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Functional Status Outcomes in Mothers with and without Postpartum Depression

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Abstract

Objective—To compare functional status between women with and without postpartum depression (PPD).

Methods—A two-group cross-sectional design compared functional status between 23 women with and 23 women without PPD. Participants were 6 to 26 weeks postpartum, and from obstetric practices in the Northeastern United States. Structured clinical interviews were used to establish diagnoses of PPD. Participants were matched on type of delivery, weeks postpartum, and parity. Participants compared current functioning to pre-pregnancy functioning utilizing the Inventory of Functional Status After Childbirth. The Postpartum Depression Screening Scale was used to measure PPD severity. Hierarchical multiple and logistic regression models were used to analyze data.

Results—Controlling for infant gender, number of nighttime infant awakenings, and income, PPD predicted lower personal ($P<0.001$), household ($P<0.05$), and social functioning ($P<0.001$), but no difference in infant care. Women with PPD were 12 times less likely to achieve pre-pregnancy functional levels.

Conclusions—Interventions are needed to address household, social, and personal functioning in women with PPD. Clinicians may find functional assessment is a useful adjunct and a less threatening way to screen and monitor treatment for PPD.

Postpartum depression (PPD) is a significant health problem affecting 6.5% to 12.9%¹ of women in the first year postpartum. It is an atypical depressive disorder characterized by a persistent depressed mood, or decreased pleasure or interest in usual activities plus 5 or more of the following: disturbances in appetite, sleep, psychomotor function, energy level, concentration, or self-worth.² Women with PPD may also have recurrent thoughts of death or suicidal ideation, or recurrent thoughts about harming the baby. The onset of PPD may be as early as 4 weeks but is most commonly diagnosed between 6 and 12 weeks postpartum. According to the DSM-IV-TR,² the symptoms of PPD are identical to non-postpartum major depression except for dramatic neuroendocrine changes, adjustments in psychosocial functioning, the impact of breastfeeding on treatment decisions, and implications for future family planning decisions. Although the DSM-IV-TR classifies PPD as an atypical major depressive disorder, there are some studies that have expanded the classification to include minor or subsyndromal depression.^{3, 4} The most common risk factors for PPD are antepartum depression, personal psychiatric history, family psychiatric history, poor social support, and poverty.^{5, 6} The longer a woman is incapacitated by PPD, the more she is at risk for lifelong and recurrent depression and suicide.⁷ Untreated PPD may seriously damage the mother-infant

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Précis Women with postpartum depression demonstrate normal levels of physical infant care despite impairments in personal, household and social functioning.

relationship and result in cognitive, emotional, and behavioral deficits in her growing child.^{8,9}

Postpartum women in the United States are expected to resume pre-pregnant activities within a short span of six weeks.¹⁰ At this critical time, whether or not they feel ready, many women are expected to run a household, care for their new infants and other children, resume marital and social relationships, participate in community activities, and provide income for their families. However, women with postpartum depression may be unable to perform these tasks. Several studies have assessed functional status in postpartum women and the general depressed population, but few have assessed functional status in women diagnosed with PPD.^{10, 11} Most studies have focused on recognizing and treating symptoms of PPD without considering its effects on daily functioning. Much attention has been paid to symptoms of PPD, and potential for suicide and infanticide. However, it is also important to know if a woman with PPD can perform day-to-day activities. Women with personal, household, and social functional impairment resulting from postpartum depression may be unable to shower, pay bills or even seek help for depression or other health-related matters. They may be less likely to attend their six-week postpartum checkups or perform preventative health-related activities for their infants.¹² Functional impairment in women with PPD has also been associated with poor infant growth and decreased breastfeeding in the postpartum period.^{13, 14} Findings from a few studies have also found that women continue to provide good physical infant care despite symptoms of depression in the postpartum period.¹⁵⁻¹⁷

Functional status during the postpartum period has been defined as a multi-dimensional concept that encompasses personal care, physical infant care, household care, social activities, and occupational activities.¹⁰ In the general population 47% to 57% of postpartum women achieve pre-pregnancy functional levels by 6-weeks postpartum, and 76% by 12 weeks.^{10, 18, 19} Most non-depressed women require 6 or more months to recover full functional status.^{10, 18, 19} Although overall functional status continues to improve between 3 weeks and 12 weeks as women adapt to their new roles, little improvement is observed between 12 and 26 weeks postpartum.¹⁰ Many participants in these studies expressed that they resumed activities due to financial strain, family needs, or to appear normal to others.

The aim of this two-group cross-sectional comparative study was to compare the differences in functional status between women diagnosed with and without PPD who were 6 to 26 weeks postpartum. The hypotheses were that compared to women without a diagnosis of depression, women with postpartum depression would have: 1: lower levels of functioning in personal, household, social, and occupational activities; 2: no differences in functioning in physical infant care; and 3: a lower likelihood of achieving pre-pregnancy functional levels.

Materials and Methods

Design

This was a two-group cross-sectional comparative design. The convenience sample of postpartum women also participated in another component of the study (not reported here) that compared sleep quality and circadian motor activity using actigraphy between women with and without PPD over a 7-day data collection period.

Conceptual Framework

The conceptual framework for this study was the Roy Adaptation Model.²⁰ In this model, individuals are viewed as biopsychosocial systems who adapt to the environment through individual responses to physiological, role function, interdependence and self-concept modes. The goal of care is to assist individuals to achieve health and quality of life by using adaptive

rather than ineffective responses to changing environmental stimuli (focal, contextual, and residual).

The Roy Adaptation model was chosen for this study, because women with PPD may have difficulty adapting to the environmental changes in the postpartum period, and because the functional status instrument used for this study, the Inventory of Functional Status After Childbirth,²¹ is theoretically based on the Roy Adaptation Model. Using this model to frame the study, childbirth provides the focal stimulus. In the context of the physical and psychosocial factors influencing childbirth (contextual stimuli), it was hypothesized that women with PPD (self-concept mode) would use ineffective responses as evidenced by lower overall, household, personal, social, and occupational activities, but would maintain adaptive responses in physical infant care (role function modes).

Sample

Participants were included if they were 6 to 26 weeks postpartum, 18 to 44 years old, gave birth to a single infant vaginally or by cesarean birth, spoke English, and had access to a telephone. Women with prior history of depression and antepartum depression were also included because they are known high-risk factors for PPD. Matching was done on type of delivery, weeks postpartum, and parity because these factors can affect functional status.^{10, 25}

Exclusion criteria included disabling medical illnesses that could affect functional status; infant complications requiring medical care beyond 6 weeks postpartum; current physical or sexual abuse; current substance abuse or dependence; and current traumatic life stressors (e.g. death of spouse, loss of home, victim of violence) within one year of childbirth.

Anticipating a medium effect size, an alpha of 0.05, and a beta of 0.80, and using 3 covariates known to affect levels of depression or function (infant gender, income, and number of nighttime awakenings^{22–24}), a power analysis determined that 46 subjects (23 per group) were needed.

Recruitment

Participants were recruited from several suburban obstetric and midwifery practices in the Northeastern United States from 2004–2005. Brochures and posters were placed in the office waiting rooms advertising the study. Potential participants informed their nurse midwives if they were interested in participating. It is unknown how many women saw the brochures and posters and decided not to participate.

Instruments

In order to provide a comprehensive measure of depression, structured clinical interviews as well as severity scales for depression have been used in studies of the general population.^{26–28} The structured clinical interview is used to determine if participants meet criteria for depression, and the severity scale measures the degree of depression. The MINI Neuropsychiatric Interview (MINI),²⁹ a 15-minute version of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I),² was administered to make the diagnoses or rule out PPD, and the Postpartum Depression Screening Scale (PDSS),³⁰ was administered to determine depression severity. Although the widely used Edinburgh Postnatal Scale³¹ was considered for this study, it does not measure severity of depression. The Inventory of Functional Status After Childbirth was used to measure functional status.²¹

In studies of the general population the test-retest Kappa for the MINI was > 0.60.^{32, 33} Positive predictive value and interrater reliability for major depression were greater than 0.75.

Interrater reliability between general practitioners and expert psychiatrists was 0.85. Comparisons of the MINI with the SCID-I found a sensitivity of > 0.70 and a specificity of ≥ 0.85 . The MINI has also been used in several studies of women with PPD to diagnose depression and to determine the validity of the Edinburgh Postnatal Depression Scale.^{34–36}

The Postpartum Depression Screening Scale^{30, 37} (PDSS) is a 35-item self-rated scale with scores ranging from 35 to 175. Interpretation of total PDSS scores were as follows: 35 to 39 indicates normal adjustment, 60 to 79 reflects significant symptoms of postpartum depression, and 80 to 175 constitutes a positive screen for major postpartum depression. Higher numbers indicate increasing severity. Total alpha reliability in prior studies has been reported to be 0.93 to 0.98.^{38, 39} Construct validity was established in prior studies.³⁷ The alpha reliability for the seven dimensions of the PDSS have been reported as follows: Sleeping and Eating Disturbance (SLP) = 0.76; Anxiety and Insecurity (ANX) = 0.86; Emotional Lability (ELB) = 0.91; Mental Confusion (MNT) = 0.94; Loss of Self (LOS) = 0.95; Guilt and Shame (GLT) = 0.92; and Suicidal Thoughts (SUI) = 0.94. The total alpha reliability for the PDSS in this study was 0.97. The alpha reliability for each of the seven dimensions of the PDSS in this study was: SLP = 0.84; ANX = 0.80; ELB = 0.88; MNT = 0.93; LOS = 0.93; GLT = 0.93; and SUI = 0.86.

The PDSS includes an *inconsistent responding index* (INC) as a measure of a subject's consistency in completing the PDSS items.³⁷ The INC consists of 10 similar question pairs. If 4 or more test pairs differ by ≥ 2 points, this indicates an elevated INC score and the possibility that the subject did not complete the PDSS in an accurate manner. Women with elevated INC scores may have limited English skills, or have difficulty following the scale's instructions, or difficulty concentrating on the scale's items from beginning to end. Thus the raw score may not reflect an accurate emotional state. In the current study, none of the women in the non-depressed group had elevated INC scores. Three depressed women had an INC score of 4, and one depressed woman had an INC score of 5. When the INC score is 4 or 5, there is an 85% or 94% possibility (respectively) that the answers did not accurately reflect the emotional states in these women. Usually the discrepant answers are discussed with women by the research staff; this was not done in this study. A significant positive bivariate correlation was found between the INC and the PDSS scores ($P < 0.001$), which could indicate that test accuracy may decrease with increasing PPD severity. The results of this correlation, however, need to be viewed with caution because of the small sample involved. Despite increased INC scores, the four depressed women were retained in the final analysis because the results of the MINI Neuropsychiatric Interview indicated that they met the criteria of major depression.

The Inventory of Functional Status After Childbirth (IFSAC) is a 52-item self-rated scale that measures physical infant care, personal care, household care, social activities, and occupational activities.⁴⁰ Participants were instructed to compare their present level functioning to their memories of their pre-pregnancy functioning levels. Although the IFSAC measures achievement of pre-pregnancy functioning levels, it does not measure feelings, beliefs or perceptions about functioning. Scores on each item range from one to four with higher scores indicating higher functioning. Overall functional status and mean scores for each functional domain were reported. Alpha reliability for overall functional status in prior studies has been reported to be 0.76.⁴⁰ Subscale alpha reliabilities were reported as follows: infant care = 0.92, personal care = 0.56, household care = 0.64, social activities = 0.67, and occupational activities = 0.98. Content validity was reported to be 84.4% in these prior studies. The alpha reliability for overall functional status in this study was 0.85. Subscale alpha reliabilities in this study were: infant care = 0.67, personal care = 0.78, household care = 0.85, and social activities = 0.68. Participation in heavy maintenance activities, pet care, community service organizations, professional organizations, religious organizations, social clubs and occupational activities were not included in the calculation of the alpha reliability because there were too few responses in these categories.

Data collection procedure

After informed consents were obtained, data were collected in two 30-minute sessions one week apart in the participants' homes. The research staff filled out all questionnaires in order to minimize the occurrence of missing data. During the first 30-minute session, the MINI²⁹ was administered to all participants to diagnose PPD. Screening, demographic and health status information was also collected at this interview. Every woman who met the criteria for PPD was informed and provided with referral resources. During the second 30-minute session one week later, the Postpartum Depression Screening Scale (PDSS)³⁰ and the Inventory of Functional Status After Childbirth⁴⁰ (IFSAC) were administered to determine PPD severity and level of functioning respectively.

Data analysis

SPSS version 14.0 (SPSS, Chicago, IL) was used to analyze the data. The first hypothesis (compared to women without the diagnosis of depression, women with PPD would demonstrate lower levels of functioning in personal, household, social, and occupational activities) was analyzed by separate hierarchical multiple regression models controlling for infant gender, the number of nighttime infant awakenings, and income for each area of functional status and overall functional status excluding physical infant care activities with covariates entered simultaneously at the first step followed by PPD at the second step. The second hypothesis (there would be no difference in functioning in physical infant care) was analyzed by hierarchical multiple regression models on physical infant care activities controlling for the same covariates with covariates entered simultaneously at the first step followed by PPD at the second step. The third hypothesis (compared to women without a diagnosis of depression, women with PPD would be less likely to achieve pre-pregnancy functional levels) was tested by logistic regression on overall functional status while controlling for the same covariates. The responses for occupational and childcare function were too few to be considered in the final analysis. Because many of the depressed women were taking antidepressants or involved in psychotherapy, multiple and logistic regressions were also run regressing these variables on overall functional status and controlling for the same covariates.

Human rights

The study was approved by the University of Pennsylvania IRB, and informed consents were obtained from all participants.

Results

Seventy-one women responded to the advertisements. Seventeen declined to participate (23.9%) once they found out the details of the study, 54 consented, and 46 completed the study. The 17 women who declined to participate did not complete the study instruments. Among the 8 who did not complete the study, 5 women with PPD withdrew, and 3 women in the non-depressed group were dropped because their actigraphs had malfunctioned during the sleep quality component of the study (14.8 % attrition rate). The depressed women withdrew for various reasons including not wanting a PPD diagnosis and feeling too burdened by the study. Those who did not complete the study had less overall help with infant, other children, cooking meals, and running errands (average 25 fewer days, $P < 0.001$) and less help from partners (average 35 fewer days, $P < 0.001$), than those who did complete the study. However, there were no significant differences in the prevalence of PPD between completers and non-completers. Although there were missing data in the sleep quality/circadian motor activity portion of the study, there were no missing data in the functional status portion because the research staff filled out the forms for the participants.

In general the sample represented mostly White (83%), middle-income (62% \$50,000 or more per year), and highly educated women (93% greater than high school education). Approximately half the sample was multiparous. Most of the women in both groups experienced a vaginal delivery (80%) and breastfed (82%) their infants. A majority of the sample had help with infant care (91%), cooking (89%), housework (96%) and errands (91%) from mothers and partners. None of the women had any restrictions in their activities. Most of the infants slept four or more hours per night (72%).

There were significant demographic differences in the sample between women with and without PPD (Table 1). Depressed women had significantly lower income than non-depressed women ($P<0.05$). The mean annual family income in the depressed group was \$58,000 per year compared to \$83,000 in the non-depressed group. Comparison of clinical variables found that women with PPD had significantly more male infants ($P<0.05$), more nighttime infant awakenings ($P<0.05$), and lower household ($P<0.001$), social ($P<0.05$), personal ($P<0.001$), and overall function ($P<0.001$) than women without PPD (Table 2). Although non-significant, women with PPD had a trend of having more help with cooking, running errands, and physical infant care than women without PPD.

At the time of the interview, the diagnoses of PPD were made in 23 postpartum women using the MINI.²⁹ The remaining 23 women did not have any current symptoms of depression (including minor or subsyndromal depression) when interviewed with the MINI. Compared to the non-depressed group, women with PPD had significantly more personal psychiatric histories ($P<0.001$), more history of antidepressant use ($P<0.01$), and more history of psychotherapy ($P<0.05$), but no significant differences in family psychiatric histories. Out of a possible total PDSS score of 175, women with PPD had a mean of 94 compared to a mean of 45.35 in the non-depressed group (positive score for major PPD = 80 to 175, $P<0.001$). The range of scores for the entire sample was 35 to 159. The mean scores for each of the 7 dimensions of the PDSS were significantly higher in the depressed group (Table 3). The INC scores were significantly higher among women with PPD ($P<0.001$). Thirteen women with PPD were currently taking antidepressant medication, and 7 were participating in psychotherapy.

Functional status was negatively correlated with PPD with the exception of infant care activities. Specifically lower household, social and personal functioning was correlated with PPD. In multiple regression analyses, PPD predicted lower overall functional status ($P<0.001$), household function ($P<0.05$), social function ($P<0.001$), and personal function ($P<0.001$). Lower overall function predicted increasing PPD severity ($P<0.001$). As hypothesized, PPD did not predict physical infant care activities. There were no differences in functional status among women with PPD who did and did not participate in psychotherapy or take antidepressant medications. Antidepressant use and participation in psychotherapy did not predict any dimension of functional status in multiple or logistic regression models. Finally, women with PPD were 12 times less likely to demonstrate achievement of pre-pregnancy functional levels compared to women without PPD ($P<0.01$).

Discussion

In this study, postpartum depression predicted lower personal, household, and social functioning, but no difference in infant care. Women with PPD were 12 times less likely to achieve pre-pregnancy functional levels than non-depressed women. Although often overlooked in women with PPD, clinical assessment for functional impairment is critically important because of its detrimental effects on family economic stability, health maintenance activities, help-seeking for depression, and social skills necessary for positive interactions with the infant, spouse, family and friends.¹²

Factors that may affect functional status in the postpartum period in the general population include parity, social support, infant temperament and nighttime awakenings, type of delivery, and maternal and neonatal complications.^{10, 41} Waters and Lee²⁵ found at one month postpartum that multiparas displayed higher functional status, less sleep disturbance, less fatigue and more vitality compared to primigravidas. The researchers hypothesized that the primigravidas were less functional and more fatigued because they were still adapting to their new roles as mothers. Among 132 women assessed in the postpartum period, McVeigh¹⁸ found that perceived lack of social support and increased nighttime infant awakenings were associated with lower functional status scores. She hypothesized that fatigue associated with these factors inhibited maternal role attainment and resumption of pre-pregnancy functioning. Tulman and Fawcett⁴⁰ found inconsistent levels of functional status following cesarean birth and maternal and neonatal complications. In an early study, women who had experienced cesarean birth had lower functional status at 3 weeks compared to women who experienced a vaginal delivery, but a later study found that these differences persisted for 6 months. They also found that maternal and neonatal complications were associated with lower functional status in the earlier study, but this association disappeared in the later study. In other studies, associations have been reported between subsyndromal depressive symptoms and poor psychosocial functioning; anxiety, depressed mood, and poor maternal functional status; and poor postpartum mental health and fewer recreational activities.^{4, 10, 42} Although these studies provide a rich knowledge base about factors that affect functional status in the postpartum period, none of these studies assessed functional status in women diagnosed with PPD.

Only one other study examined functional status in women diagnosed with PPD using a structured clinical interview for depression. In a randomized double-blinded study, 61 women with PPD treated with nortriptyline vs. sertraline demonstrated substantial improvement in role function after 8 weeks of treatment.³ Specifically, in both treated groups of depressed women, functional improvement was found in household, social, and infant care activities, but no improvement in marital satisfaction. In contrast, the findings of the current study suggest that women with PPD display decreased functional status in household, social, and personal activities, but no difference in infant care activities compared to women without depression. The difference in findings regarding infant care activities may be due to differences in study measures. The former study may have examined interpersonal relationships with infants rather than physical infant care as in the current study.

The findings of this study are consistent with other research where women with PPD continued to provide normal physical infant care despite depressive symptoms.¹⁵⁻¹⁷ McLearn found in a sample of 4874 women that physical infant care did not differ between women with and without PPD.¹⁵ Studies by Hall and Tammentie found that depressed mothers expressed the need to achieve unrealistic perfection in caring for their infants.^{16,17} Many women with PPD experience recurrent thoughts of harming their infants,⁴³ and may feel obligated to provide physical care despite these negative intrusive thoughts. There may be a hierarchy of functioning in women with PPD, where physical infant care activities take precedence over other areas of functioning. Further qualitative and observational research is needed to find out why women with PPD provide normal physical infant care despite reduced functioning in other dimensions of functional status.

Although women with PPD may be providing the same level of physical infant care as non-depressed postpartum women, they may be unable to provide necessary nurturing interactions with their infants due to poor social function. Several studies report that although women with PPD provide similar levels of physical infant care, they are less likely to play, talk, and read with their infants.^{3, 15} In a case-control study, 35 mothers with PPD were found to be more anxious, less affectionate, less verbally interactive, and less playful with their infants.⁴⁴ In a prospective longitudinal study comparing 58 children exposed to PPD to 41 children without

exposure to PPD, the children of depressed mothers displayed significant deficits in creative play at school and insecure attachment at age 5 compared to the non-exposed children.⁸ Additional follow-up at age 13 found that this same group of children were more likely to develop depression than children without exposure to PPD.⁹ Because women with PPD were 12 times less likely to achieve full pre-pregnancy functional status compared to non-depressed women, intervention studies are needed to find out what would be helpful in facilitating expedient and full functional recovery. The longer a woman is incapacitated by functional deficits inherent in PPD, the more she is at risk for impaired mother-infant interaction and subsequent long-term cognitive, behavioral and emotional problems in her child.⁴⁵

In this study, the positive correlation between the INC score (inconsistent responding index) and PPD severity could indicate cognitive impairment. At a time when cognitive ability is critical, a woman with PPD may be unable to run her household, care for her own health needs, and provide a safe and secure environment for her infant. Diminished cognition may have long term negative psychosocial and health implications for her entire family. Further research is warranted to examine the INC and PDSS scores in larger and more diverse samples.

The finding that overall functional status predicted PPD severity suggests that assessment of functional status may be useful in monitoring postpartum depression treatment. For example, the nurse midwife may use functional assessment to determine if the depressed mother is making progress indicated by improvements in household, personal and social function. Table 4 provides a list of suggested questions for assessing functional status based on the IFSAC.⁴⁰

High-risk women may find functional assessment more acceptable than assessment for depression because of the stigma attached to the diagnosis of PPD. In this study, the INC (inconsistent responding index) was elevated in 4 women with PPD. One of the explanations for this finding is that women with PPD may answer questions in a way that avoids the stigma of a PPD diagnosis. Sensational headlines that link PPD to violent behavior may prevent women from admitting to or seeking help for depressive symptoms in the postpartum period. In the current study, some depressed women withdrew because they did not want a PPD diagnosis. In previous research women found the Edinburg Postnatal Depression Scale unacceptable for screening because of the stigma attached to PPD.⁴⁶ According to Corrigan,⁴⁷ individuals may decide to bear the burden of mental illness rather than risk being stigmatized. If the nurse midwife initially questions the new mother about how much she has resumed her pre-pregnant activities, and whether or not she is feeling overwhelmed by them, this approach may prove to be less threatening than asking her if she is feeling depressed. Depression screening by the nurse midwife may then be more acceptable to women with PPD after opening the discussion with assessment of functional status, but further research is needed in this area.

A strength of this study is that a structured clinical interview was used to diagnose PPD as well as a measure to assess symptom severity. Although the use of a structured clinical interview with a self-report measure of depression severity has been used in the general population to provide a more comprehensive measure of depression, these methods are rarely used in studies involving women with PPD.²⁶⁻²⁸ There were some weaknesses in this study. Because a convenience sample and a cross-sectional design were used, this study lacks the strengths of a prospective study with randomization. The sample may have been too small to detect the effects of psychotherapy and antidepressants on functional status. Because the INC scores were elevated in 4 women with PPD, their PDSS severity scores may be inaccurate. These elevated scores, however, may also reflect impaired cognition, or measures to avoid the stigma of a PPD label. Because the findings of this study are based on self-report measures, the participants may have overestimated or underestimated their comparisons to pre-pregnancy functional levels. Self-report lacks objectivity of observational methods that might have been more

accurate in determining the actual levels of pre-pregnancy and postpartum functional levels. However, the perceptions of functional levels from the point of view of women with PPD are important data to take into account when formulating plans of care. Women with PPD may have declined to admit shortcomings in physical infant care for fear of repercussions, such as the infant being removed from the home. The need to provide good and/or equivalent physical infant care by women with PPD compared to women without PPD, however, has been supported previously in the literature.^{16, 17}

There may have been other variables affecting functional status that were not included in this study. For example, the quality of marital relationships, social support or interpersonal relationships was not examined. In addition, infant characteristics such as fussiness or colic were not assessed. Among the 46 participants, 73.9% of women with PPD and 8.7% of those without PPD had personal psychiatric histories. Therefore, these women may have compared their present level of postpartum functioning to pre-pregnancy functioning while depressed. The finding that women with depression had a trend of more instrumental help from their families than women without PPD, may have contributed to lowering their functional status scores. For example, more help with infant care could have decreased infant care functional scores. The difference in instrumental help, however, was not significantly different between the two groups. The women with PPD who volunteered may have been less severely depressed than those who refused participation. Depressed women who dropped out of the study may also have been more severely depressed and therefore the results of the study may contain bias. Because the women in this study were mainly White, middle-class, and highly educated, generalizability of the findings are limited.

Nonetheless this study underscores the importance of assessing postpartum women for depression as well as functional impairment. Long-term effects of PPD on mothers and infants may be devastating. At this critical time when depressed mothers must function and adapt to their new roles, they may be unable to care for themselves, run a household, and provide nurturing interactions with their infants. Assessment of functional status by nurse midwives may be a useful adjunct to current PPD screening by providing a means to monitor treatment progress, a less stigmatizing way to screen women for PPD, and a new direction for more effective interventions. Further qualitative and observational research is needed to examine why and if depressed mothers perform normal physical infant care despite impairments in personal, household and social functioning.

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Table 1

Comparison of Demographics between Women with and without Postpartum Depression

Variable *	NO n=23	YES n=23
Age, yrs, mean (SD)	31 (4.45)	30 (5.45)
White Race	19 (82.6)	16(69.6)
Income[†]		
< \$50,000	3 (13.0)	10 (43.5)
\$50,000–\$74,999	3 (13.0)	1 (4.3)
\$75,000–\$99,999	4 (14.0)	4 (17.4)
\$100,000–\$149,999	9 (39.1)	6 (26.1)
>\$150,000	4 (17.4)	2 (8.7)
Employment		
Full-time	9 (39.1)	9 (39.1)
Part-time	4 (17.4)	5 (21.7)
Unemployed	10 (43.5)	9 (39.1)
Educational Level		
Attended College	3 (13.0)	5 (21.7)
2-year degree	2 (8.7)	1 (4.3)
4-year degree	9 (39.1)	4 (17.4)
Attended grad school	3 (13.0)	2 (8.7)
Graduate Degree	5 (17.3)	8 (34.8)
Living with partner	23 (100)	21 (91.3)
Medical insurance		
HMO	7 (30.4)	7 (30.4)
PPO	15 (65.2)	14 (60.9)
Medicaid	1 (4.3)	2 (8.7)

* Data are reported as n (%) unless otherwise noted

[†] P<0.05

Table 2

Comparison of Clinical Variables between Women with and without Postpartum Depression

Variable *	Postpartum Depression	
	NO n=23	YES n=23
Female Infant[†]	18 (78.3)	7 (30.4)
Weeks Postpartum, mean (SD)	12 (6.00)	10 (5.62)
Primiparous	12 (52.2)	8 (34.8)
Maternity leave		
< 6 weeks	1 (4.3)	2 (8.7)
6 weeks	3 (13.0)	3 (13.0)
>6 weeks	10 (43.5)	12 (52.2)
Number of nighttime infant awakenings[†], mean (SD)	1.78 (1.62)	2.91 (2.02)
Baby sleeps > 4 hrs	18 (78.3)	15 (65.2)
Type of Feeding		
Breast	10 (43.5)	9 (39.1)
Bottle	4 (17.4)	4 (17.4)
Breast & Bottle	9 (39.1)	10 (43.5)
Experience caring for infants	13 (56.5)	16 (69.6)
Restrictions on activities now	0 (0)	0 (0)
Practical help husband	19 (82.6)	21 (91.3)
Practical help own mother	16 (69.6)	17 (73.9)
Practical help infant total	22 (95.7)	23 (100)
Help with other children	11 (47.8)	15 (65.2)
Help with housework	22 (95.7)	22 (95.7)
Help with meals	20 (87.0)	21 (91.3)
Help with errands	20 (87.0)	22 (95.7)
Vaginal Birth	18 (78.2)	19 (82.6)
Household function[†], mean (SD)	3.62 (0.32)	3.06 (0.57)
Social function[†], mean (SD)	3.31 (0.73)	2.76 (0.83)
Infant care, mean (SD)	3.77 (0.34)	3.76 (0.25)
Personal function[†], mean (SD)	3.44 (0.32)	2.84 (0.49)
Overall function[†], mean (SD)	3.56 (0.18)	3.15 (0.35)

* Data are reported as n (%) unless otherwise noted

[†] P<0.05^{††} P<0.001

Table 3

Comparison of Postpartum Depression Screening Scale Dimension Mean Scores between Women with and without Postpartum Depression

Dimension [*]	Non-depressed women	Depressed women
Sleeping and Eating [‡]	6.30 (3.06)	10.86 (4.73)
Anxiety and Insecurity [‡]	6.30 (1.94)	13.31 (3.11)
Emotional Lability [‡]	5.76 (1.58)	13.79 (3.92)
Mental Confusion [‡]	5.65 (2.07)	11.90 (4.63)
Loss of Self [‡]	5.19 (1.43)	11.75 (4.84)
Guilt and Shame [‡]	5.24 (1.85)	12.22 (4.88)
Suicidal Thoughts [‡]	4.25 (0.25)	6.52 (3.64)

* Data reported as mean (SD)

[†] P<0.01

[‡] P<0.001

Table 4
Suggested Questions to Assess Functional Status Domains

Domain	Question
Household function	1. How much have you resumed your household chores such as cleaning the house, doing laundry, cooking, doing dishes, shopping, and caring for pets (if applicable) compared to before this pregnancy?
Infant Function	2. How much are you independently feeding, bathing, diapering, dressing, and playing with your baby?
Personal Function	3. Compared to before this pregnancy, how much of the day are you spending sitting, lying down, staying in your robe without getting dressed, and walking slowly?
Social Function	4. Compared to before this pregnancy, how much have you resumed socializing with relatives and/or friends?