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An assessment of depression, psychosocial factors, and resilience among women seeking prenatal care at an urban community health center

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Abstract

Objective—To describe the relationship between resilience and mental health and psychosocial characteristics in the prenatal period.

Methods—A prospective cohort pilot study was conducted among English-speaking women aged 18 years or older with singleton pregnancies of at least 20 weeks' gestation who received prenatal care at an urban community health center in the USA between March and October 2014. Surveys were administered and a retrospective chart review was conducted. Resilience and depression were measured using validated scales and anxiety was self-reported. Univariate and bivariate analyses were performed.

Results—Thirty women participated. The median resilience score was 82.0 (interquartile range [IQR] 74.0–92.0). Median resilience scores were significantly lower among women with a history of depression (73.0 [IQR 66.0–81.0]) than among those without a history (85.0 [IQR 79.0–92.0]; P=0.007). A history of using medication for anxiety, depression, or insomnia before pregnancy was also associated with lower resilience (median 74.0 [IQR 64.5–80.0] vs 83.5 [IQR 79.0–92.0];

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Author contributions

KMJ and JS contributed to all aspects of the study, from the design, planning, and conduct, to the data analysis and manuscript writing. FMP contributed to the conduct of the study, as well as to the data analysis and manuscript writing. AMM, MRH, and SS contributed to the study design, data analysis and manuscript writing. HAR contributed to the design and manuscript writing.

Conflicts of interest

The authors have no conflicts of interest.

P=0.029). Neither anxiety nor substance use was associated with resilience. Higher resilience was associated with religious affiliation and having adequate financial resources (both *P*<0.05).

Conclusion—Depression history, prior medication use, religious affiliation, and financial security affect resilience in pregnancy. These data inform a strengths-based approach to prenatal care and future research endeavors.

Keywords

Anxiety; Depression; Pregnancy; Resilience; Social support

1 INTRODUCTION

Depression, anxiety, and stress affect 15%–25% of women during pregnancy [1] and disproportionately affect minority and immigrant populations [2]. Chronic stress because of poverty, low socioeconomic position, or racism poses further challenges to women during the puerperium [3], and although considered a natural event in a woman's lifespan, pregnancy can be fraught with adversity and risk. Whereas much attention has focused on the effect of mental health disorders and stress on perinatal outcomes [4,5], less attention has been given to protective factors such as resilience. Resilience has emerged as a research topic important to understanding the association between perinatal mental health disorders, stress, and adverse perinatal outcomes [7].

Resilience is a process influenced by multiple factors including beliefs, values, personality, constitution, and psychosocial factors such as self-esteem and interpersonal support [6,7]. It is of interest to the medical and public health fields because of its implications for health and health interventions [8]. When measured using validated scales, resilience is lower in patients with depression or post-traumatic stress disorder [9], but does increase with mental health treatment. Among pregnant women, resilience is less studied, although its components, such as optimism and self-efficacy, have been associated with improved perinatal outcomes, such as increased birth weight [10] and decreased rates of postpartum depression [11]. There is an inverse relationship between anxiety and resilience among pregnant women [12], but limited data exist on the influences of psychosocial factors, including mental health, social support systems, and history of trauma, on resilience during pregnancy.

The aim of the present pilot study was to describe resilience among pregnant women residing in a predominantly minority community, and to understand how physical health, mental health, and psychosocial characteristics relate to resilience. The underlying hypothesis was that several factors—including depression, anxiety, and having fewer psychosocial resources during pregnancy—would be inversely associated with resilience, and that prior exposure to adversity would be associated with increased resilience. An enhanced understanding of resilience in pregnancy could inform global and community women's health programs and herald a paradigm shift in women's health from a risks- and vulnerabilities-based approach to a strengths-based approach, acknowledging and supporting women's ability to thrive in the face of change, stress, and adversity.

2 MATERIALS AND METHODS

A prospective cohort pilot study was conducted among a convenience sample of English-speaking women age 18 years or older with singleton pregnancies of at least 20 weeks' gestation receiving prenatal care at an urban community health center affiliated with an academic medical center in Boston, Massachusetts, USA. The health center provides prenatal care to approximately 100 patients per year. Participants were recruited from March 1 to October 31, 2014. All participants provided written informed consent, and the health center's institutional review board approved the study.

A registered nurse verbally administered a survey in a private setting within the clinic at two timepoints: on recruitment and once during the 12 weeks following delivery. The study investigators developed surveys, one for the prenatal assessment and another for the postnatal assessment, which partly comprised several validated questionnaires. Only the prenatal data are presented here. The surveys assessed demographic characteristics, psychosocial history, medical history, and obstetric history. Additional prenatal, intrapartum, and postpartum data were collected retrospectively from medical record review after the completion of both surveys.

A history of depression was assessed by patient self-report ("Before this pregnancy, did you ever see a healthcare professional who said that you were depressed?"), and medical record review and depressive symptoms at the time of the survey were assessed using the nine-item Patient Health Questionnaire (PHQ-9). A PHQ-9 score of 7 or more was considered to represent clinically significant depressive symptoms according to clinic protocol. Anxiety was assessed by patient self-report ("Before this pregnancy, did you ever see a healthcare professional who said that you had anxiety?") and medical record review. Substance use in pregnancy was defined as a urine toxicology screen detecting marijuana, oxycodone, cocaine, benzodiazepines, barbiturates, amphetamines, or methadone, as documented in the medical record. Intimate partner violence was assessed using four questions [13]: "Has an intimate partner ever (i) threatened you or made you feel afraid; (ii) hit, choked, or physically hurt you; (iii) forced you to do something sexually that you did not want to do; or (iv) tampered with your birth control or tried to get you pregnant?" Psychosocial resources were assessed by querying education level, financial security, employment status, perceived social and financial support from partners and others in the participants' social networks, as well as religious affiliation, access to transportation, and housing status.

The 25-item Connor–Davidson Resilience Scale (CD-RISC 25) [9] was used to measure resilience. A 2011 systematic review [14] identified the CD-RISC as one of the three most common scales used to assess resilience, and it has been used in a prenatal population [12]. The CD-RISC 25 rates each item on a five-point scale (0–4) with higher scores reflecting greater resilience [9]. Median (interquartile range) resilience scores in an adult population were 82 (73–90) [9]. The CD-RISC has high test–retest reliability (intraclass correlation coefficient of 0.87) and demonstrates high correlation with other scales [9].

The survey and medical record data were entered into REDCap, a web-based electronic data capture tool [15]. Data were analyzed with SAS version 9.4 (SAS Institute, Cary, NC, USA).

The χ^2 or Fisher exact tests were used for categorical variables and the Wilcoxon rank-sum test was used for continuous variables. $P<0.05$ was considered statistically significant.

3 RESULTS

Thirty participants were approached and all consented to participate in the prenatal survey, comprising approximately one-third of the clinic prenatal population. The median age was 26.5 years, and most participants were multiparous, black, unmarried, and enrolled in the Women, Infant, and Children program (Table 1). Most participants had completed at least a high school degree, but less than half had completed some or all of a college degree (Table 1). Many participants were employed and most had at least one dependent (Table 1). One-third of the prenatal population was enrolled in group-based prenatal care (Table 1).

Depression was self-reported or documented in the medical record of 11 (37%) participants, and 8 (27%) had a PHQ-9 score of 7 or more at the time of the initial survey (Table 2). Of those with a PHQ-9 score of 7 or more, 5 (63%) had a self-reported history of depression, and of those with a PHQ-9 score below 7, 3 (14%) reported a history of depression. Anxiety was self-reported or documented in the medical record in 7 (23%) participants. Eight (27%) participants had ever used medication for depression, anxiety, or insomnia, and only 2 (7%) participants used these medications during pregnancy. Nine (30%) participants used a substance during pregnancy, most commonly marijuana (data not shown).

The median prenatal resilience score was 82.0 (95% confidence interval 74.0–92.0) at enrollment. A history of depression was significantly associated with lower prenatal resilience scores than no history of depression ($P=0.007$), as was a history of being on medication for anxiety, depression, or insomnia before pregnancy ($P=0.029$) (Table 2). A PHQ-9 score of 7 or more—indicative of depressive symptoms at the time of the assessment—was not significantly associated with lower prenatal resilience scores, however. Neither a history of anxiety nor substance use was associated with resilience scores (Table 2).

Nulliparity was associated with higher resilience scores than multiparity, although this association was not statistically significant (Table 3). Few (n=8 [27%]) women had medical comorbidities, limiting exploration of the relationship of hypertension, asthma, or diabetes with resilience. Obese participants, who comprised a third of the prenatal population, had slightly higher resilience scores than nonobese participants, although the relationship lacked statistical significance (Table 3). There were no significant differences in resilience scores related to a history of preterm delivery, pregnancy loss, or other obstetric complications (Table 3). A history of intimate partner violence was not associated with resilience scores, irrespective of whether the violence was self-reported or present in the medical record (Table 3).

With regard to social support and personal resources (Table 4), participants with a religious affiliation had significantly higher resilience scores than those without a religious affiliation ($P=0.015$). Participants born in the USA had higher resilience scores than those born outside of the USA, although the difference was not statistically significant. Other markers of social support, such as marriage or cohabitation with the father of the infant, did not affect

resilience scores. Indicators of limited financial resources, such as not having enough money left over at the end of the month to make ends meet, were associated with lower resilience scores, compared with indicators of better financial resources (having just enough money to make ends meet or having a surplus; P=0.034), although other markers of limited financial resources, such as having utilities turned off, were not associated with resilience scores (Table 4). Although the differences were not statistically significant, women who received financial support from the fathers of their children had higher resilience scores than those who did not, whereas those who missed an appointment because of a lack of transportation had lower resilience scores than those who did not (Table 4). Resilience scores were not significantly associated with living in a house or apartment (compared with living in a shelter or with friends), education level, or participation in group-based prenatal care (Table 4).

4 DISCUSSION

The present pilot study assessed resilience among women seeking prenatal care at an urban community health center in the USA and identified important covariates that impact resilience scores. The study population comprised primarily black and Hispanic women, a population historically underrepresented in perinatal mental health research. A lower resilience score was associated with a history of depression and with prior use of medication to treat depression, anxiety, or insomnia. A higher resilience score was associated with having a religious affiliation and adequate financial resources. Resilience was not associated with prior obstetric complications, substance use, or a history of intimate partner violence.

With regard to mental health assessment and resilience, the PHQ-9 score and resilience were not related. Although a history of depression and prior medication use were associated with resilience in the present study, it is possible that the PHQ-9 did not identify well-controlled depression and that resilience scores might be more affected by untreated or long-standing depression. Furthermore, a PHQ-9 cutoff score of 7 was used in the clinic to identify patients for same-day behavioral health assessment; however, even when higher cutoff scores were used (data not shown), there was no association between PHQ-9 scores and resilience. Unlike prior research by Roos et al. [12], the present study did not find a significant association between anxiety and resilience scores. This difference could be attributable to the use of self-reported anxiety in the present study, as opposed to using a validated scale. The study by Roos et al. was conducted among a low-risk obstetric population in South Africa, and community norms could influence how distress manifests, either in the form of anxiety or in the form of depression, possibly explaining differences between the two study populations.

Given existing data on substance use and mental health disorders [16], an association between substance use and resilience was expected. There is a paucity of literature investigating the effect of substance use on resilience, especially in pregnancy, with most studies investigating how resilience might be protective against substance use. One qualitative study [17] identified that certain substance use practices facilitate community bonds and enable coping. Another study [18] identified low tobacco, alcohol, and marijuana use among resilient teens, but found high levels of stress hormones. Recognizing the

intersections of substance use, mental health, and stress, the nature of the relationship between substance use and resilience deserves further study, especially in the peripartum period.

Among the psychosocial factors assessed, the present study revealed high rates of intimate partner violence. By comparison with studies showing that exposure to traumatic events was associated with increased resilience [19,20], the present study did not identify a statistically significant difference in resilience scores. Little is known about the relationship between intimate partner violence and resilience, especially during pregnancy. Given the high rate of intimate partner violence in the present population, and globally [21], it is important for future studies to understand its impact on resilience and to identify potential areas of intervention.

With regard to social factors, financial security—as measured by whether a person has enough money to make ends meet at the end of the month—and religious affiliation were significantly associated with higher resilience. Financial security could influence coping, as seen in another study [22], and women in the present study who received financial support from the fathers of their children had higher resilience, although the difference was not statistically significant. Religion and spirituality have been linked with coping [23], and prior research indicates that community participation facilitates coping strategies that might increase resilience, such as sharing of tangible and nontangible resources, socializing with relatives, and kin monitoring [24]. This might also explain the present finding that those who were born in the USA had higher resilience scores than those born outside of the USA, even though the difference was not statistically significant. Lastly, one-third of the present study population was enrolled in group-based prenatal care, and although there was no significant difference in resilience scores between those in group-based care and those in traditional prenatal care, a growing body of evidence indicates that group-based prenatal care offers social support among women at risk of adverse perinatal outcomes [25], and resilience should be further explored in group-based interventions.

The present study was limited primarily by the small sample size and convenience sampling, although approximately one-third of the annual obstetric population served by the clinic was incorporated in the study sample. Some of the relationships identified demonstrated differences in resilience scores; however, the small sample size limited the power to detect differences. Symptoms of depression were assessed using a validated scale; however, data on history of mental health conditions such as depression, anxiety, and use of medication to treat symptoms were largely obtained by self-report. A registered nurse in the clinic who was known to the participants administered the surveys and although this could have facilitated trust among participants, there might have been a social desirability bias in the participants' responses.

In conclusion, the present findings contribute to the understanding of resilience in pregnancy and have important clinical and research implications. First, the study investigated the use of an easy-to-implement, validated tool, the CD-RISC 25, to assess resilience; this tool could be readily incorporated into existing prenatal health and mental health assessments. Second, the study identified important covariates, including history of depression and use of

medication for mental health disorders, that impact resilience scores and merit further study. Finally, investigation of resilience factors shifts the paradigm from a risk-based approach toward a strength-based approach to prenatal care.

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Synopsis

Depression history, prior medication use, religious affiliation, and financial security are important variables affecting resilience in pregnancy.

Table 1

Participant characteristics (n=30).

Characteristic	Value[a]
Demographics	
Maternal age at enrollment, y	26.5 (23.0–32.0)
Race[b]	
Black	21 (70)
White	3 (10)
Other	10 (33)
Ethnicity	
Hispanic	9 (30)
Non-Hispanic	21 (70)
Education	
Less than high school completed	6 (20)
Completed high school or GED	11 (37)
Completed some college or higher	13 (43)
Employed	20 (67)
Currently married	5 (17)
Number of dependents	
0	6 (20)
1 or 2	18 (60)
≥3	6 (20)
Medical/obstetric characteristics	
Medical comorbidities[c]	8 (27)
Parity	1.0 (0.0–2.0)
Nulliparous	10 (33)
Gravidity	4.0 (2.0–6.0)
Enrolled in group-based prenatal care[d]	10 (35)
Resources	
Enrolled in WIC	23 (77)
Finances at the end of the month	
Some money left over	14 (47)
Just enough to make ends meet	12 (40)
Not enough to make ends meet	4 (13)

Abbreviation: GED, General Equivalency Diploma; WIC, Women, Infants, and Children program.

[a]Values are given as median (interquartile range) or number (percentage). Data are derived from prenatal survey (self-report) unless indicated otherwise.

[b]Participants could select multiple races.

[c]Hypertension, diabetes, asthma, or other.

[d] Information missing for 1 participant.

Table 2

Prenatal resilience scores, stratified by answers to different categories listed relevant to psychological and substance use history (n=30).

Category	No. (%)	Resilience score[a]	*P* value
History of depression[b]			0.007
Yes	11 (37)	73.0 (66.0–81.0)	
No	19 (63)	85.0 (79.0–92.0)	
History of anxiety[b]			0.770
Yes	7 (23)	81.0 (75.0–87.0)	
No	23 (77)	83.0 (69.0–92.0)	
Ever medicated for anxiety, depression, or insomnia[c]			0.029
Yes	8 (27)	74.0 (64.5–80.0)	
No	22 (73)	83.5 (79.0–92.0)	
PHQ-9 ≥7			0.299
Yes	8 (27)	78.5 (67.5–82.5)	
No	22 (73)	83.0 (74.0–92.0)	
Substance use			0.770
Yes	9 (30)	80.0 (76.0–92.0)	
No	21 (70)	81.0 (73.0–89.0)	

Abbreviation: PHQ, Patient Health Questionnaire.

[a] Values are given as median (interquartile range).

[b] Medical record or self-report.

[c] Self-report.

Table 3

Prenatal resilience scores, stratified by risk factors for medical or obstetric complications (n=30).

Risk factor	No. (%)	Resilience score[a]	*P* value
Maternal age, y			0.351
<30	19 (63)	79.0 (73.0–92.0)	
≥30	11 (37)	84.0 (74.0–92.0)	
Smoking			0.346
Yes	7 (23)	80.0 (60.0–85.0)	
No	23 (77)	81.0 (75.0–92.0)	
Body mass index >30[b]			0.244
Yes	10 (33)	88.0 (75.0–94.0)	
No	20 (67)	80.0 (73.5–84.5)	
Nulliparous			0.157
Yes	10 (33)	89.5 (79.0–92.0)	
No	20 (67)	79.5 (73.5–84.5)	
Prior preterm delivery			0.432
Yes	3 (10)	84.0 (83.0–89.0)	
No	27 (90)	80.0 (73.0–92.0)	
Prior pregnancy loss			0.219
Yes	13 (43)	83.0 (79.0–92.0)	
No	17 (57)	79.0 (73.0–87.0)	
Prior obstetric complication[c]			0.600
Yes	5 (17)	84.0 (79.0–89.0)	
No	25 (83)	81.0 (73.0–92.0)	
History of intimate partner violence, reported by survey			0.187
Yes	15 (50)	79.0 (69.0–85.0)	
No	15 (50)	83.0 (76.0–92.0)	
History of intimate partner violence, present in medical record			0.268
Yes	7 (23)	73.0 (68.0–84.0)	
No	23 (77)	81.0 (76.0–92.0)	

[a] Values are given as median (interquartile range).

[b] Calculated as weight in kilograms divided by the square of height in meters.

[c] Defined as placental abruption, uterine rupture, shoulder dystocia, hemorrhage, pre-eclampsia, or need for reoperation.

Table 4

Prenatal resilience scores, stratified by social resources (n=30).

Social resource	No. (%)	Resilience score[a]	*P* value
Religion affiliation			0.015
Yes	23 (77)	84.0 (79.0–92.0)	
No	7 (23)	73.0 (60.0–80.0)	
Country of birth			0.215
USA	22 (73)	82.0 (76.0–92.0)	
Other	8 (27)	76.5 (68.5–85.0)	
Married			>0.99
Yes	5 (17)	79.0 (74.0–87.0)	
No	25 (83)	81.0 (75.0–92.0)	
Lives in same household as the child's father			0.900
Yes	12 (40)	81.0 (71.5–89.5)	
No	18 (60)	81.5 (75.0–92.0)	
Finances at the end of the month			0.034
Some money left over	14 (47)	85.0 (79.0–92.0)	
Just enough to make ends meet	12 (40)	82.0 (74.0–87.0)	
Not enough to make ends meet	4 (13)	67.5 (62.0–74.0)	
Receives financial support from the child's father			0.248
Yes	21 (70)	83.0 (79.0–92.0)	
No	9 (30)	75.0 (66.0–89.0)	
Enrolled in WIC			0.397
Yes	23 (76)	81.0 (76.0–92.0)	
No	7 (23)	75.0 (68.0–92.0)	
During pregnancy, have you missed an appointment because you had no transportation?			0.761
Yes	5 (17)	76.0 (75.0–81.0)	
No	25 (83)	83.0 (74.0–92.0)	
During pregnancy was telephone/electricity/gas turned off?			0.699
Yes	5 (17)	79.0 (76.0–84.0)	
No	25 (83)	81.0 (73.0–92.0)	
Lives in apartment or house			0.871
Yes	22 (73)	81.5 (74.0–92.0)	
No	8 (27)	81.0 (76.0–88.0)	
Education			0.970
Less than high school completed	6 (20)	79.5 (69.0–92.0)	
Completed high school or GED	11 (37)	83.0 (73.0–89.0)	
Completed some college or higher	13 (43)	81.0 (75.0–92.0)	
Enrolled in group-based prenatal care[b]			0.750

Social resource	No. (%)	Resilience score[a]	*P* value
Yes	10 (35)	80.0 (75.0–92.0)	
No	19 (66)	81.0 (69.0–89.0)	

Abbreviation: WIC, Women, Infants, and Children program; GED, General Equivalency Diploma.

[a]Values are given as median (interquartile range).

[b]Information missing for 1 participant.