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Suicidal Ideation in Pregnant and Postpartum Women Veterans: An Initial Clinical Needs Assessment

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ABSTRACT

Introduction

Pregnancy and postpartum, or the perinatal period, are times when women are particularly vulnerable to mental health concerns, including suicidal ideation. Risk factors for suicidal ideation during this period of a woman's life are depression and exposure to trauma, the latter of which may occur during military operations. The number of women veterans in the United States continues to rise, as does their use of maternity benefits. In this pilot study, we examined the feasibility of recruiting pregnant veterans for longitudinal research. We hypothesized that hopelessness and depressive symptoms would be related to suicidal ideation during the perinatal period, and we investigated a possible relationship between post-traumatic stress symptoms (PTSS) and suicidal ideation.

Materials and Methods

Using the designated Veterans Affairs (VA) maternity care coordinator's census, we contacted pregnant women veterans for assessment during the 3rd trimester of pregnancy and 6 weeks postpartum at the San Diego VA. Between September 2017 and October 2018, 28 women volunteers completed the following measures: the Columbia-Suicide Severity Rating Scale (C-SSRS); the Beck Hopelessness Scale (BHS); the Edinburgh Postnatal Depression Scale (EPDS); and the PTSD Checklist for DSM-5 (PCL-5). We used correlational analyses and descriptive statistics to determine associations among the measures.

Results

As gathered from the C-SSRS, over 30% of the veteran women had past lifetime suicide attempts, and over 10% of the veterans had suicidal ideation in the perinatal period. Both depression and PTSS rates neared 30% during pregnancy and postpartum. Hopelessness and depressive symptoms were positively correlated at both time points. While the intensity of lifetime suicidal ideation was correlated with postpartum depressive symptoms, there was no correlation with current suicidal ideation and depressive symptoms. PTSS correlated with both depressive symptoms and hopelessness, but not suicidal ideation, at both time points. There was no correlation between hopelessness and suicidal ideation during the perinatal period in this cohort.

Conclusions

It is important to understand the mental health needs of perinatal veterans given their vulnerability to develop mental health concerns, including suicidal ideation. The unpredicted pattern of correlations determined in this study implies the need for multifaceted measures for safety-related mental health assessment of perinatal veterans, including assessment for PTSS. Strengths of this study include its longitudinal assessment and a sampling from a general population of veterans. Limitations include small sample size, a single gestational time point, and loss of participants who did not return for their postpartum assessment. We demonstrated the feasibility of longitudinal research with pregnant and postpartum veterans, but additional assessment points during the perinatal period could help identify critical times for mental health intervention in this population.

INTRODUCTION

The number of women veterans (WV) in the United States continues to rise, with current estimates of 2 million living WV.[1] WV are at increased risk for depression and other mental health concerns as the result of trauma experienced during military service,[2,3] and they are more likely than male veterans to experience symptoms of posttraumatic stress disorder (PTSD).[4] Attributed to a higher risk of exposure to trauma, WV are at increased risk for suicide mortality when compared with civilian women.[5] The number of suicides by WV has increased in recent years[6] and is now double that among civilian women.[7]

The population of pregnant veterans within the Department of Veterans Affairs (VA) Healthcare System is rising

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correspondingly, with a 44% increase in the use of maternity benefits in recent years.[8] Pregnancy and postpartum, i.e., the perinatal period, is a time when women are more likely to experience mental health symptoms.[9] Perinatal women are at higher risk than the general population of having suicidal ideation (SI) for which depression and past exposure to trauma are significant risk factors.[10] A large cohort study (N = 43,078) of pregnant WV enrolled in the VA found a 32% prevalence of one or more mental health diagnoses among veterans during the study period; they were also twice as likely as WV without a pregnancy to be diagnosed with PTSD, depression, anxiety, bipolar disorder and/or schizophrenia.[11] Among postpartum WV, a recent retrospective study estimated that the frequency of mental health symptoms was 30%.[12] Additionally, mental health symptoms in postpartum mothers can lead to deleterious consequences for their children, including delayed developmental milestones, behavioral disturbances, and impaired academic achievement.[13,14] Thus, perinatal mental health warrants increased attention from the VA as it strives to provide comprehensive healthcare to WV.

Addressing suicidality among perinatal veterans will require understanding the determinants of suicidal thoughts and behavior in this population. Researchers have long theorized an association among hopelessness, depression, and suicide.[15–18] Whether or not these same factors predict suicidality in perinatal veterans has yet to be examined. In response to the critical need to advance our understanding of the mental health care needs of perinatal veterans, this pilot investigation was designed to: (1) examine the feasibility of recruiting pregnant veterans into a longitudinal study; and (2) prospectively characterize hopelessness, depression, and suicidality in this population. Given the important role of trauma in this context,[5,11,12] we also explored the relationship between post-traumatic stress symptoms (PTSS) and suicidality in this cohort.

We hypothesized that more severe hopelessness and depression would be related to more severe perinatal SI. Furthermore, we hypothesized that current PTSS severity would be positively related to hopelessness, depression, and SI intensity during pregnancy and postpartum. Current understanding of changes in mental health symptoms during the perinatal period is limited,[11,12,19] and therefore, we explored group-level changes in mental health symptoms between the 3rd trimester of pregnancy and 6 weeks postpartum.

MATERIALS AND METHODS

Recruitment and Procedures

This study was approved by the VA San Diego Healthcare System (VASDHS) Institutional Review Board. Eligible participants were pregnant WV, 18 years of age and older who sought care at the VA. The recruitment pool came from a local census of pregnant veterans enrolled in the VASDHS. This census is maintained by a designated VA maternity care coordinator, and it identified 247 perinatal veterans, but at time of recruitment, only 160 veterans were prior to 38 weeks gestation. This gestational cut-off was established to allow two weeks for the women to respond to the initial study letter and complete procedures before giving birth.

Potential participants were mailed a letter describing the study as focused on "the mental and physical health of women Veterans." The letter provided an opt-out option to leave a voicemail requesting no further contact; only one potential participant used this option. Up to 3 attempts were made to contact 103 potential participants. Reasons for not calling the remaining potential participants included: no indication of pregnancy in the medical chart (i.e., on pregnancy list in error); inability to schedule pregnancy assessment (e.g., indication of birth in the medical chart, had reached 38 weeks gestation during the opt-out period, or assessment appointments were unavailable prior to due date); no longer enrolled in the VASDHS (i.e., no longer living in the area); and reaching incentive and recruitment timeline limits (maximum number of participants = 32).

Over 50 women expressed interest in participating in this study; however, not all of them scheduled or presented for an appointment. One participant presented for the initial appointment but cited a time conflict and did not enroll in the study; she delivered her baby before being able to reschedule. Consenting participants were assessed during their 3rd trimester of pregnancy (Time 1) and at approximately 6 weeks postpartum (Time 2) between September 2017 and October 2018. Participants received a $25 (pregnancy) or $50 (postpartum) gift card upon assessment completion; the higher amount at postpartum was intended to encourage retention. The final study sample includes 28 women who completed the pregnancy assessments and 23 women who completed both assessments. The assessments were administered by a trained research coordinator in a research setting and reviewed by a licensed mental health clinician when indicated. Participants who reported current mental health symptoms warranting additional follow-up (see Measures) were referred for mental health services, if not already engaged in care.

Our initial study design included assessments during the 2nd trimester, but none of the veterans who were still in the 2nd trimester were willing to schedule visits during that period. The most frequently cited reasons were occupational or family-related obligations, and many women indicated that attendance would be easier once they began maternity leave.

Participants

As described in Table I, the average participant age was 31.6 years, with a range from 26 to 41. This sample was consistent with the VASDHS veteran population in terms of race and ethnicity: 13 (46.4%) self-identified as Caucasian/white, 5 (17.9%) as Hispanic, 2 (7.1%) as African-American/black, 1 (3.6%) as Asian American, and 7 (25%) as more than one race. All women had completed high school or GED equivalent,

TABLE I. Characteristics of Pregnant Women Veteran Participants ($N = 28$)

	%
Current age, in years [mean (range)]	
31.6 (26–41)	
27–31	53.6
32–36	28.6
37–41	17.9
Military Branch	
Air Force	3.6
Army	7.1
Coast Guard	3.6
Marine Corps	28.6
Navy	57.1
Highest grade during service	
Junior enlisted (E1-E3)	10.7
Non-commissioned officer (E4-E9)	82.1
Junior officer (O1-O4)	7.1
Race/ethnicity	
Caucasian/white	46.4
Hispanic	17.9
African American/black	7.1
More than one race	25
Highest level of education	
High school or some college	46.4
Bachelor's degree	42.9
Advanced degree	10.7
Relationship status	
Single	14.3
Married or living with partner	67.9
Divorced	17.9
Gravidity*	
1	39.3
>1	60.7

*Number of times pregnant.

12 (42.9%) had obtained a bachelor's degree, and 3 (10.7%) had obtained graduate degrees. In terms of military branch, 16 (57.1%) were Navy, 8 (28.6%) Marine Corps, 2 (7.1%) Army, 1 (3.6%) Air Force, and 1 (3.6%) Coast Guard. Of the participants, 23 (82.1%) were non-commissioned officers (E4-E9), 3 (10.7%) were junior enlisted (E1-E3), and 2 (7.1%) were junior officers (O1-O4). Nineteen (67.9%) of the women were married or living with their partner (1 was re-married), 5 (17.9%) were divorced, and 4 (14.3%) were single. Eleven (39.3%) of the women were nulliparous; of the remaining participants, 14 (50%) had living children, and 3 (10.7%) had only a previous miscarriage.

Average gestational age at Time 1 was 36.4 weeks, and Time 2 assessments were completed an average of 7.1 weeks postpartum. Average length of gestation was 39.7 weeks. One baby was delivered preterm and had low birth weight. At the postpartum visit, delivery complications were reported by 12 (52.2%) participants, including unplanned or emergency C-sections (3, 10.7%), fever, uterine infection, reduced fetal heart rate, breech position, failure to descend, gestational diabetes, K-protein deficiency, suction required for delivery, positive fetal fibronectin during the 2nd[d] trimester, and postpartum hemorrhage.

Measures

Lifetime suicidal ideation and behavior (SIB) were assessed using the Columbia-Suicide Severity Rating Scale (C-SSRS), which is an interviewer-administered instrument with good reliability and validity.[20] Recent SIB was defined as, "since learning you were pregnant" (Time 1) or "since giving birth" (Time 2). The C-SSRS queries wishes to be dead (i.e., would fall asleep and not wake up) and passive suicidal thoughts (i.e., "I've thought about killing myself," without thoughts of means, intent, nor planning). Those who report passive SI are additionally asked questions about active SI with any method without plan and intent, with some intent to act but no specific plan, or with specific plan and intent. The C-SSRS also assesses lifetime and recent suicide attempts, including actual attempts, interrupted attempts, and aborted attempts.[20] If a participant reported active suicidal thoughts, they were referred for mental health evaluation.

The Beck Hopelessness Scale (BHS) is a self-report measure consisting of 20 true-false statements related to the respondent's attitude in the past week (e.g., "my future seems dark to me," "I have great faith in the future").[21] Responses are summed indicating the level of severity: 0–3, no hopelessness; 4–8, mild hopelessness; 9–14, moderate hopelessness; and 15+, severe hopelessness.[21,22] Good internal consistency (Cronbach's $\alpha = 0.79$–0.97) and reliability have been found in both control and depressed samples.[23] Convergent validity has also been shown when compared to other measures of depression.[24] Severe hopelessness triggered referral to mental health services.

We assessed for depression using the Edinburgh Postnatal Depression Scale (EPDS),[25] a 10-item scale developed for the perinatal period to account for depressive symptoms independent of common pregnancy and postpartum changes, such as sleep alterations (e.g., "I have been so unhappy that I have difficulty sleeping") and anxiety (i.e., "I have been anxious or worried for no good reason"). Evaluated for the past week, the items are summed to create a total score ranging 0–30.[25] The EPDS has well established internal consistency within the perinatal period, with Cronbach's α coefficient of 0.82, 0.83, and 0.84 for the trimesters of pregnancy.[26] Test-retest reliability for the EPDS has been demonstrated between 12 and 24 weeks and 24 and 36 weeks gestation ($r = 0.63$).[26] Among postpartum samples, the EPDS has revealed moderate-good test-retest reliability and correlates well with alternative measures of depression.[27] The clinically significant cutoff score utilized for this study was 13 or above,[25] but a more conservative total score of 11 was used for clinical referral.

The PTSD Checklist for DSM-5 (PCL-5) is a 20-item measure that asks an individual how disturbing PTSS (e.g., intrusions, avoidance, negative emotions, hyperarousal) have been in the past month on a 5-point Likert scale ranging

from 0 (not at all bothered) to 4 (extremely bothered).[28] Responses are summed to create a total score ranging 0–80. Prior studies have demonstrated high levels of internal consistency (Cronbach's α coefficient = 0.91–0.97),[28–31] test-retest reliability (r = 0.82–0.84),[28,29] and strong validity in both veterans[29–31] and trauma-exposed civilians.[28] The cutoff score utilized for this study was 33+ to trigger mental health evaluation.[28] Trauma history was assessed using the self-report Life Events Checklist (LEC) for DSM-5, which lists 17 "difficult or stressful things" that the individual may have experienced.[32] The measure is useful in identifying types of trauma experienced in the past, but it does not provide information regarding timing, frequency, or severity of these events, nor are we able to identify if the events occurred during military service.[33] The LEC was administered at the Time 1 visit only.

Analysis Plan

Given the difficulty recruiting participants for a 2nd trimester assessment along with the small sample size of veterans completing both 3rd trimester and postpartum assessments (n = 23), statistical analyses are largely limited to correlational analyses and descriptive statistics. We used correlational analyses to examine if hopelessness, depression, and SI are positively related with each other at Time 1 and Time 2 at the group level. We also used a correlational analysis to examine the relationship between PTSS and suicidality at each time point at the group level. Additional description of the data is provided in order to highlight important implications for future research; paired-sample t-tests are used to assess same-measure differences across time and independent samples t-tests are used to explore differences in mental health symptoms (hopelessness, depression, and PTSS) among those with and without a history of suicidal behavior.

RESULTS

Within our small sample, 53.6% (n = 15) of veterans reported lifetime thoughts of wishing they were dead, and 42.9% (n = 12) reported lifetime SI triggering additional questions on the C-SSRS. Of those with lifetime SI: 3.6% (n = 1) did not report any active SI; 7.1% (n = 2) identified means, but without planning or intent; 7.1% (n = 2) reported means but no plan; and 25% (n = 7) reported lifetime occurrence of active suicidal thoughts including plan and intent to kill oneself. Interestingly, 32.1% (n = 9) of the participants reported at least one suicide attempt during their lifetimes, and 25% (n = 7) had multiple past attempts, ranging from 2 to 10. Only the veterans who reported suicide attempts additionally reported interrupted or self-aborted suicide attempts, indicating that suicidal behavior appeared limited to the same group of veterans (n = 9, 32.1%).

Since learning they were pregnant, very few veterans reported SI at any level of severity. 7.1% (n = 2) of veterans reported passive thoughts of suicide (no means, plan or intent), and 3.6% (n = 1) reported active suicidal thoughts (in this case, some intent but no plan). No suicidal behavior was reported to have occurred during pregnancy. At the postpartum assessment, 1 veteran reported experiencing at least one wish to die, and 1 veteran reported at least one passive suicidal thought. No one reported active SI or suicidal behavior since giving birth.

None of the participants reported severe thoughts of hopelessness during pregnancy or in the postpartum period. In fact, 89% (n = 25) had either mild or no thoughts of hopelessness during pregnancy, and 91% (n = 21) had either mild or no thoughts of hopelessness in the postpartum period. Consistent with this, we did not detect group-level difference in hopelessness between pregnancy (M = 3.39, SD = 4.21) and postpartum (M = 2.83, SD = 3.38) using a paired-sample t-test ($t(22) = 0.83$; $p > 0.05$). All 5 of the veterans who did not return at Time 2 had either mild or no thoughts of hopelessness at Time 1.

During pregnancy, 25% (n = 7) of participants reported clinically significant depressive symptoms (i.e., score of 13+), and in the postpartum, 30% (n = 7) reported clinically significant depressive symptoms; 4 of those veterans reported clinically significant symptoms at both time points. However, depression severity as measured by EPDS did not differ from pregnancy (M = 8.65, SD = 5.88) to postpartum (M = 8.85, SD = 5.77) ($t(22) = -0.20$; $p > 0.05$). Hopelessness and depressive symptoms were positively correlated at each time point: Time 1 ($r = 0.67$; $p < 0.01$) and Time 2 ($r = 0.62$; $p < 0.01$).

The intensity of lifetime SI (as reported at Time 1) was significantly correlated with postpartum depressive symptoms ($r = 0.44$; $p < 0.05$), but it was not significantly correlated with depressive symptoms during pregnancy ($r = 0.24$; $p > 0.05$). Lifetime SI intensity was not significantly correlated with hopelessness at either time point. Additionally, hopelessness did not differ between those who reported lifetime suicidal behavior (n = 9) and those who did not during pregnancy ($t(26) = 1.76$; $p > 0.05$) or postpartum ($t(21) = 0.29$; $p > 0.05$). Depressive symptoms also did not differ between those with past suicide attempts and those without during pregnancy ($t(26) = 1.92$; $p > 0.05$) or postpartum ($t(21) = 1.59$; $p > 0.05$).

All but one veteran reported experiencing a traumatic event during her lifetime on the LEC (n = 27). Interpersonal trauma was common with 53.6 % (n = 15) of participants reporting physical assault (n = 12) and/or assault with a weapon (n = 8), and 75% (n = 21) of participants reported lifetime sexual assault (n = 13) and/or other unwanted sexual experiences (n = 18). Combat-related trauma was reported by 46% (n = 13) of participants. The WV in our sample directly experienced an average of 5.14 types of trauma, ranging from 0 to 11. It is important to note that PTSS in this study were not linked with a specific traumatic event, and a diagnosis of PTSD using the PCL-5 alone is not possible. However,

PCL-5 scores of 33+ suggest clinically significant distress[28]: 25% ($n = 7$) of veterans met this cutoff during pregnancy, and 34.5% ($n = 8$) did so postpartum. As a group, PCL-5 scores during pregnancy ($M = 19.96$, SD = 4.11) did not significantly differ from those during postpartum ($M = 19.30$, SD = 19.30; $t(22) = 0.27$; $p > 0.05$). PTSS were significantly positively correlated with depressive symptoms both during pregnancy ($r = 0.75$; $p < 0.01$) and postpartum ($r = 0.79$; $p < 0.01$). Furthermore, PTSS were positively correlated with hopelessness during pregnancy ($r = 0.55$; $p < 0.01$) and postpartum ($r = 0.55$; $p < 0.01$). However, PTSS severity was not significantly correlated with SI severity at either time point. An independent samples t-test indicated that those who had reported at least one lifetime suicide attempt ($n = 9$) had greater prenatal PTSS severity ($M = 31.11$, SD = 20.36) than those without past suicidal behavior ($M = 15.37$, SD = 16.49; $t(26) = 2.19$; $p < 0.05$), but this relationship was not found in the postpartum, possibly related to change in sample size.

DISCUSSION

The perinatal period is a time when women may be vulnerable to experiencing depressed mood, anxiety, and other distressing mental health symptoms.[9] WV in particular are at increased risk to develop mental health concerns, including SI.[5] Thus, it is important to understand the needs of perinatal veterans as the VA is increasingly called upon to provide them with care.[8] The current study utilized pilot data to examine suicidality and related mental health symptoms during the 3rd trimester of pregnancy and approximately 6 weeks postpartum. It also provides valuable insight into the feasibility of recruiting pregnant veterans enrolled in VA care for longitudinal research.

Our cohort of perinatal veterans did not make any suicide attempts since learning that they were pregnant. However, over 30% reported at least one prior suicide attempt. Notably, a recent analysis of WV across the lifespan reported a similar rate of past suicide attempts at 25.8%.[12] In our sample, active SI was limited to one veteran during pregnancy, and no one reported active suicidality since giving birth. Passive SI was present in two veterans during pregnancy and in one veteran during the postpartum period.

High levels of hopelessness have been shown to predict eventual risk of suicide.[22] However, none of our study participants reported a severe level of hopelessness; rather, most reported low or no hopelessness. Unsurprisingly, given the low variability of hopelessness reported in this sample, we did not find a significant difference between 3rd trimester and early postpartum hopelessness severity. Contrary to our hypothesis, we did not find a significant correlation between hopelessness and suicidality, but this finding must be interpreted with the caveat of our small sample of veterans.

In this cohort, depressive symptoms were significantly correlated with lifetime SI intensity during the postpartum period, but not during pregnancy. While overall depression severity was below the cut-off for clinically significant distress, a quarter of our sample ($n = 7$) reported clinically significant depressive symptoms, with 14.3% ($n = 4$) reporting clinically significant symptoms at both time points. We did not find a statistically significant difference in depressive symptom severity between the 3rd trimester and postpartum. During both pregnancy and postpartum, depressive symptoms and hopelessness were significantly correlated, consistent with past research.[15]

As reported by other studies of WV,[2] interpersonal trauma was common in our sample, and nearly 30% of our sample screened positive for clinically significant PTSS. Overall, PTSS did not significantly differ between pregnancy and postpartum, and PTSS were positively correlated with hopelessness and depressive symptoms at both time points. A significant correlational relationship between PTSS and recent SI intensity was not found, despite finding that those with a history of suicidal behavior had higher PTSS during pregnancy than those without history of suicidal behavior. These findings suggest that it is important to assess trauma history, suicidal behavior history (not only recent suicidal ideation) and current PTSS as early as possible among pregnant veterans to ensure needed mental health care is received. In this population, it is not sufficient to rely on depression measures alone or a single screening tool as it may lead to under-detection of mental health concerns. Additionally, future research should utilize more time points during pregnancy and postpartum to better understand the progression or resolution of mental health symptoms, and further, gather information regarding healthy adaptation and resilience after past exposure to trauma.

During this preliminary investigation, we demonstrated the feasibility of conducting longitudinal research with perinatal veterans. The small size of our sample is related to limited funding for participant incentives as well as inherent challenges in the recruitment timeline. Specifically, we found that the VA maternity care census included many veterans who had already given birth or were too near their due dates for inclusion, reducing the potential recruitment pool. Methods to identify women who are likely to become pregnant (i.e., actively attempting) or who are newly identified (e.g., positive pregnancy test) may help address some of the inherent challenges with recruitment. Most VA facilities do not provide obstetrical care, which poses an additional challenge. All participants declined to schedule 2nd trimester appointments, most often citing ongoing family and job commitments and preference for scheduling once parental leave began. Future research may require creative methods for recruiting veterans earlier during pregnancy, such as with home visits, weekend and evening assessment hours, and/or assessment at veteran-serving obstetrical care sites in the community. These challenges aside, larger studies with higher recruitment and participation limits, based at multiple sites, may be able to successfully recruit perinatal veterans.

Our study has several strengths, including its longitudinal nature, which demonstrates the feasibility of longitudinal

research with perinatal veterans. Another strength is recruitment from a local VA pregnancy census, which is more likely to represent a general population of WV compared with a mental health treatment-seeking sample.

This study also has limitations. Our sample size is small, and the data were gathered from only one VA. While we collected some information about military service, we do not know the length of service or number of deployments for each veteran. There are challenges inherent in recruitment during pregnancy, chiefly the changing eligibility of potential participants related to gestational timing. Indeed, some veterans were unable to enroll due to the delivery of their infants. Five women did not return for their postpartum assessment, but with such a small sample, it is hard to predict if dropout would be similar in larger studies. As participation was voluntary and incentivized, our recruitment method may have introduced a self-selection bias, but our use of a census-based participation pool and active opt-out process likely limited self-selection bias to a greater extent than some other methods (e.g., flyers in waiting rooms). We mostly utilized self-report measures, which may differ from clinician-administered examinations; however, our primary construct of interest, SIB, was assessed using an interviewer-administered assessment. Finally, our study is limited to one time point during each of pregnancy and postpartum. Additional assessment points during both times could help clarify understanding of the development and/or progression of mental health symptoms across the perinatal period, potentially identifying critical time periods when mental health screening would be especially beneficial.

CONCLUSIONS

While the vast majority of WV in this study did not have suicidal thoughts during pregnancy nor postpartum, past suicidal behavior was reported by over 30% of this sample, and the WV with past suicidal behavior were more likely to experience PTSS during the perinatal period. The United States Preventive Services Task Force recently recommended that clinicians screen and refer perinatal women at increased risk for depression for counseling to prevent and treat depressive symptoms.[34] Importantly, some depression screening tools do not include questions about suicidal ideation or past suicidal behavior. For perinatal veterans, screening of trauma history, suicidal behavior history, and PTSS in addition to depression may better identify WV in need of additional mental health services during or after pregnancy. In the future, we hope that our findings may inform recommendations regarding mental health screening and treatment for perinatal veterans in order to improve outcomes for both women and their families.

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REFERENCES

1. Department of Veterans Affairs, National Center for Veterans Analysis and Statistics, Office of Enterprise Integration. Projected Veteran Population, 2013–2043. October 2014. Available at: https://www.va.gov/vetdata/docs/QuickFacts/Population_slideshow.PDF; accessed January 3, 2019.
2. Zinzow HM, Grubaugh AL, Monnier J, et al: Trauma among female veterans: a critical review. Trauma Violence Abuse 2007; 8: 384–400.
3. Hankin CS, Skinner KM, Sullivan LM, Miller DR, Frayne S, Tripp TJ: Prevalence of depressive and alcohol abuse symptoms among women VA outpatients who report experiencing sexual assault while in the military. J Trauma Stress 1999; 12: 601–12.
4. Lehavot K, Katon JG, Chen JA, et al: Post-traumatic stress disorder by gender and veteran status. Am J Prev Med 2018; 54: e1–9.
5. Kimerling R, Makin-Byrd K, Louzon S, et al: Military sexual trauma and suicide mortality. Am J Prev Med 2016; 50: 684–91.
6. Department of Veterans Affairs, Veterans Health Administration, Office of Mental Health and Suicide Prevention. Veteran Suicide Data Report, 2005–2016. September 2018. Available at: https://www.mentalhealth.va.gov/docs/data-sheets/OMHSP_National_Suicide_Data_Report_2005-2016_508-compliant.pdf; accessed January 8, 2019.
7. Department of Veterans Affairs, Veterans Health Administration, Office of Suicide Prevention. Suicide among veterans and other Americans, 2001–2014. August 2016. Available at: https://www.mentalhealth.va.gov/docs/2016suicidedatareport.pdf; accessed on December 27, 2018.
8. Zephyrin LC: Reproductive health management for the care of women veterans. Obstet Gynecol 2016; 127: 383–91.
9. Kendig S, Keats JP, Hoffman MC, et al: Consensus bundle on maternal mental health: Perinatal depression and anxiety. Obstet Gynecol 2017; 129: 422–30.
10. Galaye B, Kajeepeta S, Williams MA: Suicidal ideation in pregnancy: an epidemiologic review. Arch Womens Ment Health 2016; 19: 741–51.
11. Mattocks KM, Skanderson M, Goulet JL, et al: Pregnancy and mental health among women veterans returning from Iraq and Afghanistan. J Womens Health 2010; 19: 2159–66.
12. Miller LJ, Ghadiali NY: Mental health across the reproductive cycle in women veterans. Mil Med 2018; 183: e140–6.
13. Netsi E, Pearson RM, Murray L, et al: Association of persistent and severe postnatal depression with child outcomes. JAMA Psychiatry 2018; 75: 247–53.
14. Tuovinen S, Lahti-Pulkkinen M, Girchenko P, et al: Maternal depressive symptoms during and after pregnancy and child developmental milestones. Depress Anxiety 2018; 35: 732–41.
15. Abramson LY, Metalsky GI, Alloy LB: Hopelessness depression: a theory-based subtype of depression. Psychol Rev 1989; 96: 358–72.
16. Abramson LY, Alloy LB, Hogan ME, et al: The hopeless theory of suicidality. In: Suicide science: Expanding boundaries, pp 17–32. Edited by Joiner TE, Rudd MD Boston, Kluwer Academic Publishing, 2000.
17. Beck AT, Steer RA, Kovacs M, Garrison B: Hopelessness and eventual suicide: a 10-year prospective study of patients hospitalized with suicidal ideation. Am J Psychiatry 1985; 142: 559–63.
18. Beck AT, Brown G, Berchick RJ, et al: Relationship between hopelessness and ultimate suicide: a replication with psychiatric outpatients. Am J Psychiatry 1990; 147: 190–5.
19. Onoye JM, Shafer LA, Goebert DA, et al: Changes in PTSD symptomatology and mental health during pregnancy and postpartum. Arch Womens Ment Health 2013; 16: 453–63.
20. Posner K, Brown GK, Stanley B, et al: The Columbia-Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults. Am J Psychiatry 2011; 168: 1266–77.
21. Beck AT, Weissman A, Lester D, Trexler L: The measurement of pessimism: the hopelessness scale. J Consult Clin Psychol 1974; 42: 861–5.

22. Beck AT, Steer RA: Manual for the Beck Hopelessness Scale. San Antonio, TX, Psychological Corp, 1988.
23. Bouvard M, Charles S, Guérin J, Aimard G, Cottraux J: [Study of Beck's hopelessness scale. Validation and factor analysis]. Encephale 1992; 18: 237–40.
24. Steed L: Further validity and reliability evidence for Beck Hopelessness Scale scores in a nonclinical sample. Educ Psychol Meas 2001; 61: 303–16.
25. Cox J, Holden J, Sagovsky R: Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. Br J Psychiatry 1987; 150: 782–6.
26. Bergink V, Kooistra L, Lambregtse-van den Berg MP, et al: Validation of the Edinburgh Depression Scale during pregnancy. J Psychosom Res 2011; 70: 385–9.
27. Boyd RC, Le HN, Somberg R: Review of screening instruments for postpartum depression. Arch Womens Ment Health 2005; 8: 141–53.
28. Blevins CA, Weathers FW, Davis MT, et al: The posttraumatic stress disorder checklist for DSM-5 (PCL-5): development and initial psychometric evaluation. J Trauma Stress 2015; 28: 489–98.
29. Bovin MJ, Marx BP, Weathers FW, et al: Psychometric properties of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (PCL-5) in veterans. Psychol Assess 2016; 28: 1379–91.
30. Wortmann JH, Jordan AH, Weathers FW, et al: Psychometric analysis of the PTSD Checklist-5 (PCL-5) among treatment-seeking military service members. Psychol Assess 2016; 28: 1392–1403.
31. Vogt D, Danitz SB, Fox AB, Sanders W, Smith BN: Do functional impairments promote or hinder mental health treatment seeking: differential results for women and men. Psychiatry Res 2019; 271: 614–20.
32. Weathers FW, Blake DD, Schnurr PP, Kaloupek DG, Marx BP, Keane TM The Life Events Checklist for DSM-5 (LEC-5). 2013. Available at: www.ptsd.va.gov; accessed February 1, 2019.
33. Gray MJ, Litz BT, Hsu JL, Lombardo TW: Psychometric properties of the life events checklist. Assessment 2004; 11: 330–41.
34. United States Preventive Services Task Force; Curry SJ, Krist AH, Owens DK, et al: Interventions to prevent perinatal depression: US Preventive Services Task Force recommendation statement. JAMA 2019; 321: 580–7.