race/ethnicity was self-reported (white non-Hispanic, black non-Hispanic, Hispanic, and other).

The data archive at the Office of Population Research of Princeton University and the Johns Hopkins IRB approved use of these data, which are publicly available and de-identified. The Johns Hopkins IRB determined this study to be exempt.

Statistical analysis

First, how predisposing and enabling factors were associated with year 3 BHC use and varied by race/ethnicity were examined with Chi-square tests. Second, the associations between symptom profiles and BHC use were estimated using unadjusted and adjusted multivariate logistic regression models. From each model, predicted probabilities (Stata's *margins* command) were estimated for the primary predictors.[27] Predicted probabilities estimated profile-specific probabilities of each symptom profile and each ethnic/racial group, adjusted for correlates.[27] Furthermore, a moderation model was fit to examine if the relationship between symptom profiles and BHC use varied by race/ethnicity using a race by profile interaction term.

Missingness of the outcome variable (year 3 BHC use) was related to two cities not receiving that question due to survey administration issues. That variable was first imputed using an auxiliary variable (i.e., city), and then an imputation model was added to the previous model to include the other predictors of interest.[28–30] To avoid the loss of 28.9% of the sample due to listwise deletion, data were multiply imputed with chained equations (MICE),[30] using 5 imputed datasets, the year 3 BHC use dependent variable, and aforementioned maternal characteristics. Data were deemed missing at random given significant associations of missingness with city flag, race/ethnicity, maternal education, household poverty status, employment, health insurance, instrumental social support, and year 1 marijuana use (all $p < 0.05$).[28, 31] Statistical analyses were conducted in Stata/SE 14.2.[32]

Results

Overall, 7.5% of mothers reported any past year BHC use when their children were 3 years old. Of those, roughly half reported counseling/therapy alone (3.5%) and the other half reported regular use of prescribed psychiatric medication alone (1.9%) or in conjunction with counseling (1.3%). Proportions of BHC use were higher among symptomatic women (i.e., current behavioral health need) overall (20.9% of symptomatic women reported BHC use in the past year) and varied substantially by symptom profile, ranging from 33.9% among women with depressive and substance dependence symptoms to 16.0% among women with anxiety symptoms only. Bivariate analyses demonstrated statistically significant differences across most predisposing and enabling characteristics by maternal race/ethnicity (Table 1). For example, white women had twice the

Table 1
Maternal characteristics and item-level Missingness, by race/ethnicity ($N = 4194$)

	Non-Hispanic white	Non-Hispanic black	Hispanic	Other	Total	*p* Value
Sample size (*N*)	918	2021	1095	160	4194	
Year 3 behavioral health profile (%)						
Depression and substance use	1.3	1.8	0.7	1.9	1.4	*0.020*
Severe anxiety and depression	5.6	5.1	5.4	6.3	5.3	
Depression only	13.9	16.3	11.6	13.1	14.5	
Anxiety only	2.9	1.9	2.1	3.1	2.2	
Symptom free	76.3	74.9	80.2	75.6	76.6	
Mental health care use (%)						
Any in the past 12 months	12.3	6.7	5.7	3.8	7.5	*< 0.001*
Past year mental health care use (%)						
None	77.9	82.8	72.5	80.0	78.8	*< 0.001*
Counseling/therapy only	4.8	3.6	2.4	1.9	3.5	
Psychiatric medication only	3.8	1.3	1.6	0.6	1.9	
Both counseling and medication	2.3	1.2	0.8	0.6	1.3	
Maternal age (%)						
15–24 years	25.7	38.9	36.5	25.0	34.9	*< 0.001*
25–34 years	47.7	47.3	48.7	50.6	47.9	
35 years and older	26.6	13.9	14.8	24.4	17.3	
Maternal education (%)						
Less than high school	18.3	32.4	49.2	20.6	33.2	*< 0.001*
Completed high school	24.8	36.5	25.8	19.4	30.5	
Any post-secondary education	56.9	31.0	24.8	59.4	36.2	
Health insurance coverage (%)						
Uninsured	19.2	18.3	40.3	20.6	24.3	*< 0.001*
Medicaid	21.1	51.6	31.9	30.0	38.9	
Private	59.3	29.0	26.9	48.1	35.8	
Instrumental social support (%)						
Low instrumental support	5.5	15.6	13.4	17.1	12.9	*< 0.001*
Household income as percentage of the federal poverty line (FPL) (%)						
Near poor/poor (< 99% FPL)	19.5	49.3	48.6	30.6	41.9	*< 0.001*
Low income (100–199% FPL)	19.9	25.9	27.9	21.3	24.9	
Middle or high income (200%+ FPL)	60.6	24.8	23.6	48.1	33.2	
Parity (%)						
1 child	29.6	22.3	25.8	30.6	25.1	*< 0.001*
2 children	38.5	29.6	33.4	32.5	32.7	
3+ children	28.0	41.1	33.7	28.8	35.8	
Recent pregnancy loss (%)	3.9	7.0	7.0	8.1	6.4	*0.005*

Table 1
(continued)

	Non-Hispanic white	Non-Hispanic black	Hispanic	Other	Total	*p* Value
Currently pregnant (%)	10.0	13.5	9.7	12.5	11.7	0.719
Year 1 health-related limitations (%)	5.9	7.4	6.3	3.1	6.6	0.108
Year 3 health-related limitations (%)	7.2	10.4	6.3	6.9	8.5	*< 0.001*
Major depressive episode (%)	14.3	16.2	12.6	11.9	14.7	*0.037*
Generalized anxiety disorder (%)	3.8	2.8	2.6	3.8	3.0	0.359
Any binge drinking (5+ drinks in one occasion in the past month) (%)	8.9	5.2	6.5	3.1	6.3	*0.001*
Any marijuana use (%)	1.6	2.4	1.0	0.0	1.8	*0.010*
Any hard drug use (%)	0.0	0.3	0.4	0.0	0.2	0.299
Smoked cigarettes in pregnancy (%)	28.3	21.0	9.6	10.6	19.2	*< 0.001*
Relationship with biological father (%)						
Married	55.9	17.3	36.1	56.9	32.2	*< 0.001*
Cohabitating	13.9	18.7	26.9	10.0	19.5	
Together but not cohabitating	2.6	8.0	3.7	3.1	5.5	
In another relationship	13.0	24.2	13.2	11.9	18.4	
Single	14.4	31.5	20.1	18.1	24.3	

Chi-squared tests were conducted on complete case data; sample size varies based on item-level missingness which ranged from 13.6% for behavioral health use to 0% for maternal age
$N = 11$ mothers did not report race/ethnicity in the year 3 survey wave

proportion of BHC use (12.3%) compared with black (6.7%) and Hispanic women (5.7%; $p < 0.001$). The percentage of white women in the "Currently symptom free" behavioral health profile was similar to the average (76%), slightly lower for black women (74.9%), and higher for Hispanic women (80.2%, $p = 0.02$). Hispanic women had nearly twice the proportion of being uninsured (40.3%) compared with white and black women (19.2% and 18.3%, respectively) ($p < 0.001$).

Unadjusted and adjusted predicted probabilities of BHC use varied by symptom profiles (Table 2). Women reporting clinically significant depressive symptoms as well as symptoms characteristic of a co-occurring condition had the highest predicted probabilities of BHC use. Mothers in the "Depression and substance use" profile had the highest adjusted predicted probability of BHC use (28.7; 95% CI 17.9, 39.5), followed by "Severe depression and anxiety" (21.1; 95% CI 15.4, 26.0), "Depression only" (14.4; 95% CI 11.8, 17.0), "Anxiety only" (12.8; 95% CI 6.7, 19.0), and "Currently symptom free" profile (5.0; 95% CI 4.1, 5.9). All between-group comparisons were statistically significant, except for single-condition comparisons ("Depression only" vs. "Anxiety only," $p = 0.160$) and co-occurring condition comparisons ("Depression and substance use" vs. "Severe depression and anxiety," $p = 0.657$).

There were statistically significant racial/ethnic group differences in the predicted probability of BHC use (Table 2). Compared with white women, black and Hispanic women had lower predicted

probabilities of BHC use: 13.3% for white women, 6.6% for black women, 8.6% for Hispanic women, and 5.1% for women who identified as "other" race/ethnicity. The differences between white women and each of the other subgroups were statistically significant.

Adjusted odds ratios (AOR) of BHC use and associated maternal characteristics are presented in Table 3. Maternal characteristics associated with increased odds of BHC use included membership in any symptomatic profile, older age (35 years and older; AOR 2.4; 95% CI 1.5, 3.7), functional limitations due to health (AOR 3.6; 95% CI 2.3, 5.7), having a major depressive episode in the postpartum period (AOR 1.9; 95% CI 1.4, 2.7), smoking during pregnancy (AOR 1.8; 95% CI 1.3, 2.4), and Medicaid (AOR 2.0; 95% CI 1.4, 2.9). Women who were pregnant at the time of the year 3 survey (AOR 0.5; 95% CI 0.3, 0.9) were less likely to use BHC. Neither mothers' relationship status nor level of instrumental support was significantly related to BHC use. No statistically significant symptom profile by race/ethnicity interactions was identified (Table 4).

Table 2

Overall unadjusted and adjusted predicted probabilities of behavioral health care (BHC) use associated with membership in different behavioral health profiles, $N = 4205$

	Probability of BHC use Predicted probabilities (PP)			
	BHC[1] (unadjusted)		BHC (adjusted) [2]	
	PP	95% CI	PP	95% CI
Behavioral health symptom profile				
Depression and substance use	37.3	24.7, 49.9	28.7	17.9, 39.5
Severe depression and anxiety	33.5	27.1, 40.0	21.1	15.4, 26.0
Depression only	17.9	14.8, 21.0	14.4	11.8, 17.0
Anxiety only	17.4	9.7, 25.2	12.8	6.7, 19.0
Currently symptom free	4.2	3.5, 4.9	5.0	4.1, 5.9
Maternal race/ethnicity				
Non-Hispanic white	13.5	11.4, 15.6	13.3	11.1, 15.5
Non-Hispanic black	7.2	6.1, 8.4	6.6	5.6, 7.6
Hispanic	7.2	5.6, 8.9	8.6	6.7, 10.6
Other	4.5	1.2, 7.8	5.1	1.6, 8.5

[1]Women were considered to use any mental health care if they reported receiving counseling or therapy in the past 12 months and/or regularly taking prescribed psychiatric medication in the past 12 months

[2]Predicted probabilities and contrasts computed with logistic regression model, adjusted for maternal characteristics, including maternal age, race/ethnicity, maternal education, household poverty status, relationship status, employment, health insurance, parity, pregnancy status, fetal loss, instrumental support, health limitations, year 1 depression, year 1 anxiety, year 1 binge drinking, year 1 drug use, and smoking in pregnancy

For adjusted models: all between-symptom profile differences were statistically significant, at $p < 0.05$, with the exception of "Depression and substance use" vs. "Severe Depression and anxiety" and "Depression only" vs. "Anxiety only"

For adjusted models: between-race/ethnic subgroup contrasts that were statistically significant (i.e., $p < 0.05$) include non-Hispanic white compared with non-Hispanic black women; non-Hispanic white compared with women who self-identified their race/ethnicity as "other"; and non-Hispanic white compared with Hispanic women

Results based on multiply imputed data as described in the "Methods" section of this manuscript

Table 3
Correlates of past 12-month behavioral health care (BHC) use, $N = 4205$

	BHC use	
	UOR (95% CI)*	**AOR* (95% CI)**
Current need		
Year 3 behavioral health profiles		
Depression and substance use	*13.6 (7.7, 24.0)*	*10.2 (5.2, 19.8)*
Severe depression and anxiety	*11.5 (8.1, 16.4)*	*6.1 (3.9, 9.6)*
Depression only	*5.0 (3.8, 6.6)*	*3.7 (2.7, 5.0)*
Anxiety only	*4.8 (2.7, 8.6)*	*3.2 (1.6, 6.2)*
Currently symptom free	1.0	1.0
Predisposing factors		
Maternal age		
15–24 years	1.0	1.0
25–34 years	*1.5 (1.2, 2.0)*	*1.5 (1.1, 2.2)*
35 years and older	*2.3 (1.7, 3.3)*	*2.4 (1.5, 3.7)*
Race/ethnicity		
Non-Hispanic white	1.0	1.0
Non-Hispanic black	*0.5 (0.4, 0.6)*	*0.4 (0.3, 0.5)*
Hispanic	*0.5 (0.3, 0.6)*	*0.5 (0.4, 0.8)*
Other	*0.3 (0.1, 0.7)*	*0.3 (0.1, 0.6)*
Maternal education		
Less than high school	1.0	1.0
Completed high school	*0.7 (0.5, 0.9)*	0.7 (0.5, 1.1)
Any post-secondary education	1.0 (0.8, 1.3)	1.2 **(0.8, 1.7)**
Household income (federal poverty line) (%)		
Poor/near poor, < 100% FPL	1.0	1.0
Low income, 100–199% FPL	*0.7 (0.5, 0.9)*	0.9 (0.6. 1.3)
Middle or high income, 200%+ FPL	0.8 (0.6, 1.0)	1.1 (0.7, 1.8)
Worked in the last week	*0.5 (0.4, 0.6)*	*0.7 (0.5, 0.9)*
Currently pregnant	*0.5 (0.3, 0.9)*	*0.5 (0.3, 0.9)*
Recent fetal loss	1.4 (1.0, 2.0)	1.3 **(0.8, 2.0)**
Parity		
1 child	1.0	1.0
2 children	1.3 (0.8, 1.9)	1.2 **(0.7, 2.0)**
3+ children	*1.7 (1.2, 2.3)*	1.3 **(0.9, 1.9)**
Year 1 health limitation	*3.2 (2.3, 4.5)*	0.9 (0.5, 1.5)
Year 3 health limitation	*5.9 (4.5, 7.7)*	*3.6 (2.3, 5.7)*
Year 1 MDE	*4.0 (3.1, 5.1)*	*1.9 (1.4, 2.7)*
Year 1 GAD	*6.1 (4.0, 9.4)*	1.7 (0.9, 2.9)
Year 1 binge drinking	*1.7 (1.2, 2.6)*	1.0 (0.6, 1.6)
Year 1 marijuana use	1.1 (0.4, 2.8)	0.5 **(0.1, 1.7)**
Year 1 hard drug use	*4.9 (1.3, 18.1)*	3.2 (0.4, 24.6)
Smoked in pregnancy	*2.9 (2.3, 3.7)*	*1.8 (1.3, 2.4)*
Enabling factors		
Relationship with biological father		
Married	1.0	1.0

Table 3
(continued)

	BHC use	
	UOR (95% CI)*	**AOR* (95% CI)**
Cohabitating	0.8 (0.6, 1.2)	0.9 **(0.6, 1.5)**
Not cohabitating (together)	1.4 (0.8. 2.3)	1.6 **(0.9, 3.0)**
Another relationship (not focal father)	1.3 (0.9, 1.8)	1.3 **(0.8, 2.0)**
Single	*1.5 (1.1, 2.1)*	1.5 **(1.0, 2.2)**
Instrumental social support (low)	*0.6 (0.4, 0.8)*	1.0 **(0.7, 1.5)**
Health insurance coverage		
Uninsured	1.0	1.0
Medicaid	*2.1 (1.5, 2.9)*	*2.0 (1.4, 2.9)*
Private	1.3 (0.9, 1.8)	1.4 **(0.9, 2.3)**

UOR, unadjusted odds ratio; *AOR*, adjusted odds ratio; *CI*, 95% confidence interval
Italicized ORs and 95% CI indicate < 0.05 p value, i.e., after adjustment for all correlates in the model, the odds of using behavioral health care were statistically significant
The logistic regression model was adjusted for the following maternal characteristics: maternal age, race/ethnicity, relationship status, maternal education, household poverty status, employment, health insurance, parity, recent pregnancy loss, pregnancy status, functional health limitations in year 1 and year 3, postpartum probable major depressive episode (MDE), postpartum generalized anxiety disorder (GAD), year 1 marijuana use, year 1 use of hard drugs, and smoking in pregnancy, and instrumental social support
*Results based on multiply imputed data as described in the "Methods" section of this manuscript

Discussion

This study demonstrated that behavioral health symptom profiles differentially predicted the use of behavioral health care among a diverse group of mothers of young children. Women with comorbid symptom profiles (i.e., depression/substance use and severe depression/anxiety) were most likely to use BHC. These findings differ from estimates from the National Comorbidity Study of the US adult population, which found that individuals with MDE were most likely and those with drug dependence were least likely to use BHC within a year of disorder onset.[23] However, that analysis did not take into account symptoms characteristic of multiple probable disorders.[23] Use of BHC services was low in this socioeconomically disadvantaged sample of mothers, far below 2012 National Survey on Drug Use and Health estimates that found that about two-thirds of adults with MDE in the past year received at least some treatment.[22] While no symptom profile-specific differences by race/ethnicity were found in this study, white women were twice as likely to report use of BHC compared with women of color. Pregnant women were less likely to use BHC, compared with non-pregnant women.

Women in the "Anxiety only" profile were least likely to report using BHC services, consistent with prior studies.[23] These women may not have endorsed the psychiatric medication use because they considered their medication use to be for a medical condition, e.g., tense muscles or nervous stomach.[33] Furthermore, their symptoms may be less observable to family members, employers, and health care providers compared with those with depression or substance use symptoms, making it less likely that they were encouraged (or mandated) to seek care.

Table 4

Adjusted odds ratios and 95% CIs for behavioral health care (BHC) use by symptom profile by race/ethnicity interaction terms, $N = 4205$

	BHC use		
	AOR	**95% CI**	
Current behavioral health symptom profiles			
Depression and substance use	*8.9*	*2.4*	*33.1*
Severe depression and anxiety	*7.8*	*3.2*	*19.3*
Depression only	*4.5*	*2.6*	*7.6*
Anxiety only	2.4	0.8	7.3
Currently symptom free	1.0		
Race/ethnicity			
Non-Hispanic white	1.0		
Non-Hispanic black	*0.4*	*0.2*	*0.7*
Hispanic	0.7	0.4	1.1
Other	0.2	0.0	1.1
Symptom profile × race interactions			
Depression and substance use + black	1.7	0.4	8.2
Depression and substance use + Hispanic	Not estimable		
Depression and substance use + other	1.3	0.0	37.3
Anxious only + black	1.6	0.4	7.4
Anxious only + Hispanic	1.3	0.2	7.5
Anxious only + other	4.6	0.2	100.0
Severe anxiety and depression + black	0.9	0.3	2.4
Severe anxiety and depression + Hispanic	0.5	0.1	1.7
Severe anxiety and depression + other	0.6	0.0	9.0
Depressed only + black	0.7	0.3	1.5
Depressed only + Hispanic	0.8	0.3	2.0
Depressed only + other	1.2	0.1	11.7

AOR, adjusted odds ratio; *CI*, confidence interval

Statistically significant correlates at $p < 0.05$ are italicized

Analyses are adjusted for maternal characteristics, including maternal age, maternal education, household poverty status, relationship status, employment, health insurance, parity, pregnancy status, fetal loss, instrumental support, health limitations, year 1 depression, year 1 anxiety, year 1 binge drinking, year 1 drug use, and smoking in pregnancy

Results based on multiply imputed data as described in the "Methods" section of this manuscript

Limitations

These study findings should be interpreted in light of the following limitations. First, mothers were only asked about formal behavioral health services; they were not asked to assess the extent to which they used informal counseling services, such as those provided by a religious leader or support group. Despite a large sample with a high representation of women of color, some of the interactions of symptom profile by race/ethnic categories resulted in small sample sizes that constrained the ability to produce several estimates and may have reduced power to detect effects in others. A contributing factor may be that in this study, 23.3% of participants were uninsured (compared with 16.5% of the US population at the time),[34] which could partially explain low BHC

use. This study cannot be generalized to current health care use levels and likely overestimates unmet need; between 2003 and 2016, the uninsured rate dropped roughly 10%, largely due to the Affordable Care Act.[34]

No questions in the FFCW study related directly to women's decision-making about seeking help for behavioral health problems, which are needed to better understand the extent to which that process may vary by race or ethnicity. In addition, a far greater proportion of Hispanic women were foreign-born compared with whites in this sample (38.3% and 4.4%, respectively, $p < 0.001$), suggesting possible within-group differences that could differentially impact behavioral health attitudes and help seeking. Possible explanations, out of the scope of this paper, include culturally specific beliefs and attitudes (e.g., stigma, provider mistrust) about help seeking and BHC use.[18] While some research indicates that minority women and foreign-born women are twice as likely to think they do not need help compared with white, US-born women,[35] other research finds limited evidence of health belief differences regarding mental health care.[36] Finally, it was out of the scope of this study to assess health care system or health provider-level discrimination, perceived or otherwise, which could also explain some of the observed racial and ethnic disparities in BHC use.[37]

Implications for Behavioral Health

Despite these limitations, this study advances the science by demonstrating the impact of mothers' behavioral health symptoms, adjusting for a host of maternal characteristics, on their likelihood to use behavioral health services. While mothers with more complex behavioral health need were the most likely to report using BHC, levels of BHC use were dismally low overall and even lower for women of color. Distinct from most studies related to reproductive behavioral health, this study examined a non-clinical population of mothers from across the USA. This population is particularly at risk for unmet mental health need and has been historically understudied in national surveys.

In particular, the finding that being pregnant decreased the probability of BHC use among women with significant clinical need is troubling—perhaps our "canary in the coal mine." Over 95% of pregnant women receive prenatal care services in the USA,[38] highlighting missed opportunities for identifying and managing these conditions that elevate risk of poor birth outcomes[39, 40] and postpartum depression.[41] Concerted efforts and leadership are needed to ensure that these problems are screened as actively as a number of medical conditions that are much less prevalent and often not as pernicious.[2, 42] Mothers' mental health problems are readily identifiable in primary care visits.[43] The US Preventive Services Task Force (USPSTF) recommends depression screening in pregnancy and postpartum if "adequate systems are in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up."[44] Often, linkages between obstetric and mental health services are "on the books" only, so that inadequate identification, poor coordination, and long wait times invalidate such "systems." An "adequate system" such as the USPSTF envisions could involve integrated primary care and behavioral health services, such as co-location and coordinated or stepped care models.[2, 45, 46] Ensuring such adequacy requires not only advances in federal and state policies, but leadership at the level of health systems and clinical settings, and in medical education.

Some suggest expanding coverage of Medicaid through the first entire postpartum year,[47] as most women are dropped within months of delivery.[48] However, this will do little good if women are not routinely identified and helped to engage in effective BHC during the pregnancy or postpartum periods.[42] According to research with obstetric providers, this workforce requires improved training in the basics of mental health conditions, the value and efficacy of screening and referral, primary care-level management, and treatment options.[49, 50] There is emerging evidence that incorporating routine mental health screening into prenatal and postpartum care, coupled with

on-site mental health providers, improves mental health referral uptake.[51] Moreover, evidence-based models of postpartum depression prevention are promising, including stepped and collaborative care models based in public hospital systems,[52, 53] as well as preventive programs in home-visiting services.[54, 55]

Success is contingent on the availability of culturally relevant models of health care that address the system-level factors contributing to the low level of engagement in mental health services following referral,[3] as well as racial/ethnic disparities in screening, uptake, retention, and quality of care. These are major challenges for the obstetrics, pediatrics, and behavioral health care fields, but addressing them well has the potential for improving the well-being of mothers, children, and families in the USA across generations.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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