

Rural Mothers Experiencing the Stress of Intimate Partner Violence or Not: Their Newborn Health Concerns

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Pregnancy and the postpartum period is a time of great physical, psychological, and emotional upheaval. Women who experience intimate partner violence experience more depression and anxiety and a higher risk of adverse pregnancy outcomes (such as those related to the abuse). While the literature supports the presence of increased health care utilization for abused women, there is little information on the way that these mothers seek medical care for their infants. This secondary analysis is part of a larger study on smoking cessation in low-income, rural pregnant women called Baby Behavioral Education Enhancement of Pregnancy (Baby BEEP). Women (N = 616) were classified as abused or not abused based on their answers to the Abuse Assessment Screen. At 6 weeks postdelivery, each woman was asked, "Has your baby had any problems that you talked to the doctor or nurse about?" The abused women (n = 211) sought health care advice significantly more often than the nonabused women (n = 405; Pearson $\chi^2 = 4.89$; $P = .027$). Stress scores were elevated for all women in the study, but women categorized as abused experienced significantly more stress ($P < .001$). *J Midwifery Womens Health* 2008;53:556–562 © 2008 by the American College of Nurse-Midwives.

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INTRODUCTION

Childbirth, while often seen as a joyful time, can also be a time of great stress and change. Stress during pregnancy has been linked to poorer outcomes in children, including elevated cortisol levels¹ and preterm birth.² Preterm birth and low birth weight have been associated with many adverse health problems that extend to adulthood, in part because of the effects of prenatal stress and the activation of the hypothalamic-pituitary-adrenal axis.³ Intimate partner violence (IPV) is a stressor for many pregnant women.

Women who experience IPV through physical, psychological, or sexual violence before, during, or after pregnancy encounter adverse effects in both maternal and infant health.^{4–6} Abused women, pregnant or not, often experience higher levels of depression,⁷ substance abuse,⁸ posttraumatic stress disorder, anxiety, and chronic mental illness⁹ than nonabused women. Abused women utilize additional health care^{10,11} that is not always related to physical trauma.¹² Women with a history of abuse continue to utilize additional care after the abuse has ended.¹¹ Health care costs for women with severe IPV can be double those of nonabused women.¹⁰

IPV can also affect the newborn infant's health. Physical assaults on the mother are associated with statistically significantly higher rates of preterm labor, placental abruption, uterine rupture before labor, and hemorrhage ($P < .001$), all of which may affect infant health. In addition, mothers who were physically assaulted were more likely to experience premature deliv-

ery and low birth weight (<2500 g; $P < .001$). The effects were worse for infants who were delivered immediately after the assault, including respiratory distress syndrome, fetal death, neonatal death, and infant death ($P < .001$).¹³ Some women cope with the stress of IPV through substance abuse,⁸ which also has adverse health consequences for the infant.⁸

The purpose of this article is to describe the frequency and reasons mothers seek health care consultations for their newborns in the first 5 weeks postdelivery and to investigate the role that IPV plays in health care utilization.

METHODS

This secondary data analysis is part of a large randomized controlled trial of a smoking cessation intervention during pregnancy called Baby Behavioral Education Enhancement of Pregnancy (Baby BEEP).¹⁴ The study, approved by the University of Missouri–Columbia's Institutional Review Board, was conducted through rural Women, Infant, and Children Nutritional Supplement (WIC) clinics in the Midwest. Pregnant women (N = 695) were randomized to one of four groups, two of which received a social support intervention throughout the study (n = 345). This consisted of a weekly telephone call from a research nurse plus pager access to the nurse for additional support. The intervention was purposefully unstructured and the women could discuss anything they desired.¹⁴ All 695 women in the study were considered for this secondary analysis, but only 616 women had complete data sets. The 79 women not included were either lost to follow-up (n = 36), experienced a spontaneous abortion or nonviable infant (n = 18), or had missing data (n = 25).

For the Baby BEEP trial, women were interviewed by

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the research nurses at three different times in the Baby BEEP trial: baseline (before 23 weeks' gestation [T1]), 28 to 32 weeks' gestation (T2), and 6 weeks postdelivery (T3). The T3 interview was the basis of this secondary analysis. This interview included questions about the birth (such as birth weight and labor complications); questions about stress, mental health, and social support; and the infant health care question, which is the focus of this secondary analysis: "Has your baby had any problems that you talked to your doctor or nurse about? If yes, what?" The mothers' responses were recorded verbatim by the nurses conducting the interview.

The women were categorized as currently abused if they answered yes to question 2, 3, and/or 4 on the Abuse Assessment Screen (AAS; Figure 1) at any of the three interviews. The focus of this secondary analysis was to determine if the stress of a mother experiencing abuse currently or in the past year increases her health-seeking behaviors regarding her newborn. Therefore, the lifetime abuse question was not considered.

In addition to the demographics, the following instruments were used at all three interviews: The AAS¹⁵ is a 5-question instrument that assesses for physical or sexual abuse. Construct validity was determined by comparing responses on the AAS with scores on other established domestic violence instruments.¹⁶ Internal reliability was established with a Cronbach α of 0.7270.¹⁷

The Abbreviated Perceived Stress Scale (PSS4)¹⁸ is a 4-item scale which measures the subject's perception of life stress¹⁸ in areas of situational control, self-confidence, and feeling burdened. In a smoking cessation program, the coefficient α reliability was 0.72, and validity was evaluated by comparing the PSS4 scores with the rate of smoking as a measure of stress, with a correlation of 0.26 ($P < .05$).¹⁸

The Prenatal Psychosocial Profile (PPP)¹⁹ consists of three sub-scales: stress, social support, and self-esteem. The PPP has consistently correlated high stress with

lower social support and lower self-esteem.²⁰ Cronbach's α for the overall scale is 0.92.¹⁹

The Mental Health Index-5 (MHI-5)²¹ measures anxiety, depression, loss of behavioral/emotional control, and psychological well being. A cut-off score of 65 or lower after converting the raw score to a 100-point scale indicates clinical depression.²² The MHI-5 has a Cronbach α of 0.74.²² Validity was examined by comparison with sensitivity of 0.83 and specificity of 0.78.²²

Simple statistics (frequency, means, and standard deviation) were used to describe the sample. To test for differences between the two groups, χ^2 tests of homogeneity and t tests were used.

RESULTS

Of the 616 women in this sample, 211 disclosed abuse and 405 were classified as nonabused. The demographics of the sample for this secondary analysis consists of young women (average age, 23.1 years) who identify as white or European American (91.2%) (Table 1). Most are married or living with a partner (70.6%) and have at least a general education development (GED) or high school diploma (62.7%). Forty-six percent of the women were primigravidas, 28% had one child, and 26% had two or more children. Both groups are similar in age and race. The nonabused women were more likely to be in a marriage-like relationship, to have a high school education or GED, and to have other children.

A total of 132 of the 211 abused women (62.6%) sought health care consultations for their infants, compared with 215 of the 405 nonabused women (53.2%), which is significantly different (χ^2 [20, $N = 616$] = 4.89; $P = .027$). However, the type of infant health concerns they sought consultations for did not differ significantly between the groups (Table 2).

The 132 abused women who sought consultations for their infants had 208 concerns (1.58 concerns per mother). The 215 nonabused women seeking consultations had 329 concerns, which is a similar number of consultations per woman as occurred in the abused group (1.53 concerns per woman), but is a fewer number of overall consultations when the entire group of nonabused women are considered.

In order to create Table 2, we took the list of the mothers' answers to the T3 infant health question as recorded by the nurses during the interview. These mothers' answers included diagnoses provided by health care providers, symptoms as reported by the mothers, and generalized concerns, such as problems breathing or problems with formula as stated by the mother.

These tallied answers were sorted by the investigators into 11 categories (Table 2). The categories were as follows: 1) feeding and digestion issues (constipation, jaundice, spitting up, problems with formula, and

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1. Have you ever been physically abused by your partner, ex-partner, the father of the baby? YES NO

WHO? _____

2. IN THE YEAR BEFORE YOU WERE PREGNANT, were you pushed, grabbed, shoved, slapped, hit, kicked or otherwise physically hurt by your partner , ex-partner or the father of the baby?YES NO

WHO? _____

3. SINCE YOU WERE PREGNANT, were you pushed, grabbed, shoved, slapped, hit, kicked or otherwise physically hurt by your partner , ex-partner or the father of the baby?YES NO

WHO? _____

4. IN THE PAST Year did your partner, ex-partner or father of the baby force you into sexual activities YES NO

WHO? _____

5. Are you afraid of your partner, ex-partner or father of the baby? YES NO

WHO? _____

Figure 1. Abuse Assessment Screen (AAS). Modified with permission from Parker and McFarlane.¹⁵

colic); 2) infection (thrush or yeast infection, cold, pneumonia, and ear infections); 3) respiratory issues (congestion, concerns or problems with breathing, and a cold); 4) skin issues (a rash, acne, or questions about the circumcision); 5) issues related to transition from birth (umbilical cord questions or admittance to a neonatal intensive care unit); 6) musculoskeletal issues (dislocated hip or shape of the infant's skull); 7) birth defects (jejunal atresia, clubfoot, imperforate anus, or cri du chat); 8) cardiovascular problems not including congenital heart defects (heart murmurs); 9) neuromuscular issues (tremors or possible seizures); 10) inborn errors of metabolism or blood disorders (sickle cell trait and phenylketonuria); and 11) an "other" category for situations that did not easily fit into the above categories (i.e., urinary reflux). Within the 11 categories, the highest number of individual concerns that the mothers sought health consultations for were related to feeding and digestion issues or infection.

Because there was no statistical difference between the categories of the above concerns for the two groups, *t* tests were used to investigate whether psychosocial factors could account for the abused mothers' increased use of health care.

Differences between the psychosocial scores (PSS4, PPP, and MHI-5) for abused and nonabused women were all significantly different ($P < .001$) at T1 in early pregnancy (Table 3). At the T3 interview (6 weeks

postpartum), abused women continued to report significantly higher stress, lower partner support, lower self-esteem, and more depression ($P < .001$). Social support from others also ranked significantly lower in the abused group when compared to those women who did not experience IPV ($P < .01$; Table 3).

DISCUSSION

This secondary analysis of the Baby BEEP study showed that women experiencing current IPV were more likely to seek health care for their infants than nonabused women. Although we cannot determine why they sought more health consultations for their infants, we do know that these women perceived more stress, were more depressed, and had less support than those women reporting no abuse. We hypothesize that maternal stress may be a major contributing factor to this increase in health care services utilization for their infants.

There are at least three possibilities that could explain how the stress could be a contributing factor. The poorer psychosocial status and/or the violence may have resulted in the infants of the abused mothers experiencing more illness. Another explanation may be that the mother's stress may have led to the mother being more hypervigilant, resulting in her seeking additional health care. Finally, it is possible that increased health care utilization may be a way for abused women to seek safety

Table 1. Demographics of Abused and Nonabused Participants

| Study Group | Abused ^a (n = 211) | Nonabused ^a (n = 405) | Total ^a (N = 616) |
|--------------------------------------|----------------------------------|-------------------------------------|---------------------------------|
| Age, mean (SD) | 22.40 (4.16) | 23.47 (4.73) | 23.10 (4.57) |
| Ethnicity | | | |
| White | 186 (88.6) | 376 (92.6) | 562 (91.2) |
| African American | 8 (3.8) | 11 (2.7) | 19 (3.1) |
| Hispanic | 3 (1.4) | 6 (1.5) | 9 (1.5) |
| Asian | 0 (.0) | 2 (0.5) | 2 (0.3) |
| Native American | 4 (1.9) | 6 (1.5) | 10 (1.6) |
| Other | 9 (4.3) | 5 (1.2) | 14 (2.3) |
| Living in marriage-like relationship | 129 (61.7) | 305 (75.1) | 434 (70.6) |
| High school diploma or GED | 117 (55.7) | 269 (66.3) | 386 (62.7) |
| Parity | | | |
| Primigravida | 103 (48) | 182 (45) | 285 (46) |
| Multigravida | 113 (52) | 223 (55) | 336 (54) |

GED = General education development.

^aValues reported as n (%) unless otherwise noted.

for themselves and their newborns. Each of these possibilities is discussed below.

Direct Impact of Stress on the Newborn

Stress scores (from the PPP) for all women in the study were elevated compared to the study by Curry,⁸ particularly for those experiencing abuse. In our study, scores on the PPP were 23.5 for abused and 20.8 for nonabused women (Table 3). In Curry's study, which also used the PPP, stress scores from a large sample (N = 1384) were much lower for abused women (21.8; n = 512) versus nonabused women (18.6; n = 872).⁸ It is possible that the infants of mothers in abusive relationships perceived their mothers' stress and experienced more illnesses that required medical attention. Infant perception of familial stress has been shown to be associated with sleep problems,²³ fussiness,²⁴ and colic.²⁵

Trauma within the family, including witnessing or experiencing abuse, can result in posttraumatic symptoms in very young children, most intensely in infants and toddlers who witness a threat to a caregiver.²⁶ Children whose mothers are abused experience a number of cognitive and emotional responses, including aggressiveness, hyperactivity, headaches, bedwetting, disturbed sleep, vomiting, and diarrhea.²⁷ Infants exposed to IPV have experienced trauma symptoms, such as increased arousal and aggression,²⁸ and are hospitalized more frequently.⁶

Because this study occurred within a smoking cessation program, all of the participants smoked for at least a portion of their pregnancy. Smoking during pregnancy has also been associated with increased infant health problems, including wheezing,²⁹ colic,³⁰ and nervous system problems, such as hypertonicity and increased excitability,³¹ all of which were listed as reasons for consultation. However, the abused women sought health

care for these reasons significantly more often than the women in the nonabused group.

Some of the feeding issues discussed by the mothers included problems with colic, which is already associated with anxiety.²⁵ Other feeding issues included desires to switch formula. Concerns about formula have been shown to be related to parental concerns about infant behavior, and were commonly associated with concerns about emesis and restlessness.³²

Hypervigilance in Mothers Experiencing IPV

Hypervigilance is a second possible explanation for the increased numbers of health care consultations for the infants of abused women. This heightened state of arousal may be interpreted by health care providers as a lack of knowledge or inability to care for the infant. Hypervigilance, a heightened arousal and awareness of fears, has been associated with postpartum depression³³ and posttraumatic stress.³⁴ In our study, the abused women possibly saw their infants as more vulnerable, and therefore felt a greater need to protect them. It is known that when a pregnancy is complicated, women continue to see their children as more vulnerable than other children.³⁵

Health Care as a Safety Net

Low-income rural women experience many stressors that are unique to their geographic area. These can include difficulty accessing adequate medical care in underserved areas, poorly maintained roads and lack of public transportation to access help, and difficulty obtaining financial assistance for care problems.³⁶ These barriers highlight the significance of the abused woman's increased utilization of health care. Does the health care

Table 2. Reasons Abused and Nonabused Mothers Consulted Health Care Providers for Their Newborn in the First 6 Weeks Postpartum

| Reason | Abused (n = 211), n (%) | Nonabused (n = 405), n (%) | Total (N = 616), n (%) |
|---------------------------|-------------------------------|----------------------------------|------------------------------|
| Feeding/digestion | 87 (41.23) | 132 (32.59) | 219 (35.55) |
| Infection | 47 (22.27) | 81 (20) | 128 (20.78) |
| Respiratory | 21 (9.95) | 35 (8.64) | 56 (9.09) |
| Skin | 20 (9.48) | 25 (6.17) | 45 (7.31) |
| Birth transition | 13 (6.16) | 19 (4.69) | 32 (5.19) |
| Musculoskeletal | 6 (2.84) | 11 (2.7) | 17 (2.76) |
| Birth defects | 3 (1.42) | 14 (3.46) | 17 (2.76) |
| Cardiovascular | 2 (0.95) | 8 (1.98) | 10 (1.62) |
| Neuromuscular | 5 (2.37) | 1 (0.25) | 6 (0.97) |
| Metabolic/blood disorders | 3 (1.42) | 1 (0.25) | 4 (0.65) |
| Other | 1 (0.47) | 2 (0.49) | 3 (0.49) |
| Total number of concerns | 208 | 329 | 537 |
| Number of consultations | 132 | 215 | 347 |

Table 3. Psychosocial Measure Scores by Groups of Abuse

| Measures | Abused | | Nonabused | | P |
|----------------------|--------|---------------|-----------|---------------|-------|
| | n | Mean (SD) | n | Mean (SD) | |
| T1 | | | | | |
| PSS4 | 210 | 8.16 (3.69) | 406 | 6.65 (3.57) | <.001 |
| PPP: Stress | 210 | 23.48 (5.30) | 406 | 20.84 (4.71) | <.001 |
| PPP: Partner support | 173 | 48.33 (14.03) | 370 | 53.76 (10.54) | <.001 |
| PPP: Other support | 205 | 50.01 (13.14) | 402 | 53.94 (10.39) | <.001 |
| PPP: Self-esteem | 209 | 32.34 (5.67) | 405 | 34.07 (5.18) | <.001 |
| MHI-5 | 205 | 53.29 (18.40) | 398 | 62.14 (17.89) | <.001 |
| T3 | | | | | |
| PSS4 | 210 | 6.40 (3.84) | 406 | 5.18 (3.51) | <.001 |
| PPP: Stress | 208 | 21.05 (5.33) | 403 | 18.08 (4.38) | <.001 |
| PPP: Partner support | 169 | 50.27 (13.74) | 359 | 54.70 (10.64) | <.001 |
| PPP: Other support | 206 | 51.70 (12.38) | 398 | 54.23 (10.92) | <.01 |
| PPP: Self-esteem | 207 | 33.86 (5.86) | 402 | 35.59 (5.12) | <.001 |
| MHI-5 | 210 | 61.01 (19.76) | 406 | 69.46 (17.20) | <.001 |

MHI-5 = Mental Health Index-5; PPP = Prenatal Psychosocial Profile; PSS4 = Abbreviated Perceived Stress Scale; T1 = baseline; T3 = within 6 weeks after delivery.

provider provide a physical safety net, an emotional safety net, or both?

Anecdotal reports from the telephone logs of women in the Baby BEEP study indicate that abused women seek health care to receive feedback that they were good mothers. A notation, for example, from one telephone log of an abused mother reads:

“She was able to get him to his doctor appointment and he has gained weight and is throwing up less. She said she felt good about the doctor saying he was doing fine.”

Another woman discussed using her pediatrician as a way to confirm that she was doing the right things with her infant. Other women described the need of seeking help to keep the household under control to avoid distressing their partner. Still another woman described seeking health care as a way to involve her partner in the infant’s care. This was noted by the research nurse recording in this woman’s telephone log:

“At this time, the client said she wanted her partner to be the father of the baby since the biological father would not have anything to do with the baby. Having him go with her to doctor appointments was very important in order to involve him in the care of her baby.”

While none of the women shared that they were actually seeking safety, it is known that some women use health care as a refuge.³⁷ The decision to seek help may be based on the belief that a situation is unacceptable and that the problem will not be corrected without the help of others.³⁸ If a woman cannot fix a problem herself, she seeks informal sources of help (such as family or friends) before finally turning to formal agencies such as courts or

shelters.³⁸ When a woman reaches out to others about the violence, she may have exhausted her internal resources.

There is scant information in the literature about the effect of maternal distress on the rate of infant health care utilization. Because women use health care as a refuge for themselves,³⁷ and because of the social values that support maternal help-seeking,³⁹ we can consider that women may use their children’s health care problems as help-seeking for themselves. Women may find it easier to disclose abuse when directly asked,^{40,41} although this may be more difficult during pregnancy because of her desire for her infant to have an involved father.^{42,43}

Limitations of the Study

This cohort reflected the population of rural low-income women in this Midwestern area. It may be difficult to generalize these findings to other regions, urban areas, and people of differing ethnicities. Because this secondary analysis was from a large randomized controlled trial with women smoking during pregnancy, the findings may not be the same for populations of women who did not smoke during pregnancy. In one of the largest population-based studies examining risk factors in healthy term infants, Carroll et al.⁴⁴ found that 20% of the sample had at least one health visit for bronchiolitis. This is a similar number of respiratory infections found in our sample. However, in their sample,⁴⁴ maternal smoking increased this risk by 14%.

The T3 question on reasons for consultations was open-ended. Information came from mothers’ self-report, and was open to their interpretations of health. Clustering health concerns into groups created a duplication of data. A mother who consulted a health care provider for “breathing problems,” “congestion,” and a “cold” was counted twice under respiratory and once for infection.

We could not know for sure the number of consultations or episodes the child experienced, the number of calls or visits made to health care providers, or the profession and setting of the contacted provider. The study should be replicated with more specific questions to capture this type of information.

IMPLICATIONS FOR HEALTH CARE INTERVENTION

The first 6 weeks postpartum is an important time for transition, because both mother and infant experience great physiologic, emotional, and psychological adjustment. Most are able to transition through this period without difficulty and without the need of consulting health care providers. The significantly higher number of consultations by abused women highlights the need for additional attention during this period. The most powerful intervention may be as simple as repeated screening for IPV throughout pregnancy and postdelivery visits, a recommendation that is supported by the Family Violence Prevention Fund.⁴⁵

This study supports the idea that clinics should give all women education and resource information whether or not they disclose IPV or if they do not admit to being exposed to IPV. In our collective experiences, we have found women to be very receptive to IPV information and resources. In pediatric and women's health settings, a routine policy of screening and educating all women may be the single most helpful action that can be provided.

Additionally, this study supports looking beyond the immediacy of the presenting concern and reflecting on the entire clinical presentation. Frequent calls or visits for common infant concerns should be a red flag for providers. They must be cognizant of the psychosocial state of women and based on that assessment are obligated to intervene on her behalf. Referrals to support programs, such as battered women's services, counseling, parenting support, and financial services, could make a positive impact on the lives of these women and their infants.⁴⁵

CONCLUSION

For health care providers, the data suggest a need for great diligence in terms of IPV. Although the mothers experiencing IPV did not voice concerns about their own safety, multiple calls and/or visits might be seen as a sign for the provider to reflect on the possibility of IPV. It is difficult in the day-to-day clinical practice to see beyond the immediately expressed concerns. However, the data suggest that considering only voiced concerns about the infant may represent a lost opportunity to intervene on a more critical health concern that impacts both mother and child. Reflective practice is difficult, but considering that multiple calls or encounters could reflect another level of problems provides the opportunity to aid a mother who may know of no other avenue for help for herself.

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