

Screening for Postpartum Depression in Military Women with the Postpartum Depression Screening Scale

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Each year, ~16,000 women on active duty in the U.S. military experience the birth of a child. A descriptive, longitudinal, prospective design was used to gather data with the Postpartum Depression Screening Scale. Depression was measured after delivery but before hospital discharge (time 1), 2 weeks after delivery (time 2), and 6 to 8 weeks after delivery (time 3). Mothers were found to be experiencing the greatest severity of symptoms in the category of sleeping and eating disturbances. Almost one-half of the mothers in this study scored either significant postpartum depressive symptoms or positive screening for postpartum depression after delivery. This number remained virtually unchanged at time 2. By time 3, 40% of women still reported depressive symptoms. At 2 weeks and 6 weeks after delivery, 13% and 11% of mothers, respectively, had positive screening for postpartum depression, consistent with the national average of 10 to 15%. Future research is needed to examine issues surrounding postpartum depression of military women.

Introduction

More women are serving on active duty in the U.S. military each year. Currently, it is estimated that 222,000 women serve,¹ compared with 33,000 in World War I,² 60,000 at the start of the Vietnam War,³ and 200,000 in 1994.⁴ Not only do women now represent 15% of the military forces on active duty, but also a majority of these women are of childbearing age. Each year ~16,000 women on active duty in the U.S. military experience the birth of a child.⁵ Even with these startlingly high numbers, limited research exists on postpartum depression in military women. An Ovid Medline and Cumulative Index to Nursing and Allied Health Literature search of literature from 1966 to 2005 using the terms "pregnancy," "military women," "active duty women," "depression," and "postpartum depression" yielded only one recent study specific to depression in pregnancy and postpartum women.⁶

It is estimated that 10 to 15% of all women develop postpartum depression,^{7,8} a condition that is secretly suffered⁹ and causes personal anguish for the mother, disturbed mother-infant interaction, and impaired cognition and emotional development of the infant.^{10,11} The prevalence of postpartum depression in military women has received little attention in the medical literature. In the only published study evaluating the phenomenon, O'Boyle et al.⁶ used the Edinburgh Postnatal Depression

Scale, finding that 19% of mothers had a positive depression score in the postpartum period. Suicidal ideation was present in 11% of prenatal patients and in 15% of postpartum-period women. The purpose of this study is to report data from a larger study¹² that evaluated the concept of postpartum fatigue in military women, in which depression was one of the studied predictor variables.

Screening for Postpartum Depression

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, defines generalized depression as the presence of five or more of the following criteria: symptoms of depressed mood, lack of pleasure or interest in normal activities, sleep disturbance, appetite disturbance, loss of energy, agitation, feelings of worthlessness or guilt, diminished concentration, and frequent thoughts of death or suicide. The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, does not consider postpartum depression to be a distinct and separate diagnosis; rather, it generalizes symptoms of depression that begin 4 weeks after delivery and that have been present for most of the day, nearly every day, for a 2-week period.¹³ The diagnosis of postpartum depression should not be confused with postpartum blues, which can be present from the time of birth until 2 weeks after delivery and is manifested by symptoms such as mild feelings of depression, tearfulness, anxiety, irritability, mood lability, increased sensitivity, and fatigue.¹⁴

Many methods exist to aid clinicians and researchers in screening for and diagnosing postpartum depression. Although numerous studies have used well-accepted generalized depression questionnaires such as the Beck Depression Inventory and the Center for Epidemiological Studies Depression Scale,¹⁵ these instruments were not specifically designed to screen for postpartum depression. Another method found in the literature to screen for depression includes simply asking the mother two questions, as follows.¹⁶ "During the past month, have you often been bothered by feeling down, depressed, or hopeless?" "During the past month, have you often been bothered by having little interest or pleasure in doing things?" No reliability and validity data exist for these screening questions.

Beginning in the 1980s, a call was heard for the development of screening instruments specific to postpartum depression.¹⁷⁻²⁰ Choosing a depression screening tool is potentially problematic because different instruments measure various symptoms of depression.²¹ The most commonly used instrument to measure postpartum depression is the Edinburgh Postnatal Depression Scale, a 10-item self-report scale.²² Mothers are asked to respond to 10 statements about depressive symptoms; replies range from "yes, quite often" to "no, not at all." Total scores range from 0 to 30, with a threshold score of >12 being 100% sensitive and 95.5% specific in detecting major depression.²³

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Another commonly used instrument is the Postpartum Depression Screening Scale (PDSS), a 35-item, Likert-type, self-report scale with summative scoring that can be completed by the mother in 5 to 10 minutes. Each statement on the PDSS is a description of how the mother may feel after childbirth. This instrument was designed after extensive grounded theory and phenomenological research by Beck.²⁴⁻²⁷ The PDSS is designed to provide an overall score for postpartum depression, with a total score range of 35 to 175. Once totaled, summed scores can be sorted into three categories, i.e., normal adjustment (scores of ≤ 59), significant symptoms of postpartum depression (scores of 60-79), and positive screening for postpartum depression (scores of ≥ 80). One advantage to this instrument is that it considers the multidimensionality of depression, offering seven subscale scores (Table I). Internal consistency reliability for the subscales ranges from a low of 0.83 for anxiety/insecurity and sleeping/eating disturbances to a high of 0.94 for loss of self. The overall scale reliability is 0.97.²⁸ This instrument has been found to be superior to both the Edinburgh Postnatal Depression Scale and the Beck Depression Inventory II for postpartum depression, capturing the depressive symptoms of sleeping disturbances, anxiety, and cognitive impairment that are not detected by other instruments.²¹

TABLE I
SCORING GUIDELINES FOR PDSS SUBSCALES²⁷

Symptom Content Profile (range, 5-25)	Description
Sleeping/eating disturbances	Scores of ≥ 14 indicate significant disturbance in normal appetite and/or sleeping habits
Anxiety/insecurity	Scores of ≥ 15 endorse a high level of anxiety symptoms, which may include psychomotor agitation and feelings of being overwhelmed or isolated
Emotional lability	Scores of ≥ 15 support feelings of emotional instability, causing the mother to be irritable and/or subject to frequent crying spells
Mental confusion	Scores of ≥ 14 suggest problems with mental confusion and difficulties controlling thought processes and sustaining attention on tasks
Loss of self	Scores of ≥ 13 indicate changes in aspects of personal identity, such as the mother's perceptions of herself as strange or abnormal, compared with how she was before the birth
Guilt/shame	Scores of ≥ 13 endorse significant feelings of guilt and/or shame for not measuring up to the mother's own standards of "good mothering"
Suicidal thoughts	Scores of ≥ 6 indicate that the mother might be entertaining thoughts of harming herself

Methods

Design

A descriptive, longitudinal, prospective design was used to gather data in the first 6 weeks after delivery, the time when military women are allowed 42 days of convalescent leave before returning to work. Data were collected at three times, as follows: time 1, after delivery but before hospital discharge (postpartum days 1-3; 86% of the data were collected on the first day after delivery); time 2, 2 weeks after delivery (postpartum days 11-26; 78% on days 13-16); time 3, 6 weeks after delivery (postpartum days 36-67; 73% on days 41-46). Patients were recruited and asked for consent by the primary investigator (a nurse practitioner). For the first data collection point, mothers were handed the questionnaire on a clipboard and were asked to complete the instrument in the privacy of their hospital room at a time convenient to them. Instruments were retrieved from the subjects within several hours and scored immediately.

For the second and third data collection points, instruments were mailed to the mothers 2 days before their 2-week and 6-week pediatric and obstetric medical appointments. Instruments were retrieved at the appointment and scored the same day. If a mother did not keep her appointment or was otherwise unable to meet the researcher, questionnaires were returned in a postage-paid envelope. These data collection points were chosen because they coincided with well-child and postpartum appointments, times when interventions could be designed to help mothers facing postpartum issues such as fatigue, depression, anxiety, pain, and fussy or colicky infants.

Sample

A convenience sample of 109 active duty women was recruited from the largest military medical treatment facility in southern California, which averages ~75 active duty deliveries per month. Institutional review board approval was received before study commencement. Data were collected from women serving on active duty in the U.S. Army, Navy, Marine Corps, or Air Force. More than 94% were members of the U.S. Navy, with the majority (88%) being enlisted personnel. The ages of the mothers ranged from 18 to 38 years, with a mean age of 25 years. More than one-half (51%) of the mothers were between the ages of 21 and 25 years. The majority of the mothers were married (60%) and nulliparous before this delivery (66%). Ninety-nine percent had at least a high school education, and 39% had some college background in addition to their high school diploma. Twenty-three percent were single, and 9% considered themselves partnered. Ninety-two percent of the mothers had no previous history of depression. Exclusion criteria were multiple births, preterm deliveries (<37 weeks), infants in the neonatal intensive care unit or otherwise not able to room in, and mothers with an acute illness or condition such as anemia, infection, fever, preeclampsia, or eclampsia.

Instrument

The PDSS instrument was chosen to measure postpartum depression in this study not only because of its excellent internal consistency but to also capture the multidimensional components of postpartum depression. Depression was measured after delivery but before hospital discharge (time 1), 2 weeks

TABLE II
INTERNAL CONSISTENCY FOR PDSS AND SUBSCALES OVER TIME

Symptom Content Profile	Internal Consistency			Published Estimates for Standardization Samples ²⁷
	Time 1	Time 2	Time 3	
Sleeping/eating disturbances	0.69	0.74	0.80	0.83–0.85
Anxiety/insecurity	0.67	0.76	0.77	0.80–0.83
Emotional lability	0.70	0.79	0.78	0.86–0.89
Mental confusion	0.83	0.84	0.85	0.86–0.91
Loss of self	0.82	0.85	0.87	0.91–0.94
Guilt/shame	0.76	0.83	0.89	0.86–0.90
Suicidal thoughts	0.83	0.90	0.93	0.86–0.93
Total PDSS	0.93	0.95	0.95	0.96–0.97

after delivery (time 2), and 6 weeks after delivery (time 3). Although the PDSS is not indicated for use before 2 weeks after delivery, a decision was made to use the instrument in this population for the sole purpose of establishing a baseline for research.²⁷

Data Analysis

Data were analyzed using SPSS for Windows, version 12.0.0 (SPSS, Chicago, Illinois). Descriptive statistics and repeated-measures analysis of variance were used to analyze the data. Spearman ρ and Pearson product-moment correlation coefficients were used to examine relationships between key variables.

Results

Because there are no published studies using the PDSS in military women, special attention was paid to the reliability and validity of the instrument in this population. Internal consistency reliabilities for the overall depression scale were high (0.93–0.95). Subscale internal consistency reliabilities ranged from 0.67 to 0.83 at time 1, from 0.74 to 0.90 at time 2, and from 0.77 to 0.93 at time 3. A detailed analysis is shown in Table II.

To address validity, the inconsistent responding index (INC) score of the PDSS was examined. This score, calculated by comparing responses given to similar statements, was used to determine how well the mothers were able to read the questionnaire, understand it, and pay attention while answering each question from start to finish. To be considered valid, the INC score should be 0 to 3. If the INC score is 4, then there is an 85% likelihood that the PDSS items were not answered in a manner that consistently reflects the test's content.²⁷ For an INC score of 5, the likelihood is 94%; for an INC score of 6, the likelihood is 97%. If the INC score is ≥ 4 , then the scoring manual recom-

mends that, in a clinical setting, the provider assess depression with other methods, such as a clinical interview.

For the first data collection point, 94% of the PDSS responses yielded INC scores of ≤ 3 , compared with 92% at time 2 and 96% at time 3. Table III presents a complete report of INC scores at all data collection points. Overall, the reported INC scores indicated acceptable validity for these mothers.

Once totaled, PDSS scores group the mother's depressive symptoms into categories of normal adjustment (scores of ≤ 59), significant symptoms of postpartum depression (scores of 60–79), and positive screening for major postpartum depression (scores of ≥ 80). Almost one-half of the mothers in this study scored either significant postpartum depressive symptoms or positive screening for postpartum depression after delivery. This number remained virtually unchanged at time 2. By time 3, 40% of women still reported depressive symptoms (Table IV). To test for differences between depression means, one-way analysis of variance was conducted [$F_{(2,324)} = 1.519$; $p = 0.220$].

According to the institutional review board-approved protocol, mothers whose scores indicated either significant symptoms of postpartum depression or positive screening for postpartum depression were screened and referred to a mental health provider or the individual's primary care provider if indicated. During this study, 16 mothers were referred to their obstetric provider for evaluation, four to the mental health clinic, and two to the active duty obstetric social worker. All mothers with depressive symptoms were allowed to continue participating in the study. There were no suicide attempts during this study, but one subject was disenrolled after significant concerns were noted at the time of hospitalization.

Means for the seven-symptom content profile subscales were calculated at all data collection points (Table V), with higher scores indicating that the mother was experiencing more nega-

TABLE III
INC SCORES FOR PDSS USE FOR MILITARY WOMEN OVER TIME

Data Collection Point	No. (%)				
	INC Score of <4	INC Score of 4	INC Score of 5	INC Score of 6	INC Score of 7
Time 1	102 (93.6)	4 (3.7)	2 (1.8)	1 (0.9)	0 (0)
Time 2	100 (91.7)	7 (6.4)	1 (0.9)	0 (0)	0 (0)
Time 3	105 (96.3)	2 (1.8)	0 (0)	1 (0.9)	1 (0.9)

TABLE IV
POSTPARTUM DEPRESSION SCORES OVER TIME

	No. (%)		
	Time 1	Time 2	Time 3
Normal adjustment (PDSS scores of ≤59)	57 (52.3)	55 (50.4)	65 (59.6)
Significant symptoms of depression (PDSS scores of 60–79)	42 (38.5)	39 (35.8)	32 (29.4)
Positive screening for depression (PDSS scores of ≥80)	10 (9.2)	15 (13.8)	12 (11.0)

tive symptoms. Mothers were found to be experiencing the greatest severity of symptoms in the category of sleeping and eating disturbances.

Discussion

Almost one-half of the mothers in this study scored either significant postpartum depressive symptoms or positive screening for postpartum depression after delivery. This number remained virtually unchanged at time 2. By time 3, 40% of women still reported depressive symptoms. At 2 weeks and 6 weeks after delivery, 13% and 11% of mothers, respectively, had positive screening for postpartum depression, consistent with the national average of 10 to 15%.^{7,8}

Compared with nonmilitary women, several comparison studies indicated that military women might be experiencing more symptoms of postpartum depression 6 weeks after delivery than their civilian counterparts. With use of the PDSS to measure postpartum depression in a sample of 151 rural Native American postpartum women 6 weeks after delivery, 77% of mothers experienced no symptoms of depression, 11% showed significant symptoms of postpartum depression, and 13% had positive depression screening.²⁹ This compares with a comparable study of 84 Australian postpartum women at 6 to 8 weeks after delivery, in which 73% experienced no symptoms of depression, 17% had significant symptoms of depression, and 10% revealed positive screening.³⁰ In comparison with those two studies using the PDSS to measure depression, 60% of military women had no symptoms of postpartum depression at 6 weeks after delivery, but a much higher percentage (29%) were experiencing symptoms of postpartum depression. Eleven percent of military women had positive depression screening, consistent with the

TABLE V
MEAN PDSS SUBSCALE SCORES OVER TIME

Symptom Content Profile	Mean Score		
	Time 1	Time 2	Time 3
Sleeping/eating disturbances	11.6 ± 3.9	10.7 ± 4.0	9.9 ± 4.3
Anxiety/insecurity	10.3 ± 3.3	10.1 ± 3.7	9.6 ± 3.7
Emotional lability	8.7 ± 3.1	10.3 ± 4.3	9.0 ± 3.6
Mental confusion	8.4 ± 3.3	8.6 ± 3.8	8.0 ± 3.5
Loss of self	7.5 ± 3.1	7.9 ± 3.2	7.3 ± 3.0
Guilt/shame	6.8 ± 2.4	7.6 ± 3.2	7.2 ± 2.8
Suicidal thoughts	5.5 ± 1.3	5.8 ± 1.7	5.8 ± 1.7

comparison studies. The reason why military women are experiencing more symptoms of depression at this time in their lives requires further investigation.

The total PDSS, along with its associated subscales, was an exceptionally reliable and valid instrument for use in postpartum military women at 2 weeks and 6 weeks after delivery. Although the instrument is designed specifically to measure postpartum depression, a condition that does not occur until at least 2 weeks after delivery, this analysis indicates that the scale might have utility in research to establish baseline depression scores, as well as to screen for suicidal ideation after delivery.

Although many health care professionals advocate postpartum depression screening, the obstetric and pediatric communities have not decided when and where postpartum depression screenings should take place. Because the pediatric provider might see the mother and baby several times before the obstetric 6-week follow-up visit, screening for postpartum depression in the pediatric setting is gaining popularity.³⁰ Bright Futures, the American Academy of Pediatrics guidelines for health supervision, has mentioned pediatric screening for maternal depression since 1994.

Health professionals should also be aware of identifiable predictors of postpartum depression. Research has shown that prenatal depression, low self-esteem, child care stress, prenatal anxiety, life stress, lack of social support, problems with marital relationships, history of previous depression, fussy or temperamental infant, maternity blues in the first 2 weeks after delivery, being unmarried, lower socioeconomic status, and unplanned or unwanted pregnancy can predict postpartum depression.³¹ Gross et al.³² found the prevalence of depression to be very high for postpartum women who reported that pregnancy was “a very hard time” or “one of the worst times of my life.”

Military women must return to duty 6 weeks after delivery, and most military members are fully deployable by 4 months after delivery. Pediatric and obstetric nurses and primary care providers can help these mothers to function at their maximal capacity by implementing prenatal depression screening as well as postpartum depression screening programs during the convalescent period.

Future research is needed to examine issues surrounding postpartum depression of military women, including exploration of its causes in both the prenatal and postpartum periods. Designing interventions to reduce symptoms of depression among military postpartum women may result in improved parenting, decreased health care costs, fewer workplace accidents, increased job satisfaction, prolonged breastfeeding, and improved physical readiness. Identifying and treating postpartum depression in this population has the potential benefit of a significant cost savings to the U.S. government, as well as an improved quality of life for military families.

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