

Redesigning Prenatal Care Through CenteringPregnancy

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CenteringPregnancy is a model of group prenatal care that provides more than 20 hours of contact time between the childbearing care provider and a cohort of pregnant women with similar due dates. During this time, each woman has the opportunity to build community with other pregnant women, learn self-care skills, get assurance about the progression of her pregnancy, and gain knowledge about pregnancy, birth, and parenting. Ten essential elements have been defined, which contribute to the success of this model of prenatal care delivery. These elements correspond with the Institute of Medicine's 2001 challenge to improve the quality of health care in the United States. Foundational perspectives provide potential explanations for the model's growing influence and success. Implications for clinical practice and further research to link it with perinatal health outcomes are suggested. *J Midwifery Womens Health* 2004;49:398–404 © 2004 by the American College of Nurse-Midwives.

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INTRODUCTION

The health care system is struggling. An expert panel for the Institute of Medicine published "*Crossing the Quality Chasm: A New Health System for the 21st Century*" in 2001, which concludes that current delivery systems are poorly organized to meet today's health care challenges.¹ This report proposes six fundamental aims central to health services outcomes. Care must be 1) safe, 2) effective, 3) patient-centered, 4) timely, 5) efficient, and 6) equitable. To the uninitiated, these aims may seem obvious; however, those providing frontline prenatal care know that a major redesign of delivery systems is needed to accomplish these basic goals. This article presents a discussion of one such emerging model of health care.

CenteringPregnancy was created when it became apparent that the regular prenatal care system was no longer effective to meet the needs of women.² Since its inception more than 10 years ago, Centering has gained momentum and is emerging as a potentially "disruptive redesign" of US prenatal care.^{3,4} The elements of the CenteringPregnancy model are described with a discussion of its concordance with the Institute of Medicine's goals for quality health care. Relevant foundational theories are also discussed to provide guidance for understanding the model and its growing influence and for future research.

THE CENTERINGPREGNANCY MODEL

Development of CenteringPregnancy paralleled the publication of the report by the 1989 US Public Health Service Expert Panel on Prenatal Care, "*Caring For Our Future: The Content of Prenatal Care.*"⁵ This panel challenged the empirical basis for many of the routines of prenatal care and

highlighted evidence that supports the benefits of prenatal education. Systems were encouraged to strengthen the education content available to women and families and the report established a policy platform for the development of programs such as CenteringPregnancy.

CenteringPregnancy is founded on a set of "Essential Elements" that provide the structure for effective group prenatal care (Table 1). In the CenteringPregnancy model, individual prenatal care is generally dispensed with and replaced with ten 2-hour prenatal group sessions with 8 to 12 women who share similar due dates. Women are invited to join the group sessions after an initial prenatal assessment and laboratory testing is completed. The sessions comprise prenatal health care and education and begin at 12 to 16 weeks of pregnancy, concluding in the early postpartum. Within the group space, women learn self-care skills including measuring their own blood pressure and weight, which they record in their medical record and they receive an individual physical assessment from their prenatal care provider. The women then meet together as a group to discuss issues around the content of pregnancy, childbirth, and parenting. This group discussion, facilitated by the prenatal care provider, is stimulated by self-assessment sheets geared to the content plan for each session and completed by the women at the beginning of each session.

The model's roots are in Minnesota with the Childbearing Childrearing Center established in the 1970s. This center was a place for low-risk women and their partners to receive prenatal care from midwives, to join in support groups with couples of similar gestation, and to continue with well-child care thereafter. It was founded on the philosophical belief that "a dynamic union of health care provider and consumer holds the greatest potential for the personal growth of both. The consumer is viewed as an equal partner in care and works actively with the care provider to develop goals and appropriate means to reach those goals."⁶ These early experiences led to the formalization of CenteringPregnancy, and the model was piloted

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Table 1. Essential Elements of CenteringPregnancy

Essential Elements
Health assessment occurs within the group space.
Women are involved in self-care activities.
A facilitative leadership style is used.
Each session has an overall plan.
Attention is given to the core content; emphasis may vary.
There is stability of group leadership.
Group conduct honors the contribution of each member.
The group is conducted in a circle.
Group composition is stable, but not rigid.
Group size is optimal to promote the process.
Involvement of family support people is optional.
Opportunity for socialization within the group is provided.
There is ongoing evaluation of outcomes.

in 1993 to 1994 in an East coast hospital clinic. This pilot included 13 ethnically diverse and primarily Medicaid-eligible prenatal groups to determine the response of the participants and providers to the program. Attendance was excellent, and 96% of the women in these groups stated they preferred receiving their care this way, with 98% saying they liked being with other women during their prenatal care.⁴

As of 2004, more than 700 midwives, nurses, physicians, educators, social workers, and administrators have been prepared in the model with more than 50 sites active throughout the United States and Canada and growing international interest. Although the majority of these sites are in community health centers and hospital or public health clinics, they are also in private offices and large HMOs. Collectively, these sites serve women of all socio-economic classes, encompassing the entire childbearing age range and representing many different ethnic backgrounds. Several locations provide groups in Spanish; other languages are being piloted.

Program evaluation and maternal-infant outcomes studies have been supported through agencies interested in its potential to influence perinatal health outcomes. The March of Dimes has been particularly supportive, providing modest funding to many sites in their early development phase. A randomized clinical trial funded by the National Institute

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of Mental Health currently is enrolling more than 1100 women at Yale and Emory Universities. Other grants have helped with the development of CenteringPregnancy for women incarcerated during pregnancy and another for HIV positive teens. The CenteringPregnancy and Parenting Association was established in 2001 to educate professionals in the model, to track implementation sites, and to measure outcomes. This association is currently developing a CenteringParenting model to continue the groups for mother-baby care in the first year of life.

CENTERINGPREGNANCY AND THE REDESIGN OF PRENATAL CARE

When the Institute of Medicine's expert panel presented their report to develop a new health care system for the 21st century, they did not provide a specific blueprint, because "imagination abounds at all levels, and all promising routes for innovation should be encouraged."¹ However, the report did suggest 10 rules that could enhance the quality of any redesign. Table 2 provides an overview of how the Essential Elements, the underpinning of CenteringPregnancy, correlate with these Institute of Medicine rules and what women and providers have said about their experience with the model.

Caring for Our Future outlines basic objectives for prenatal care, which include the pregnant woman, the fetus and infant, and the family. Perhaps the most difficult objectives to fulfill in traditional care are those listed under family objectives: 1) promoting healthy family development, reducing family violence, 2) reducing unintended pregnancies, and 3) promoting use of community resources.⁵ When seen in this broader perspective, the current model of prenatal care, with its focus on risk assessment, is inadequate to support the woman and her family in the tasks of pregnancy. As stated by Alexander and colleagues in a recent analysis of the effectiveness of prenatal care, "The role of adequate utilization of prenatal care has more recently been downplayed and greater credence has been given to the importance of the content, comprehensiveness, and quality of prenatal care."⁷ The challenge of meeting the above objectives within the traditional care system is overwhelming, further emphasizing the need for a redesign of care delivery.

Each of the Essential Elements of CenteringPregnancy provides a building block fundamental to developing a new architecture for prenatal care delivery. The first three elements require the greatest departure from current prenatal care delivery, and they push the provider to envision a different milieu for the therapeutic care environment. The following is a brief description of each of these elements, why they are important, and how they translate into actual health care delivery.

Health assessment occurs within the group space. Pregnancy for most women is a normal, healthy event. The focused physical assessment (e.g., documentation of fetal heart rate and measurement of fundal height) provides a

Table 2. Correspondence of CenteringPregnancy With the Institute of Medicine's Rules for Health Care Redesign

Institute of Medicine's Rules for Health Care Redesign	Essential Elements of CenteringPregnancy	What Women Say About CenteringPregnancy*
Care is based on continuous healing relationships.	Continuity and stability of group leadership Group composition is stable, but not rigid Facilitative leadership	"The other women in the group became another group of friends for me." "I'd say the community building has been the most satisfying thing to see among patients and it has been the most satisfying thing for me, personally, because you become included in that community as well."(provider)
Care is customized according to patient needs and values.	Each session has an overall plan; emphasis varies with group needs Facilitative leadership Opportunity for socialization is provided	"I'm learning that it doesn't matter what the group doesn't talk about because we're talking about what matters to the group."(Provider) "I'm so happy to be here in this group. I feel so comfortable, and it feels so good that everyone here speaks Spanish. I have felt so alone in this country. . . ." "I felt like I was in a family." "We are all on the same path doing it together."
The patient is the source of control.	Women are involved in self-care activities Facilitative leadership	"I really liked checking my blood pressure, it's a great way of learning." "They (providers) didn't just give you medicine and not tell you what was wrong. Even if they tried to do that you had a chart there that told you what was wrong."
Knowledge is shared and information flows freely.	Each session has an overall plan; emphasis varies with group needs Facilitative leadership Group is conducted in a circle	"You feel trust and you lose your embarrassment, because you speak your problems out loud and as they say, 'a bunch of brains think better than one.'" "The group helped us so much . . . others had the same concerns we had. Our discussions didn't follow the agenda . . . we solved our own problems."
Decision making is evidence-based.	There is ongoing evaluation of outcomes	"Centering will only move forward as a widely accepted model if empirical data document positive outcomes."(administrator) "The women treasured what they learned, went home and taught their friends, and some now want to be nurses."(provider)
Safety is a system property.	Women are involved in self-care activities Group is conducted in a circle Continuity and stability of group leadership Involvement of family support people is optional	"Although it was a group it seemed more intimate, more time was spent on specific issues that I'm not sure would have been brought up or discussed with a provider in a 10 minute session." "In the group you have the same two people check you every time. You know your care is being watched."
Transparency is necessary	Women are involved in self-care activities There is ongoing evaluation of outcomes Group is conducted in a circle	"We watched each other grow; everybody loved it. 'Oh, you're a lot bigger this week!'" "I liked how we were going through the same issues and discussed different methods or ways we approach them."
Needs are anticipated.	Facilitative leadership Each session has an overall plan; emphasis varies with group needs	"People would come to the group tired, anxious, worried and every single time, without fail, everyone left happy, laughing, lighter."
Waste is continuously decreased.	Health assessment occurs within the group space Continuity and stability of group leadership	"We came at the same time and left at the same time and something was happening the whole time we were there." "I enjoy the freedom, creativity, and common sense inherent in the Centering model of care. I feel like I've done meaningful and satisfying work after EVERY group, that maybe I'm participating in something with a lasting impact."(provider)
Cooperation among clinicians is a priority.	Non-hierarchical cooperation occurs between different service providers	"We're able to do some preventive medicine . . . it is impossible to present all of that content to women individually."(physical therapist)

*Quotes are from CenteringPregnancy group evaluation data and pilot studies.

private time with the provider within the group space. The conduct of the assessment in the group space serves to normalize the process and affirms the woman's personal sense of how well her pregnancy is progressing. The group gradually bonds in this intimate shared time and sees the normalcy of the physical changes of pregnancy. Hearing all the babies' heartbeats connects the women to each other and to their babies and encourages the sharing of the

intimacy of pregnancy with others. Having many of the activities occur simultaneously and within the group enhances the efficiency of care required in any system redesign.

Women are involved in self-care activities. An important goal for all persons is taking individual responsibility for personal health, and this is even more important during pregnancy when the growing baby depends on the nurturing

activities of the mother. Activities such as determining weight and blood pressure are self-assessed by each woman who then records the data in her own record. This enhances her understanding of the physiologic measures and their implications for her total health, moving her from being a passive to an active participant in her care. This also contributes to her sense of control in the care process. This activity mirrors the Institute of Medicine's encouragement to provide the patient with "the opportunity to exercise the degree of control they choose over health care decisions that affect them."¹

Facilitative leadership style is used. A hallmark of successful adult education is learner readiness. In *CenteringPregnancy* it is assumed that the woman is an expert on what she needs. Therefore, the leader facilitates the flow of discussion to address the self-identified needs of the individuals within the group in a way that capitalizes on the strengths of the group process. This atmosphere helps to establish the non-hierarchical nature of group interaction. To allow women to draw on their own strength and knowledge, the facilitator must spend much of the group time listening, providing gentle guidance and education only when appropriate. As the discussions progress, there is a flow of information among the group, emphasizing valuable knowledge and debunking myths. This method of imparting information has healing potential where a woman's needs are anticipated as described by the Institute of Medicine.

There is stability of group leadership. Women often state that they would rather have continuity during their pregnancy than to have visits with several different possible birth attendants. It is important that the facilitator commit to the group for all of the 10 sessions because the history of the group is difficult to convey to another person, and the dynamics and trust can be altered. It takes time for the "spirit" of the group to emerge; the facilitator holds each woman and her story in trust as the dynamics of the group cohesion evolve. For the facilitator, noting the development of the group process and the growing sense of empowerment demonstrated by the women is one of the most rewarding parts of group leadership and responds to the Institute of Medicine's call for continuous healing relationships.

Each session has an overall plan. Attention is given to the core content; emphasis may vary. Group sessions begin with a plan based on common gestational changes and preparation for birth and parenting. At the beginning of each session, women complete a self-assessment sheet that helps guide the discussion and allows them to identify their current concerns and needs. The facilitator balances the planned content with the group-generated discussion. For example, some of the common discomforts associated with the physical changes are shared by many women and may become a partial focus for the group, even though they had not been part of the original plan. Care becomes customized to the woman's needs and those of the group; women learn

from each other how to handle difficult personal and family issues.

The group is conducted in a circle. Group conduct honors the contribution of each member. Within a circle, all positions are equal. Opportunity is provided for each person to share and for the group members to provide active support and problem solving for each other. Through the provider's facilitation each participant claims her or his own knowledge, beliefs, and power. This open sharing among the members also provides opportunity for a woman to test her own "knowing" and to fill in identified gaps, all of which leads to a greater sense of empowerment. Group members also gain confidence in the value of their own voice and their ability to teach others based on this experience. This non-hierarchical group process promotes the "transparency" described by the Institute of Medicine where information is shared honestly, flows freely, and enhances women's ability to make health care decisions.

Group composition is stable, but not rigid. Most pregnant women enjoy meeting other pregnant women during their pregnancy. There is a natural bonding that happens as they listen to each other's story. A group size of 8 to 12 women is both efficient for the system and effective to promote the process. Once a group has been formed, it is possible to include another woman if size permits, and it is expected that she would be welcomed and accepted. This stability of the group enhances the development of community as relationships grow and bonds solidify.

Involvement of family support people is optional. Groups provide extensive support for the participant, although they are not "therapy" sessions. Women can ask partners, mothers, sisters, or friends to participate with them if they desire. Groups can also decide by consensus if they would prefer to keep the group as a women-only time. The group collectively deals with issues of trust and control as they decide who is invited to join the circle. Confidentiality within the group is essential for it to be a safe space for women to share about sensitive issues. "Self-revelation takes courage and trust, which must be honored and held in confidence."⁸ This reflects the emphasis on safety by the Institute of Medicine as an essential element of redesign.

Opportunity for socialization within the group is provided. Community building is an important aspect of *CenteringPregnancy* as women make connections with others, some of whom may live in their neighborhood. Groups conducted in native languages also honor cultural differences and help women to feel valued. Teen groups are especially effective as they honor the particular needs of adolescents to socialize with peers and to have opportunities for learning within an interactive environment. Healthy refreshments facilitate this informal connecting during the social time that occurs during the initial gathering of the group and as women are participating in their health assessments. By the completion of all sessions, most women will have exchanged phone numbers and will

request a reunion after the births of their children. Many of these groups continue as play groups.

There is ongoing evaluation of outcomes. Whenever there is a paradigm shift, it is important to evaluate the effect on the system, the women, and the staff. Immediate evaluation by the women themselves regarding their own medical record is seen as they discuss their laboratory values and the data they personally enter into their chart. Evaluation tools that include predictors and outcomes of pregnancy are available for use by each site. This evaluation process must be carefully designed and conducted to ensure the highest quality data. Aggregate evidence of success or concerns of this model needs to be documented over time and is of the utmost importance to systemwide change.

THEORETICAL PERSPECTIVES SUPPORTING THE CENTERINGPREGNANCY MODEL

More than 10 years of experience and several studies have demonstrated that this model works.⁴ The Institute of Medicine's framework for redesigning health care provides one format for supporting the premises of CenteringPregnancy. Health care reform continues to be high on the agenda of policy makers and *Crossing the Quality Chasm* is providing direction. In addition, there are other relevant frameworks known to support health care interactions, including feminism, midwifery, group function, social support, and self-efficacy, which contribute to the power of the CenteringPregnancy model.

Feminism

Feminism is founded on a number of philosophical and theoretical beliefs about women and their place and role in the world. Andrist proposed a feminist foundation for health care that would include symmetry in the provider-patient relationship, access to information, participation in decision making, and potential for social change.⁹ Symmetry in the provider-patient relationship redresses the power differential between a woman and her health care provider. Core elements in a symmetrical relationship include the removal of: physical and social barriers to care, obstacles to access of personal medical information, and disrespectful treatment. In CenteringPregnancy, women have an opportunity to read their charts and to question terminology or laboratory results they may not understand. This model of care confirms to the woman that her concerns are important and that other women in the group may have similar ones. The group process is based on the needs and experiences of the participants, rather than the values of the medical system. Through participation in CenteringPregnancy groups, women learn to advocate for themselves, their families, and their communities. These skills are reflected in a growing confidence of the woman to care for herself and her family and to get needs met within the health care community.

Midwifery Model of Care

The midwifery framework proposed by Kennedy and colleagues, with its emphasis on the relationship between the midwife and the woman, also is relevant.^{10,11} This framework is founded on the belief that although the midwife works to create an environment to support the needs of the woman, each brings mutual knowledge and power to the relationship. The outcomes of care in this framework are articulated as "life journeys" for the woman and midwife that go far beyond standard perinatal measures used in current health care. Providers of CenteringPregnancy comment on the professional and personal renewal they feel as they are able to spend 20 hours with the women in the group listening to their stories and providing needed guidance. Women comment, "that midwife... she really knew me." Over the 10 years that the model of CenteringPregnancy has been conducted, the feedback has been resounding that outcomes can be profound.

Social Support Theory

Social support theory speaks to the value of community and its importance to one's sense of well-being. Groups provide women with social support. That support is built through actions from others that contribute to a feeling of inclusion and importance and to the development of a network of belonging. The relationship of social support to pregnancy outcomes suggests that women with high life stress and low psychosocial assets or support experience more pregnancy complications, postpartum depression, and adverse neonatal outcomes.¹²⁻¹⁶ Although lack of social support is related to poorer pregnancy and postpartum outcomes, positive social support seems related to better pregnancy outcomes, including improved fetal growth and increased infant birth weight.¹⁷ Baldwin found that women who participated in CenteringPregnancy groups perceived more support from their significant others than those receiving individual prenatal care.¹⁸ Perhaps the provision of resources and information offered in group care helps to mitigate physical and psychological stressors in pregnancy.

Groups honor a pregnant woman's need for affiliation and also provide opportunity for skill building, attitude change, self-responsibility, and the development of social support and community as members share their common life experiences. In CenteringPregnancy groups, women share the common focus of pregnancy, but all come with different experiences and challenges. The group collectively may create solutions or suggest coping mechanisms. In addition, the group format allows for a variety of learning experiences—auditory, visual, and experiential—that uphold the principles of adult learning. Studies in several areas of health care attest to the improved health outcomes of those receiving care in groups.¹⁹⁻²²

Self-Efficacy Theory

Self-efficacy theory also provides a supportive framework for the model. It proposes that perceptions of agency affect the achievement of specific outcomes. For example, a woman's sense of her own ability to handle life stresses may predict her success in coping with the challenges of birth and parenting. The support a woman receives from the group also may motivate her to engage in healthy behavioral changes, leading to healthier pregnancy outcomes.^{17,23} Learning from other women in the CenteringPregnancy group helps the individual woman apply group strengths to the context of her own life, potentially enhancing her personal self-efficacy.

IMPLICATIONS FOR PRACTICE AND RESEARCH

CenteringPregnancy evolved from a basic belief in women and families and the observation that the current system was not responding to their needs. Ultimately, it will need to be evaluated on how well it crosses the chasm to respond to the Institute of Medicine's aims for quality health care that is safe, timely, efficient, patient-centered, effective, and equitable.

According to Strong, "much of what promotes better pregnancy outcomes has less to do with prenatal care than it does with caring during the prenatal period."²⁴ Preliminary data suggest that CenteringPregnancy contributes to improvements in perinatal outcomes. A prospective, matched cohort study with 458 women found that birth weight was higher for infants of women in group care versus individual prenatal care. Among infants born preterm, infants born to women who received group prenatal care were significantly larger than infants of women who received individual care (mean 2398 versus 1990 g; $P < .05$).²⁵ Continuing effort is needed to identify critical research questions and to design and implement studies to explore the relationship between the Essential Elements of CenteringPregnancy and the complex positive effects the model appears to have for women and families. Empowerment, pregnancy and parenting stress, readiness for parenting, and maternal-fetal attachment can be measured to explore the model's effect on mental and physical health. Long-term maternal and child health outcomes, including unintended pregnancy, postpartum depression, preventable childhood illnesses, and domestic violence, are issues that continue to negatively impact the health of families and are important to examine when evaluating long-term effects of this model of care. Other research questions are articulated in the article by Novick in this issue.

Issues of cost-effectiveness are critical to health care delivery systems today and cost-effectiveness evaluations will be one of the most important items on the research agenda. Changing the way health care is delivered also affects how providers feel about their work. The tension between the demands of the system and the desire of practitioners to provide patient-centered care often is acute,

leading to increasing job dissatisfaction. McCloskey and colleagues polled certified nurse-midwives (CNM) in the late 1990s to document how changes in the health care system had influenced their ability to practice.²⁶ They found, "a significant number of CNMs in the field described threats to their ability to sustain economically viable practices and a style of care consistent with the women-centered, prevention-oriented midwifery model."

CONCLUSION

CenteringPregnancy redesigns the way health care is delivered to women during pregnancy. As with any new model, it is imperative to explore the effects of the change on health care outcomes, satisfaction with care, and family health and well-being.

Providers who have been practicing the model believe that profound changes are happening for women in groups. One midwife provided the following description of the changes in her practice since beginning CenteringPregnancy groups.

I think that I have revisioned what it means to be a midwife because, like many midwives, I came out of school wanting to catch babies. I think that what midwives really are about is helping mothers give birth to themselves, that's what we do that's important and that's how we impact the baby. And in some ways almost anybody can catch a baby, but it is a much more complex process to help a woman give birth to herself as a mother for that baby (unpublished focus group data, 2002).

This suggests that CenteringPregnancy has a powerful effect on the women who participate, as well as the ability to change how midwives practice the art of midwifery with the women they serve. It holds the potential for a revolutionary redesign of prenatal health care delivery . . . a way to provide health care that energizes providers, is embraced by childbearing women, provides many benefits for the system, and responds directly to the vision of the Institute of Medicine for Health Care for the 21st century.

To create a future different from its past, health care needs leaders who understand innovation and how it spreads, who respect the diversity in change itself, and who, drawing on the best of social science for guidance, can nurture innovation in all its rich and many costumes.²⁷

REFERENCES

1. Institute of Medicine. Crossing the quality chasm: A new health care system for the 21st century. Washington (DC): National Academy of Sciences, 2001.
2. Rising S. CenteringPregnancy: An interdisciplinary model of empowerment. *J Nurs Midwifery* 1998;43:46–54.

3. Christensen C, Bohmer R, Kenagy J. Will disruptive innovations cure health care? *Harvard Bus Rev* 2000;102–11.
4. Ferlie E, Shortell S. Improving the quality of health care in the United Kingdom and the United States: A framework for change. *Milbank Q* 2001;79:291.
5. United States Public Health Service. *Caring for our future: The content of prenatal care*. Washington (DC): Department of Health and Human Services, 1989.
6. Rising S, Lindell S. The childbearing childrearing center: A nursing model. *Nurs Clin North Am* 1982;17:11–22.
7. Alexander G, Kotelchuck M. Assessing the role and effectiveness of prenatal care: History, challenges and directions for future research. *Public Health Rep* 2001;116:311.
8. Bolen J. *The millionth circle*. Berkeley (CA): Conari Press, 1999.
9. Andrist L. A feminist model for women's health care. *Nurs Inquiry* 1997;4:268–74.
10. Kennedy H. The essence of nurse-midwifery care, the woman's story. *J Nurs Midwifery* 1995;40:410–7.
11. Kennedy H. A model of exemplary midwifery practice: Results of a Delphi study. *J Midwifery Womens Health* 2000;45:4–19.
12. Norbeck J. Social support: A model for clinical research and application. In Chinn P, editor. *Developing substance mid-range theory in nursing*. Gaithersburg (MD): Aspen Publishers, Inc, 1994: 56–73.
13. Norbeck J, Tilden V. Life stress, social support and emotional disequilibrium in complications of pregnancy: A prospective multivariate study. *J Health Soc Behav* 1983;24:30–46.
14. Norbeck J, Anderson N. Psychosocial predictors of pregnancy outcomes in low-income black, hispanic and white women. *Nurs Res* 1989;38:204–9.
15. Logsdon M. Helping hands. Exploring the cultural implications of social support during pregnancy. *AWONN Lifelines*, 2000;4:29–32.
16. Beck C. Predictors of postpartum depression: An update. *Nurs Res* 2001;50:275–85.
17. Dunkel-Schetter C, Sagrestano L, Feldman P, Killingsworth C. Social support and pregnancy: A comprehensive review focusing on ethnicity and culture. In Pierce G, Sarason B, Sarason I, editors. *The handbook of social support and the family*. New York: Plenum, 1996:375–412.
18. Baldwin K. The effect of the CenteringPregnancy prenatal care model on knowledge, social support, health locus of control, satisfaction and sense of participation of pregnant women. Unpublished doctoral dissertation. Teachers College New York: Columbia University, 2003.
19. Sampson E, Marthas M. *Group process for the health professions*. Albany (NY): Delmar Publishers, 1990.
20. Clancy D, Cope D, Magruder K, Huang P, Wolfman T. Evaluating concordance to American Diabetes Association standards of care of type 2 diabetes through group visits in an uninsured or inadequately insured patient population. *Diabetes Care* 2003;26: 2032–6.
21. Noffsinger E, Sawyer D, Scott J. Group medical visits: A glimpse into the future? *Patient Care* March 2003 [Internet]. [Date accessed: July 1, 2004.] Available from: <http://www.patientcareonline.com>.
22. Taylor J, Davis R, Kemper K. A randomized controlled trial of group versus individual well child care for high-risk children: Maternal-child interaction and developmental outcomes [Internet]. *Pediatrics* June 1997;99:e9. [Date accessed: July 1, 2004.] Available from: <http://www.pediatrics.org/cgi/content/full/99/9/9>.
23. Feldman P, Dunkel-Schetter C, Sandman C, Pathik D. Maternal social support predicts birth weight and fetal growth in human pregnancy. *Psychosom Med* 2000;62:715–25.
24. Strong T. *Expecting trouble: The myth of prenatal care in America*. New York: New York University Press, 2000.
25. Ickovics J, Kershaw T, Westdahl C, Rising S, Klima C, Magriples U. Group prenatal care improves preterm birth weight: Results from a matched cohort study at public clinics. *Obstet Gynecol* 2003; 102:1051–7.
26. McCloskey L, Kennedy H, Declercq E, Williams D. The practice of nurse-midwifery in the era of managed care: Reports from the field. *Matern Child Health* 2002;6:127–36.
27. Berwick D. Disseminating innovations in health care. *JAMA* 2003(April 16);289:1974.