STRESS PERCEPTION AMONG RURAL AND URBAN PERINATAL PATIENTS

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ABSTRACT

Pregnancy can be a source of both physical and emotional stress for the pregnant woman. Stress can greatly impact one's well-being by increasing blood pressure, reducing coping mechanisms, and ultimately threatening one's homeostasis. Anecdotal data indicates that urban and rural areas afford different sociocultural stress. There is a dearth of studies that explore perceptions of stress among pregnant women and no known studies that explore the perception of stress among pregnant women who live in different sociocultural areas of the United States. The purpose of this pilot study was to explore perceptions of stress among rural and urban pregnant women. Findings indicated that rural participants attended prenatal classes more than urban participants and that urban participants perceived greater overall stress than rural participants. The study lends feasibility to future research exploring perinatal stress as influenced by geographical, sociocultural factors.

BACKGROUND

Numerous studies indicate that pregnancy can be a stressful time for expectant mothers (Nierop, Wirtz, Bratsikas, Zimmermann, & Ehlert, 2008; Orr, Reiter, Blazer & James, 2007). Maternal stress in pregnancy is associated with elevated blood pressure, excessive weight gain, weight loss, sleeplessness, fatigue, and decreased coping skills (Hobel, Dunkel-Schetter, Roesch, Castro & Arora, 1999). Chronic maternal stress can lead to cardiovascular issues and increased susceptibility to infectious disease (March of Dimes Birth Defects Foundation, 2009).

In a meta-analysis of the literature, Glover and O'Connor (2006) noted that stress in pregnancy has negative implications for the fetus and could have a long-term negative effect on the child's behavior and neurodevelopment. Weinstock (2008) explored the effect of stress-induced levels of cortisol and corticotrophin releasing hormone in pregnancy. Based on animal studies, Weinstock postulated that increased maternal levels of cortisol and glucocorticoids could cause learning deficits in the child by altering neurological development of the fetus. Van den Bergh, Mulder, Mennes, and Glover (2005) found that high levels of maternal anxiety caused an increase in adrenaline and a reduction of placental blood flow, exposing the developing fetus to possible hypoxia. Nierop et al. (2008) found that complications such as low infant birth weight, gestational complications, postpartum depression and developmental issues in infancy were associated with women who reported high levels of stress throughout pregnancy.

Dayan, et al., (2002) studied 634 pregnant women and found that anxiety and depression along with various biomedical risk factors were correlated with premature delivery. This finding was also supported in a study done by Dole, et al. (2003).

In a convenience sample of 278 pregnant women, Oweis (2001) found that stress experienced by women during the birthing process was positively associated with postpartum depression. Similar findings were noted by Goldbort (2006) in a qualitative study that explored the relationship between unexpected birthing experiences and mood disorders.

Some researchers have postulated that pregnancy-specific stress may have a stronger impact on a woman's physical state than stress in general (DiPietro, Ghera, Costigan & Hawkins, 2004). Pregnancy-specific stress involves stress that pregnant women experience related to their pregnancy such as concerns over labor and delivery, worries about the health of the baby, parenting, etc., according to Lobel, et al. (2008). These researchers criticized studies that did not consider the perinatal patient's perception of pregnancy-specific stress, but instead measured stress in terms of the number of life event stressors such as moving, loss, job change, etc. Lobel et al. (2008) studied perceived pregnancy-specific stress in 279 pregnant women and found that there was a positive association between pregnant women who identified significant pregnancy-specific stress and preterm delivery.

Although there is ample research that links stress and pregnancy, little is known about the perception of stress among pregnant women living in the rural area compared with the perception of stress among pregnant women living in urban areas. Hartley (2004) found that rural health care has a notably greater need for improvement and revision compared to health care in the urban setting. Hartley argued that rural populations do not have access to the necessary health services, as do populations in urban areas. Galambos (2005) found that there are perinatal disadvantages among rural populations including a shortage of medical specialists, physicians and nurses. Rosenblatt and Hart (2000) noted that only 9% of the physicians in the United States serve rural populations even though 20% of the American people live there. The rural area has a higher infant mortality rate than urban areas (Eberhardt & Pamuk, 2004). In a study conducted by Zust and Briggs (2006) findings indicated that problems with staffing labor and delivery nurses in a rural hospital led to a higher interventional and instrumental delivery rate than the national average.

In addition to the disparity of resources in the rural area, distance to the limited resources and lack of public transportation compound the problem for people living in the rural area. In some rural areas of the country, inclement weather such as blizzards and ice storms can further impede rural dweller's access to health care resources. Understanding the nature of perinatal stress is important in guiding practice to effectively reduce perinatal stress. However, it cannot be assumed that urban perinatal stress is the same as rural perinatal stress. The purpose of this pilot study was to explore the perception of stress among rural perinatal patients and the perception of stress among urban perinatal patients.

METHODS

An exploratory design with a 15-item survey was used for this study. Thirteen items required participants to use a 0-10 Likert Scale to rate their stress in pregnancy related to factors such as support, financial concerns, physical self concerns, physical baby concerns, labor and delivery concerns, and overall stress. The survey also included two open-ended questions. The first question asked participants to suggest what providers, nurses, and other health care

personnel could have done to help them reduce their stress. The second open-ended question asked participants who had previous pregnancies to comment on their current experience of pregnancy stress in comparison to the stress they experienced in a prior pregnancy. In addition to the 15-item survey, demographic data was requested that included age, geographic location, employment status, income, number of pregnancies (parity), provider, and whether or not the participant attended prenatal classes.

Following Institutional Review Board (IRB) approval, as well as administrative approval from the hospitals involved, perinatal patients in a rural birthing unit and perinatal patients in an urban birthing center were invited to participate in this study. The rural birthing unit was located in a town of 33,000 people and served a large farming community involving five counties in the Midwest. The urban birthing center was located in a metropolitan area of 89,000 on the East Coast. Staff nurses in both settings assisted with data collection by asking their assigned postpartum patients if they would like to participate in the study by completing the survey. Patients were told that the surveys were anonymous; that they should not place their names on the survey, and that they had the right to refuse to participate. Women who were not able to read and write in English were excluded from the study. Women who had a current negative birth outcome were not asked to participate in this study out of respect for their grieving process.

Data were analyzed using descriptive statistics, simple frequencies, and correlations. Narrative data were analyzed using content analysis.

RESULTS

Forty-four participants agreed to participate in this study. There were 22 rural participants and 22 urban participants. The rural sample was obtained before the urban sample, although sample collection in both areas was simultaneous. The larger urban staff of nurses needed reminders to invite their patients to participate. It is unknown how many patients chose not to participate in the study.

Participants ranged in age from 16 to 39 years old. The mean age of the rural participants (28.8 years) was slightly higher than the mean age of the urban participants (26.6 years). More rural participants (81.8%) attended perinatal classes than urban participants (68.2%). Half of the rural participants (50%) had just delivered their first baby (primipara) and 40.9% of the urban participants were primipara patients. The rural participants had more income than the urban participants. Half of the rural participants (50%) had an income above $60,000 compared to roughly a fourth (27.2%) of the urban participants who had an income above $60,000. Income less than $20,000 was reported by 13.6% of the rural participants and 22.7% of the urban participants. A slightly higher percentage of rural participants (54.5%) chose an OB/GYN provider for their perinatal care than urban participants (50%). Nurse midwives were chosen by 13.6% of both the rural and urban participants (Table 1).

Using a 0-10 Likert Scale, urban participants rated their stress higher than rural participants in every category with a few exceptions (Table 2). Urban participants rated stress over physical concerns for self, for baby, and for the labor and delivery process higher than rural participants. Stress over physical concern for self and labor and delivery were rated higher for primipara participants in both urban and rural areas than for multipara participants in each respective area. Urban primipara and multipara participants reported a mean rating regarding stress for their physical wellbeing as 7.3 and 4.4, respectively. In comparison, rural primipara

Table 1. Demographics of Perinatal Participants

	Mean Age	Job Status	Income		Provider		Prenatal Classes
Urban	26.6	Part time: 18.2%	$0-20,000:	22.7%	OB/GYN-	50%	Yes: 68.2%
			$20,000-40,000:	13.6%	Family MD-	36.4%	No: 31.8%
			$40,000-60,000:	36.4%	Nurse Midwife-	13.6%	
		Full time: 81.8%	$60,000-80,000:	13.6%			
			$80,000-100,000:	13.6%			
Rural	28.8	Part time: 31.8%	$0-20,000:	13.6%	OB/GYN-	54.5%	Yes-81.8%
			$20,000-40,000:	13.6%	Family MD-	31.8%	No-18.2%
			$40,000-60,000:	22.7%	Nurse Midwife-	13.6%	
		Full time: 68.2%	$60,000-80,000:	31.8%			
			$80,000-100,000:	18.2%			

and multipara participants reported a mean rating of stress regarding their physical wellbeing as 3.7 and 1.4, respectively. Urban primipara and multipara participants reported a mean rating of stress regarding labor and delivery as 8.8 and 7.2, respectively. Rural primipara and multipara participants reported a mean rating of stress regarding labor and delivery as 8.1 and 3.5, respectively. Stress regarding the wellbeing of the baby was rated higher for urban primipara and multipara participants (at 8.0 and 8.5, respectively) than for rural primipara and multipara participants (6.9 and 6.4, respectively.)

Rural primipara participants demonstrated more perceived slightly more stress concerning their providers (1.7) than urban primipara participants (0.2). Rural multipara participants rated their stress concerning finances on the average of 2.4, while urban multipara participants rated their stress regarding finances 1.8. Transportation was perceived to be slightly more stress producing for rural participants (1.0) than for urban participants (0.5). The data showed that transportation stress was higher for multipara participants than for primipara

Table 2. Mean score for perceived stress among urban and rural participants on a 0-10 Likert Scale Response (10=extreme stress).

	Rural Primipara	Rural Multipara	Urban Primipara	Urban Multipara
Overall stress	7.7	4.5	8.9	8.0
Stress over self physical concerns	3.7	1.4	7.3	4.4
Stress over labor and delivery	8.1	3.5	8.8	7.2
Stress over baby's wellbeing	6.9	6.4	8.0	8.5
Stress over provider	1.7	1.0	0.2	1.1
Financial stress	1.7	2.4	3.6	1.8
Transportation stress	0.3	1.7	0.1	0.8
Employment stress	0.1	1.3	2.1	1.1
Stress over support	1.6	0.3	3.2	0.9

participants in both areas. Primipara rural participants rated their transportation stress on the average of 0.3 while rural multipara participants rated their transportation stress as 1.7, compared to their urban counterparts who rated this stress as 0.1 and 0.8, respectively.

Stress related to employment was rated lower by rural primipara participants (0.1) than by urban primipara participants (2.1). Rural multipara participants indicated slightly more stress regarding employment (1.3) than their urban counterparts (1.1). Stress regarding their support system was rated higher for primipara and multipara urban participants (3.2 and 0.9, respectively) compared to primipara and multipara rural participants (1.6 and 0.3 respectively).

The mean score for overall stress was highest for urban primipara participants (8.9), followed by urban multipara participants (8.0); than rural primipara participants (7.7), and rural multipara participants (4.5). Of the urban primipara participants, 100% rated their overall stress greater than or equal to 7 while 72.7 % of the rural primipara participants rated their overall stress greater than or equal to 7. Of the urban multipara participants, 84.6% rated their overall stress greater than or equal to 7. In comparison, only 27.2% of the rural multipara participants rated their overall stress greater than or equal to 7 (Table 3).

Using an alpha of .05 to determine significant Pearson correlations, findings indicated that overall stress was associated with labor and delivery concerns for both rural (.797) and urban (.573) participants. Overall stress was associated with physical concerns for baby among rural participants (.639) but this association was not demonstrated by the Pearson correlation for urban participants (.118). However, labor and delivery stress was associated with stress over the physical wellbeing of the baby for both rural (.560) and urban (.635) participants. There was a greater correlation between labor and delivery stress and stress regarding maternal physical wellbeing for urban participants (.712) than for rural participants (.416). Stress regarding transportation was associated with stress over providers for urban participants (.600). There was not a significant association found between transportation stress and provider stress among rural participants (.368) (Table 4).

There was a positive correlation between stress regarding support concerns and financial stress among urban participants (.846). There was not a significant relationship found between stress over support concerns and financial stress among rural participants (.186). A significant negative correlation was found between stress regarding one's support system and stress over the physical well being of the baby among urban participants (-.565). This correlation was not significant among rural participants (-.167). Stress regarding concern over one's own wellbeing was significantly associated with geographical area (.511) (Table 4).

Overall, 91% of multiparous rural participants and 92.3% of multiparous urban participants reported that they experienced a different kind of stress with their current pregnancy than with a prior pregnancy. Narrative data indicated that stress perceived by multiparous

Table 3. Percent of participants in each category who rated their overall stress on a 0-10 Likert Scale (10= extreme stress).

	Rural Primipara	Rural Multipara	Urban Primipara	Urban Multipara
Rated overall stress 0-3	9.1%	45.5%	0%	7.7%
Rated overall stress 4-6	18.2%	27.3%	0%	7.7%
Rated overall stress 7-10	72.8%	27.3%	100%	84.6%

Table 4. Significant associations using Pearson's Bivariate Correlation of stress factors among rural and urban participants. Significance determined using .05 alpha.

	Rural Participants Pearson R	Urban Participants Pearson R
Overall stress associated with stress regarding labor and delivery concerns	.797	.573
Overall stress associated with stress regarding baby's well-being	.639	Not significant
Stress regarding baby's wellbeing associated with stress regarding labor and delivery concerns	.560	.635
Stress regarding self wellbeing associated with stress regarding labor and delivery concerns	.416	.712
Stress regarding provider associated with stress regarding transportation	Not significant	.600
Stress regarding support associated with stress regarding finances	Not significant	.846
Stress regarding support associated with stress regarding baby's wellbeing.	Not significant	.565

participants in both rural and urban areas was greater for their current pregnancy than a previous pregnancy due to complications the participants experienced with a prior pregnancy. For example, one participant stated "I'm worried about having another preemie." Another commented, "I'm worried about pain medications because the epidural made me sick last time." Several multiparous participants commented that the fact that they were adding another child to their household increased their stress.

The narrative data indicated that both urban women and rural women felt their overall stress could have been decreased if certain interventions by health care providers took place. Both urban and rural women voiced that having a nurse explain procedures and remain more present and encouraging during the labor and delivery process, would have reduced stress. Numerous participants wrote about how the lack of explanations by the nurse added to their stress as evidenced by the following quotes. "I thought something was wrong. If I had known about being on monitors the whole time it would have helped"; and "I really wish someone would have really taken the time to sit down with me and answer all my questions…. I had no idea what to expect or anything."

Participants explained that the nurse could have an impact on creating a calm and supportive environment thereby easing stress as evidenced by the following quotes. "The room was so loud and chaotic; the nurse could have created a quieter environment"; "If only my nurse had been a little supportive"; and "If only my nurse had been more caring".

DISCUSSION

Participants in the urban area perceived greater overall stress than participants in the rural area. One possible explanation for the higher stress rate in the urban setting might be that some urban participants may have been referred to the urban setting for a high acuity pregnancy. The fact that there was a significant association noted between perceived stress over one's physical wellbeing and area, with the highest perceived stress regarding maternal physical wellbeing demonstrated in the urban area, lends support to the postulation that the urban participants may have had higher perinatal acuity. Unfortunately, acuity was not measured in this study.

It is also possible that the noted inequity of perceived stress may be due to the fact that the rural sample represented a wealthier group than the urban sample. In addition to the fact that the urban sample reported an overall lower income than the rural sample, the cost of living is roughly 11% higher on the East Coast than in the rural Midwest (Cost of Living Calculator, 2010). Therefore, a limitation of this study is that there was an economic disparity between the rural and urban sample that may have played a role in the increased overall stress of the urban sample.

Although the finding of greater stress in the urban sample in comparison to stress noted in the rural sample may be in part due to a higher acuity of patients with less financial resources, the stress differences could also be due to area cultural differences regarding social support. Anecdotal data indicates that there is a strong sense of community and close family ties in the rural area. Bushy (2000) contended that there is a sense of social connectedness in the rural area. People are considered to be neighbors, even though they live miles apart. This sense of community creates a network of support that may result in reduction of perceived stress.

One of the most important findings was that rural participants attended prenatal classes more than urban participants which may have contributed to the higher overall stress level of the urban group. Prenatal education is designed to address a knowledge deficit about labor and delivery and breastfeeding, thereby reducing fear and anxiety (Lu, et al., 2003; March of Dimes Birth Defects Foundation, 2009). Segeel and du Plessis (2006) argued that education about the birthing process enhances coping skills by reducing fear of the unknown. In a meta-analysis of the literature, Beddoe and Lee (2008) found that strategies to enhance relaxation, improve self-understanding and self-efficacy, and advance education about the birthing process were best done in a group. Nierop et al. (2008) contended that psychosocial support is important in buffering stress for pregnant women. Prenatal classes present an opportunity for pregnant women to develop peer support among each other while acquiring perinatal knowledge and relaxation skills.

One possible explanation for the discrepancy between rural and urban prenatal class participation could be that prenatal class attendance continues to be valued by the rural culture, but has waning importance in the urban setting. Morton and Hsu (2007) noted that prenatal class attendance has been declining. Using an ethnographic study design involving 11 prenatal classes, these researchers found that attendance in childbirth education was a cultural issue and that the classes offered needed to be sensitive to the culture in which they were presented. These researchers found that participants in what they referred to as a "spa culture" (p. 28) were exposed to relaxation techniques through other sources such as yoga and pilates, and therefore did not need to learn relaxation techniques through prenatal classes.

The finding that rural participants had an 81.8% participation rate in prenatal classes, suggests that prenatal classes in the rural area still present content that is valued by the rural

constituency. This finding is noteworthy. Although Morton and Hsu (2007) found a downward trend in childbirth education class attendance in the urban setting, no studies have explored the attendance of prenatal class education in the rural area. Unfortunately, Morton and Hsu's postulation that the "spa culture" of today have other resources that replace prenatal education, has resulted in the downsizing of prenatal classes in both urban and rural hospitals by some governing health care systems. This downsizing of prenatal classes inherently gives the curriculum an uban focus that lacks sensitivity to the rural area.

Due to the lack of public transportation in the rural area as well as the significant distance represented by a five county area, it was anticipated that stress over transportation concerns would be an identified stressor in the rural area. However, this was not the case. Both rural and urban participants rated their concern over transportation low. Primiparous participants in both areas rated their stress over transportation lower than multiparous participants in both areas. This finding may reflect the added stress a pregnant woman has of transporting her other children to a place where they will be cared for while she is hospitalized for labor and delivery. Given that this study took place in the summer, rural ratings about transportation stress may have been higher if the study took place in the winter when inclement weather could have been a factor.

An interesting finding was that both rural and urban participants had access to the same scope of perinatal providers. Approximately half of each group chose OB/GYN specialists over family practice or midwives. This finding may reflect the explosion of specialty physicians in the United States and possibly the growing need for family practice physicians (Miller, 2009).

The narrative responses in this study did not address how nurses and other health care professionals could reduce pregnancy specific stress during their pregnancy. All of the narrative responses for ways nurses could help reduce their stress pertained to the stress they perceived in labor and delivery. These responses provided a strong universal message from both rural and urban participants that nurses could be key in reducing perinatal stress by being more "present" at the bedside. This finding lends support to research that upholds the importance of nursing presence in birthing suites as a means of reducing perinatal complications (Gagnon, Waghorn, & Covell, 2008) and preventing postpartum mood disorders (Goldbort, 2006; Halldorsdottir and Karlsdottir, 1996; & Oweis, 2001).) Halldorsdottir and Karlsdottir (1996) found that the patients perceived a lack of nursing's caring presence; the patient's perceived lack of connection to the nurse; and the patient's perception of lack of control associated with not knowing what was happening and why, were contributing factors to postpartum mood disorders.

The participants' perception of nursing's lack of presence at the bedside is of concern and only speculation can provide possible explanations for their perceptions. Perhaps nurses assume that they are not needed if a patient is physically comfortable due to the help of today's effective pain relief interventions. Perhaps more patient monitoring is happening from the nurses' station in front of banks of monitors transmitting fetal heart tracings. Perhaps staffing for nursing's caring and connected presence at the bedside is not considered cost effective by administrations. Perhaps nursing time spent with the electronic medical record has compromised time spent with the patient at the bedside. Perhaps there are complications due to obstetrical unit census in staffing qualified perinatal nurses in the rural area (Zust & Briggs, 2006). More research is needed to explore these conjectures and to further establish the need for nurse-patient relationships that convey a caring and empowering presence (Halldorsdottir & Karlsdottir, 1996; Koloroutis, 2004).

The convenience sample and the small number of participants are important limitations to this study. The small sample limits the power of this study, rendering the results inconclusive.

However, the findings strongly suggest the rural area has different needs than the urban area concerning prenatal classes and that there is a need for developing nurse-led prenatal classes that are culturally sensitive according to geographic area. The study also lends support for performing a larger, randomized study to explore perinatal stress specific to geographical, sociocultural factors.

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