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Suicidal Ideation During the Postpartum Period

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Abstract

Objective: To examine the association between suicidal ideation (SI), 3 weeks, 3 months, and 6 months postpartum with demographic, psychosocial, clinical factors, and depressive/anxiety symptoms (measured 24–48 hours after delivery), among a cohort of postpartum women.
Methods: This study included 1,073 mothers who gave birth in a large tertiary New York City hospital (2009–2010). Later, self-report SI was assessed using the suicide measure from the Edinburgh Postnatal Depression Scale and from the Patient Health Questionnaire.
Results: Two percent of participants presented with SI during the first 6 months postpartum. In bivariate analyses, race/ethnicity, nativity, insurance, and language were significantly correlated with SI 3 weeks, 3 months, and 6 months postpartum. Screening positive for depression ($p = 0.0245$) and anxiety (0.0454), assessed 1–2 days postpartum, was significantly correlated with later SI in bivariate analyses, as were antepartum complications ($p = 0.001$), depressive history (0.001), and self-efficacy (0.045). In adjusted models, antepartum complications (OR = 4.681, 95% CI = 1.99–10.99) and depressive history (OR-3.780, 95% CI = 1.514–9.441) were significantly associated with later postpartum SI. Heightened self-efficacy reduced the odds of later SI ($p = 0.050$).
Conclusion: Findings suggest that SI among a relatively healthy group of new mothers occurs with some frequency. Mothers with a history of depression and antepartum complications may be at increased risk.

Keywords: postpartum suicide, postpartum suicidal ideation, postpartum depression, maternal mortality, maternal mental health, antepartum complications

Introduction

Suicide is the 10th leading cause of death in the United States,[1] representing a major public health concern.[2] For women in their reproductive years, aged 19–24, suicide is the second leading cause of death, and for those 25–44, it is the third leading cause.[3] It is estimated that 3.9% of U.S women report to having suicidal thoughts or ideations,[4] and recent research suggests that self-reported suicidal ideation (SI) is significantly associated with an increased risk for suicide attempt or death.[5] For individuals with depression, suicidal thoughts and ideation are significantly higher than for those in the general population.[5,6] Anxiety, while often comorbid with depression,[7,8] has also been found to be independently correlated with the onset of suicidal thoughts and ideation.[9] Depression and anxiety are responsible for significant morbidity among postpartum mothers with prevalence rates ranging from 8% to 15% for depression,[10] and 4%–18% for anxiety.[11,12] Studies that have examined postpartum suicidality have found it to be associated with depression[13] and to be the leading cause of maternal death during the postpartum year.[14–16] However, to our knowledge, there has been little attention paid to the association between postpartum anxiety and other psychosocial and clinical factors with SI.

The primary aim of this study was to investigate the prevalence of SI in the first 6 months postpartum among a sample of relatively healthy women and to identify baseline sociodemographic, clinical, and psychosocial characteristics associated with later postpartum SI (measured at 3 weeks, 3 months, and 6 months postpartum). We also examined whether self-report symptoms of depression and/or anxiety assessed 24–48 hours after delivery were associated with later postpartum SI.

Materials and Methods

Data from this study come from the results of two randomized controlled trials that aimed to reduce postpartum

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depressive symptoms among minority and majority women, and details have been published elsewhere.[17–19]

Eligibility

The two trials enrolled postpartum women ($N = 1,080$), who delivered at a large New York City tertiary hospital between April, 2009 and April, 2010. Both studies were approved by the Mount Sinai Icahn School of Medicine, Program for the Protection of Human Subjects (Institutional Review Board). The first trial recruited black and Latina postpartum women. The second trial recruited white and other non-black and non-Latina postpartum mothers. Recruitment for these two studies occurred simultaneously. Details regarding patient recruitment and results from the intervention trials have been published.[17–19] Eligible participants were women 18 years plus, English or Spanish speaking, delivered infants with birthweights greater than or equal to 2,500 g and had 5-minutes Apgar scores over 6, and had a working telephone. Maternal age, infant Apgar scores, and infant birthweight were obtained from electronic medical records. Mothers were approached during the first and second day postpartum by bilingual clinical coordinators who confirmed eligibility and obtained informed written consent. Participants who were enrolled in the study then completed a baseline in-hospital survey, followed by randomization into either the control or intervention arms of the study.

Women in the treatment arm were provided with a two-step behavioral education intervention during their postpartum hospitalization, administered by trained, bilingual, licensed clinical social workers. The intervention aimed to prepare and educate mothers about postpartum symptoms and experiences, bolster social support, and enhance self-management skills. Mothers received a call—2 weeks postdischarge from the study social workers to reinforce this education.

Assessments

Bilingual clinical research coordinators collected baseline data in person, 24–48 hours after delivery, and follow-up data by telephone. Phone interviews occurred at 3 weeks (27.6 mean days, 5.8 SD), 3 months (83.5 mean days, 7.8 SD), and 6 months (175.6 mean days, 8.9 SD). Data for the current analysis combine the results from both trials using data from interviews conducted at all four time points. Survey items included baseline questions on sociodemographics, depressive symptoms, clinical characteristics, and psychosocial factors. All waves of the survey were conducted in English and Spanish and lasted $\sim$20–35 minutes.

The primary outcome for this study was later postpartum SI assessed 3 weeks, 3 months, and 6 months postpartum, using the suicidality questions from both the Edinburgh Postnatal Depression Scale (EPDS) and Patient Health Questionnaire (PHQ). From the EPDS, patients were asked if ''In the past 7 days the thought of harming myself has occurred to me''; responses to this statement were coded as (1) ''Yes, quite often,'' or ''sometimes'' and (0) ''hardly ever'' or ''never.'' SI was also determined using the PHQ question: ''Over the last 2 weeks, how often have you been bothered by thoughts that you would be better off dead, or hurting yourself in some way?'' Responses were similarly dichotomized and coded as (1) ''Several days,'' ''more than half the days,'' or ''nearly every day'' and (0) ''not at all.'' If a patient scored positively, to either one or both of the questions, between 3 weeks and 6 months after giving birth, they were considered positive for later postpartum SI. Since we were interested in whether the baseline EPDS scores were associated with the risk of later developing SI, women who reported SI ($n = 7$) 1–2 days postpartum hours after birth were omitted from our analysis, yielding an analytic sample of 1,073 women.

Any positive SI screening generated an immediate evaluation by a mental health professional, which included an assessment for suicide intent and if positive, referral to emergency care (911) and/or evaluation in the psychiatric emergency room. If the research team (which comprised social workers and clinical research coordinators) assessed a patient as suicidal, the team also contacted the resident or PA handling the patient so that they could contact the patient's OB/GYN. The research protocol suggested the physician meet with the patient to assess her safety or to call for a psychiatric consult. Study social workers also met with patients to provide them with a list of mental health resources. All cases were then reviewed and discussed with the team psychiatrist.

All respondents were assessed for depression during each wave of the study using the EPDS, a widely used and postpartum depression screening instrument.[20,21] EPDS depression scores obtained 24–48 hours postpartum were used to assess the association between early postpartum depression and later SI. The EPDS is a self-report scale, specifically designed to screen for postpartum depression in community samples, and has been validated in many postpartum populations and in several different languages.[20,22,23] The EPDS cannot confer a diagnosis of depression, but the recommended cutoff score of 10 and higher has sensitivities of 0.59–0.81 and specificities of 0.77–0.88 for major and minor depression.[24] We chose to regard an EPDS score $\geq$10 as indicating possible depression. Although a number of cutoff points have been used, it is recommended that to minimize the failed detection of depressive cases, a cutoff score of 9/10 be used.[20] Studies have found that the EPDS is quick and easy to administer and is well accepted by patients and clinicians.[25]

To assess the association between baseline anxiety and suicidality, we used the Generalized Anxiety Disorder 7-item scale (GAD-7), a validated screening and severity measure for generalized anxiety disorder (GAD).[26] Responses to the seven items contained in the GAD-7 ranged from 0 to 3; scores for the seven items are summed to give a total score between 0 and 21; higher scores on the GAD-7 represent more severe anxiety symptoms. A score of 10+ was used to measure moderate anxiety.[26] GAD and depression frequently co-occur,[27–29] but have been found to have different effects on mental health function.[26]

Social and partner support was assessed using five items on emotional support, instrumental support with the baby and household, and two questions about partner support. Self-efficacy was assessed using five items, including items such as ''How much of the time did you feel that you were able to do all of the things needed to take good care of your baby?'' ''How much of the time did you feel you were able to do all of the things needed to take good care of other members of your household (such as other children)?'' ''How much of the time did you feel that you were able to do all of the things needed to take good care of your household?''[30,31]

Control variables selected a-priori for inclusion were as follows: maternal sociodemographic characteristics (age,

race/ethnicity, nativity, country raised, language, education, income, insurance coverage, marital status, and whether or not women were randomized into the treatment or control group) and maternal health/clinical characteristics (parity, delivery type, comorbid conditions, antepartum complications, and history of depression).

Statistical analyses

Chi-square, Fisher's Exact, and *t*-tests were used to compare characteristics among mothers with and without later SI in simple bivariate analyses. To estimate the risk of SI, odds ratios were calculated as using multiple logistic regression models. Risk factors and confounders were identified *a priori* on the basis of prior research, theoretical considerations, and sensitivity analyses. The following variables were controlled for in the fully adjusted models: race, nativity, primary language, antepartum complications, past history of depression, self-efficacy, and treatment arm. The final multivariable model also adjusted for positive depression screen (EPDS) and positive anxiety screen (GAD-7). The depression–anxiety interaction term was not significantly related to suicidality in bivariate analysis so it was not included in the multivariable model. Due to multicollinearity between income and education, SES was controlled for using education. Analyses were conducted using SAS version 9.2 (SAS Institute, Cary, NC).

Results

Table 1 presents the descriptive characteristics of our sample. Our sample was racially and ethnically diverse; 44% of women were white, 19% African American, 31% Latina, and 6% other. In addition, nearly one-third of women were foreign born and 10% were Spanish speakers. One-third of participants were low income (measured by income, education, and Medicaid eligibility). Approximately one-third of respondents delivered *via* cesarean delivery, and for 44% of women, this was their first baby. One-fifth of participants had pregnancy complications, and slightly fewer than one out of five women had comorbid health conditions.

Table 2 presents the bivariate associations between maternal sociodemographic, clinical, and psychosocial characteristics measured 24–48 hours postpartum with later SI. Twenty-four women (2.2%) presented with SI. Of these, two (8%) were found to have suicidal intent and were referred for in-patient treatment. Four women presented on more than one assessment. Later postpartum SI was significantly associated with race/ethnicity, being Spanish speaking, being foreign born, and antepartum complications. Later SI was marginally associated with Medicaid insurance, education, and partner support, race/ethnicity ($p = 0.009$), and primary language was significantly associated with SI ($p = 0.002$). Four percent of those who were foreign born presented with later postpartum SI compared to 96% who were not suicidal ($p = 0.009$). Clinically, antepartum complications were associated with later SI ($p = 0.0001$); of those with antepartum complications, 6% had later SI and 94% did not. SI was not significantly associated with treatment arm. Fourteen percent of women presented with baseline depression (EPDS ≥10) and 15% with baseline anxiety (GAD-7 ≥ 10). Bivariate analyses revealed that baseline depression ($p = 0.0245$) and anxiety ($p = 0.0454$) screenings were significantly associated with later SI. A depression–anxiety interaction term was not significantly related to suicidality ($p = 0.2143$). Depression history was also correlated with SI ($p = .001$). Self-efficacy ($p = 0.045$) scores were inversely correlated with SI.

Table 1. Descriptive Characteristics of the Sample ($N = 1{,}073$)

Characteristics	n *(%)*
Race	
White	477 (44)
African American	202 (19)
Latina	335 (31)
Other	59 (6)
Foreign born	321 (30)
Primarily Spanish speaking	111 (10)
High School or Less	324 (30)
Income <$30,000	350 (33)
Medicaid	351 (33)
Single/Sep/Div/Widow	214 (20)
C-Section	360 (34)
Primiparous	468 (44)
Antepartum complications	229 (21)
Comorbid conditions (1 = yes)	191 (18)
Treatment (1 = yes)	537 (50)
Baseline Depression (EPDS ≥10)	146 (14)
Baseline Anxiety (GAD-7 ≥ 10)	159 (15)
Past History of Depression	209 (19)

	Mean	*Standard deviation*
Mean age (±SD)	30.17	6.18
General Social Support Scale (range: 0–4)	3.32	0.79
Partner Support Scale (range: 0–4)	3.07	0.92
Self-Efficacy Scale (range: 0–4)	3.42	0.60

MADE-IT (2009–2010) $N = 1{,}073$. Means (standard deviations) or *n* (proportions) shown.
EPDS, Edinburgh Postnatal Depression Scale.

Table 3 displays the association between baseline postpartum depressive and/or anxiety symptoms with the odds of SI. After adjusting for baseline depression/anxiety, treatment arm, race, language, education, antepartum complications, depressive history, and self-efficacy, later SI was more common among women with antepartum complications (OR = 4.68, 95% CI: 1.99–10.99), and women with a history of depression (OR = 3.78, 95% CI: 1.51–9.44). Having increased self-efficacy was associated with lower odds of SI (OR = 0.54, 95% CI = 0.30–1.00), although this finding was of borderline significance ($p = 0.05$). Treatment arm, race, nativity, and primary language were not significant in the fully adjusted model. While significant in the bivariate model, depression/anxiety assessed 24–48 hours postpartum was not associated with later SI in the adjusted models.

Discussion

Two percent of relatively healthy postpartum women reported SI at 3 weeks, 3 months, and 6 months postpartum. Although this prevalence rate is slightly lower than what has been previously reported in the literature,[32] we suspect this may be an underestimate as our study did not consider an

Table 2. Summary of Sociodemographic and Clinical Characteristics–Suicidal Ideators vs. Nonideators [*N* (%)]

	Suicidal ideators 24 (2)	*No suicidal ideation 1,049 (98)*	p
Sociodemographic characteristics			
Mean Age (± st. dev)	30.29 (6.16)	30.17 (6.19)	0.9246
Race			0.0088
White	5 (1)	472 (99)	
African American	3 (2)	199 (98)	
Latina	12 (4)	323 (96)	
Other	4 (7)	55 (93)	
Foreign born	13 (4)	308 (96)	0.0087
Primarily Spanish speaking	7 (6)	104 (94)	0.0022
High school or less	11 (3)	313 (97)	0.0915
Income <$30,000	9 (3)	341 (97)	0.6059
Medicaid	12 (3)	339 (97)	0.0679
Single/Sep/Div/Widow	3 (1)	211 (99)	0.4478
Clinical characteristics			
C-Section	7 (2)	353 (98)	0.6455
Primiparous	11 (2)	457 (98)	0.8247
Antepartum complications	13 (6)	216 (94)	0.0001
Comorbid conditions (1 = yes)	5 (3)	186 (97)	0.5994
Treatment (1 = yes)	12 (2)	525 (98)	0.9963
Baseline Psychosocial characteristics			
Baseline Depression (EPDS ≥10)	7 (5)	139 (95)	0.0245
Baseline Anxiety (GAD-7 ≥ 10)	7 (4)	152 (96)	0.0454
Positive baseline depression (EPDS ≥10) and positive base line anxiety (GAD-7 ≥ 10) (interaction term)	3 (4)	69 (96)	0.2143
Past History of Depression	11 (5)	198 (95)	0.0010
General Social Support Scale (range: 0–4)	3.14 (0.87)	3.33 (0.78)	0.2360
Partner Support Scale (range: 0–4)	2.79 (1.14)	3.07 (0.92)	0.0934
Self-Efficacy Scale (range: 0–4)	3.18 (0.72)	3.43 (0.60)	0.0453

MADE-IT (2009–2010) $N = 1{,}073$. Means (standard deviations) or *n* (proportions) shown. Chi-square, Fisher's Exact (for counts less than 5), and *t*-tests (continuous)

answer of ''hardly ever'' on the EPDS to reflect suicidality. If an answer of ''hardly ever'' was included in our analysis, prevalence rates of SI would be as high as 6% in this cohort of racially/ethnically and socioeconomically diverse women. Of the 2.2% of women who screened positive for suicide ideation in our study, 8% were found to have true suicidal intent and required emergency psychiatric care. Consistent with previous research, having a history of depression and having pregnancy complications were associated with SI. In addition, we found that women who had low self-efficacy or confidence in their ability to meet the demands of motherhood had marginally higher odds of SI.

Similar to other research on postpartum suicidality, in bivariate analysis, we found that positive depression screens were associated with later SI.[33] We also found that a positive screen for anxiety at baseline on the GAD-7 was correlated with later SI in bivariate analysis. However, the association between baseline depression and anxiety and later SI was not

Table 3. Unadjusted and Adjusted Logistic Regression Analysis for Association Between Sociodemographic, Clinical, and Psychosocial Symptoms 24–48 Hours Postpartum with Odds of Later Postpartum Suicidal Ideation

Baseline characteristics	*Unadjusted odds ratio (95% CI)*	p	*Adjusted odds ratio (95% CI)*	p
Depression (EPDS ≥10)	2.098 (0.758–5.808)	0.1536	1.561 (0.521–4.671)	0.4263
Anxiety (GAD-7 ≥ 10)	1.775 (0.642–4.910)	0.2689	1.437 (0.490–4.216)	0.5091
Race = Non-Hispanic White			0.427 (0.142–1.288)	0.1309
Foreign Born			1.965 (0.670–5.760)	0.2184
Spanish speaker			2.935 (0.857–10.049)	0.0865
Antepartum Complication			4.681 (1.994–10.986)	0.0004
Past Hx of Depression			3.780 (1.514–9.441)	0.0044
Self-Efficacy (scale range: 1–4)			0.543 (0.295–0.999)	0.0497
Treatment randomization			0.884 (0.379–2.060)	0.7745

MADE 1 and 2 (2009–2010) $N = 1{,}073$.

significant in the fully adjusted model. In adjusted models, women who screened positive for depression were 1.6 times as likely as those with no symptoms to have SI later in the postpartum period. To our knowledge, our study is the first to examine the association between both early postpartum depression and anxiety and later SI among a sample of relatively healthy new mothers.

We found that low self-efficacy scores were correlated with SI in the postpartum period, which is consistent with previous research showing that low levels of self-efficacy in managing situational demands are associated with postpartum depressive symptoms.[30] As anticipated, treatment randomization in both the bivariate and multivariate analyses was not associated with an increased risk of suicidality in this study, as the targeted intervention was aimed at the modifiable correlates of postpartum depression, such as self-management and efficacy, bolstering partner support, and normalizing postpartum experiences.

The findings from our study are concerning and suggest that SI may be under-recognized in the postpartum period. This is especially concerning, as our sample was limited to relatively healthy mothers who delivered healthy babies, as measured by Apgar scores and birthweights. Although awareness of postpartum depression by obstetricians has increased in recent years, screening of postpartum patients for anxiety largely remains outside of this purview; increased early screening around these symptoms may be warranted. It is well known that postpartum depression often leads to disruptions in the mother–infant attachment process and impairment in a mother's ability to take care of herself and child, and to engage in recommended parental safety practices.[34,35] Recent work highlights the importance of our findings and demonstrated that depressed women with SI were less sensitive and responsive to their newborns, and demonstrated a more negative effect than depressed women without SI.[34]

Limitations of this study include the use of screening instruments, as both the EPDS and GAD-7 scales do not conclude a formal clinical diagnosis. In our study, the baseline EPDS was administered to study participants only 1–2 days after delivery, so it is possible that the symptoms detected were more consistent with postpartum blues than postpartum depression. In addition, due to study design, women were not evaluated for depression or anxiety during pregnancy. It is also possible that our study underestimates the prevalence of postpartum women with SI because we excluded mothers of infants weighing less than 2,500 g, thus most mothers in our study had relatively good infant outcomes. Furthermore, women included in this analysis agreed to be participants in a randomized trial, and women with SI may have been less likely consent to participation in such a study.

Conclusion

SI occurs with some frequency in postpartum mothers. Our data demonstrate that antepartum complications and a history of past depression were significantly associated with later postpartum SI among a relatively healthy cohort of postpartum mothers. Importantly, heightened self-efficacy and confidence in meeting postpartum demands were associated with a lower odds of later SI. Although a great deal of research has investigated depression during pregnancy and the postpartum period, our study is one of few to examine correlates of SI during this period among a group of relatively healthy women. Our study is also among the first to examine the relationship between early depression/anxiety and self-efficacy with later SI postpartum. Our finding that mothers with low self-efficacy or confidence in their ability to manage postpartum demands may also be at increased risk of later postpartum SI raises the hypothesis that interventions aimed at enhancing self-efficacy among postpartum women may protect against SI. Although this study did not assess depression and anxiety during pregnancy, there is no doubt that identifying depression and possible SI early in pregnancy would benefit the health of the mother and baby. Our findings highlight the need for increased attention and awareness to the issue of perinatal SI. Identifying SI early in pregnancy would allow for earlier intervention, which would benefit the health of the mother and the baby.

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Author Disclosure Statement

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