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Maternal stress exposures, reactions, and priorities for stress reduction among low-income urban women

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Abstract

INTRODUCTION—Maternal psychosocial stress has been associated with adverse maternal-child outcomes. Vulnerable women's experiences with stressors during pregnancy and their desires and priorities for appropriate and useful stress reduction interventions for pregnant women are not well-understood.

METHODS—Qualitative interviews with low-income, urban women explored their stress exposures and reactions during pregnancy, ways that stressors overlapped and interacted, and their priorities for stress reduction. Quantitative measures (Perceived Stress Scale, My Exposure to Violence Instrument Danger Assessment, Center for Epidemiologic Studies of Depression Scale, Revised, and Posttraumatic Stress Disorder Checklist-Civilian) supplemented qualitative descriptions of women's stress exposures and reactions. Analyses explored relationships between stressors and women's priorities for stress intervention. Lay advisors from the sample population reviewed qualitative interview guides for appropriateness, completeness, and language prior to interviews, and reviewed study findings for validity. Study findings were returned to the community in newsletter form.

RESULTS—Twenty-four low-income urban women participated in interviews. Women in the sample reported high stress, lifetime violence exposure, depression and posttraumatic stress disorder symptoms. The most common stressors reported were financial strain, violence exposure, and feelings of intense isolation and loneliness. Few participants reported having discussed

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psychosocial stressors with prenatal care providers. Participants in this study described connections with other women as desirable to relieve their stress and provided input on ways healthcare providers could facilitate such connections.

DISCUSSION—Clinical and research implications of findings are discussed, including approaches that health care providers may find useful to facilitate connections among vulnerable pregnant women.

Keywords

Stress; Psychological; Socioeconomic Factors; Depression; Posttraumatic Stress Disorder; Violence; Maternal Health; Prenatal Care

INTRODUCTION

Maternal stress has been defined as the physiological and behavioral responses that occur when acute or chronic psychosocial difficulties overwhelm the coping abilities that allow a woman to return to physiological homeostasis.¹ Chronic maternal stress is increasingly accepted as a predictor of maternal-child health.^{1–6} Specific stressors such as low socioeconomic status [SES], partner violence, and depressive or posttraumatic stress disorder (PTSD) symptoms have been associated with adverse pregnancy outcomes such as low birth weight and preterm birth.^{6–12} While these stressors are often analyzed independently in studies, in reality they may overlap and act synergistically in complex ways. For example, both depression and PTSD may be conceptualized as maternal responses to stress exposures, and as stressors themselves.^{3,10,13–15}

In 2006, the American College of Obstetricians and Gynecologists¹⁶ recommended practitioners screen pregnant women each trimester for psychosocial stressors in an attempt to identify “patients under stress” and provide appropriate intervention. ACOG includes both overall maternal stress and specific psychosocial issues as areas for concern with regard to pregnancy outcomes, including barriers to prenatal care, unstable housing, pregnancy intention, communication barriers, problems with nutrition, substance use, household and neighborhood safety concerns, mental health symptoms, general stress, and exposures to violence. Suggested interventions to reduce the impact of psychosocial stressors in pregnancy include offering validation and information, suggestions for possible changes, resources, and referrals for further evaluation or intervention where needed.

Other stress-reduction interventions tested to date with pregnant women include nurse-case management, cognitive-behavioral stress management techniques and mind-body interventions.^{17–19} There is insufficient evidence to suggest which interventions are truly effective or what interventions represent women’s own priorities for stress reduction. Research with vulnerable populations may be perceived as irrelevant, inappropriate, or unhelpful, and harms may befall communities if research is inaccurate, is designed or interpreted in ways that are harmful/blaming of participants, or does not consider the safety and confidentiality of participants.²⁰ Including the perspectives of women in the design of study questions and interpretation of results may be useful in the development and

implementation of future maternal stress interventions which are acceptable, appropriate, and relevant to women at risk.^{21–23}

In this exploratory study, we aimed to describe maternal stress exposures, reactions, and the interrelationships between stressors during pregnancy among a sample of low-income urban women, a population at high risk for maternal stress. A secondary aim was to better understand women's priorities for stress reduction during pregnancy. Specifically, we aimed to understand women's informational needs and to identify useful content for a stress-reduction information resource that healthcare providers might provide to women, thereby laying the groundwork for future prenatal interventions.

METHODS

We chose a mixed-methods approach combining qualitative and quantitative measurement. This approach has been described as effective to facilitate multiple perspectives and examine complex health phenomena.²⁴ The qualitative approach predominated in this study. Qualitative description was chosen as an analysis approach for this study, as it prioritizes minimal researcher abstraction and using participants' own language to describe phenomena.²⁵ It is considered particularly useful for illuminating patterns and addressing health problems embedded in complex social and cultural contexts, such as maternal stress, providing a clear description of participants' viewpoints in "everyday language" that can be understood by laypersons, and identifying areas potentially amenable to intervention.²⁵

We developed a semi-structured, open-ended interview guide with qualitative questions and probes that asked women to describe their stressors and responses to stress during pregnancy, and explored what women identified as helpful, harmful, and what was needed to reduce stress, with respect to information, support, and services. For example, questions asked women to define what the word "stress" meant to them, describe what was stressful for them and what they thought would be most helpful to reduce stress, with additional probes to elicit information as needed. Quantitative measures were chosen to provide additional descriptive information regarding key individual psychosocial risk factors associated with adverse pregnancy outcomes, including symptoms of global stress, depression, and posttraumatic stress, and exposures to violence. Table 1 lists the survey instruments and measures of validity and reliability.(Table 1)

Participants were recruited from urban health/social service settings (i.e., Women's, Infants', and Children's [WIC] programs, Healthy Start) in a metropolitan Pacific Northwest region by posting fliers inviting women to participate in a "stress and women's health" study. Eligible participants were age 18 years, English-speaking, and had either delivered a baby within the previous 3 years and/or were currently pregnant. The interviewer (author 1) met with participants individually in a safe and private setting of her choice, such as her home or a coffee shop, and first administered quantitative measures, then conducted audiotaped qualitative interviews. Each participant received a cash stipend of \$50 and was provided referrals to resources such as domestic violence or hotline information as needed. Human subjects procedures were approved by the Oregon Health & Science University Institutional Review Board..

Eight women from the sample population were first recruited to review the interview guide. These lay advisors generally agreed the interview guide was understandable, largely complete, and not offensive, overly long or burdensome. They advised adding qualitative probes for stress related to housing, employment, documentation of citizenship, parenting, and step-parenting. It was also suggested to add transitional language between quantitative measures (e.g., “Now I’m going to ask you about how generally stressed you have been over the past month.”). Following interview guide revisions, participants were recruited for 1–2 individual interviews. Six lay advisors later participated in the study as interviewees.

Qualitative interviews were transcribed verbatim, with identifying details removed and each participant assigned a pseudonym. Transcripts were coded line by line and codes sorted to identify similar patterns and phrases among the data. A priority for organization of themes was describing how individual stressors related, overlapped and intertwined in women’s experiences.

Analyses were performed continuously and iteratively with interviews. The investigator gradually decided on tentative generalizations/trends that held true for the data and used these emerging findings to present more focused questions in subsequent interviews, exploring preliminary findings with subsequent interviewees and explore commonalities and differences. Descriptive statistics, frequencies and mean scores were calculated for quantitative measures, with the findings compared with qualitative data in the analysis phase to illuminate emerging themes. Interviews and data analyses were performed by the first author, and reviewed by the other authors at several points during the study. Data collection continued until investigators agreed that qualitative data had reached saturation, with no new information emerging.

Study findings were presented in a 4-page, lay-language newsletter format to lay advisors in individual meetings. Lay advisors had no access to participant identities or data. In these meetings, lay advisors were asked if they had concerns or objections to findings or felt information was missing. They responded positively to findings, generally agreed that the themes made sense and resonated with their own experiences, and recommended no further revisions. Finally, the newsletter was provided to participants and program staff at recruitment sites, returning findings to the community.

RESULTS

Interviews were conducted over six months in 2007–2008. Thirty-three women contacted the toll-free study number in response to the flyer. Four did not meet inclusion criteria; five others were unreachable after their initial contact. Twenty-four met inclusion criteria and were interviewed. Most were interviewed once; investigators returned for a second interview with eight women to ask clarification questions and/or perform member checks, in which emerging themes in qualitative data are shared with participants for the purposes of validation. Demographic data are presented in Table 2. Participants’ mean age was 25.7 years (*SD* 4.97; range 18–35); mean education was 12.9 years (*SD* 2.1; range 10–20 years). These women were primarily low-income, white, and partnered. Twenty-two participants

had delivered a child within the previous 3 years; 3 were currently pregnant, 2 with their first baby.

Participants endorsed high levels of stress, with a mean PSS score approximately twice population-based norms for women (Table 3).¹⁶ Yet, many assumed they should be able control their responses to stress:

“I am prone to be really judgmental on how much stress I can tolerate. And I should be like superwoman.”

Financial Stress

Three stressors were most commonly reported in the sample: financial stress, violence and isolation/loneliness. Many participants had difficulty meeting basic needs, including having enough food. Affordable housing was difficult to find, thus some mothers became ensnared in violence. For example, Kathleen could not leave her apartment at night because of neighborhood crime, Vivian was living with her abusive father, and Sadie could not afford to leave her subsidized apartment, although her violent ex-husband was stalking her. (All names are pseudonyms.)

Mothering added financial burdens and a sense of greater consequences of financial problems. Participants often referred to their own childhood deprivations and worried about the impact of financial distress on children. Talise described herself as valuing family over material possessions, but lamented:

“Having it, or not having it, changes the whole dynamic of our family. Not having the money has so much major consequences. We either go without something, or I’m irritated all the time. Yeah, actually, it really does make me sad if I think about it.”

Eleven participants believed they had been unfairly passed over for a job; over half ($n = 14$) reported being unfairly fired/not promoted. Participants commonly reported employers did not want to hire women who were pregnant and/or mothers. Consequentially, some avoided talking about children at work and concealed pregnancy until it was longer possible to hide it. Many also believed others saw them as “welfare queens” or “cheating the system.” For example, Michelle could not bear to use her WIC vouchers, believing grocery cashiers treated her poorly when she did. She reported:

“I’d leave the grocery store in tears... It was not good.”

Violence

Violence was another highly predominant stressor described. Participants reported relatively few past-year violence exposures, but had substantial lifetime exposures (Table 3), including sexual assault, rape, or molestation ($n = 9$; 38%) being hit, slapped, punched, or beaten up ($n = 18$; 75%), attacked with a weapon ($n = 9$; 38%), or shot/shot at ($n = 4$; 17%). State mandatory reporting requirements prevented follow-up questions regarding timing/perpetrators, thus it was not possible to report what proportion of exposures occurred in childhood. Only 3 women reported having ever disclosed violence to a healthcare provider.

Four women disclosed current intimate partner violence (IPV) in interviews; three more did not disclose IPV but reported significant violent and controlling partner behavior on the DA.

Violence and its consequences, including mental health symptoms and financial stress, often existed in overlapping relationships that increased women's vulnerability. Gina had experienced severe IPV and had been formally diagnosed with PTSD (PCL-C score = 65). She moved from a women's shelter into transitional housing with two toddlers, but had been recently threatened with a knife by another resident, triggering a trauma response. Her abuser had actively sabotaged her employment in the past (preventing her from leaving, hiding car keys, refusing to take care of the children, and beating her so badly she could not go to work), thus her work history was spotty. After months of attempting to manage her PTSD, conceal her current pregnancy from prospective employers, and find work, she worried she would never succeed and be able to move from transitional housing.

Isolation and Loneliness

The third common stressor that emerged was intense isolation and loneliness, which participants often dated back to childhood family dysfunction and chaos. One-third of this sample (n = 8) reported having no friends. Motherhood often increased women's isolation and loneliness. Participants lost friends when their priorities changed in pregnancy, and when they stopped drinking or using drugs. Entering social settings where they might make new friends was anxiety-producing:

"I don't have my old friends, and it's hard to make new friends. It's hard to open up. It's just hard for me to do... I'm starting all over again... it's like, kindergarten, here I come."

Yet, four women in the sample reported they no longer struggled with isolation and loneliness. One had learned to utilize church-based mothers' groups. Three were friends who had met in drug treatment while pregnant. One likened their friendship to a "bubble" which buffered stress:

"They're my support sisters... we can call each other at any time of the day or night with problems. And we're just there to work through stuff with each other. Or just throw something at them, and just say, 'I don't need no feedback, I just need to be able to say something to somebody ...'"

While interviews focused on stress during pregnancy, many noted that, like loneliness and isolation, their stress had been chronic since childhood due to family chaos/disruption. Women worried their stress affected their own family, including the health or personalities of unborn children. These worries often persisted after birth:

"I feel so bad... I'm afraid I'm affecting her. From being just, you know, so frustrated, and angry, and angry at myself, and then melting down right there, and crying while I'm holding her... I don't want that to go into her psyche."

Psychosocial problems and prenatal care

Thirteen participants (54.2%) had depression symptom levels exceeding the cut score for clinical significance; 20 (83%) reported symptoms consistent with moderate to severe levels

of PTSD. Eleven (45.8%) readily identified symptoms of depression and reported prior diagnosis/treatment; only 5 reported formal diagnosis and treatment for PTSD. Prior to formal diagnosis, these women often attributed PTSD symptoms of hyperarousal, avoidance, and/or intrusion to “my stress” or “how I am,” as in one who assumed she was “just going crazy” prior to learning she had PTSD.

Women described becoming “worn down” over time and conceptualized stress as a serious health issue, attributing outcomes including mental health symptoms, substance use, disordered eating, self-mutilation, and/or disease to chronic high stress. For example, Kathleen was fired when she told her employer she was pregnant, increasing her financial dependency on her highly controlling partner. She became depressed and unable to eat, losing weight until her provider warned her she was hurting her baby. Anna was a rape survivor who described her coping method as “just eat, eat, eat, to constantly eat.” Una attributed severe preeclampsia to stress in drug treatment:

“From years back I had, I have an eating disorder... the stress, everything like kind of kicked up. I was not drinking anymore and, or anything while I was in there, of course, but my bulimia came back. And so that, I think that that is a really big part of why I got so sick, just the physical stress of that in my body. That behavior, coupled with my depression and everything.”

Five women reported prenatal providers were key sources of support in dealing with stress during pregnancy. Conversely, other participants reported little continuity of care, and some reported unhelpful or judgmental responses from providers, such as Naomi, who reported that once providers knew of her history of drug use in pregnancy they would often not look her in the eye. Several women chose not to disclose problems to providers, believing they would find such disclosures inappropriate, a belief that was reinforced for some by brief, impersonal interactions with hurried providers who appeared to focus primarily on physical concerns. For example, Beatriz had been choked into unconsciousness by her husband when 8 months pregnant, and fled with her children into a women’s shelter, and then to a vacant rental house, where they lived without electricity, heat, or running water. She did not disclose these experiences to her provider, remarking,

“They don’t want to know these things... they are like technicians, concerned with the body when you are pregnant.”

Priorities for Support to Reduce Stress

A secondary aim of this study was to describe women’s priorities for stress reduction--in particular, to identify useful content for an informational resource that could be provided in prenatal care settings. However, a finding which emerged clearly was that even the most vulnerable participants knew and could recommend sources of information and resources. Additionally, information and resources actually fell far short of what participants described as key to reducing their stress, i.e., tangible connection with other women. As Talise said:

“I’m a woman... I’m an emotional creature... If you hand me information, all the pamphlets in the world are not going to mean anything. They’re going to give me knowledge, and I am going to put that information back someplace and remember

it. But if I don't have that connection with somebody... or, feel like I can have somebody to talk to, or, go to with my problems, you're still going to be left with that... hole. That empty spot. I like to talk about things ... It always comes down to having somebody safe to talk to."

Some participants found internet support groups acceptable; most preferred to meet other women face-to-face. Iterative questions in later interviews focused on how providers might be able to facilitate such connections. None experienced group prenatal care, but reactions to the concept were positive. Women described it as a setting where they could dialogue in a safe and structured atmosphere with other pregnant women, with the presence of the provider key to ensuring safety in a group. Wendy commented,

"I really like that idea. I like that concept of sharing your experience with other people going through the same thing you're going through... Wow, I really wish I'd had that."

For some women, the opportunity to provide support to other women and thus make meaning of their own difficulties was equally important as receiving support themselves. As Beatriz said,

"...because then it is that something good has come out of what I have been through— if I can help someone else get through it."

DISCUSSION

It is not surprising that low-income women might report financial strain, nor that a convenience sample volunteering for a study about "stress and women's health" might have extremely high stress. In addition, given the known high prevalence of violence in women's lives^{26–28} and the significant interrelationship of violence, mental health symptoms and stress for women^{3,10,13–15} the high levels of lifetime violence exposures, depression/PTSD symptoms in these women is also not surprising. However, it is nonetheless concerning, because adverse health outcomes associated with stressful events are presumed to occur when they overwhelm women's coping resources.^{1,29} The high degree of psychosocial risk reported by women in this study has tremendous implications for their health.

Women in this study generally reported they had received prenatal care, believed stress was a health concern, and were concerned about its impact on their pregnancies, but many reported they did not discuss stress or psychosocial risk with a healthcare provider during pregnancy. While we did not systematically ask our participants whether they were screened for psychosocial risk during pregnancy and thus cannot definitively say they were not, the research literature documents persistently low screening rates for violence and mental health symptoms.^{30–32} Failing to acknowledge psychosocial problems can result in decreased patient satisfaction, missed or inappropriate treatment, retraumatization and future victimization, thus diagnosis and treatment is key.^{16,33,34} We believe our findings reinforce current guidelines and the need for psychosocial risk screening by providers¹⁶ and agree that prenatal care provides a key window to connect with vulnerable women and address such problems and to connect women to appropriate sources of help.^{16,35–37}

However, we believe our findings also suggest that providers must also consider how they perform such screening and the messages, intended or unintended, that they send vulnerable women when they do. For women to feel safe discussing their problems in prenatal care, providers must clearly and consistently convey empathy, a non-judgmental attitude, and the message that prenatal care providers are not just “technicians concerned with the body” as one participant in this study described them. This finding is consistent with other studies of vulnerable pregnant women and their desired interactions with healthcare providers.^{17,37–39} In addition, providers need to provide appropriate assessment and follow-up, including identification and treatment for depression and mental health symptoms and violence resources when women do share their problems.

As the literature suggests,^{21–23,25} a participatory design and the use of a qualitative descriptive approach for analysis did facilitate “hearing” the viewpoint and voices of our participants and led to a much richer concept for future interventions. We believe that including the voice of vulnerable women in the research process is a strength of this project, and recommend future researchers also include women in the development and implementation of future maternal stress interventions which are appropriate, relevant, and helpful to the target population. At the outset of this study, we hoped participants could help us identify information/resources useful to reduce stress, so that we could develop an easily disseminated (and easily tested) resource such as an informational book or pamphlet that could be provided in prenatal care settings. Our data led us in a substantially different direction than we anticipated, in that what emerged was women’s strong sense of loneliness and isolation and desire for connection with other women to reduce their stress.

Little evidence exists to describe how clinicians might best facilitate such connections for vulnerable pregnant women. Many participants in this study had fractured childhood family systems, loosened social bonds, depression, and feelings of isolation that substantially predated childbearing. New social situations caused anxiety; substantial trauma histories and symptoms of depression/PTSD likely represented additional barriers to walking into a room full of strangers. These women need help, support, and a safe atmosphere to facilitate the connections they desire.

Other research has demonstrated that pregnant women want to connect to peers,³⁴ and that group prenatal care models appear well-liked by pregnant women.^{40–44} Some evidence suggests that while women in group care models do not report less stress specific to the pregnancy itself,⁴⁵ they may be less likely to deliver preterm or low birth weight infants.^{40,45} Such findings are intriguing, given that preterm birth and low birth weight have been linked to maternal stress. More research is needed regarding group prenatal models and their ability to facilitate peer networks, reduce overall perceived maternal stress and improve outcomes among women with trauma histories and mental health symptoms. Providers may also consider how they might help vulnerable women connect with their peers in childbirth preparation classes, prenatal exercise classes, breastfeeding classes, and baby care classes.

As a primarily qualitative study, findings are based upon a small convenience sample, presenting limitations to generalizability. The quantitative measures may have sensitized participants to “desired” areas for discussion. Six lay advisors also participated in study

interviews, which may have affected their interpretation of results. Consistent with the Pacific Northwest setting, only one-third of the mothers were racial/ethnic minorities, and the primary interviewer was white, thus, stress based on minority status is likely underrepresented and underreported. Participants were uniformly of low SES and English-speaking, thus, the stressors of mothers in different socioeconomic brackets and of non-English speaking women are not represented. Finally, while these depression and PTSD scales have demonstrated discriminant validity in distinguishing between clinical and community samples^{46,47} they are not intended as diagnostic. Therefore, the high scores on these measures are most accurately interpreted in terms of symptom levels, not diagnoses. We did not ask about current psychiatric medications in interviews, or about adverse outcomes in pregnancy. Women may have given birth up to three years prior, introducing the potential for recall bias. Finally, we did not administer measures of maternal anxiety, or of protective factors such as resilience and social support.

CONCLUSION

Our findings suggest that vulnerable, low-income women with substantial, intersecting, and chronic stressors during pregnancy are often highly resourceful and adept at locating sources of information, but the meaningful bonds with other women that they identify as key to reducing their stress may elude them. Health care providers who care for such women can play a key role in reducing maternal stress by recognizing that these mothers need invitation in prenatal care settings to disclose their stressors, providing appropriate assessment and follow-up, and by considering ways in which they might facilitate the connections with other women that mothers identify as key interventions to reduce the ongoing health impacts of stress.

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References

1. Hogue CJ, Hoffman S, Hatch MC. Stress and preterm delivery: A conceptual framework. *Paediatr Perinat Epidemiol.* 2001 Jul; 2(15 Suppl):30–40. [PubMed: 11520398]
2. Beydoun H, Saftlas AF. Physical and mental health outcomes of prenatal maternal stress in human and animal studies: A review of recent evidence. *Paediatr Perinat Epidemiol.* 2008 Sep; 22(5):438–466. [PubMed: 18782252]
3. Lancaster CA, Gold KJ, Flynn HA, Yoo H, Marcus SM, Davis MM. Risk factors for depressive symptoms during pregnancy: A systematic review. *Am J Obstet Gynecol.* 2010 Jan; 202(1):5–14. [PubMed: 20096252]
4. Goldenberg RL, Culhane JF, Iams JD, Romero R. Epidemiology and causes of preterm birth. *Lancet.* 2008 Jan 5; 371(9606):75–84. [PubMed: 18177778]
5. Latendresse G. The interaction between chronic stress and pregnancy: Preterm birth from a biobehavioral perspective. *J Midwifery Womens Health.* 2009 Jan-Feb; 54(1):8–17. [PubMed: 19114234]
6. Woods SM, Melville JL, Guo Y, Fan MY, Gavin A. Psychosocial stress during pregnancy. *Am J Obstet Gynecol.* 2010 Jan; 202(1):61. e61–67. [PubMed: 19766975]

7. Boy A, Salihu HM. Intimate partner violence and birth outcomes: A systematic review. *Int J Fertil Womens Med.* 2004 Jul-Aug;49(4):159–164. [PubMed: 15481481]
8. Field T, Diego M, Hernandez-Reif M. Prenatal depression effects on the fetus and newborn: A review. *Infant Behav Dev.* 2006 Jul; 29(3):445–455. [PubMed: 17138297]
9. Austin MP. Antenatal screening and early intervention for "perinatal" distress, depression and anxiety: Where to from here? *Arch Womens Ment Health.* 2004 Feb; 7(1):1–6. [PubMed: 14963727]
10. Seng J, Low L, Sperlich M, Ronis D, Liberzon I. Post-traumatic stress disorder, child abuse history, birthweight and gestational age: A prospective cohort study. *BJOG.* 2011 Jul 27.
11. Murphy CC, Schei B, Myhr TL, Du Mont J. Abuse: a risk factor for low birth weight? A systematic review and meta-analysis. *CMAJ.* 2001 May 29; 164(11):1567–1572. [PubMed: 11402794]
12. Seng JS, Low LK, Ben-Ami D, Liberzon I. Cortisol level and perinatal outcome in pregnant women with posttraumatic stress disorder: a pilot study. *Journal of Midwifery & Women's Health.* 2005 Sep-Oct;50(5):392–398.
13. Bryant Borders AE, Grobman WA, Amsden LB, Holl JL. Chronic stress and low birth weight neonates in a low-income population of women. *Obstetrics & Gynecology.* 2007; 109(2):331–338. [PubMed: 17267833]
14. Jesse DE, Swanson MS. Risks and resources associated with antepartum risk for depression among rural Southern women. *Nurs Res.* 2007 Nov-Dec;56(6):378–386. [PubMed: 18004184]
15. Koleva H, Stuart S, O'Hara M, Bowman-Reif J. Risk factors for depressive symptoms during pregnancy. *Archives of Women's Mental Health.* 2011; 14(2):99–105.
16. ACOG Committee Opinion No. 343: Psychosocial risk factors: perinatal screening and intervention. *Obstet Gynecol.* 2006 Aug; 108(2):469–477. [PubMed: 16880322]
17. Curry MA, Durham L, Bullock L, Bloom T, Davis J. Nurse case management for pregnant women experiencing or at risk for abuse. *J Obstet Gynecol Neonatal Nurs.* 2006 Mar-Apr;35(2):181–192.
18. Urizar GG Jr, Munoz RF. Impact of a prenatal cognitive-behavioral stress management intervention on salivary cortisol levels in low-income mothers and their infants. *Psychoneuroendocrinology.* 2011 Nov; 36(10):1480–1494. [PubMed: 21641117]
19. Beddoe AE, Lee KA. Mind-body interventions during pregnancy. *J Obstet Gynecol Neonatal Nurs.* 2008; 37(2):165–175.
20. Riger S. Working together: Challenges in collaborative research on violence against women. *Violence Against Women.* 1999; 5(10):1099–1117.
21. Israel BA, Schulz AJ, Parker EA, Becker AB. Community-based participatory research: Policy recommendations for promoting a partnership approach in health research. *Education for Health.* 2001; 14(2):182–197. [PubMed: 14742017]
22. Flaskerud JH, Nyamathi AM. New paradigm for health disparities needed. *Nurs Res.* 2002 May-Jun;51(3):139. [PubMed: 12063411]
23. Viswanathan M, Ammerman A, Eng E, et al. Community-based participatory research: Assessing the evidence. *Evid Rep Technol Assess (Summ).* 2004 Aug;(99):1–8. [PubMed: 15460504]
24. O'Cathain A. Mixed methods research in the health sciences: A quiet revolution. *JMMR.* 2009; 3(3):3–6.
25. Sullivan-Bolyai S, Bova C, Harper D. Developing and refining interventions in persons with health disparities: The use of qualitative description. *Nurs Outlook.* 2005; 53:127–133. [PubMed: 15988449]
26. Dailey DE, Humphreys JC, Rankin SH, Lee KA. An exploration of lifetime trauma exposure in pregnant low-income African American women. *Matern Child Health J.* 2011 Apr; 15(3):410–418. [PubMed: 18253820]
27. Black, MC.; Basile, KC.; Breiding, MJ., et al. The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2011.
28. Bloom, T.; Bullock, L.; Sharps, PW.; Laughon, K.; Parker, B. Intimate partner violence during pregnancy. In: Campbell, JC.; Humphreys, J., editors. *Nursing Care of Survivors of Family Violence.* Mosby: St. Louis.: St. Louis: Mosby; 2010.

29. Cohen, S.; Williamson, GM. Perceived stress in a probability sample of the United States. In: Spacapan, S.; Oskamp, S., editors. *The social psychology of health*. Newbury Park, CA: Sage; 1988.
30. Smith MV, Rosenheck RA, Cavaleri MA, Howell HB, Poschman K, Yonkers KA. Screening for and detection of depression, panic disorder, and PTSD in public-sector obstetric clinics. *Psychiatr Serv*. 2004 Apr; 55(4):407–414. [PubMed: 15067153]
31. Chamberlain L, Perham-Hester KA. Physicians' screening practices for female partner abuse during prenatal visits. *Maternal Child Health Journal*. 2000 Jun; 4(2):141–148. [PubMed: 10994583]
32. Clark KA, Martin SL, Petersen R, et al. Who gets screened during pregnancy for partner violence? *Arch Fam Med*. 2000 Nov-Dec;9(10):1093–1099. [PubMed: 11115213]
33. Perez S, Johnson DM. PTSD compromises battered women's future safety. *J Interpers Violence*. 2008 May; 23(5):635–651. [PubMed: 18272729]
34. Novick G. Women's experience of prenatal care: An integrative review. *Journal of Midwifery & Women's Health*. 2009; 54(3):226–237.
35. Grote NK, Bridge JA, Gavin AR, Melville JL, Iyenger S, Katon WJ. A meta-analysis of depression during pregnancy and the risk of preterm birth, low birth weight, and intrauterine growth restriction. *Archives of General Psychiatry*. 2010; 67(10):1012–1024. [PubMed: 20921117]
36. Mezey G, Bacchus L, Bewley S, White S. Domestic violence, lifetime trauma and psychological health of childbearing women. *International Journal of Obstetrics and Gynaecology*. 2004; 112:197–204.
37. Seng JS, Sparbel KJ, Low LK, Killion C. Abuse-related posttraumatic stress and desired maternity care practices: women's perspectives. *J Midwifery Womens Health*. 2002 Sep-Oct;47(5):360–370. [PubMed: 12361348]
38. Phillips D, Thomas K, Cox H, et al. Factors that influence women's disclosures of substance use during pregnancy: A qualitative study of ten midwives and ten pregnant women. *Journal of Drug Issues*. 2007; 37(2):357–376.
39. Lutz KF. Abused pregnant women's interactions with health care providers during the childbearing year. *J Obstet Gynecol Neonatal Nurs*. 2005 Mar-Apr;34(2):151–162.
40. Ickovics JR, Reed E, Magriples U, Westdahl C, Schindler Rising S, Kershaw TS. Effects of group prenatal care on psychosocial risk in pregnancy: results from a randomised controlled trial. *Psychol Health*. 2011 Feb; 26(2):235–250. [PubMed: 21318932]
41. Novick G, Sadler LS, Kennedy HP, Cohen SS, Groce NE, Knafl KA. Women's experience of group prenatal care. *Qual Health Res*. 2011 Jan; 21(1):97–116. [PubMed: 20693516]
42. Rising SS, Kennedy HP, Klima CS. Redesigning prenatal care through CenteringPregnancy. *J Midwifery Womens Health*. 2004 Sep-Oct;49(5):398–404. [PubMed: 15351329]
43. Kennedy HP, Farrell T, Paden R, et al. "I wasn't alone"--a study of group prenatal care in the military. *J Midwifery Womens Health*. 2009 May-Jun;54(3):176–183. [PubMed: 19410209]
44. Ickovics JR, Kershaw TS, Westdahl C, et al. Group prenatal care and perinatal outcomes: A randomized controlled trial. *Obstet Gynecol*. 2007 Aug; 110(2 Pt 1):330–339. [PubMed: 17666608]
45. Ickovics JR, Kershaw TS, Westdahl C, et al. Group prenatal care and preterm birth weight: Results from a matched cohort study at public clinics. *Obstet Gynecol*. 2003 Nov; 102(5 Pt 1):1051–1057. [PubMed: 14672486]
46. Stein MB, McQuaid JR, Pedrelli P, Lenox R, McCahill ME. Posttraumatic stress disorder in the primary care medical setting. *Gen Hosp Psychiatry*. 2000 Jul-Aug;22(4):261–269. [PubMed: 10936633]
47. Eaton, WW. Center for Epidemiologic Studies Depression Scale: Review and revision (CESD and CESD-R). In: Maruish, ME., editor. *The use of psychological testing for treatment planning and outcomes assessment*. 3rd ed.. Mahwah NJ: Lawrence Erlbaum Associates; 2004.
48. Selner-O'Hagan MB, Kindlon DJ, Buka SL, Raudenbush SW, Earls FJ. Assessing exposure to violence in urban youth. *J Child Psychol Psychiatry*. 1998 Feb; 39(2):215–224. [PubMed: 9669234]

49. Campbell JC. Domestic homicide: Risk assessment and professional duty to warn. *Md Med J*. 1994 Oct; 43(10):885–889. [PubMed: 7808187]
50. Walker EA, Katon W, Russo J, Ciechanowski P, Newman E, Wagner AW. Health care costs associated with posttraumatic stress disorder symptoms in women. *Arch Gen Psychiatry*. 2003 Apr; 60(4):369–374. [PubMed: 12695314]

Table 1

Quantitative Measures

Measure	Description	Scoring
Demographics	Self-reported age, marital status, children under the age of 18 in the home, living situation (i.e. homeless, living alone, living with partner), race and Latina ethnic subgroup.	n/a
Exposure to violence: My Exposure to Violence Instrument (EVI); Danger Assessment (DA)	<i>EVI</i> Assesses past-year/lifetime exposure to violent events either witnessed or personally experienced, including frequency of exposure, for past year and lifetime. Has demonstrated high internal consistency ($r=0.68$ to 0.93), test-retest reliability ($r=0.75$ to 0.94), and evidence of construct validity. ⁴⁸ <i>DA</i> : Widely-used clinical/research instrument assessing presence of risk factors associated with intimate partner homicide. Assesses risk of severe/lethal intimate partner violence; has been used as a proxy for severity of partner violence. Internal consistency reliability has ranged 0.60 – 0.86 , test-retest reliability of 0.89 to 0.94 . ^{52 49}	<i>EVI</i> : 18-item yes/no dichotomous response format measure exposure to 18 possible categories of violent events. Frequency of exposure is measured on a 5-point scale (never, once, 2 or 3 times, 4 to 10 times, more than 10 times). <i>DA</i> : 20-item yes/no dichotomous response format measure exposure to risk factors. A weighted scoring algorithm for four levels of danger has been developed: variable danger (score of 0 – 7); increased danger (9 – 13); severe danger (14 – 17); and extreme danger (18). Possible scores range 0 – 38 .
Global stress symptoms: Perceived Stress Scale-10 (PSS-10)	Widely-used; assesses perceived global/chronic past-month stress, including how unpredictable, uncontrollable, and overloaded respondents find their lives to be. The PSS has good internal consistency ($\alpha = .78$) and good construct validity, with scores moderately correlating to other measures of appraised stress. ²⁹	10 items are scored from 0 = never to 4 = very often. Scores are obtained by reversing scores on the four positive items and then summing across all 10 items. Possible scores range from 0 – 40 . Population-based norms for women (mean score 13.7 , SD 6.6) have been published. ²⁹
Depressive symptoms: Center for Epidemiologic Studies Depression Scale, Revised (CESD-R)	Widely-used scale measures past-week depression symptoms, corresponding to DSM-IV symptom groups. Internal consistency estimates range from $.85$ to $.90$ and split-half reliability from $.77$ to $.92$; test-retest from $.51$ to $.67$.	20 items are each rated on 4-point Likert scales indicating the degree of past week occurrence. The scales range from 0 = "rarely or none of the time" to 4 = "most all of the time;" scored by summing items. Possible scores range 0 – 60 ; higher scores indicate greater depressive symptoms. Scores of 16 or greater are suggestive for depressive illness. ⁴⁷
PTSD symptoms: Posttraumatic Stress Disorder Checklist-Civilian (PCL-C)	Widely-used scale measures past-month PTSD symptoms, paralleling DSM-IV diagnostic criteria for PTSD. Has demonstrated excellent reliability ($.94$) for total scale score.	17 items ask respondent to rate the degree to which they have been bothered by past-month posttraumatic symptoms on a 5-point Likert scale, with responses ranging from 1 = "not at all" to 5 = "extremely." Responses are summed for total possible score 17 – 85 ; higher scores indicate greater PTSD symptoms. Scoring algorithm used by Walker et al. (<30 = low; 31 – 44 moderate; 45 = severe symptoms) has demonstrated excellent specificity ($.76$) and sensitivity ($.82$) in an HMO sample of women. ⁵⁰

Table 2

Sample Demographics

Gross annual income	n (%)
<\$5K	4 (16.7)
\$5K–11,999	3 (12.5)
\$12K–24,999	9 (29.1)
\$25K–34,999	5 (20.8)
\$35K–49,999	2 (8.3)
\$75K–99,999	1 (4.2)
Don't know income	2 (8.3)
Relationship status	
Single/live alone/children	7 (29.2)
Live with partner	17 (70.8)
Race	
White	19 (79.1)
Black	1 (4.2)
Native American	1 (4.2)
Biracial	1 (4.2)
Other/Did not identify	2 (8.3)
Ethnicity	
Latina	5 (20.8)
Current living situation	
Own apt/house, pay rent	8 (33.3)
With extended family	7 (29.2)
Subsidized housing	5 (20.8)
Own home w/ mortgage	2 (8.3)
Transitional housing	1 (4.2)
Homeless	1 (4.2)

Table 3

Scale Scores

Measure	Mean (SD)	Range	n (%)
DA	4.5 (5.2)	0–18	24 (100)
PSS	26.1 (7.5)	12–37	24 (100)
CESD-R	21.1 (14.7)	1–60	24 (100)
<i>Distribution</i>			
15			11 (45.8)
17–30			8 (33.8)
30–60			5 (20.8)
PCL-C	46.3 (15.6)	20–74	24 (100)
<i>Distribution:</i>			
30 (low)			4 (16.7)
31–44 (moderate)			6 (25.0)
45 (severe)			14 (58.3)
EVI			
Witnessing violence, past-year:			
<i>Number of items reported</i>	1.4 (1.3)	0–4	24 (100)
Violent victimizations, past-year:			
<i>Number of items reported</i>	0.1 (0.3)	0–1	24 (100)
Witnessing violence, lifetime:			
<i>Number of items reported</i>	3.4 (2.6)	0–9	24 (100)
Violent victimizations, lifetime:			
<i>Number of items reported</i>	2.8 (2.2)	0–7	24 (100)

DA = Danger Assessment; PSS = Perceived Stress Scale; CESD-R = Center for Epidemiologic Studies Depression Scale- Revised; PCL-C = Posttraumatic Stress Disorder Checklist-Civilian; EVI = My Exposure to Violence Instrument