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Perinatal Symptoms and Treatment Engagement in Female Veterans

Elizabeth H. Anderson, PhD¹*; Carolyn Morrow, MD^{2,3}; Kristin M. Mattocks, PhD, MPH^{4,5}; Geetha Shivakumar, MD, MSCS^{2,3}

ABSTRACT

Introduction:

Women veterans using Veterans Health Care Administration maternity benefits have a high prevalence of mental health disorders, including depression, PTSD, and anxiety. Additionally, women with psychiatric histories often experience a relapse or worsening of symptoms during pregnancy and postpartum. Adequate perinatal mental healthcare engagement is critical to optimizing outcomes for mother and child.

Materials and Methods:

This study evaluated psychiatric symptom severity and predictors of women veteran's mental health treatment engagement during pregnancy and postpartum at the VA North Texas Health Care System. Seventy women using Veterans Health Administration were assessed longitudinally via chart review and interviews (including the Edinburgh Postnatal Depression Scale) during pregnancy and postpartum. A Friedman test was used to evaluate the change in symptom severity during (1) the 6 months before pregnancy, (2) pregnancy, and (3) postpartum. Multivariate logistic regressions were used to determine predictors of attending outpatient mental health appointments. Potential predictors examined included sociodemographic factors, symptoms of depression, history of military sexual assault, presence of a pre-pregnancy psychiatric diagnosis, and attendance of mental health appointments before pregnancy.

Results:

Approximately 40% of participants demonstrated at least mild psychiatric symptoms before pregnancy, and symptom severity did not significantly change across the perinatal period (pre-pregnancy, pregnancy, and postpartum) $X^2 (2, n = 70) = 3.56, P = .17$. Depressive symptoms during the 2nd or 3rd trimester were a significant predictor for attendance of mental health appointments during both pregnancy (OR = 1.18, 95% CI, 1.04 to 1.34) and postpartum (OR = 1.18, 95% CI, 1.02 to 1.36). An active psychiatric diagnosis during the 6 months before pregnancy was also a significant predictor of attendance following delivery (OR = 14.63, 95% CI, 1.55 to 138.51).

Conclusion:

Our results demonstrate that women with prior histories of mental health conditions will continue to be symptomatic, and this is a good predictor of mental health treatment engagement during the perinatal period.

INTRODUCTION

Due to their high prevalence of PTSD, depression, and anxiety, women veterans utilizing Veterans Health Administration (VHA) maternity care benefits represent a high-risk population.^{1,2} Furthermore, women with psychiatric histories often experience a relapse or worsening of symptoms during

pregnancy and postpartum.¹ Psychiatric conditions during pregnancy and postpartum have been associated with numerous negative consequences in the health of the mother and her offspring.³ For women veterans with a psychiatric diagnosis before pregnancy or those with a new onset of symptoms during pregnancy or postpartum, perinatal mental health care is vital for education, monitoring of symptoms, interventions, and informed discussions regarding risks and benefits of psychotropic medications.

Women veterans enrolled in VHA are eligible for comprehensive maternity care that allows access to obstetric care in the community. Although comprehensive maternity care has been included in VA medical benefits packages since 1996, research has only recently begun to investigate this high-risk population and the way in which they navigate both VHA and community care. This study aims to better understand changes in clinical psychiatric symptom severity and predictors of VHA mental health treatment engagement during pregnancy and postpartum by women veterans enrolled in maternity care at the VA North Texas Health Care System (VANTHCS).

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METHODS

The study population consisted of 70 women receiving care at VANTHCS who were enrolled in a larger cohort study, the Center for Maternal & Infant Outcomes & Research in Translation (COMFORT), between February 2016 and December 2018. The COMFORT study has been described in previous publications.⁴ Eligibility criteria consisted of being an English-speaking, pregnant female veteran enrolled in VHA and over the age of 18. Each participant provided informed consent to participate in the COMFORT study, which was approved by the VA Central Institutional Review Board. The current sub-study was approved by the Institutional Review Board of Dallas VA Medical Center, VANTHCS, and received a waiver of informed consent.

For the current study, participants' VHA electronic medical records were reviewed to collect information related to sociodemographic information, medical history, mental health visits, and symptom severity during three specific time periods: (1) the 6 months before pregnancy; (2) pregnancy; and (3) the 6 months following pregnancy. Sociodemographic factors collected included age, race/ethnicity, marital status (coded categorically as single, married, or divorced), and employment status (coded categorically as full-time employment, part-time employment, unemployed, or disability). Medical history included the presence of an active mental health diagnosis and active prescription for psychiatric medication. Data regarding prescriptions were derived from VA Computerized Patient Record System pharmacy data. Because most veterans have primary care within VHA, prescriptions for psychiatric medication may have been prescribed by a VHA primary care or mental health provider.

Electronic medical records were also reviewed by two study authors (GS and CM) to determine a participant's psychiatric symptom severity. The study authors, who are board-certified psychiatrists, followed a clinically informed rubric to categorize symptom severity based on symptom frequency, severity, impairment, emergency room visits, hospitalization (if any), and medication/treatment changes. If there was a symptom rating scale available in the records, it was considered in the categorization as well. Participants' symptoms were categorized as follows:

- No symptoms.
- Minimal—very few symptoms reported, no mention of distress.
- Mild—few symptoms present, noted a milder level of distress.
- Moderate—several symptoms present, some distress noted.
- Severe—multiple symptoms or one to two symptoms with significant distress/impairment noted, emergency department visits, and hospitalizations.

The authors recognize this rubric has limitations in that it is subject to clinicians' discretion; however, psychometric tools were not widely available in the patient charts.

Additional information such as self-reported military sexual trauma (MST) histories and the Edinburgh Postnatal Depression Scale (EPDS) scores from two interviews conducted by the COMFORT study during pregnancy and postpartum were also utilized. The EPDS is a 10-item self-report scale used to assess common symptoms of depression.⁵ Total scores range from 0 to 30, with a higher score indicating greater severity of depressive symptoms.

The primary outcomes were changes in psychiatric symptom severity and attendance of at least one outpatient VHA mental health appointment (1) during pregnancy and (2) during the 6 months following pregnancy.

DATA ANALYSES

A Friedman test was used to evaluate the change in symptom severity based on chart review across three time periods: (1) the 6 months before pregnancy, (2) pregnancy, (3) and the 6 months following pregnancy. We used *t* tests and χ^2 tests to examine the bivariate relationships between potential predictors and attendance of mental health appointments during (1) pregnancy and (2) the 6 months following delivery. Potential predictors examined included sociodemographic factors (race/ethnicity, marital status, and employment status), symptoms of depression (EPDS) during pregnancy and postpartum, history of military sexual assault, presence of a psychiatric diagnosis during the 6 months before pregnancy, and attendance of mental health appointments during the 6 months before pregnancy. Next, we conducted two direct multivariate logistic regressions to determine predictors of attending an outpatient VHA mental healthcare appointment during both time points. Variables from the bivariate analyses that were statistically significant at the $\alpha = 0.05$ level were used as predictors in the regression analyses. For the purpose of the logistic regression, race and ethnicity were coded categorically as White, non-Hispanic, or Non-White and/or Hispanic due to the small number of participants ($n = 4$) who did not identify as White or Black. Analyses were conducted using STATA version 15.1.

RESULTS

Table I describes the sociodemographic and clinical characteristics of participants. In our sample of 70 women veterans, the majority were White (39%) or Black (27%), married (60%), and the mean age was 31.4 (SD = 4.3). In the 6 months before pregnancy, 50% had a mental diagnosis listed in their electronic medical record and 32.4% were prescribed psychotropic medications. During this same time period, 35.7% attended VHA mental health care. In regard to MST, 28.6% of our participants reported a history of assault and 50% reported a history of harassment.

Psychiatric Symptom Severity

Based on the clinical assessment via chart review by study authors, the mental health symptom severity distribution of our participants during the 6 months before pregnancy was

TABLE I. Demographics and Clinical Characteristics ($n = 70$)

	<i>n</i> (%)	Mean (SD)
Age		31.41 (4.3)
Race/ethnicity		
White, non-Hispanic	38 (54.3)	
Non-White and/or Hispanic	31 (44.3)	
Unknown	1 (1.4)	
Marital status		
Married	42 (60.0)	
Divorced	15 (21.4)	
Single	11 (15.7)	
Unknown	2 (2.9)	
Employment status		
Full-time	25 (35.7)	
Unemployed	20 (28.6)	
Part-time	12 (17.1)	
Disability	9 (12.9)	
Unknown	4 (5.7)	
Mental health diagnosis during 6-month pre-pregnancy period		
Yes	35 (50.0)	
No	35 (50.0)	
Psychotropic medication use during 6-month pre-pregnancy period		
Yes	23 (32.4)	
No	47 (67.6)	
Endorsement of military sexual assault		
Yes	20 (28.6)	
No	48 (68.6)	
Declined to answer	2 (2.9)	
Endorsement of military sexual harassment		
Yes	35 (50)	
No	33 (47.14)	
Declined to answer	2 (2.86)	
Attendance of VHA mental health care during 6-month pre-pregnancy period		
Yes	25 (35.7)	
No	43 (61.4)	
Unknown	2 (2.9)	

Abbreviation: VHA = Veterans Health Administration.

as follows: 55.7% experienced no symptoms, 2.9% experienced minimal symptoms, 24.3% experienced mild symptoms, 12.9% experienced moderate symptoms, and 1.4% experienced severe symptoms. The results of the Friedman test indicated that there was not a statistically significant difference in symptom severity across the three time periods (pre-pregnancy, pregnancy, and postpartum) χ^2 (2, $n = 70$) = 3.56, $P = .17$. The median symptom severity rating for all three time periods was no symptoms.

Treatment Engagement During Pregnancy

Bivariate analyses revealed that attendance of a mental health appointment during pregnancy was significantly associated with employment status during pregnancy ($P = .049$). It was also significantly associated with having an active mental health diagnosis ($P < .001$), attending a mental health appointment ($P < .001$), and being prescribed a psychiatric medication ($P = .018$) during the 6 months before pregnancy. Women who attended a mental health appointment during pregnancy scored significantly higher on the EPDS than women who did not attend a mental health appointment (10.3 vs. 5.0; $P < .001$). Age, race/ethnicity, marital status, and MST did not have a significant association. Logistic regression analyses (see Table II) showed that only EPDS score during the 2nd or 3rd trimester was a significant predictor of attending a mental health appointment during pregnancy (OR = 1.18, 95% CI, 1.04 to 1.34).

Treatment Engagement During Postpartum

Bivariate analyses indicated that attendance of a mental health appointment during postpartum (the 6 months following delivery) was significantly associated with employment status during pregnancy ($P = .024$). It was also significantly associated with having an active mental health diagnosis ($P = .001$) and attending a mental health appointment ($P = .004$) during the 6 months before pregnancy. Women who attended a mental appointment during the 6 months following delivery scored significantly higher on the EPDS both during pregnancy (10.1 vs 5.09; $P < .001$) and within 3 months following delivery (8.00 vs. 4.17; $P = .005$). Age, race/ethnicity, marital status, being prescribed a psychiatric medication during the 6 months before pregnancy, and MST did not have a significant association. Logistic regression analyses (see Table II) showed that the presence of an active mental health diagnosis during the 6 months before pregnancy significantly predicted attending an appointment (OR = 14.63, 95% CI, 1.55 to 138.51). EPDS score during the 2nd or 3rd trimester was also a significant predictor of attending a mental health appointment following delivery (OR = 1.18, 95% CI, 1.02 to 1.36).

DISCUSSION

This study examined symptom severity and predictors of women veteran's mental health treatment engagement during and after pregnancy at the VANTHCS. Based on chart review, the majority of our sample experienced mild to no mental health symptoms across pre-pregnancy, pregnancy, and postpartum time periods. This is reassuring in that symptoms did not worsen during pregnancy and postpartum, but it emphasizes that symptoms persist for many of these women and highlights the importance of optimizing treatment. Further, an active prescription for a psychiatric medication during the 6 months before pregnancy did not prove to be a significant predictor of mental health treatment engagement either during or in the 6 months following pregnancy. This is surprising

TABLE II. Results of Logistic Regressions (*n* = 65)

Variable	Odds ratio	95% CI	
Logistic regression predicting likelihood of attending a MH appointment during pregnancy			
Employment			
Part-time (vs. unemployed)	0.76	0.08	7.49
Full-time (vs. unemployed)	1.36	0.24	7.88
Disability (vs. unemployed)	3.77	0.33	42.65
Pre-pregnancy MH diagnosis (yes vs. no)	4.6	0.44	47.90
Pre-pregnancy MH treatment utilization (yes vs. no)	6.87	0.75	62.82
Pre-pregnancy psychiatric medication use (yes vs. no)	0.43	0.06	3.21
EPDS score during pregnancy (0-30)	1.18	1.04	1.34
Logistic regression predicting likelihood of attending a MH appointment during postpartum			
Employment			
Part-time (vs. unemployed)	0.19	0.01	2.76
Full-time (vs. unemployed)	5.12	0.87	30.16
Disability (vs. unemployed)	1.48	0.17	13.16
Pre-pregnancy MH diagnosis (yes vs. no)	14.63	1.55	138.51
Pre-pregnancy MH treatment utilization (yes vs. no)	0.42	0.06	3.15
EPDS score during pregnancy (0-30)	1.18	1.02	1.36
EPDS score during postpartum (0-30)	1.00	0.84	1.19

Abbreviations: MH = Mental Health; EPDS = Edinburgh Postnatal Depression Scale.

given that having an active prescription indicates a current or historical need for mental health care and/or being clinically symptomatic. It is possible that pregnant veterans taking psychiatric medications were asymptomatic and did not feel it necessary to attend a mental health follow-up appointment. Since our study was not able to evaluate adherence to prescribed medications, it is also possible that veterans discontinued their medications and did not feel follow-up mental health appointments were needed. It is also possible that pregnant and postpartum veterans were prescribed psychiatric

medications by their non-VA maternity care provider and thus did not attend VA mental health appointments. Future research is needed as our study was not able to evaluate reasons why having an active prescription for a psychiatric medication was not predictive of mental health treatment engagement. As per the American Psychiatric Association and the American College of Obstetricians and Gynecologists, it is recommended that patients, even those who are currently asymptomatic, be monitored for signs and symptoms of relapse or worsening of symptoms.⁶

For keeping the VHA mental health appointments during pregnancy and postpartum EPDS total score during the 2nd or 3rd trimester was a significant predictor of mental health treatment engagement during pregnancy and postpartum. For each additional point on the EPDS total score, veterans were 1.18 times more likely to attend at least one VA mental health appointment during pregnancy and/or postpartum. Similar to the findings of a recent study, the presence of an active psychiatric diagnosis during the 6 months before pregnancy was also a significant predictor of attending a VHA mental health appointment during postpartum.⁷ These findings are also consistent with previous research among nonpregnant women veterans, which found that current symptoms and diagnoses were dominant factors in predicting VHA mental healthcare use.^{8,9}

Contrary to expectations, a history of MST was not associated with mental health treatment engagement during pregnancy or postpartum. This finding was unexpected given that Grekin et al.¹⁰ found that pregnant veterans with a history of MST are more likely to use VHA services during pregnancy. In addition, a history of MST is associated with greater symptoms of depression and suicidal ideation both during and after pregnancy in veterans using VHA.¹¹ The discrepancy between our findings and those of Grekin et al.¹⁰ may be due to our smaller sample size (70 compared to 510), which may have limited our ability to detect a significant relationship between the two variables. It is also possible that our sample of women with a history of MST may differ from those used in other studies. MST is a broadly defined event rather than a specific diagnosis,¹² and a person's response to MST is likely to differ based on factors such as the type, intensity, frequency, and duration of the event¹³; prior trauma history¹⁴; and social support.¹⁵ It is possible that more women in our sample did not need or want VHA mental health services. Future research is needed to understand the factors that may impact the relationship between MST and VHA mental health engagement, such as institutional mistrust.¹⁶

There are several limitations to this study. First, there are several factors that may be important in predicting VHA mental health treatment engagement that we were not able to assess in this study (e.g., specific psychiatric diagnoses, specific medication classes, stigma, use of non-VHA mental health care, family income, and transportation issues). It should also be noted that we were not able to measure medication adherence for women who had an active prescription

for a psychiatric medication in their chart. Because data were drawn from VHA electronic medical records, it is possible that we missed episodes of non-VA care or prescriptions that had not been documented in a veteran's chart. Finally, the findings of this study are limited to English-speaking veterans utilizing VHA medical care. Strengths of the study include the longitudinal design and utilization of both self-report and medical record data sources.

This study helps to clarify existing research regarding perinatal psychiatric symptom severity and predictors of VA mental health treatment engagement during pregnancy and postpartum. Our results demonstrate that women with prior histories of mental health conditions will continue to be symptomatic, and this is a good predictor of mental health treatment engagement during the perinatal period. Future research is needed regarding how to enhance mental health treatment for women veterans, particularly during the perinatal period, to address these persistent symptoms. It will also be important to examine contributing factors to mental health and treatment engagement during pregnancy, such as sleep quality and social support. The clinical implications of this study are that providers be vigilant about screening and early detection of mental health conditions in women of childbearing age. Before pregnancy, mental health providers should stress the importance of follow-up care during and after pregnancy for continued monitoring of symptoms and, if necessary, early treatment.

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CONFLICTS OF INTEREST STATEMENT

There is no conflict of interest for any of the authors.

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