Use of the Antenatal Risk Questionnaire to Assess Psychosocial Risk Factors Associated with Risk for Postpartum Depression: a Pilot Study

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Abstract

Introduction—Postpartum depression is the most common complication of childbirth. The purpose of this pilot study was to examine use of the Antenatal Risk Questionnaire (ANRQ) to assess psychosocial risk factors associated with increased risk for the development of symptoms of postpartum depression.

Methods—This was a prospective investigation of women during the third trimester of pregnancy. Women were recruited from a high-volume collaborative obstetric and midwifery practice in a large academic tertiary-care hospital. Participants were enrolled during their third trimesters of pregnancy and studied through 6 weeks postpartum. Surveys were completed for psychosocial risk (ANRQ), perceived stress, and symptoms of depression. Bivariate analysis was conducted and multiple regression analysis was performed to examine the effects of the predictor variables on the outcome variable, symptoms of depression at 6 weeks postpartum.

Results—Thirty-five women participated in the study. Prenatal ANRQ scores, Perceived Stress Scale (PSS) scores, and Edinburgh Postnatal Depression Scale (EPDS) scores were significantly correlated with EPDS scores at 6 weeks postpartum. In the multiple regression analysis, prenatal ANRQ score was a significant predictor of postpartum EPDS score, whereas prenatal PSS and EPDS scores were not significant. This regression model explained 57% of the variance in symptoms of depression at 6 weeks postpartum.

Discussion—Key past and present psychosocial risk factors experienced by women (measured by prenatal ANRQ) were a significant predictor of postpartum depressive symptoms. In light of our results, use of the ANRQ in clinical practice warrants further exploration.

Keywords

pregnancy; postnatal; depression; psychosocial assessment; screening; nurse-midwives; Antenatal Risk Questionnaire; Perceived Stress Scale; Edinburgh Postnatal Depression Scale

INTRODUCTION

Postpartum depression (PPD) is the most common complication of childbirth. National estimates of prevalence range between 10% and 20%.¹ Although there is extensive evidence regarding psychosocial risk factors associated with the development of PPD, screening for these factors is not standard in the United States. The purpose of this pilot study was to examine the use of a structured questionnaire during pregnancy to assess psychosocial risk factors associated with increased risk for the development of PPD symptoms.

PPD is a significant public health problem with devastating effects. Consequences to the woman may include prolonged periods of emotional disturbance, disability, impaired child-care practices, and, in some cases, infanticide or suicide.² For the infant, PPD may lead to insecure attachment and impaired cognitive and emotional development with long-term consequences that may extend across the lifespan.^{3,4} Despite the high prevalence of PPD and the devastating consequences for women and their offspring, many at-risk women are not identified.

The perinatal period provides a unique opportunity for clinicians to address the physical and psychological health of women because they seek regular health care during this time. For this reason, the International Marcé Society for Perinatal Mental Health recommends universal psychosocial assessment in perinatal women within the context of a practice model that integrates services.⁵ Importantly, this assessment is inclusive of past and present risk factors.⁵ Significant psychosocial risk factors for PPD include a history of trauma, a history of a mental health disorder, current prenatal depression and anxiety, major life events, a lack of social support, and substance misuse.^{5–7} In a recent randomized controlled trial (N = 1868), more than one-third (36.7%) of women reported one or more psychosocial risk factors in the perinatal period.⁸ In addition, those who reported substance misuse and intimate partner violence had increased odds for depressive symptoms (odds ratio [OR], 2.37 and 3.98, respectively; both $P < .001$).⁸ Furthermore, authors of a recent Cochrane Database Systematic Review reported that early identification of women at high risk for PPD assisted in preventing approximately one-third of the cases of PPD (risk ratio, 0.66; 95% CI, 0.50–0.88).⁹ This evidence lends support to a comprehensive screening program that targets multiple risk factors, allowing for individualized interventions.

Despite the evidence to support comprehensive psychosocial screening, in the United States, screening for mental health issues in pregnancy typically involves a measure of symptoms of depression or anxiety in a relatively short, present-day, time frame (the past week or month).¹⁰ Current recommendations include a statement issued by the US Preventive Services Task Force recommending screening for depression in the adult population, including pregnant and postpartum women.¹¹ The American College of Obstetricians and Gynecologists (ACOG) recommends that clinicians screen women for symptoms of depression and anxiety

at least once during the perinatal period.¹² The American College of Nurse-Midwives states that midwifery care should include prevention, universal screening, treatment, and/or referral for depression.¹³ Reasons for the lack of comprehensive psychosocial assessment may include the lack of a reliable tool.^{6,14} Additionally, many authors argue against the value of comprehensive assessment in light of limited access to resources to address psychosocial risk factors.^{5,15}

The Antenatal Risk Questionnaire (ANRQ) is a structured questionnaire developed by Marie-Paule Austin and colleagues to assess early and chronic psychosocial stressors that are associated with increased risk for perinatal depression.¹⁶ In a sample of 287 Canadian women, ANRQ scores at 12 to 14 weeks' gestation were significantly correlated with PPD symptoms as measured by the Edinburgh Postnatal Depression Scale (EPDS) at 7 to 9 weeks postpartum (r , 0.41; $P < .001$).¹⁷ Notably, the ANRQ has been reported by midwives to be useful as a psychosocial assessment tool and helpful in planning care during pregnancy.¹⁶ This evidence supports the role of comprehensive psychosocial assessment in pregnancy. To our knowledge, the ANRQ has not been used in the United States. Therefore, the purpose of this study was to assess psychosocial risk factors, as measured by the structured ANRQ, in the third trimester of pregnancy as a predictor of symptoms of depression at 6 weeks postpartum.

METHODS

Design and Study Population

This pilot study was a prospective investigation of women during the third trimester of pregnancy through 6 weeks postpartum. A large academic tertiary-care hospital in the southwest region of the United States was the study setting. Women were recruited from a high-volume collaborative obstetric and midwifery practice. Institutional review board approval was granted by the University of New Mexico, and written consent was obtained from all participants. Recruitment for the study was conducted by research team members and occurred from April 2016 to December 2016. Women were eligible to participate if they were aged 18 to 40 years; were in their third trimester of pregnancy; were anticipated to give birth on or before December 23, 2016; and had the ability to communicate in English or Spanish. Women were recruited through oral presentations, distribution of flyers, and posting of ads at prenatal clinics. Women who met inclusion criteria during initial screening were scheduled for a stage one meeting.

Procedures

The study protocol had 2 stages. The first was the prenatal stage, which occurred in the third trimester of pregnancy, during which the study protocol was reviewed and informed consent was obtained by research team members. Participants completed a demographic survey and questionnaires on psychosocial risk, perceived stress, and symptoms of depression. The second stage occurred approximately 6 weeks postpartum. The researchers called participants on the telephone, and a postpartum demographic survey and a questionnaire for symptoms of depression were administered.

Measures

Antenatal Risk Questionnaire—The ANRQ is a 12-item self-report measure of key early and chronic psychosocial risk factors associated with perinatal depression. It assesses the following domains: childhood social support from the respondent's mother, history of mental illness, perceived level of support available postpartum, significant life events in the past 12 months, personality traits, and history of abuse.¹⁶ Scores range from 5 to 60, with a cut-off score of 23 used to identify women at increased risk for development of depression. In a sample of 1196 Australian women, use of this cut-off yielded a sensitivity of 0.62, a specificity of 0.64, and a receiver operating characteristic area under the curve of 0.69.¹⁶

Perceived Stress Scale—The Perceived Stress Scale (PSS) is a 14-item self-report measure of the extent to which an individual perceives life events as stressful over the past month.¹⁸ The response categories range from 0 (never) to 4 (very often). Responses are summed (range, 0 to 56), and higher scores are associated with higher levels of perceived stress. In the original study, the PSS demonstrated consistent reliability, with Cronbach's alpha coefficients ranging from .84 to .86 in a young adult population.¹⁸

Edinburgh Postnatal Depression Scale—The 10-item EPDS is used to assess for symptoms of depression during pregnancy and the postpartum period. The EPDS has been validated in both antepartum and postpartum populations.¹⁹ Answers to statements such as "I have looked forward with enjoyment to things" are scored from 0 (As much as I ever did) to 3 (Hardly at all). The items are summed, with a total possible score of 0 to 30. Higher scores correspond to higher levels of symptoms of PPD.²⁰ In the original validation study, the EPDS had a specificity of 78%, a sensitivity of 86%, and a positive predictive value of 73% for symptoms of PPD, compared with a diagnostic clinical interview.²⁰ In a sample of pregnant women, using the cut-off of 14 or 15, sensitivity for major depression ranged from 57% to 100%, and the specificity ranged from 93% to 99%.¹⁹

Statistical Analysis

The primary outcome variable was symptoms of depression at 6 weeks postpartum as measured by the EPDS. The predictor variables were questionnaire-measured variables of third-trimester ANRQ score, PSS score, and EPDS score. Data analysis was conducted with SAS (version 9.4; SAS Institute, Cary, NC), and *P* values less than .05 were considered statistically significant.

Descriptive statistics of means and standard deviations were calculated for all interval-level variables, and frequencies and percentages were calculated for categorical variables. Analysis of variance and regression analysis were used to assess associations between participant characteristics and the primary outcome variable. To understand the separate effects of the prenatal ANRQ, PSS, and EPDS scores on the postpartum EPDS score, we conducted bivariate analysis. Multiple regression analysis was performed to examine the effect of prenatal EPDS scores, prenatal ANRQ scores, and prenatal PSS scores on EPDS scores at 6 weeks postpartum. Reliability of the instruments was assessed via the Cronbach's alpha statistic.

RESULTS

A total of 66 women were approached for the study, of whom 44 agreed to participate (67%). Eight women did not meet inclusion criteria, and one woman did not complete the study. Demographic characteristics of the 35 participants and descriptive statistics for each study variable are summarized in Tables 1 and 2. Approximately half of the women identified themselves as Hispanic or Latina, and more than 90% were married or lived with a partner. Half of the participants reported low-income status. There were no significant differences in postpartum EPDS score based on demographic characteristics, with the exception that women who reported a history of emotional abuse as a child had higher EPDS score at 6 weeks postpartum, $F(1) = 7.17$, $P = .01$.

Prenatal ANRQ scores, PSS scores, and EPDS scores were significantly correlated with EPDS scores at 6 weeks postpartum (see Table 3). Multiple regression analysis with prenatal ANRQ scores, PSS scores, and EPDS scores as independent variables and postpartum EPDS scores as the dependent variable, was performed. The R^2 for the model was .57, which suggests that this model explains 57% of the variance in symptoms of depression at 6 weeks postpartum. Importantly, prenatal ANRQ score was a significant predictor of postpartum EPDS score ($P < .001$), whereas prenatal PSS score and EPDS score were not significant in this model ($P = .52$ and $P = .30$, respectively).

DISCUSSION

In this pilot study, we examined the use of a structured screening questionnaire (ANRQ) to assess psychosocial risk factors associated with increased risk for development of symptoms of PPD. Analysis of data revealed a significant association between key psychosocial risk factors, perception of stressful life events over the past month, and symptoms of depression in the third trimester of pregnancy and at 6 weeks postpartum. These findings are consistent with other research in which prenatal symptoms of depression and stress are consistently associated with symptoms of PPD.^{21–23} However, this was a small pilot study using a convenience sample, and caution must be used when interpreting the findings.

Although screening for depression and perinatal psychosocial risk factors in the perinatal period is becoming more common, the evidence for the predictive ability of available tools is currently limited.²⁴ In addition, ACOG states that evidence for the benefits of screening is limited.²⁵ These limitations may be due to the multitude of screening tools used in studies, differences in populations, differences in study methods, and differences in cut-points and diagnostic criteria used. These factors make comparison among separate studies and conclusions difficult, thereby hampering translation to clinical practice.^{24,26}

Despite these limitations, ACOG advocates the use of the EPDS to screen for symptoms of depression in the perinatal period.¹² The EPDS, specifically developed for perinatal women, is the most widely used and validated tool in pregnancy and the postpartum period.²⁴ Accordingly, there is robust evidence supporting an association between elevated EPDS scores in pregnancy and elevated scores in the postpartum period.^{6,27} As we expected, our results were consistent with this evidence.

Multiple psychosocial risk factors are also consistently associated with symptoms of PPD.^{6,16,17} However, similar to depression screening in the perinatal period, evidence does not support the efficacy of psychosocial assessment during this time.²⁸ Proponents of psychosocial screening state that screening increases identification of the number of women with risk factors.^{16,28} Early identification of women with risk factors is a first step in linking them with support services and preventing adverse consequences for the maternal-infant dyad.

In light of the high morbidity associated with PPD, early identification, including psychosocial assessment, and intervention are becoming best practice in several countries, including Australia and the United Kingdom.^{29,30} The ANRQ is currently used in the Australian *beyondblue* Perinatal Clinical Practice Guidelines for routine psychosocial assessment. To date, there is limited evidence supporting the ability of this instrument to identify women at risk for developing PPD. However, a study of 276 women found that the odds of having PPD were 6 times higher for women who scored greater than 23 on the ANRQ compared with women who scored less than 23 (OR, 6.3; 95% CI, 3.5–11.5; $P < .001$).¹⁶ In a sample of 287 perinatal women, 33% scored above the ANRQ cut-off of 23, and these women were at a higher risk of scoring above 12 on the EPDS at postpartum assessment compared with women who scored below 23 on the ANRQ (10.6% vs. 3.6%; $P < .05$).¹⁷ Although these studies suggest the use of the ANRQ in prenatal screening may be beneficial, the study samples may limit the generalizability of the findings. For example, women in both studies had a mean age of 31 years, were highly educated, and 94% were married or living with a partner.^{16,17}

Other instruments used for psychosocial assessment in pregnancy include the Antenatal Psychosocial Health Assessment (ALPHA) and the Antenatal Psychosocial Questionnaire (APQ). A study of 60 providers found using the ALPHA tool during pregnancy identified a greater number of women with prenatal psychosocial risk factors for PPD (36% vs 26%) compared with the control group of providers who administered care as usual.²⁹ Conversely, in a study of 154 women, investigators found that prenatal psychosocial assessment using the APQ was not predictive of PPD.³⁴ However, the APQ does not allow for a single composite score as the ANRQ and the ALPHA do. Interestingly, the single item in the APQ that predicted PPD was emotional abuse as a child.³¹ This is consistent with the findings of the current study that a history of emotional abuse as a child was the one item on the ANRQ that had a significant effect on differences in EPDS scores at 6 weeks postpartum.

Analysis of our pilot data revealed that key past and present psychosocial risk factors experienced by women (measured by prenatal ANRQ) were a significant predictor of postpartum depressive symptoms, whereas prenatal perceived stress and depressive symptoms were not significant predictors of symptoms of PPD. However, a regression model inclusive of these 3 predictors explained 57% of the variance in symptoms of depression at 6 weeks postpartum. These results suggest that comprehensive screening for perinatal mental health that is inclusive of psychosocial assessment may promote early identification of at risk women. In light of the results of this pilot study, use of the ANRQ to fill this gap in screening warrants further exploration.

Limitations

This study had several limitations. Because this was a pilot study, the sample of women was very small, possibly limiting the power to detect significant differences in the sample. Consequently, the results may not be generalizable beyond the inclusion and exclusion criteria of this study. In addition, convenience sampling may have limited the representativeness of the sample. For example, more than 90% of participants were married or lived with a partner, and 77% reported no history of depression.

Implications for Practice

Our results highlight key areas of practice for midwives and other women's health care providers to consider. Although evidence of the efficacy of psychosocial assessment in pregnancy is limited, investigators consistently reported that health care providers found the psychosocial assessment tools to be a valuable method to systematically explore sensitive topics.^{16,32} This finding, as well as our findings, suggest the need for midwives to develop a consistent procedure to assess past and current psychosocial stressors that may affect a woman's mental health.⁵ Collection of this health information is imperative to inform appropriate and relevant care for women. Lack of a formalized screening mechanism may hinder collection of relevant information. Use of the ANRQ during pregnancy may be a promising tool. In addition, opening this conversation is consistent with the midwifery philosophy of woman-centered care and facilitates health promotion and education of the woman and her family. Even in the face of limited time and resources, the ANRQ can open a dialogue between the midwife and the woman regarding her particular psychosocial environment and convey to her the importance of these issues to her care.¹⁶

Recommendations for Future Research

Building on the findings of this study, further research on the ANRQ is needed with a larger, more socioeconomically diverse sample. This tool was originally validated in a sample of Australian women and to our knowledge has not been used in the United States. Therefore, further exploration of the use of the ANRQ in specific populations is needed. Finally, future research is needed to determine the feasibility of integrating psychosocial assessment with the ANRQ into clinical practice.

CONCLUSION

Although this was a pilot study, the results are consistent with the current body of knowledge supporting psychosocial stressors, both past and present, as significant risk factors for symptoms of PPD. The evidence suggests that comprehensive psychosocial assessment in combination with depression screening during pregnancy is an effective means of identifying women at risk for PPD. These findings point to the need for midwives to develop comprehensive psychosocial assessment programs that are inclusive of depression screening.

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QUICK POINTS

- Postpartum depression is a significant public health problem with devastating consequences.
- The perinatal period provides a unique opportunity for clinicians to address the physical and psychological health of women because most women are engaged in regular health care.
- The Antenatal Risk Questionnaire (ANRQ) is a structured questionnaire to assess early and chronic psychosocial stressors associated with increased risk for perinatal depression.
- Analysis of our data revealed that key past and present psychosocial risk factors experienced by women (measured by prenatal ANRQ) were a significant predictor of postpartum depressive symptoms.
- Use of the ANRQ to fill gaps in psychosocial screening in antepartum care warrants further exploration.

Table 1

Participant Characteristics (N = 35)

Characteristic	Value
Race and ethnicity, n (%)	
American Indian or Alaska Native	4 (11.4)
Asian	2 (5.7)
Hispanic/Latina	18 (51.4)
White	23 (65.7)
Other	4 (11.4)
Don't know	2 (5.7)
Income, n (%)	
High (> \$70,000)	11 (31.4)
Middle (\$40,000–\$70,000)	4 (11.4)
Low (< \$40,000)	18 (51.4)
Unknown	2 (5.7)
Education, n (%)	
High school or less	5 (14.3)
Some college	18 (34.3)
College or more	13 (51.4)
Relationship status, n (%)	
Single	1 (2.8)
Live with partner	11 (31.4)
Married	23 (65.7)
Personal history of depression, n (%)	
Yes	8 (22.9)
No	27 (77.1)
Emotionally abused when growing up, n (%)	
Yes	4 (11.4)
No	31 (88.6)
Ever been sexually or physically abused, n (%)	
Yes	4 (11.4)
No	31 (88.6)
Age, mean (SD), y	28.6 (4.9)
Gestational age at study stage 1, mean (SD), range, wk	34.3 (2.0), 27.2–37.0
Weeks postpartum at study stage 2, mean (SD), range	6.4 (0.7), 5.0–8.0

Table 2

Participants' Scores on Assessments of Psychosocial Risk, Perceived Stress, and Symptoms of Depression (N = 35)

Data	Mean (SD)	Range	Cronbach's α
Prenatal ANRQ ^a	16.94 (9.00)	5.00–40.00	.72
Prenatal PSS ^b	16.68 (7.47)	7.00–37.00	.84
Prenatal EPDS ^c	4.11 (3.15)	0.00–11.00	.79
Postpartum EPDS ^c	3.45 (3.61)	0.00–15.00	.85

Abbreviations: ANRQ, Antenatal Risk Questionnaire; EPDS, Edinburgh Postnatal Depression Scale; PSS, Perceived Stress Scale.

^aANRQ score range: 5–60

^bPSS score range: 0–56

^cEPDS score range: 0–30

Table 3

Correlations Among Prenatal ANRQ, PSS, and EPDS Scores and Postpartum EPDS Score (N = 35)

Variable	Prenatal ANRQ	Prenatal PSS	Prenatal EPDS	PP EPDS
Prenatal ANRQ	—			
Prenatal PSS	.598 ^a	—		
Prenatal EPDS	.477 ^a	.686 ^a	—	
PP EPDS	.722 ^a	.580 ^a	.529 ^a	—

Abbreviations: ANRQ, Antenatal Risk Questionnaire; EPDS, Edinburgh Postnatal Depression Scale; PP, postpartum; PSS, Perceived Stress Scale.

^aCorrelation is significant at the .01 level (2-tailed).