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A Comparison of Latina Women in CenteringPregnancy and Individual Prenatal Care

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A Comparison of Latina Women in CenteringPregnancy® and Individual Prenatal Care

by

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DEDICATION

I dedicate this dissertation to my parents Selma and Robert Trudnak who have supported me in so many ways throughout the years. Your selfless dedication to all of your children and continued encouragement has helped us all become the people we are today. To my father, you taught me hard work, determination and to take every moment for what it is and enjoy the ride. To my mother, your endless love, laughter and excitement has always helped me continue on my journey and "spread my wings." All that am and ever hope to be, I owe to my parents.

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ABSTRACT

CenteringPregnancy is a model of group prenatal care that replaces routine, individual prenatal care. The program brings women together into small groups to receive their care and prenatal education, and is based on three components: *risk assessment*, *education*, and *support*. The model is client-centered, designed to empower pregnant women and support persons, and involves the woman in small group discussions of 8-10 other women of similar gestational age. The group discussions provide support, help women educate each other, and invoke self-monitoring. Currently, there have been few publications that closely examined maternal weight and obesity and associated outcomes in women involved in CenteringPregnancy; and there are a limited number of studies that examined Spanish-speaking CP groups with Latinas. Therefore, the primary purpose of this retrospective cohort study was to compare pregnancy outcomes of Latina women who completed CenteringPregnancy in a public health clinic to women who completed individual care in the same clinic during the same time. The secondary purpose of this study was to understand perceptions of care among multiparous women who recently completed CenteringPregnancy and completed individual prenatal care in the past. Both quantitative and qualitative methods were employed to examine differences in pregnancy outcomes and maternal factors in both prenatal care groups, and to understand women's perceptions and experience in both CenteringPregnancy and individual prenatal care. A total of 487 patient charts were obtained for data collection (Intervention n= 247,

Comparison n=240) and 10 women who recently completed CenteringPregnancy at the health department and completed individual prenatal care in the past completed in person in-depth interviews. The results indicated that there were no differences in infant birthweight or gestational age at delivery between the groups. Compared to women in individual care, women in CenteringPregnancy had increased odds of: having a vaginal birth as opposed to a primary cesarean section, aOR =2.57, (95% CI: 1.23-5.36), attending prenatal care visits, aOR=11.03, (95% CI: 4.53, 26.83), attending postpartum care visits, aOR=2.21 (95% CI: 1.20, 4.05) and formula-only feeding their infants, aOR=6.07 (95% CI: 2.57-14.31). Compared to women in individual care, women in CenteringPregnancy had decreased odds of gaining below the recommended amount of gestational weight, aOR=0.41, (95% CI: 0.22, 0.78). Qualitative findings indicated that women who complete CenteringPregnancy were more satisfied with their care, received more education and support and were more empowered to make decisions about their pregnancy and childbirth. The program provides a system of social support that encapsulates all types of social support to provide relief of stress, encourage positive relationships and empower women to help facilitate healthy pregnancies. CenteringPregnancy at the Pinellas County Health Department increased health care utilization and informed and empowered women through social support.

CHAPTER ONE:

INTRODUCTION

Support groups have been used in health care settings often with people trying to manage a disorder or treatment. Recently, these types of support groups have been implemented in prenatal care so that pregnant women could gather together in a positive environment, learn from and provide support for each other, take control of their own pregnancies, gain friends, become better educated about maternal health and labor and birth, have prolonged contact with health care providers and have fun. In 1998, Sharon Rising, a nurse-midwife, first introduced a new model for prenatal care (Rising, 1998). This model called, CenteringPregnancy was formed in response to the newly revised recommendations of prenatal care at the time and satisfies Medicaid components of routine prenatal care. CenteringPregnancy is a model of group prenatal care that replaces routine, individual prenatal care by incorporating assessment of the pregnancy along with extensive education and group support. The program brings women together into small groups to receive their care and prenatal education, and is based on three components: *risk assessment*, *education*, and *support* (Ickovics, Kershaw, Westdahl, Magriples, Massey et al., 2007; Klima, Norr, Vonderheid, & Handler, 2009; Rising, 1998). The CenteringPregnancy model is client-centered, designed to empower pregnant women and support persons, and involve the woman in small group discussions that invokes

education and self-monitoring (Reid, 2007). In each group, 8-10 women of similar gestational age gather together for ten 2 hour prenatal visits and two postpartum visits (Rising, 1998). The time and number of settings is often altered in individual clinics to best meet the needs of the clients and the clinic. The CenteringPregnancy program along with a CenteirngParenting program are manages through the Centering Health Care Institute ("Centering Health Care Institute," 2010).

Women begin their first class at about 12-16 weeks gestation after they have an initial individual prenatal care visit. During the group visits, women spend individual time with a health care provider (usually a midwife but it may also be an obstetrician) for screenings and risk assessment to assess overall maternal and fetal well being. Ultrasound monitoring is done to listen for fetal heart tones, fetal position and size are assessed, fundal height is measured and vaginal exams are conducted. Each woman learns to do her own self assessment along with the rest of the women in the group. The self assessment includes measuring weight, and blood pressure, calculating the estimated gestational age and completing self assessment tools. This is often done with assistance by health care providers during the first few visits. As the group continues, women help each other with these assessments.

The risk assessment portion of the class is followed by group discussion and education that is moderated by a midwife, nurse or health educator. During the education portion several topics are addressed including, comfort and relaxation during pregnancy, exercise and physical activity, nutrition, childbirth preparation, sexuality, communication and self-esteem, issues of abuse or domestic violence, care for the baby, infant feeding (which an emphasis on breastfeeding), parenting and contraception. Time is also given

for women to share thoughts, ideas, and ask questions to the health care providers and each other (Rising, 1998). The class is structured as a support group. Chairs are set up in a circle and all of the women and the health care providers sit in the circle. Refreshments are served and one of the health care providers is the consistent leader of the group. There is also a sense of stability in the group since all of the health care providers that are involved should attend all of the classes and women are highly encouraged to attend every class. There is a formal and informal sharing of information and women and their support partners are free to ask questions and state their opinions. Discussions among the participants are encouraged. There is an exchange of names and phones numbers and women are encouraged to contact each other outside of the group if they need additional support. The structure of the class is based on social support theory.

CenteringPregnancy is implemented and monitored through the Centering Healthcare Institute led by Sharon Rising. When a clinic or hospital decides to use CenteringPregnancy they must be trained by CenteringPregnancy staff and must purchase the program which includes trainings manuals and patient guides. The CenteringPregnancy program is an alternative to individual care and follows the same guidelines for assessment, laboratory testing and education set forth by the American College of Obstetrics and Gynecology (ACOG) (ACOG, 2010). Table 1.1 shows the time frame based on estimated gestational age of CenteringPregnancy sessions compared to individual prenatal care visits. The topics covered in the CenteringPregnancy manual are listed Table 1.2. See Appendix A for a table of assessments, routine laboratory/diagnostic procedures and education based on the ACOG routine prenatal care guidelines for CenteringPregnancy and individual prenatal care (ACOG, 2010).

Table 1.1: Estimated Time Frame of Individual Prenatal Care Appointments and complimentary CenteringPregnancy Sessions (Reid, 2007).

Individual Care appointments based on gestational weeks	**CenteringPregnancy sessions based on gestational weeks**
12 weeks (initial visits)	12 weeks initial visit
16 weeks	16 weeks: Session 1
20 weeks	20 weeks: Session 2
24 weeks	24 weeks: Session 3
28 weeks	28 weeks: Session 4
30 weeks	30 weeks: Session 5
32 weeks	32 weeks: Session 6
34 weeks	34 weeks: Session 7
36 weeks	36 weeks: Session 8
37 weeks	38 weeks: Session 9
38 weeks	40 weeks: Session 10
39 weeks	
40 weeks	If CenteringPregnancy program ends before a woman gives birth she may come in for individual visits until she gives birth

Table 1.2: CenteringPregnancy Sessions (Reid, 2007).

	Sessions	Topics
Initial visit		
Prenatal care visits	Introduction	Introduction to CenteringPregnancy
	Session 1	My prenatal care- What's most important Personal goals for a healthy pregnancy Nutrition during pregnancy- My weekly food pyramid
	Session 2	Common discomforts Exercises Oral Health
	Session 3	Relaxation measures (controlling stress) Thinking about Breastfeeding: Family and Parenting issues
	Session 4	Family planning and contraception Keeping myself safe and healthy Family and parenting issues
	Session 5	Personal goals- update of session 1 Childbirth
	Session 6	Comfort measures for labor and delivery Postpartum care
	Session 7	Decisions of pregnancy Care of the baby Preparation for siblings
	Session 8	Personal Assessment (birth, feelings and concerns, postpartum emotional adjustment, support systems)
	Session 9	Pregnancy review Birth Care of the baby
	Session 10	All about my baby
	Social gathering	Social gathering where women bring their babies. Conducted 1 week after last baby of the group is born.
Postpartum visit	Postpartum	Postpartum visit (depending on the site may be several postpartum visits)

CenteringPregnancy was established to provide higher quality prenatal care for women and to reduce adverse birth outcomes and improve maternal health. CenteringPregnancy groups have been established throughout the U.S. and internationally such as in Germany and Australia. Groups are formed with women of all races, ethnicity, ages, and income levels. The number of Spanish-speaking CenteringPregnancy groups is growing in the U.S. and many group leaders work with CenteringPregnancy to provide a culturally appropriate and linguistically sensitive program.

In the U.S., about half of women of reproductive age are either obese or overweight (Stotland, 2008), and it is estimated that one-third of pregnant women are obese (Mills, Troendle, Conley, Carter, & Druschel, 2009). Obesity and other related pregnancy complications such as gestational diabetes and hypertensive disorders disproportionately affects Latinas in the U.S. (Yeo, Wells, Kieffer & Nolan, 2007; Thorpe, Berger, Ellis, Bettegowda, Brown, Matte et al., 2005). These complications can lead to adverse pregnancy outcomes such as preeclampsia, high birth weight and large-for-gestational-age infants. In Pinellas County, Florida, Spanish-speaking CenteringPregnancy groups provide comprehensive prenatal education and focus on important issues for Latinas, such as nutrition, exercise and healthy weight gain. Continued research is needed on the effectiveness of CenteringPregnancy groups. Specifically, research is needed to assess maternal obesity indicators in Latina women in CenteringPregnancy groups.

The Pinellas County Health Department-Clearwater clinic serves a prenatal clientele that is about 90% Spanish-speaking, mainly Mexican Americans. The health

department began CenteringPregnancy groups in late 2006 and all of the women enrolled in the groups are Spanish-speaking. In addition, all of the presentations and materials are presented in Spanish. The Centering Health Care Institute requests that women complete evaluation forms in each CenteringPregnancy group. However, to date, there has been no formal evaluation of the CenteringPregnancy program comparing findings to women in traditional individual care at the health department. The health department is in need of an evaluation of the CenteringPregnancy program to ensure quality prenatal care is provided for patients in the program and to investigate whether there are fewer adverse pregnancy conditions and outcomes due to the intervention than in traditional individual prenatal care.

Statement of the Problem/Need

An alternative form of prenatal care called, CenteringPregnancy, has been implemented to address and prevent adverse pregnancy outcomes through a client-centered, group care approach. There are currently a limited number of studies that have assessed birth outcomes of women who attended CenteringPregnancy compared to individual prenatal care. To continue to fill gaps in the literature, it is important to assess these programs and determine if there are improved outcomes associated with this type of care ("Centering Health Care Institute," 2010). The number of Spanish-speaking CenteringPregnancy groups is growing in the U.S. and group leaders are focusing on important issues such as nutrition, exercise and healthy weight gain for Latina women. However, there are limited studies that have specifically assessed Latinas in CenteringPregnancy or closely examined maternal weight and obesity. In addition, there is limited research that focuses on theory and how the types of social support are

provided to women in the group. Therefore, there is a need for research, specifically aimed at assessing birth outcomes and maternal factors of Latinas in CenteringPregnancy compared to Latinas in individual prenatal care.

Research Plan

Study purpose. The primary purpose of this retrospective cohort study is to compare pregnancy outcomes of Latina women who completed CenteringPregnancy in a public health clinic to women who completed individual care in the same clinic during the same time. The secondary purpose of this study is to understand perceptions of care among multiparous women who recently completed CenteringPregnancy and completed individual prenatal care in the past. This research will address a current gap in the literature on adverse birth outcomes and maternal factors related to CenteringPregnancy programs for Spanish-speaking women. This project completes three main objectives when comparing CenteringPregnancy and individual prenatal care: 1) compare birth outcomes including gestational age at delivery, birth weight of infants and method of birth of women who completed CenteringPregnancy compared to individual care, 2) compare maternal conditions including maternal weight gain, adequacy of prenatal and attendance in postpartum visit of women who completed CenteringPregnancy compared to individual care, and 3) assess women's perception of CenteringPregnancy compared to their past experience with individual prenatal care. The first two objectives were addressed in Phase I of the study while the third objective was addressed in Phase II.

Research questions. ***Phase I.*** Specifically, the following research questions about Latina women who initiated and completed prenatal care (CenteringPregnancy and individual care) in the Pinellas County Health Department-Clearwater clinic over four

years. For pregnant women to be included in this study, they must have entered prenatal care by November 2006 and at least completed care by June 2010.

Table 1.3: Phase I Research Questions

Objective	Research Questions
1	1. Is there a difference in gestational age at delivery based on type of prenatal care?
1	2. Is there a difference in infant birth weight based on type of prenatal care?
1	3. Is there a difference in the method of birth based on type of prenatal care?
2	4. Is there a difference in maternal weight gain based on type of prenatal care?
2	5. Is there a difference in prenatal care and postpartum care attendance rates based on type of prenatal care?
2	6. Is there a difference in infant feeding method based on type of prenatal care?

Phase II. The last research question pertains to Latina women who completed CenteringPregnancy at the Pinellas County Health Department–Clearwater clinic between and January 2010 and June 2010 and completed individual prenatal care in the past.

Table 1.4: Phase II Research Questions

Objective	Research Questions
3	7. What are women's perceptions of CenteringPregnancy prenatal care compared to their past experience with individual prenatal care?

Definition of Terms

Birthweight: Weight of an infant in grams at the time of birth.

CenteringPregnancy or (CP): A copyrighted brand name of a group prenatal model of care in which women of similar gestational age receive prenatal care in a group setting.

Gestational age at birth: The number of weeks a woman was pregnant before she gave birth.

Gestational diabetes: High blood sugar levels (diagnosed as diabetes) that start or are first diagnosed during pregnancy.

Group prenatal care: Prenatal care given to women along with other women of similar gestational age given in a group setting. In addition to clinical care women receive education and support from the group facilitator and other women in the group.

Healthy or normal maternal (gestational) weight: Appropriate weight gain based on pre pregnancy BMI as defined by the Institute of Medicine (IOM, 1990; IOM, 2009)

High maternal weight gain: When a pregnant woman gains more weight than recommended based on her pre-pregnancy BMI (IOM, 1990; IOM, 2009).

Individual prenatal care: Traditional prenatal care given to women in an individual clinical setting.

Large-for-gestational-age: An infant weighting above the 90th percentile for their gestational age.

Low birthweight: An infant weighing < 2,500 grams at birth.

Low maternal weight gain: When a pregnant woman gains less weight than recommended based on her pre-pregnancy BMI (IOM, 1990; IOM, 2009).

Macrosomia (high birthweight): An infant weighing ≥ 4,000 grams at birth.

Maternal (gestational) weight gain: The amount of weight that a pregnant woman gained from conception to birth. Maternal weight gain can be categorized into low weight gain, normal weight gain or high weight gain.

Multipara: A woman who has had 2 or more pregnancies resulting in potentially viable offspring.

Multiparous: Describing a woman who has had 2 or more pregnancies resulting in potentially viable offspring.

Preeclampsia: A condition of hypertension occurring in pregnancy accompanied by edema (swelling) and proteinuria (presence of protein in urine).

Prenatal care: Clinical care for a woman during pregnancy with a goal to monitor the progress of a pregnancy and to identify and manage potential problems and risk factors.

Pre-pregnancy body mass index (BMI): Body mass index (weight in grams/height in meters^2) of a woman before pregnancy.

Preterm birth: A birth of an infant born < 37 weeks completed gestation.

Primaparous: Describing a woman who has had one pregnancies resulting in potentially viable offspring.

Primary Cesarean section/delivery: Live births delivered by Cesarean section to mothers with no previous history of a Cesarean section.

Post term birth: A birth of an infant born after 40 completed weeks gestation.

Small-for-gestational age: An infant weighting below the 90th percentile for their gestational age.

Term birth: A birth > 37 weeks completed gestation and < 40 weeks completed gestation.

Unhealthy maternal (gestational) weight: maternal weight gain either below or above the recommended amount of maternal weight gain based on her pre-pregnancy BMI (IOM, 1990; IOM, 2009).

CHAPTER TWO:

REVIEW OF THE LITERATURE

Introduction

Prenatal care in the U.S. was implemented as a health care service to monitor the progress of a woman's pregnancy and identify potential problems before they become serious concerns (Kiely & Kogan, 1994). Group prenatal care is an alternative to traditional individual prenatal care that is being used more often in prenatal care clinics in the U.S. CenteringPregnancy is a common and well known brand name of group prenatal care that was established to provide better care for patients and to improve pregnancy and birth outcomes while still maintaining the evidenced-based prenatal care procedures and requirements (ACOG, 2002). CenteringPregnancy was first implemented as a response to newly revised recommendations to prenatal care to improve maternal well-being and improve pregnancy outcomes (Rising, 1998). CenteringPregnancy groups are often formed for specific populations of women, and many Spanish-speaking groups for Latinas have emerged. Although maternal obesity is a problem for all groups of women in the U.S., Latina women tend to have a higher pre-pregnancy BMI than White non-Latina women (Fortner, Pekow, Solomon, Markenson, & Chasan-Taber, 2009) thus addressing maternal weight gain in research among Latinas is needed. Little research has been done with Spanish-speaking CenteringPregnancy groups.

History of Prenatal Care

Prenatal care was first introduced in the early 20th Century by J.W. Ballantyne (Ballantyne, 1901, 1921). Although the original focus and concern of prenatal care was to prevent eclampsia, over time concerns about infant mortality, preterm birth and low birthweight were also addressed (Moos, 2006). Throughout the century, pregnancy became 'medicalized' and women were expected to see a physician for prenatal care several times during each trimester of pregnancy. To reduce high rates of preterm birth, low birthweight and infant mortality in the U.S., the 1985 Institute of Medicine report, *Prenatal Care: Reaching Mothers, Reaching Infants* suggested a short-term, clinical approach through increasing access to early and consistent prenatal care visits (Brown, 1988). In response, national and local programs were implemented to increase access to prenatal care services (McCormick & Siegel, 1999). However, the persistence of adverse birth outcomes in the U.S. led many to question this strategy. Several researchers began to question the usefulness of prenatal care and found that in its current form, prenatal care may actually have a limited role in preventing adverse birth outcomes such as low birth weight (Alexander & Korenbrot, 1995; Lu, Tache, Alexander, Kotelchuck, & Halfon, 2003). They suggested the need for system level approaches to impact access to care and the appropriateness of services that provide social services beyond what is encompassed in traditional prenatal care (Alexander & Korenbrot, 1995). In 1998, The U.S. Public Health Service convened an expert panel with the task of establishing good practices in prenatal care and making recommendations for improvements (Baldwin, 2006). The final report emphasized not only access to care but a revamping of care. It indicated that prenatal care should include early and continuing risk assessment, education and health

promotion, medical and psychosocial intervention, support and follow up (Culpepper, 1989). In addition, the report recommended that the number of prenatal care visits for low-risk women should be decreased, but each visit should be enriched with early pregnancy health promotion and discussions on psychosocial aspects of childbearing and parenting (Moos, 2006). The reduction of prenatal visits was a controversial topic at the time; however, more recent research has indicated that a reduced frequency of prenatal care visits for low-risk women is appropriate, effective, and safe (Berglund & Lindmark, 1998; Binstock & Wolde-Tsadik, 1995; McDuffie, Beck, Bischoff, Cross, & Orleans, 1996; Walker, McCully, & Vest, 2001).

CenteringPregnancy

An alternative form of prenatal care, CenteringPregnancy was piloted in the early 1990's by a nurse-midwife named Sharon Rising as a response to the new thinking of prenatal care (Rising, 1998). The CenteringPregnancy model not only decreased the number of prenatal care visits from 13 total visits to 10 total visits but also added depth to the educational component of care and provided a group setting conducive to interaction among women and with health care providers to enable social support. The idea of group care conducted in a support environment with increased education was an innovative framework to address the current issues with prenatal care services and in turn improve pregnancy outcomes. Although Ms. Rising had the idea of group prenatal care in the 1970's it was not until the late 1990's that she first published on the model (S.S Rising, personal communication, April 15, 2010). Now there are over 80 CenteringPregnancy cites in North America and continuing scientific research being conducting to providing findings of outcomes.

Comparison of CenteringPregnancy and individual prenatal care. Although there are some shared basic qualities, CenteringPregnancy differs from individual prenatal care in several ways. First, CenteringPregnancy prenatal care is done in 10 prenatal care visits with several other pregnant women as opposed to 13 visits in individual care (Reid, 2007). The prenatal care visits after 36 weeks are the visits that are decreased, however individual office visits may augment the last few group sessions if additional exams are needed (Reid, 2007) or if women completed CenteringPregnancy but did not yet give birth. Second, each CenteringPregnancy visit is 90-120 minutes long, sometimes longer depending on the clinic, as opposed to 15-20 minutes visits in individual prenatal care (Rising, Kennedy, & Klima, 2004). One of the main strengths of the model especially when it is incorporated into health departments is that there is no wait time before CenteringPregnancy visits. Instead of women occupying waiting rooms for several hours, they spend that time participating in the group session learning about their pregnancy.

Third, CenteringPregnancy has several education components that are mentioned in individual care, but due to time, are not covered in the same detail. Although there is a set curriculum for education, the groups can be flexible and discuss specific topics with greater depth depending on the request of the group and the recommendation by the facilitator. For example, a CenteringPregnancy group in Orange County, FL, primarily includes low-income African American women. This particular group has low breastfeeding rates, thus the facilitator spends extra time discussing the importance of breastfeeding. The CenteringPregnancy group in Pinellas County, FL, provides services only low-income Spanish-speaking women. As indicated by the physicians at the health

department and by the weight status data, this particular group of women often has more problems with overweight and obesity, and thus the facilitators emphasize the education on nutrition and physical activity during pregnancy and healthy weight gain. Lastly, the CenteringPregnancy groups function on the idea of group support. The formulation of a group of women coming together for care works under the assumption that social support can influence pregnancy. "The support component of the program may be the most important, as women with a good support system tend to have more resources to help them solve problems" (Rising, 1998, p. 49). In a CenteringPregnancy group, a supportive environment develops among the group facilitator, staff and women as they all share their thoughts, ideas and concerns throughout their pregnancy (Rising, 1998). In the group, women are not seen as isolated patients but rather they are gathered together with a support network of other women and their health care providers. Many women in the program develop strong relationships with each other and begin to assist each other with different forms of support such as, teaching each other valuable information and providing each other with transportation and childcare (Rising, 1998). Klima et al. (2009) reported that women in the group were bonding with each other and were able to become empowered through the group care (Klima, et al., 2009). Such a strong bond was formed that *CenteringParenting*, also run through the Centering Health Care Institute, was formulated. Women and their partners wanted to continue the groups after their babies were born. The Centering Parenting groups provide support and education for new parents with a similar approach to CenteringPregnancy ("Centering Parenting," 2009).

CenteringPregnancy research. Since the model was developed, a number of studies have assessed the effectiveness of group prenatal care and CenteringPregnancy

programs compared to individual prenatal care (Table 2.1). Ickovic, Kershaw, Westdahl, Rising, Klima et al. (2003) conducted a matched-cohort study of women in Atlanta, Georgia, and in New Haven, Connecticut, of 485 women and found that birthweight was greater for infants of women in group care versus individual prenatal care ($p < .01$), and preterm infants of the group care patients were significantly larger than preterm infants of individual-care patients. One limitation to this study was that authors did not specify if any of the infants were high birthweight or large-for-gestational-age. In a randomized control trial of 1,047 women aged 14-25 years old, Ickovic et al. (2007) found that when compared to individual prenatal care, group prenatal care resulted in equal or improved perinatal outcomes with no additional cost to the health centers. The authors found a 33 % (adjusted odds ratio) aOR=0.67; 95% CI: 0.44, 0.99) odds reduction of preterm birth for those women randomized to group prenatal care (Ickovics, et al., 2007). Ickovic et al. (2007) also found that women in group care had significantly better psychosocial outcomes compared to those in individual care. Women in the CenteringPregnancy groups had more prenatal care knowledge, felt more prepared for labor and birth ($p<.001$), and had significantly higher satisfaction with their prenatal care ($p<.001$) (Ickovics, et al., 2007). Grady & Bloom (2004) conducted a cohort study with a comparison group and found that adolescents in CenteringPregnancy groups who were at risk for low birthweight and preterm infants, had a 50 % lower rate of low birthweight and preterm birth ($p< 0.02$) than the comparison group. This study had a limited sample size of 124 adolescent women. Klima et al. (2009) examined women in a CenteringPregnancy group and in individual prenatal care at a public health clinic predominately serving low-income African American women. The authors did not find a

significant difference in birth outcomes, but reported increased attendance to prenatal care visits, increased breastfeeding rates, and higher levels of satisfaction of care in the CenteringPregnancy group (Klima, et al., 2009). They also found a statistically significant difference in weight gain during pregnancy from the CenteringPregnancy groups (average weight gain, 32.2 lbs) compared to the individual care (average weight gain 28.5 lbs) (Klima, et al., 2009).

There are a limited number of studies that have examined the knowledge that women gain during CenteringPregnancy groups versus traditional prenatal care. Baldwin (2006) sampled 124 pregnant women and found that between CenteringPregnancy groups and individual care groups, there was a statistically significant difference in posttest knowledge related to pregnancy compared to pretests ($p=0.03$). On the other hand, Shakespear, Waite & Gast (2009) conducted a cross-sectional study surveying 125 pregnant women and found that CenteringPregnancy had significantly lower health behavior index scores compared with women in individual prenatal care. It was not clear exactly what constructs were used in the index. However, the authors noted that the differences in the health behavior scores may have been due in part by a lack of one-on-one time for clients to ask questions to the provider (Shakespear et al., 2009). Conflicting studies such as these indicate that it is important to continue to examine health behaviors along with clinical and biological indicators when assessing pregnancy outcomes.

Although there are increasing numbers of Spanish-speaking CenteringPregnancy groups, there are a limited number of studies that focus on Latinas in a group care setting. The only study that specifically examined Latinas in CenteringPregnancy groups was done by Robertson, Aycock & Darnell (2008), who conducted a quasi-experimental,

prospective comparison study of 49 Hispanic mothers (24 cases, 25 comparison) and found no differences in infant outcomes, maternal knowledge deficits and health behaviors between the groups (Robertson, Aycock, & Darnell, 2009). However, the authors also indicated that the CenteringPregnancy group had a high satisfaction rate with their care and the majority reported that they would choose CenteringPregnancy again (Robertson, et al., 2009). A major limitation to this study is small sample size. Studies aimed at understanding outcomes of CenteringPregnancy group with Latinas with specific focus on the major pregnancy related issues with Latinas including maternal weigh are essential.

Because of the limited number of studies, low sample size of many studies and inconsistency of results, there is a gap in research assessing CenteringPregnancy. In addition, there is limited research on CenteringPregnancy groups working specifically with Latinas. Findings based on other racial and ethnic groups may not be generalizable to Latina women.

Table 2.1: Literature Review of Research on CenteringPregnancy Programs

Author, Year and Location	Study Design	Sample Size	Population	Birth Outcomes	Prenatal care/Maternal Outcome	Satisfaction of care/behaviors/ Knowledge outcomes	Qualitative	Limitations
Rising (1998) New Haven, CT	Pilot Non-random	N=62			Women in CP were less likely to have third trimester emergency room visits (p=0.001)			Lack of randomization Low sample size
Ickovic et al. (2003) Atlanta, Ga New Haven, CT	Matched-cohort prospective	N=458 Individual (n=229) CP (n=229)	Minority women of low socioeconomic status from three public clinics Age: 14-41 yrs	Birthweight was higher for infants in CP vs. individual (p< 0.01) Preterm infant's birthweight was higher for CP vs individual (p<0.05)				Lack of randomization
Grady and Bloom (2004) St. Louis, MO	Cohort	N=268 Individual 1998 (n=144) Individual 2001 (n=233) CP (n=124)	Adolescents Age: 11-17 yrs	Women in CP were less likely to have a PTB (p<0.02) and LBW infant (P< 0.02) compared to both comparison groups (50% lower rate of LBW) No significant difference in the number of C-sections between groups.	Breastfeeding at hospital discharge was higher among women in CP than individual care (0<0.02) 87% of women in CP came for postpartum visit. No data for women in individual care			Self selection of adolescents into CP or individual care Lack of information on adequacy of prenatal care in comparison groups

Baldwin (2006) Midwest, South and Northeast	Pre/post-test	N =98 Individual care (n=48) CP (n=50)	3 sites Age:18-32 yrs			Perinatal knowledge scores were higher among women in CP than in individual care (p=0.03) No difference in scores for perception of support (no p value) No difference with satisfaction of care or fetal health locus of control (no p value)		Low sample size Lack of randomization High education of women may lead to ceiling effect of pretest Post test data collected at different gestational age in CP than in individual care
Ickovic et al. (2007) Atlanta, Ga New Haven, Co	Randomized control trial	N=1,047 Individual (n=394) CP (n=653)	Low SES 80% African American women Mean Age: 20.4 yrs	There was a 33% odds reduction in preterm birth (p=0.045).	Women in CP were less likely to have suboptimal prenatal care (p<0.01) and had higher breastfeeding initiation than women in individual care (P<0.001) There were no differences in cost associated with prenatal care or delivery	Women in CP scored higher on prenatal knowledge test (p<0.001), felt more ready for labor and delivery (p<0.001) and had greater satisfaction with care (P<0.001)		Only generalizable to restricted group of low-income with at high risk for adverse perinatal outcomes.

Robertson et al. (2008) Georgia	Quasi-experimental prospective Pre/post	N= 49 Individual care (n=25) CP (n=24)	Latina women Individual mean age: 26.5 yrs CP mean age: 24.6 yrs	No significant differences in birth outcomes		No significant differences in knowledge or health behaviors but lower levels of postpartum self-esteem among individual care women (p=0.037)		Small homogenous sample size Self -selection of care No data on country of origin among Latina women
Klima et al. (2009) Midwest	Cohort and qualitative study	N=458 Individual (n=61) CP (n=207)	Predominantly African American Age: 14-38 yrs	No significant difference between group's mean gestational age at birth and mean birthweight. (P>0.05)	CP women had significantly more prenatal care visits, increased weight gain, increased breast feeding rates (all p values <0.05)	CP women had significantly higher overall satisfaction (p<0.05)	Participants in CP 1) enjoyed sharing their pregnancy experience, 2) reported they were well prepared for labor and birth and 3) felt CP enhanced relationships with their providers and other pregnant women	No prepregnancy BMI, only weight gain Only used # of prenatal visits, no calculation or index Lack of randomized control group
Shakespear (2009) Utah	Cross-sectional survey	N=125 Individual (n=75) CP (n=50)	Primarily white low-income women			Participants from CP scored lower on a health behavior index than those in individual care.		Self- reports Cross-sectional Non-random

Note. CP=CenteringPregnancy; PTB= Preterm birth, LBW= low birthweight, n=sample size

Latinas

Latinas and adverse pregnancy outcomes. In maternal health, the "Hispanic Paradox" (Brown, Chireau, Jallah, & Howard, 2007) also known as the "Mexican-American paradox" illustrates the low rates of low birthweight and infant mortality in Latinos groups living in the U.S., especially Mexican-Americans, despite high rates of low-income status, low education and lack of access to services. In general, low income and years of education are thought to increase the likelihood of adverse outcomes however research has shown that some Hispanic groups, specifically Mexican-Americans have similar adverse birth outcomes to those of non-Hispanic whites (Hummer, Powers, Pullum, Grossman, & Frisbe, 2007). Research suggests this paradox may be attributed to cultural differences such as healthier eating habits and increased family support with women who are less assimilated (Franzini, Ribble, & Keddie, 2001; Hummer, et al., 2007).

Because of the "Hispanic Paradox", Latina maternal health and pregnancy outcomes are often framed in a way that indicates Latinas have fewer adverse maternal and infant outcomes in general than other ethnic or racial groups. However, in reality, there are several pregnancy related issues that have been increasing among Latinas in the U.S., including maternal obesity and related metabolic syndrome, gestational hypertension (including preeclampsia), gestational diabetes, preterm birth, large-for-gestational-age infants and macrosomia (Rosenberg, Garbers, Lipkind & Chiasson, 2005). In addition, Buekins, Notzon, Kotelchuck and Wilcox (2000) found that although Mexican American women had fewer low birthweight infants than non-Hispanic white mothers, the mean birthweight of Mexican American babies was lower than that of non-

Hispanic White babies. This shows the importance of examining birthweight both as a categorical and a continuous variable to better understand the true outcomes. The idea of the "Hispanic Paradox" can be a cause of concern if pregnancy related research and programming is directed away from Latinas who are the fastest growing ethnic group in the U.S. with the highest rates of fertility (National Vital Statistics Report, 2008).

Latinas and prenatal care. Prenatal care is a preventive service that is used to provide risk assessment and monitoring to pregnant women throughout gestation. Prenatal care services aim to prevent adverse pregnancy conditions and outcomes (Alexander & Korenbrot, 1995). Although there are several indices that measure adequacy of prenatal care, they focus more on timing of care and number of visits rather than the quality of the care. Tandon et al. (2005) conducted a mixed-methods study on Latinas perceptions of patient-centeredness during prenatal care. They found that Hispanic mothers were less likely to perceive that doctors and nurses treated them with respect during their prenatal care appointments (aOR, 0.29; 95% CI, 0.10, 0.86) than non-Hispanic mothers (Tandon, et al., 2005). Hispanic mothers were also less likely to feel that office staff treated them with respect during their prenatal care appointments (aOR, 0.29; 95% CI, 0.12, 0.73) and that they were more likely to experience language or communication problems than non-Hispanic mothers (aOR, 3.30; 95% CI, 1.40, 7.76) (Tandon, et al., 2005). Through qualitative analyses the authors found that Hispanic mother's ability to understand information given in prenatal care, their ability to ask questions during their visits and their desire for subsequent care were hindered by a lack of patient-centered care (Tandon, et al., 2005). The authors concluded that Hispanic women could benefit from more culturally and linguistically appropriate prenatal care as

well as care that is responsive to the group's cultural norms. They recommended group prenatal care as a forum for Latinas to receive this care. Group prenatal care can also address more specific pregnancy issues related to Latinas such as those mentioned in this proposal (maternal weight gain, gestational diabetes, gestational hypertension, preterm birth and other adverse pregnancy outcomes).

Maternal Weight

Maternal weight and adverse pregnancy outcomes. In the U.S., about half of women of reproductive age are either obese or overweight (Stotland et al., 2008), and an estimated that one-third of pregnant women are obese (Mills, et al., 2009). Obesity during pregnancy is defined by pre-pregnancy body mass index (BMI) and maternal weight gain (also known as, pregnancy weight gain). The Institute of Medicine (IOM) published standards on both of these measures in a 1990 IOM report and recently updated these standards in 2009 (IOM, 2009; Rasmussen & Yaktine, 2009) (See Table 2.2 and Table 2.3). The new guidelines have a pre-pregnancy BMI category that is consistent with the World Health Organization categories and have slightly altered weight gain categories specifically for obese women. In general, it is recommended that women with lower pre-pregnancy BMI gain more weight during pregnancy than women with higher pre-pregnancy BMI.

Table 2.2. IOM Maternal Weight Gain Guidelines. Body Mass Index (BMI) According to the 1990 IOM Report (IOM, 1990)

Pre-pregnancy Weight	BMI	Total Weight Gain (lb)
Underweight	<19.8	28-40
Normal Weight	19.8 - 26.0	25-35
Overweight	26.1 - 29.0	15-25
Obese	>29.0	15

Table 2.3: IOM Maternal Weight Gain Guidelines. Body Mass Index (BMI) According to the 2009 IOM Report (2009)

Pre-pregnancy Weight	BMI	Total Weight Gain (lb)	Mean weight gain range in lbs/week
Underweight	<18.5	28-40	1-1.3
Normal Weight	18.5-24.9	25-35	1
Overweight	>25.0 -29.9	15-25	0.6
Obese	>30	11-20	0.5

Obesity rates in Latino populations in the U.S. are increasing and becoming an even greater health concern. Rates of obesity in Mexican American women are especially concerning. In 2002, the age-adjusted prevalence of obesity among adult women age 20 or more was 26 % for Mexican Americans, which is 5 % higher than non-Hispanic whites (Health and Human Services, 2003). Along with other ethnic and racial groups, the trend of obesity among Latinas of reproductive age in the U.S. has been also been increasing. A report from the National Health and Nutrition Examination Survey (NHANES) found that the prevalence of overweight among Hispanic U.S. women aged 20-49 years in 2005-2006 was 29.4 % and the prevalence of obesity was 40.7 % (Sharma, Cogswell, Li, 2008).

Maintaining healthy weight can be an important factor in preventing various adverse pregnancy outcomes. Women who are overweight or obese prior to conception, or gain more than ideal weight during pregnancy, are also at increased risk of gestational hypertension including preeclampsia (Asbee, Jenkins, Butler, White, Elliot et al., 2009) gestational diabetes, preterm birth, high birthweight, large-for-gestational age infants, macrosomia, prolonged labor, caesarean birth, congenital malformations, spontaneous abortions, stillbirths and subfertility (Stotland et al., 2009; Villamour and Cnattinguis, 2006). Several studies have found significant relationships between obesity and adverse

birth outcomes. After adjusting for many other risk factors including maternal age, parity, smoking and education, Cnattingius, Bergström, Lipworth, &Kramer (1998) found that obese women were 1.6 times more likely to deliver an infant preterm at <32 weeks gestation when compared to non-obese women. Kristensen, Vestergaard, Wisborg, Kesmodel, & Secher (2005) conducted a study in Denmark on 24,505 singleton pregnancies and found that maternal obesity, more than doubles the risk of stillbirths or neonatal death compared to women of ideal body weight. A longitudinal study by Ehrenberg LeRoy, Milluzzi,& Merceer (2004) investigating the influence of obesity, on macrosomia (birthweight ≥ 4,000 grams) found that maternal obesity and pregestational diabetes were independently associated with increased risk of large-for-gestational age infants.

Even with all the knowledge that is known about maternal weight and its profound influence on pregnancy complications and outcomes, many obstetric providers rarely discuss pregnancy related weight problems thoroughly with their patients. In a cohort study, Stoland et al. (2005) found that overweight women were often given the same guidelines on weight gain as women of normal weight. They determined that providers did not take extra time educate women about weight gain or problems associated with high weight during pregnancy. When coupled with problems in communication and translation with Spanish-speaking women, the result can lead to increase weight problems and pregnancy complications for Latinas.

Complications associated with maternal obesity. Maternal obesity has been found to be a causal factor for gestational diabetes and gestational hypertension. In the U.S. about 3-5% of all pregnant women have gestational diabetes (Gabbe & Graves,

2003). Latinas and obese women are at higher risk for developing gestational diabetes (Berkowitz, Lapinski, Wein et al., 1992; Cheng & Caughey, 2008). Gestational diabetes among Latinas has been increasing in the U.S. (Garber et al., 2008) and is associated with other maternal complications such as preeclampsia, infection and postnatal type 2 diabetes (Gonzalez-Quintero, Istwan, Rhea, Rodriguez, Cotter, Carter et al. 2007). Infant risks related to gestational diabetes include preterm birth, high birthweight, macrosomia (Mendelson, Smith, Koniak-Griffin et al., 2008), childhood metabolic syndrome and diabetes later in life (Vohr & Boney, 2008).

Hypertension disorders during pregnancy can lead to maternal and infant mortality and morbidities including chronic hypertension and cardiovascular problems for mothers and preterm birth and low birthweight infants (Thorsdottir, Torfadottir, Brigisdottir & Geirsson, 2002; Fortner, Pekow, Solomon, Markenson & Chasan-Taber 2009). Preeclampsia affects about 5-8% of all pregnancies in the U.S. (Preeclampsia Foundation, 2008), but research has shown higher rates among Latinas (Wolf, Shah, Jimenez-Kimble, Sauk, Ecker, & Thadhani, 2004).

In 2007, the rate of cesarean delivery in the U.S. was 31.8%, a record high which marked the 11th consecutive year of increase (Hamilton, Martin, & Ventura, March 18, 2009). Obese pregnant women have an increased risk of cesarean section and lower success rates for vaginal births after cesarean section (Davis et al., 2010). It is estimated that the risk of cesarean delivery is about two times higher for obese women, and three times higher for morbidly obese women. About 16,000 cesarean deliveries annually in the U.S. are due to obesity (Chu, Kim, Schimd, Dietz, Callaghan, Lau, et al., 2007).

Measuring maternal obesity. Pre-pregnancy BMI and maternal weight gain are often studied as separate indicators for maternal obesity; however, these two variables are linked. Studies have found that women who are overweight before conception are likely to gain more weight than recommended during pregnancy and are at greater risk for adverse pregnancy outcomes. A cohort study by Kiel et al. (2007) found that 46% of women in their study, who were already obese, gained more than 25 pounds during pregnancy, exceeding the IOM recommendations for obese women. Chu et al. (2009) found that obese women gained less weight during pregnancy than normal or overweight women; however, about a quarter of the women still gained at least 35 pounds. To fully assess maternal obesity and its complications, the relationships between pre-pregnancy BMI and maternal weight gain should be studied in addition to the relationship between these two factors and adverse pregnancy outcomes.

Prenatal Care Attendance

In 1994, Kotelchuck developed the Adequacy of Prenatal Care Utilization (APNCU) index to describe the utilization of prenatal care based on two dimensions, 1) adequacy of initiation into prenatal care and 2) adequacy of actual received prenatal care visits (Kotelchuck, 1994). The APNCU index was developed as an improvement of the Kessner/I.O.M index which unlike APNCU did not calculate the adequacy of received visits based on initiation of care. The APNCU index is calculated by taking the number of American College of Obstetricians and Gynecologists (ACOG) recommended visits for a given gestational age and adjusting that number based on the data of prenatal care initiation (Kotelchuck, 1994). ACOG (2002) recommends women to attend 14 prenatal care visits in a 40-week pregnancy. Thus, using the APNCU index, Kotelchuck (1994)

describes an example of a woman who began prenatal care in month four of her pregnancy and thus missed three visits. She would only be expected to attend 11 visits throughout the rest of her pregnancy (14-3 =11 visits). A proportion is then derived using the number of expected and observed visits (observed visits/expected visits) multiplied by 100. This would be altered for CenteringPregnancy which only requires 10 visits. The two components of the index results are combined and scaled as described below.

Inadequate: *care began after the 4th month or expected visits = 0-49%*

Intermediate: *care began by the 4th month and expected visits = 50-79%*

Adequate: *care began by the 4th month and expected visits = 80-109%*

Adequate plus: *care began by 4th month and expected visits ≥ 110%.*

Postpartum Care Attendance

According to the World Health Organization, the postpartum period, also known as the postnatal period or puerperium, begins about 1 hour after the placenta is delivered and continues for the following six weeks (WHO, 1998). There are many physical, psychological and interpersonal changes that occur during this period with distinctive maternal and infant needs. Women's bodies go through numerous physical changes to return to their non-pregnancy state, and women often experience many different emotions as they make many adjustments in their family, social and professional lives. Postpartum care can aid in the prevention, early detection and treatment of complications and disease such as postpartum depression, urinary tract infections and postpartum hemorrhage (Albers, 2000). It also serves to educate and assist women with breastfeeding, birth spacing, immunization and maternal nutrition and exercise (WHO, 1998).

Studies have suggested that early postpartum weeks are a critical period for the establishment of exclusive breastfeeding and suggest the need for postpartum strategies that could be a part of postpartum care (Semenic, Loiselle & Gottlieb, 2008). As public health research suggests, exclusive breastfeeding is associated with many maternal and infant benefits (Ip, Chung, Raman, Chew, Magula, DeVine, et al., 2007; Semenic et al., 2008). Exclusive breastfeeding for the first 6 months is recommended for optimal outcomes (Kramer & Kakuma, 2002). Postpartum visits are also critical opportunities to screen for and identify postpartum depression (Paulden, Palmer, Hewitt & Gilbody, 2009). Family planning, such as educating women on baby spacing and the use of contraception is an integral part of postpartum care. Short birth intervals can lead to adverse pregnancy and birth outcomes (Yeakey, Muntifering, Ramachandran, Myint , Creanga & Tsui, 2009). National objectives have been set to increase birth spacing ("Reproductive Health and Healthy People 2020", 2010) and the World Health Organization (2005) recommend that women wait 2-3 years between pregnancies to reduce subsequent health problems.

The provision of contraception is part of the standard of care for postpartum visits in the U.S. (Lopez, Hiller & Grimes, 2010) and is used to help increase birth intervals. Educating and providing contraception in the postpartum period provides an opportunity for women, who do not routinely access health care, to obtain contraceptives (Trussell, Schwarz, Guthrie, 2009). This is the case for many Latina immigrant women in the U.S. (Rodriguez et al., 2010). Studies have indicated that postpartum contraceptive education increases contraceptive use and decreases unplanned pregnancies (Lopez, Hiller & Grimes, 2010). Improving attendance rates in postpartum care can help women better

receive the services and education needed during this time period. Many CenteringPregnancy groups report higher attendance rates among women for both prenatal care and postnatal care visits (Teate, Leap, Rising, & Homer, 2009).

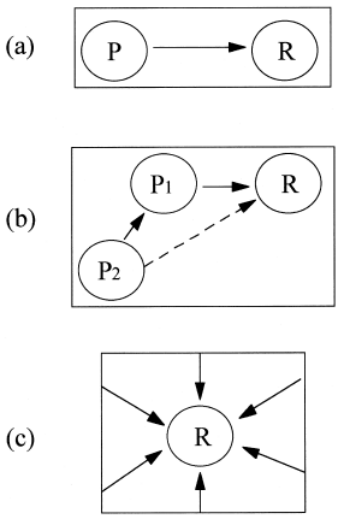
Theory

Social Support Theory. The social support theory is an interpersonal theory that is often used in health research and programming. The constructs of the social support theory were first explored in the 1970's by authors such as Gerald Caplan (1974), John Cassel (1976) and Sidney Cobb (1976). All three authors laid the foundation for research in social support especially as it relates to an individual's stress and well-being (Vaux, 1988). Social support theory is complex and multifaceted and many different variations of the theory have evolved since the 1970's. There are two models that have been used to identify the conditions in which social support can influence health outcome, *the main effects model* and the *stress-buffering model* (Cohen, Gottlieb, & Underwood, 2000). The main effect model proposes that social support and social relationships can affect mental and physical health, while the stress-buffering model proposes that support is related to well-being only for people who are under stress. Both models are used in health research, however much of the maternal and child health literature identifies stress as the common factor that is mediated by social support.

Social support theory is complex, and different theorists describe different variations and constructs within the theory. Hupcey (1998) described that characteristics and perceptions of the person giving support (the provider), denoted a P in Figure 1, and the person receiving support (the recipient) denoted as R, influence the support. Hupcey (1998) also provides diagrams depicting the reciprocal relationship between the recipient

(denoted as "R") and provider(s) (denoted as "P") In addition to positive social support, these relationships may also cause stress or negative and harmful effects that detract from the perceived notion of providing support. These pathways help in identifying social support and how it affects the recipient. See Figure 2.1.

Figure 2.1: Social Support Pathways (Hupcey, 1998).



The pathways that Hupcey (1998) provides may be used to symbolize prenatal care. Figure 2.1 (a) depicts one individual recipient and one individual provider of support. In prenatal care, this may represent the patient and the health care provider. This is often the pathway of support that is given individual prenatal care, one-to-one. Figure 2.1 (b) depicts two providers of support for one recipient. In prenatal care, the second provider of support may be either another health care provider, a family member who attends prenatal visit and is involved in the pregnancy, a patient advocate or Healthy Start worker for example. This may also be seen in individual prenatal care. Figure 2.1 (c) depicts one recipient with several providers of support. This would likely be an example of support given to a pregnant woman in a CenteringPregnancy group. However, double arrows would be added to illustrate the reciprocal support provided in the group. The

providers and recipients of support would be one or more health care providers, the health educator and all of the other women involved in the group.

Social support measures. Researchers use one of three main theoretical perspectives of social support described by Cohen (2000),

1) The Stress and Coping Perspective

    a. Supportive Actions

    b. Appraisal

2) The Social Constructivist Perspective

    a. Social Cognition

    b. Symbolic Interactionism

3) The Relationship Perspective

A common use of social support theory in health related research operates under the assumption that social support mediates stress that can affects health. This either happens through supportive actions of others which can enhance coping, or through the perceptions of available support which can lead to appraising situations as less stressful (Cohen, 2000), See Figure 2.2. In CenteringPregnancy the support from the group can help alleviate stress which may in turn improve pregnancy outcomes. The social constructivist perspective to social support is rooted in social cognition and symbolic interactionism, and links self perspective and self reflection to perceiving support (Cohen, 2000). The social cognitive perspective predicts that perceived social support can directly affect a person's health and can influence self-esteem and in turn affect health outcomes (Cohen, 2000), See Figure 2.3. The symbolic interactionist perspective predicts that social roles and support affects a person's identity which in turn affects health

outcomes (Cohen, 2000), See Figure 2.3. In CenteringPregnancy the support from the group may influence a woman's self-esteem and even empower her to take control of her pregnancy which may help her to feel stronger and more comfortable with her pregnancy. Lastly, the relationship perspective conceptualizes support as part of a larger interrelated relationship (Cohen, 2000). This perspective predicts that constructs such as companionship, low conflict and intimacy received from relationships effect social support and health (See Figure 2.4). In CenteringPregnancy the support from the group might increase companionship and intimacy through the building of low conflict friendships with other women.

Figure 2.2: Supportive Actions Approach and the Appraisal Perspective (Cohen, 2000)

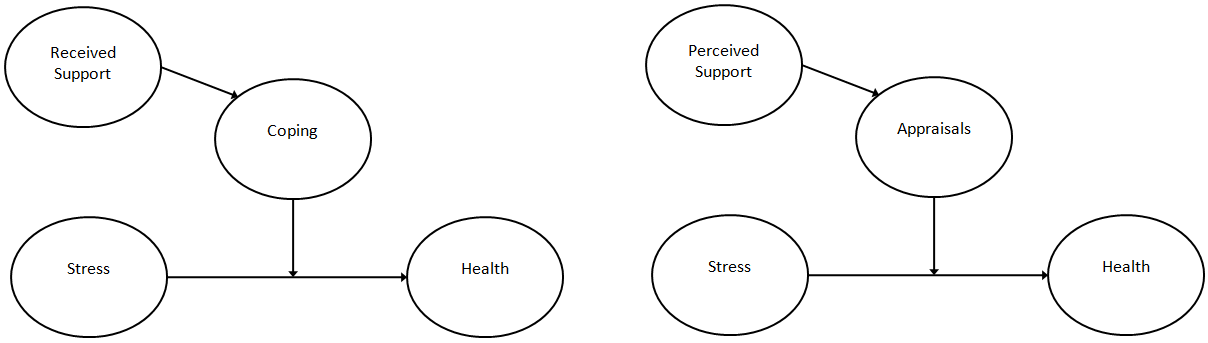


Figure 2.3: The Social Cognitive Perspective and the Symbolic Interactionist Perspective (Cohen, 2000)

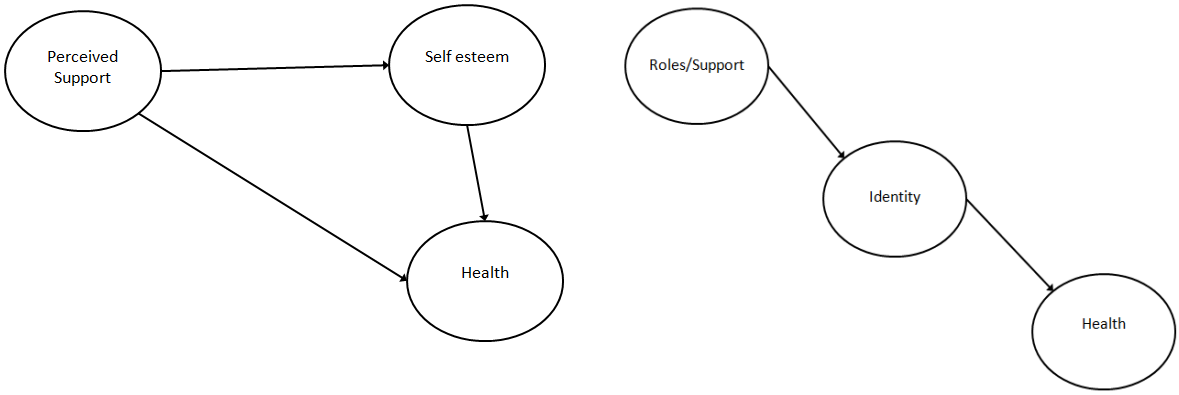
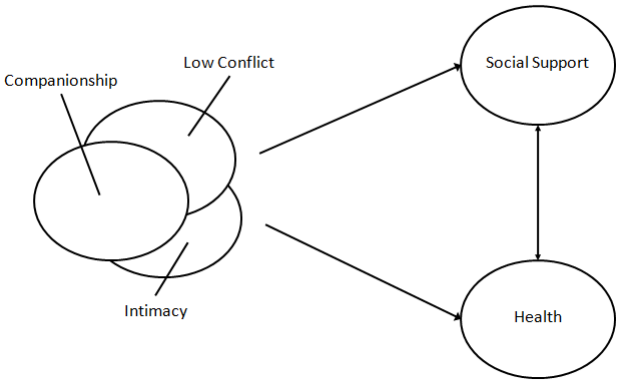


Figure 2.4: Relationship Perspective (example) (Cohen, 2000)



Types of social support. There are several different types of social support that have been described by House (1981), *emotional support* such as empathy, love and trust; *instrumental support* such as tangible services; *informational support* such as educational information and advice and; *appraisal support (also known as validation support)* such as constructive feedback and affirmation. In Social Support Measurement and Intervention, Wills (1985) also included *companionship support* as another form of support. These types of support are often used in research to measure support.

Social support and maternal and child health. The importance of the social environment, social relationships and social interactions has been used in various aspects of health and medicine. Many studies have used social support theory to test the effects of social support on birth outcomes and on maternal emotions and behaviors (Pierce, Sarason, & Sarason, 1996). "Social support in pregnancy is a particularly promising area of investigation because pregnancy and birth are biopsychosocial events" (Pierce, et al., 1996). Specifically in maternal and child health, the stress and coping perspective of the social support theory has been used often in research and programming. Stress, depression, anxiety and other psychosocial factors have been the focus of many studies on pregnancy and birth outcomes. Research has supported that stress is associated with the diagnosis of many high-risk pregnancies (Black, 2007), and is frequently linked to preterm birth, miscarriages, pregnancy complications and impaired fetal development (Elsenbruch, Benson, Rucke, Rose, Dudenhausen, Pincus-Knackstedt et a., 2007). Stress and poor maternal psychosocial support can also be associated with severe pregnancy-related nausea and vomiting and increased morbidity during pregnancy (Chou, Avant, Kuo, & Fetzer, 2008). Various studies have linked social support with better physical and

mental health during pregnancy (Balaji et al., 2007; Berkman & Syme, 1979). In particular, social relationships have been found to affect mental health in pregnant women through influencing stress levels, anxiety, depression and psychological well being (Balaji, et al., 2007). Social support has been found to act as a mediator between stress and its symptoms (Gupton, Heaman, & Ashcroft, 1997) and has been further investigated as a mediator between stress and high-risk pregnancies (Black, 2007). Chou et al. (2008) investigated the relationships between nausea and vomiting, perceived stress and social support for pregnant mothers and found that pregnancy-related vomiting associated with high-perceived stress levels may be mediated by social support. Perceived social support has been shown in various studies to have a positive effect on pregnancy outcomes (Feldman, Dunkel-Schetter, Sandman, & Wadhwa, 2000; Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Oakley, Rajan, & Grant, 1990). Social support has been related to higher utilization of prenatal care, less difficult labors, higher birthweight, and reduced rates of postpartum depression (Logsdon & Davis, 2003).

Social support and CenteringPregnancy. The presence of support has been linked to positive health outcomes and it can be used as a useful tool in health interventions (Hogan, Linden, & Najarian, 2002). Due to the large component of social support, Westdahl, Milan, Magriples, Kershaw, Rising et al. (2007) suggested group prenatal care may be a useful tool for addressing psychological issues, such as prenatal depression. In a CenteringPregnancy group, a supportive environment develops among the group facilitator, staff and women as they all share their thoughts, ideas and concerns throughout their pregnancy (Rising, 1998). Many women in the program develop strong relationships with each other (companionship support) and begin to assist each other with

different forms of support such as, teaching each other valuable information (informational support) and providing each other with transportation and childcare (instrumental support) (Rising, 1998). Klima et al. (2009) reported that women in the group were bonding with each other and having camaraderie (emotional support) and women were able to discover their voice and are empowered through the group care (appraisal/validation support) (Klima, 2003).

The dimensions of support (function, the quality, the quantity and the source of support) and the characteristics of the recipient (context, age, ethnicity, stress level, socioeconomic status, education etc) can influence how social support effects health outcomes (Pierce, et al., 1996). Creating a supportive environment in the clinical setting is especially important for women who lack social support in other areas of their lives. For example, women who do not have supportive families or partners and low-income women who may have few supportive resources in their neighborhoods or communities may be in greater need of social support from their prenatal care. Many of the CenteringPregnancy groups are held with women who tend to have high levels of stress especially during pregnancy, including low-income women, women with low-education levels, racial and ethnic minorities and teenagers (Baldwin, 2006; Grady & Bloom, 2004; Rising, Kennedy & Klima, 2004; Klima, 2003).

CHAPTER THREE:

METHODS

Research Site: Pinellas County Health Department

The Pinellas County Health Department-Clearwater clinic was the main research site for data collection. This health department clinic is a low-risk clinic, thus only low-risk obstetric patients are seen by the health care providers. If a woman is considered high-risk at the start of her pregnancy or becomes high-risk at any point in her pregnancy, she is referred to Bayfront Medical Center, which as a high-risk obstetric clinic. Some conditions that categorize a woman as high risk are severe hypertension and gestational diabetes. A list of high-risk criteria that is used at the health department is provided in Appendix B. The investigator worked with the CenteringPregnancy program coordinator and clinic staff to conduct the research. The Pinellas County Health Department-Clearwater clinic began offering CenteringPregnancy to all Spanish-speaking obstetric patients in December of 2006. Thus, women who completed their initial prenatal care visit as early as November 2006 had a choice to participate in CenteringPregnancy. Because approximately 85% of the obstetrical clients are Spanish-speaking, CenteringPregnancy is only offered in Spanish.

Preliminary Data Collection

Prior to the start of the dissertation research, the investigator conducted preliminary qualitative observations with women in the CenteringPregnancy program at the Pinellas County Health Department-Clearwater clinic. She conducted participant observation of a CenteringPregnancy group from start to finish. There were a total of ten group sessions in which the researcher attended eight. Each session lasted approximately three hours. Although not involved in the clinical assessment portion of the session, the researcher became a part of the group, sat with the participants in the group circle, listened to the education being given and participated in group activities. This preliminary research allowed the researcher to 1) better understand how the CenteringPregnancy groups functions, 2) understand the group dynamics and interactions 3) establish relationships with the group facilitators, nurses and staff and, 4) obtain preliminary qualitative data to develop the interview guide to answer research question 7.

Individual care at the Pinellas County Health Department

Individual prenatal care at the clinic comprises an initial prenatal care visit, 13 subsequent visits, and one postpartum visit. The prenatal care protocol follows three main components including assessing health risks of the mother and the baby, educating the mother about components of a healthy pregnancy and birth and providing proper intervention or services based on the mother's risks and health status. The intended outcome of prenatal care at the health department is to improve pregnancy outcomes resulting in a full-term, healthy infant and a healthy mother. See Appendix C for prenatal care protocols followed at the health department. Since 2006 there have been only three consistent obstetricians caring for obstetric patients at the clinic (with the exception of

doctors who may have filled in for vacation and sick time). Two of these obstetricians also care for the CenteringPregnancy patients and participate in the group sessions.

CenteringPregnancy at the Pinellas County Health Department

After a few pilot groups, the first official CenteringPregnancy group began in December 2006. A health educator, who works for Pinellas County Healthy Start Coalition, has served as the group facilitator for all of the CenteringPregnancy groups. The group facilitator, along with the physician, provides education to the women, conducts group activities, and leads discussions. Two of the three obstetricians, who consistently care for maternity patients at the clinic, also care for the CenteringPregnancy patients and participate in the group sessions. Each physician participated in about half of the groups. The physician's primary role in the group is for risk assessment. In each session, she/he conducts the physical exam including ultrasound and discusses the woman's health with her and anything particular about her individual pregnancy. The physician's secondary role is to assist the health educator in the education and participate in the group discussion and activities. Both physicians and the health educator have conducted the groups since the start of the program and no other physicians or health educators have been involved. A nurse is also usually present in the group to assist with taking body weight and blood pressure and to provide paperwork to women who need laboratory testing. The nurse introduces herself and participates in the group in the first session but does not consistently participate in the group education or activities. All groups are facilitated in Spanish and all material given to women is in Spanish. In addition, all personnel who work with the CenteringPregnancy groups are fluent Spanish speakers.

There are on average 10 women in each CenteringPregnancy group. The 10 prenatal care groups sessions follow the guidelines set by the Centering Health Care Institute ("Centering Health Care Institute," 2010) which is the organization that established and evaluates CenteringPregnancy programs. CenteringPregnancy at the health department clinic also follow the same protocols, which based on Medicaid elements of prenatal care, as individual care in terms of risk assessment and education. See Appendix C for protocols. In addition to the 10 prenatal care sessions, there is an individual initial prenatal care visit, a reunion social (approximately one week after the last woman delivers her baby) and a postpartum visit (scheduled six weeks after birth). The postpartum visit is the same for women who attend individual prenatal care.

Study Population

Community characteristics. The participants in this study were sampled from a larger population of Latina women who reside in Pinellas County, FL. Data listed in Table 3.1 was derived from the Florida Charts ("Florida Charts County & State Profile," 2009). The total population of Pinellas County, FL was 932, 909 ("Florida Charts County & State Profile," 2009) and the population of Florida was 18,537,969. According to these data, almost 17% of the people in the county are females of reproductive age (15-44 years).

Overweight and obesity. Over 55% of the total female population in Pinellas County was overweight or obese, a slightly higher proportion than females in Florida (52.3%) ("Florida Charts County & State Profile," 2009) Specific statistics for Hispanic women in Pinellas County are not available; however, the proportion of Hispanic women in Florida who are either overweight or obese is 54.3%. Obesity is a great concern for the

State of Florida. The Trust for America's Health issued a report in July 2009 entitled, "F as in Fat," and identified Florida's adult obesity proportion of 24.1%, and ranked Florida 39 out of 50 states for highest rates of obesity (Trust for American's Health, 2009). In 2009, over 50% of women in Florida were obese or overweight (BRFSS, 2009). In March 2004, Florida began to include maternal height and pre-pregnancy weight on Florida birth certificates to increase surveillance on maternal obesity. Pre-pregnancy BMI and maternal obesity along with maternal behaviors and birth outcomes are more often being reported in national surveys (Pregnancy Nutrition Surveillance System (PNSS), 2009) and examined at the state and local level.

Birth characteristics. The following statistics reflect the 2009 data from Florida Charts ("Florida Charts County & State Profile," 2009) and are listed in Table 3.1. In Pinellas County, 72.5% of births were to women who had adequate prenatal care based on the Adequacy of Prenatal Care Utilization (APNCU) index while 69.4% of births were to women who had adequate prenatal care in Florida. The rate of Hispanic births in the county was 19.3 per 1,000 Hispanic population. Birth spacing is an important indicator for healthy pregnancies. In Pinellas County, 22.4% of births had an inter pregnancy interval <18 months compared to 21.3% in Florida.

Several pregnancy and birth statistics were examined over 2007-2009 and analyzed by ethnicity. The following statistics reflect the 2009 data from Florida Charts ("Florida Charts County & State Profile," 2009) and are listed in Table 3.2. Pre-pregnancy weight is an important indicator of healthy pregnancies. In the county, 19.3% of births were to obese women while 23.3% were to overweight women compared to 19.5% and 23.2% respectively. About 9.5% of women in the county smoked cigarettes during pregnancy

compared to 14% in Florida; however only 3% of Hispanic women smoked during pregnancy. Almost 77% of women in the county initiated prenatal care in the first trimester compared to almost 79% in Florida. About 73% of Hispanic women initiated prenatal care in the first trimester. Slightly more than 4% of women in the county initiated care in the 3rd trimester or had no prenatal care compared to 5% in Florida. Almost 4% of Hispanic women initiated care in the 3rd trimester or had no prenatal care.

Low birthweight and preterm birth are adverse birth outcomes that prenatal care attempts to prevent. The proportion low birthweight infants in the county was 8% compared to 8.7% in Florida; while 6.4% of Hispanic women had low birthweight infants. About 13% of births in the county were preterm compared to 14% in Florida; while 13% of Hispanic women had preterm births. The infant mortality rate in the county was 8.3/100,000 births compared to almost 7/100,000 births in Florida; while the rate was 9.8/100,000 births among Hispanics in the county which was higher than the rate among Hispanics in Florida, 5.5/100,000 births. The fetal mortality rate in the county was 7.4/1,000 births compared to 7/1,000 births in Florida. The rate was 7.1/1,000 births among Hispanics. The proportion of cesarean section births in 2007 was 34.4% in the county compared to 38.1% in Florida; the proportion among Hispanics in the county was lower at 31.1% of births.

Table 3.1: Florida Charts Statistics for Pinellas County, FL and the state of Florida ("Florida Charts County & State Profile," 2009)

Female Community Characteristic	**Pinellas County (%)**	**Florida (%)**
Total female population	51.6	50.8
Hispanic female population	7.2	21.4
Total females in the population ages 15-44 yrs (%)	16.8	19.3
Total females ages 15-44 yrs among total females (%)	32.5	-
Hispanic female population ages 15-44 yrs (%)	1.63	4.83
Female Weight Status[a] Characteristics	**Pinellas County (%)**	**Florida (%)**
Obese: BMI ≥ 30	25.5	23.0
Overweight: BMI 25-30	30	30.2
Overweight or Obese BMI >25		
All females	55.5	53.2
White	54.3	50
Black	-	72.1
Hispanic	-	54.3
Birth Characteristics	**Pinellas County (%)**	**Florida (%)**
Hispanic births (per 1,000 Hispanic population)	19.3	17.8
Births with adequate prenatal care (%) (APNCU index)	72.5	69.4
Breastfeeding[b]		
New moms who ever breastfeed	80.9	76.6
New moms who breastfed at two months postpartum	54.9	53

Table 3.2: Florida Charts Birth Statistics for Pinellas County, FL by race/ethnicity from 2007-2009 Florida Charts. ("Florida Charts County & State Profile," 2009)

	2007	2008	2009
Weight categories of mothers who gave birth[a] (%)			
Births to obese women			
Pinellas	18.4	18.3	19.3
Florida	18.8	19	19.5
Births to overweight moms			
Pinellas	22.4	23.7	23.3
Florida	22.7	23.2	23.2
Live births to women who smoke during pregnancy (%)			
Pinellas	10.9	9.3	9.6
White	12.3	10.6	10.8
Black	7.7	7.2	6.8
Hispanic	2.8	1.9	3
Florida	14.1	14.2	14
Birth to mothers with first trimester prenatal care (%)			
Pinellas	74.5	76.1	76.7
White	76.9	79.0	80.3
Black	65.2	63.7	63.4
Hispanic	63.5	72.9	72.8
Florida	75.9	76.9	78.3
Birth to mothers 3rd trimester or no prenatal care (%)			
Pinellas	5.7	5.2	4.3
White	4.5	4.4	3.3
Black	10.5	8.2	7.7
Hispanic	5.7	4.4	3.8
Florida	6	5.8	5
Low birthweight (%)			
Pinellas	8.4	8.9	8
White	6.9	7.1	6.6
Black	14.9	15.6	13.9
Hispanic	6.2	6.6	6.4
Florida	8.7	8.8	8.7
White	-	-	7.2
Black	-	-	13.4
Hispanic	-	-	7.1

Preterm birth (%)			
Pinellas	12.6	12.9	13.1
White	11.1	11.3	11.5
Black	19.2	19.6	19.4
Hispanic	12.3	11.9	13.1
Florida	14.1	14.2	14
Infant Mortality Rate (per 100,000 live births)			
Pinellas	7.3	9.3	8.3
White	5.5	6.5	5.4
Black	15.8	18.9	20.8
Hispanic	8	8.2	9.8
Florida	7.1	7.2	6.9
Pinellas	7.3	9.3	8.3
White	5.5	6.5	5.4
Black	15.8	18.9	20.8
Hispanic	8	8.2	9.8
Florida	7.1	7.2	6.9
White	-	-	4.9
Black	-	-	13.2
Hispanic	-	-	5.5
Fetal Mortality (stillbirths) rate (per 1,000 live births)			
Pinellas	6.8	7	7.4
White	6	6.4	6.7
Black	11.4	10.5	11.5
Hispanic	4.8	7.4	7.1
Florida	7.6	7.2	7
White	-	-	5.6
Black	-	-	11.6
Hispanic	-	-	6.2
C-section (%)			
Pinellas	33.7	33.5	34.4
White	33.6	33.2	34.3
Black	34.4	34.5	36.5
Hispanic	32.9	33.2	31.1
Florida	37.2	37.6	38.1

Note: BMI= Body Mass Index; APNCU= Adequacy of Prenatal Care Utilization

a. Data from 2007 Behavioral Risk Factors Surveillance; 544 adults were surveyed in Pinellas county

b. Data from 2004-2005 Florida Pregnancy Risk Assessment Monitoring System County Report ("Florida Pregnancy Risk Assessment Monitoring System (PRAMS)," 2008)

All other data derived from Florida Charts ("Florida Charts County & State Profile," 2009)

Key Research Personnel and Training

The investigator trained as a volunteer at the Pinellas County Health Department, completed all research requirements including HIPPA compliance documents and completed a full training on the Health Management System (HMS) computer system. All research was approved first by the University Of South Florida Institutional Review Board and then by the Pinellas County Health Department Education and Training Department.

Translator/Interpreter. The investigator collaborated with a non-profit health organization called, Fundación Familia Sana to contract with a fluent Spanish-speaking *promotora* (health educator) to assist in translation of documents and in conducting the in-depth interviews in the qualitative portion of the research. The organization has conducted research and programs with the Florida Health Department and the Hillsborough County Health Department. The promotora who was contracted in this research project is a medical doctor certified in Venezuela and has been trained on translating health related materials and conducting interviews for various projects. Her tasks on this project were to translate the interview guide and informed consents and to conduct the interviews in Spanish along with the investigator. All of the translated documents were back translated to ensure accuracy and reviewed by various Spanish-speaking staff from both Fundación Familia Sana and the Pinellas County Health Department.

Research Design

This study employed both quantitative and qualitative methods to answer the research questions. The investigator conducted a retrospective cohort study to obtain

quantitative chart and vital statistics data to address objectives 1 and 2. To address objective 3, qualitative in-depth interviews were conducted to assess the perceptions of care of multiparous women who completed CenteringPregnancy and individual prenatal care in the past. In this section, the CenteringPregnancy may be interchanged with *intervention* group and the individual prenatal care group may be interchanged with the *comparison* group.

Phase I: (Objectives 1-2)

Subjects and setting. To address objectives 1 and 2 and answer research questions 1-6 (See Table 3.3 for list of research questions), the investigator conducted a retrospective cohort study using chart review of women who completed prenatal care in the Pinellas County Health Department-Clearwater clinic. The study eligibility criteria were as follows: the woman must have self identified as Spanish-speaking and Hispanic, entered into prenatal care at the clinic for an initial visit between November 2006 and November 2009 and completed prenatal care by June 2010. Women were excluded if they did not complete prenatal care. This was indicated in the chart as a transfer out of the clinic or stopped care due to a miscarriage or any other reason. In addition, women who did not complete at least 50% of their expected number of visits were considered to not have completed prenatal care and were excluded. The investigators sampled a total of 487 women who were enrolled in prenatal care (247 CenteringPregnancy and 240 individual prenatal care).

CenteringPregnancy. There were 255 women who completed CenteringPregnancy at the clinic. Eight charts were unobtainable at the clinic and thus,

247 charts were assessed. The month and year that each CenteringPregnancy patient entered prenatal care was noted and summarized.

Individual care. A group match based on ethnicity, primary language and the month and year the patient entered into prenatal care at the clinic was done to include eligible women in the comparison group. This was done to reduce bias based on ethnicity and the time in which women received care. The following steps were taken to match the comparison group to the intervention group and extract data from charts.

1) To match the women in CenteringPregnancy entered into prenatal care, a list of women who entered into individual prenatal care within the inclusion criteria time frame was compiled and categorized by the month and year the women entered into prenatal care.

2) All women who did not indicate Spanish as their primary language and did not self identify as Hispanic were excluded from the list.

3) The list of women in the comparison group in each month/year category was then randomized using a random number generator. The number of charts pulled from the comparison group was matched to the number of charts that were pulled for the same month and year from the intervention group. For example, if 10 women in the intervention group entered into care in July 2007, then 10 women were randomly selected from the comparison group who also entered into care in July 2007.

4) The intervention and comparison group charts were pulled for data extraction. All charts were further examined to exclude any chart of a woman who did not complete the prenatal care or did not fit the inclusion and exclusion criteria.

Chart review and data extraction. The investigator worked with the medical records department at the PCHD-Clearwater clinic to obtain charts for all women who completed prenatal care and fit the eligibility criteria. The investigator reviewed all of the charts in the clinic over a four month period and extracted the necessary information for data collection from each chart and entered the data into to a Microsoft Access database. If there were any missing data about birth outcomes (gestational age at birth, birthweight), method of birth or the birth hospital, the investigator worked with the health department staff to obtain vital records data to fill in the missing data. Some women obtained prenatal care more than once at the clinic, however only the information from the date in which she entered care that was randomly selected was used for the analysis.

After the investigator entered all of the data into the Microsoft Access database, 10% of the total number of records (25 from CenteringPregnancy and 25 from individual care) were checked for accuracy. Less than 10% of the data were discrepant and thus the data did not need to be reentered.

Confidentiality. To ensure confidentiality, charts were reviewed in the health department clinic and all data were kept in an electronic password secured file. Before analysis the data were de-identified (names and medical record numbers removed).

Variables. Variables based on maternal factors and birth outcomes were examined in the quantitative phase of the study: birth outcomes, *gestational age at birth, birthweight, type of birth, infant feeding method* and maternal factors, *maternal weight gain, attendance in prenatal visits and attendance in postpartum visit* (See Table 3.3). Several demographic variables and covariate outcomes were assessed for each group (See Table 3.4 and Table 3.5).

Table 3.3: Definition of Variables

Outcome Variable	Variable Type	Definition and Categories
Gestational age at birth	Continuous	The number of weeks a woman was pregnant before she delivered her baby. This variable was obtained in the hospital record that was in the patient chart or from vital records if it was not available in the chart. The weeks and days gestation was rounded down to complete weeks. For example, 39 weeks and 2 days was round to 39 weeks.
Preterm	Binary	This variable derived from the variable, *gestational age at birth.* **Preterm:** An infant born < 37 weeks gestation **Term:** An infant born ≥ 37 weeks gestation. This included infant born post 40 weeks.
Infant birthweight	Continuous	The weight in grams of an infant at the time of birth. This variable was obtained in the hospital record that was in the patient chart or from vital records if it was not available in the chart.
Low birthweight	Binary	This variable was derived from the variable, *infant birthweight.* **Low birthweight:** An infant born < 2,500 grams. **Normal birthweight:** An infant born ≥ 2,500 grams.
Method of birth	Binary	This variable was obtained in the hospital record that was in the patient chart or from vital records if it was not available in the chart. **Vaginal birth**- woman delivered her infant by a normal vaginal birth to a woman with no previous history of a cesarean section **Cesarean section**- woman delivered her infant by a primary cesarean section with no previous history of cesarean section
Gestational Weight Gain Category-nominal	Nominal	The amount of weight that a pregnant woman gained from her pre-pregnancy weight to her last prenatal visit was noted in each woman's medical chart. Using the 1990 IOM recommendations for maternal weight gain using both weight gain and pre-pregnancy BMI, each woman was grouped into one of three weight gain categories. **Low maternal weight gain:** Gained less than recommended weight **Normal maternal weight gain:** Gained within the recommended range **High maternal weigh gain:** Gained more than recommended weight

Outcome Variable	Variable Type	Definition and Categories
Gestational Weight Gain - binary	Binary	This variable was derived from *Gestational Weight Gain Category-nominal* to assess whether women gained a healthy weight compared to an unhealthy weight **Healthy weight gain:** Gained within the normal weight gain range **Unhealthy weight gain:** gained either above or below the recommended weight gain range.
Adequacy of prenatal care	Binary	A modified APNCU index was used to calculate adequacy of prenatal care. See Chapter 3. Women who did not initiate prenatal care prior to the 4th month of pregnancy were excluded in the study because they did not complete prenatal care. **Adequate care:** Women who initiated prenatal care before the 4th month of pregnancy and attended at least 80% of their expected visits. **Not adequate care:** Women who initiated prenatal care before the 4th month of pregnancy and attended less than 80% of their expected visits.
Attendance in postpartum visit	Binary	The postpartum visit was scheduled 6 weeks postpartum to follow-up with the mother's health and the health of the infant. Whether or not a woman attended the postpartum visit was noted in the patient chart. Not all women attended the visit at exactly 6 weeks postpartum. Only if the physician noted the visit as a postpartum visit was it counted as attended. **Attended postpartum visit:** The woman attended to a postpartum visit at the clinic **Did not attend postpartum visit**: The woman did not attend a postpartum visit at the clinic.
Infant feeding type	Nominal	The type of infant feeding the mother indicated she was using at the time of her 6 week postpartum visit. This information was noted in the patient chart. **Exclusive breastfeeding:** mother indicated she was only breastfeeding her infant either through direct breastfeeding or pumping **Formula only**: mother indicated she was only formula feeding her infant **Breastfeeding supplemented with formula:** mother indicated she was breastfeeding and formula feeding her infant

Table 3.4: Outcome Variables Assessed in Intervention and Comparison Group

Demographic variables
Maternal age
Race
Country of origin
Status in U.S.
Marital status
Educational attainment
Employment status
Pregnancy intention
Tobacco use
Previous preterm
Parity
Pre-pregnancy BMI

Table 3.5: Covariate Outcomes Assessed in Intervention and Comparison Group

Covariates
Initiation of prenatal care
Prenatal care adequacy (APNCU index)
Postpartum attendance
Healthy maternal weight gain
Postpartum BMI
Method of birth
Birth hospital
Infant birthweight
Gestational age at delivery
Infant feeding method
Parity

Data analysis. Data analyses for each research question is listed in Table 3.6. Descriptive statistics for each variable including frequencies and chi square and t-test were performed to compare means and describe statistically significant relationships. Using a generalized linear model (GLM) in PAWS Statistics 18 and IBM SPSS 19, the investigator conducted a one-way analysis of variance (ANOVA) and one-way analysis of covariance (ANCOVA) for continuous dependent variables and binary and multinomial logistic regression for categorical dependent variables. In the logistic regression analysis, odds ratios and confidence intervals were computed to determine the odds of an outcome based on the type of prenatal care. In the ANOVA and ANCOVA, an R^2 illustrates the overall variability in the model and an omnibus F-statistic showed the statistical significance of the independent variable. An ANCOVA also includes other covariates that may contribute to the variability in the dependent variable. In all of the analyses a listwise deletion of missing data was conducted which deleted the entire observation of any data was missing. This was done because the overall percentage of missing data was low and thus, other missing data methods such as inputting averages did not need to be completed.

Logistic regression (research questions 1-6). Logistic regression was used to predict a nominal dependent variable with a nominal independent variable. A binary logistic regression was used when the dependent variable was dichotomous and a multinomial logistic regression was used when the dependent variable was a nominal variable with more than two categories (Szklo & Nieto, 2007). The logistic regression was used to predict the odds of an outcome based on the independent variable.

Research question 1 addresses differences in gestational age at delivery based on the type of prenatal care. Gestational age at delivery was assessed as a continuous variable in the ANCOVA analysis and as a binary categorical variable in a binary logistic regression analysis. It is important to also conduct this test to be able to report on increased or decreased odds in preterm birth and be able to compare results with other epidemiology studies that have used these categories. In this analysis gestational age at delivery is categorized as *preterm* or *full term*. See Table 3.3 for definition of variables.

Research question 2 addresses differences in infant birthweight based on the type of prenatal care. This variable was assessed as a continuous variable in the ANCOVA analysis and as a binary variable in a binary logistic regression analysis. It is important to conduct this test to be able to report on increased or decreased odds in low birthweight and be able to compare results with other epidemiology studies that have used these categories. In this analysis birthweight was categorized as *low birthweight* and *normal birthweight* which included high birthweight infants. Normal birthweight and high birthweight were combined in this analysis because of the low sample size in the high birthweight category. See Table 3.3 for definition of variables.

Research question 3 addresses the method of birth of the infant based on the type of prenatal care. This variable will be assessed in a binary logistic regression as a binary variable with two categories, *vaginal* or *cesarean section*. See Table 3.3 for definition of variables.

Research question 4 addresses maternal weight gain based on the type of prenatal care. Maternal weight gain is a variable that was calculated based on the 1990 IOM weight gain recommendations (IOM, 1990). Although new recommendations were

published in 2009 (IOM, 2009) these new recommendations were not in place at the time the women in the study received their prenatal care. The IOM weight gain recommendation categories are based on pre-pregnancy BMI and define weight gain as, *high maternal weight gain, normal maternal weight gain,* and *low maternal weight gain.* The variable was assessed in a multinomial logistic regression using each of these categories and in a binary logistic regression using *healthy weight gain* and combining low weight gain and high weight gain to form an *unhealthy weight* gain category. See Table 3.3 for definition of variables.

Research question 5 addresses attendance in care. Attendance for prenatal care was calculated using a modified APNCU index (Kotelchuck, 1994). The four possible categories of the index are *Inadequate, Intermediate, Adequate,* and *Adequate plus,* however, in this research adequate was combined with adequate plus and intermediate was combined with inadequate, to form a binary variable with two categories *adequate* and *not adequate.* Thus, the data will be assessed in a binary logistic regression. Data on entry into prenatal care and attendance in visits was used to calculate the modified APNCU index. This index is modified because there is a difference in the recommended number of visits for each group. Women in individual prenatal care are recommended to attend 14 total visits including the initial visits and women in CenteringPregnancy are recommended to attend 11 total visits including the initial visit. Due to this difference, the modified index uses a different denominator in each type of care. Data for the individual prenatal care is calculated using 14 as the expected number of prenatal care visits while data for the CenteringPregnancy prenatal care will be calculated using 11 as the expected number of prenatal care visits. See Table 3.3 for definition of variables.

There are two components that are used to calculate the APNCU index, initiation of prenatal care and % of visits. To be considered as adequate prenatal care a woman must initiate prenatal care before the 4th month of pregnancy. The % of visits is calculated as follows: *Observed number of visits/Expected number of visits x 100 = % of visits.*

The two components of the index results are combined and scaled as described below.

> ***Inadequate:*** *care began after the 4th month or expected visits = 0-49%*
> ***Intermediate:*** *care began by the 4th month and expected visits = 50-79%*
> ***Adequate:*** *care began by the 4th month and expected visits = 80-109%*
> ***Adequate plus:*** *care began by 4th month and expected visits ≥ 110%.*

In this analysis the adequate and adequate plus were combined to form one variable, *adequate prenatal care.* Women who had inadequate were excluded from the study because completion of prenatal care was part of the inclusion criteria. The intermediate category was formed into a new category, *not adequate prenatal care.*

> ***Not adequate:*** *care began by the 4th month and expected visits = ≤ 79%*
> ***Adequate:*** *care began by the 4th month and expected visits = ≥ 80%*

The following is an example of the modified APNCU index: A woman began individual prenatal care in month three of her pregnancy and thus according to the American College of Gynecologists guidelines (*Guidelines for Perinatal Care 6th edition*, 2007) she missed two visits. She would only be expected to attend 11 visits throughout the rest of her pregnancy (14-3 =11 visits). She attended 10 prenatal care visits. Thus, her % of visits is 91% (10/11). Since she attended care before the 4th month of pregnancy and she attended 91% of her visits she would fall into the category of adequate care.

Attendance in the six week postpartum care visit is assessed in a binary logistic regression with the binary attendance variable, *attend* and *did not attend.* Although the postpartum visit was scheduled for 6 weeks postpartum a few women attended the postpartum visit after 6 weeks. As long as the physician categorized the visit as postpartum is was included as attended in this analysis. See Table 3.3 for definition of variables.

Research question 6 addresses infant feeding at 6 weeks postpartum based on the type of prenatal care. The type of infant feeding, *exclusive breastfeeding*, *formula only* or *breastfeeding supplemented with formula* was assessed in a multinomial logistic regression analysis. See Table 3.3 for definition of variables.

Assumptions. Unlike linear regression, no assumptions are made about the distribution in logistic regression. However, larger sample sizes are needed and it should be assumed that explanatory variables should not be highly correlated with one another (Bewick, Cheek, & Ball, 2005).

General Linear Model: ANOVA/ANCOVA (research questions 1, 2). Much of the research done on preterm birth and low birthweight categorizes these variables as discrete. This may be important as these variables are often described in the literature in such a way. However, both variables are continuous by nature. When continuous variables are transformed into discrete variables and placed into categories, important information may be lost. Thus, the associations between type of prenatal care and the dependent variables, gestational age at delivery and infant birthweight will be analyzed using a statistical test that account for continuous dependent variables.

ANOVA and ANCOVA are analyses that are conducted when there is one continuous dependent variable with a discrete independent variable (Tabachnick & Fidell, 2007). The analyses test whether mean differences on a single variable between women in the prenatal care groups are likely to have occurred. An ANOVA was used first to assess these differences on one single independent variable (type of prenatal care) and one single dependent variable. An ANCOVA was then used to assess the independent variable along with other covariates that may contribute to the differences in the dependent variable.

The ANCOVA produces an overall model fit test to determine if the model is significant and an F-statistic (omnibus test) that allows the researcher to test the null hypothesis through a main effects test. If the main effect for the independent variable of interest was significant, the researcher conducts follow-up t-test tests to identify the direction in which the variable was statistically significant (O'Rourke, Hatcher, & Stepanski, 2005).

Assumptions. There are three main assumptions to consider when conducting an ANOVA or ANCOVA. First, the data should have a normal distribution. Thus, a test for normality such as Shapiro-Wilk and an assessment of central tendency through skewness and kurtosis should first be conducted to assure normality. Normality is less critical as sample size increases (Tabachnick & Fidell, 2007) and thus with larger sample sizes the test is robust to normality. Second, it is important that the two groups being assessed are independent of each other. Third, the error variance across each group is equal. Levene's test of equality of variance can be used to test the null hypothesis that the variances are equal.

Table 3.6: List of Research Questions 1-6 and Description of Variables and Type of Data Analysis.

Research Question	Data Collection Method	Dependent Variable	Dependent Variable Type	Type of Analysis
1) Is there a difference in gestational age at delivery based on type of prenatal care?	Patient Charts and vital records	Gestational age at delivery	Continuous	ANCOVA
		Preterm	Categorical	Logistic regression
2) Is there a difference in infant birth weight based on type of prenatal care?	Patient Charts and vital records	Birthweight	Continuous	ANCOVA
		Low birthweight	Categorical	Logistic regression
3) Is there a difference in the method of birth based on type of prenatal care?	Patient Charts and vital records	Method of birth	Categorical	Logistic regression
4) Is there a difference in maternal weight gain based on type of prenatal care?	Patient Charts	Maternal weight gain categories	Categorical	Logistic regression
5) Is there a difference in prenatal care and postpartum care attendance rates based on type of prenatal care?	Patient Charts	Adequacy of prenatal care	Categorical	Logistic regression
		Postpartum care attendance	Categorical	Logistic regression
6) Is there a difference in infant feeding type based on type of prenatal care?	Patient Charts	Infant feeding method	Categorical	Logistic regression

Phase II: Qualitative (Objective 3)

Using a convenience sample of multiparous women who completed their CenteringPregnancy prenatal care between November 2009 and May 2010 to conduct postpartum interviews were conducted with women about their experiences and perceptions of CenteringPregnancy compared to their past experience with individual prenatal care.

Study population and recruitment. The investigator worked with staff at the health department to recruit 8-10 Latina women who completed CenteringPregnancy in the past 6 months and who have completed individual prenatal care sometime in the past. A list of twenty five women who fit these inclusion criteria from the more recent eight CenteringPregnancy groups was formulated. The investigator assigned numbers to each woman and used a random number generator to choose the order in which the women would be contacted to recruit for the interview. The health educator who coordinates CenteringPregnancy at the health department contacted each woman starting from the beginning of the randomized list until she scheduled ten women to come to the health department to complete the interview. The women were all given several dates and times to choose from. During the initial phone call, in Spanish, the health educator briefly explained the research and told the women about the incentive to participate. Five women who were originally called declined the offer to participate and a total of ten women were scheduled. On the day they were supposed to arrive, three of the women did not come for the interview. The next three subsequent women on the randomized list were called and they all agreed to participate. A total of ten women completed the interviews within a two

week period. The women were from six different CenteringPregnancy groups that were held over the previous six months.

Data collection procedures. All of the interviews were conducted at the health department clinic in a conference room separate from the obstetrics clinic and the CenteringPregnancy program room. The investigator, the translator/interviewer and the participants, along with their child(ren) in some cases, were in the room during the interview. Snacks and water were provided for all participants and children. When the participant came to the room she was welcomed, offered refreshments and then asked to sit down to listen to the explanation of the research, what the interview would entail and the informed consent process. Since the investigator was not fluent in Spanish, the translator spoke directly to the women in Spanish. The translator explained the main objectives of the research, introduced the investigator, and then told the participant that the interview would be about 25 minutes long and that she could stop at any time. She then read through the main points of the informed consent documents and assured the participant that the information they spoke about would be completely confidential and would not in any way affect the care she received at the health department. See Appendix D for informed consent documents. The translator also asked permission to allow the interview to be recorded for transcription and analysis purposes. After the participant indicated she understood and agreed to take part in the interview, she signed the informed consent form and the interview proceeded. None of the interviews lasted more than 30 minutes. At the end of the interview the participant was given a small baby gift and was told that she would be called in the next few weeks if she won the raffle for a $100.00 Walmart gift card.

Raffle. As an incentive to participate in the study, the women were told they would be entered into a drawing to win a $100.00 Walmart gift card. After the final interview was completed all of the women's names were put on a list and one name was randomly drawn. The CenteringPregnancy coordinator contacted the woman who won and asked to schedule a time with the investigator to receive the gift card.

Confidentiality. All interviews were recorded but women's names were not included in transcripts or any part of data analysis. There was no identifying information such as names or medical record numbers included in the transcription or analysis.

Pilot Test. A pilot test was conducted with 10 % percent of the expected sample size to reflect any poorly designed questions or problems with data collection and analysis (Larossi, 2006). One woman completed CenteringPregnancy (10% of the sample) was asked to be interviewed and comment on the questions appropriateness. The women who participated in the pilot interview were compensated with a small baby gift. Prior to the pilot test, three women participated in practice interviews during the interviewer training. After each interview, the investigator and interviewer talked with the woman who was interviewed about her perception of the interview questions and asked for suggestions on improvements. The suggestions were taken into consideration for possible changes to the interview guide. The comments were assessed and the necessary improvements were made to the protocol. Two examples of such modifications are as follows. First, some of the Spanish language in the interviews was modified to accommodate a broader range of Spanish speakers. Because the majority of the women being interviewed were of Mexican origin some language was changed to fit a Mexican dialect. In addition, some questions were modified to be clearer and better address the

objective of the question. One question that was modified was about physical activity and exercise. During the practice and pilot interview it was brought to the investigator's attention that there was confusion about the difference between physical activity and exercise to do during pregnancy to stay healthy versus exercises to do to prepare for labor and birth or manage pain during pregnancy or labor. The question was changed to be more specific about the type of exercise it was referring to.

To complete the full pilot test, the pilot interview was transcribed, translated and analyzed as if it were the actual data. This allowed the investigator to work through any issues with this process before the actual data collection and analysis began.

Data analysis methods. All ten interviews were audio recorded and the electronic recording was sent to Avalon Transcription Services for transcription and translation. The transcription company transcribed the interviews in Spanish and translated the interviews into English. Back translation from English to Spanish was done to ensure accuracy. The transcriptions were coded using a prior and emerging codes in *Atlas Ti v6*, a qualitative data analytical software program. The investigator combined an a priori code book based on the types of interview questions and the five types of social support (emotional, instrumental, informational, companionship and appraisal/validation) with emerging codes. The codes were merged into family groupings and the investigator summarized the data into themes for interpretation. Another data analyst coded all of the interviewers using the same a priori code book as the investigator and his own emerging codes. The second coder, coded the interviews separately from the investigator. The two sets of codes were merged to formulate the final summary of codes and themes.

Quality and trustworthiness of data. The *credibility* of the data is trustworthiness and the accurate representation of the context of the study (Ulin, Robinson, & Tolley, 2005). To ensure credibility, the investigator examined the findings to first, assess if the results had a logical and consistent relationship to each other. The data were logical and the information obtained from the women was consistent across each interview. Second, the data were assessed to test whether they were sufficiently supported by the findings. The investigator completed in-depth interviews and continued until saturation of data was reached in each area of analysis. Third, the investigator assessed if the findings accurately depicted the opinions of the study population by reviewing the information at the end of each interview. Either during the interview or at the end of the interview, the interviewer summarized the information obtained and asked the participant if the summary was accurate. If it was not accurate, the interviewer asked the participant to summarize the information in her own words.

Similar to reliability in quantitative data, *dependability* tests whether the research process and methodology is consistent and replicable (Ulin, et al., 2005). To ensure dependability, the investigator made a clear and logical research question that was linked to the third objective of the study. There was only one interviewer and thus inter-rater reliability was not a concern. The interviewer was trained and followed a strict protocol for each interview.

Confirmability is the process in which objectivity is utilized and minimizes the influence of the investigator's personal values on the research (Ulin, et al., 2005). Confirmability was ensured in two ways. First, the investigator was reflexive in disclosing her roles in the research process and when necessary indicated when personal

reactions influenced data interpretation. Second, a data collector who was not involved in CenteringPregnancy or the health department in any way interviewed the women. In addition to the investigator, a second data analyst coded the interviews and codes were combined for data summary and analysis of themes. Dual coding was done to decrease bias and ensure more accurate results.

It is important to be able to generalize findings to the study population. *Transferability* is the concept of transferring the findings to other contexts beyond this particular study (Ulin, et al., 2005). This was addressed in the study by randomizing the women who were eligible to be contacted to participate in the interview. Randomizing helped with making certain that the women were well represented in the study and that the findings transfer to other contexts.

Instrumentation. A semi-structured interview guide was developed to address objective 3 and answer research question 5. The interview guide consisted of questions that asked women about their overall experience and satisfaction with CenteringPregnancy (likes, dislikes, good experiences, bad experiences), what they learned in the program, what they learned specifically about nutrition and exercise, if they felt their questions and concerns were addressed, if they felt the program prepared them well for labor and birth and about any friendships and relationships they may have formed. They were also asked to compare the CenteringPregnancy program to their past experience with individual prenatal care. Specifically they were asked to compare the program overall, what they learned differently in general and specifically about nutrition and exercise, how comfortable they felt and which program they would recommend to others and for themselves to do over again. The interview questions were formulated to

address the five types of social support, *emotional, instrumental, informational, companionship and appraisal/validation.* See Appendix E for the interview guide of questions. The interview was administered in Spanish by a bilingual interviewer along with the investigator.

Training

Investigator. The investigator completed the Human Subjects Training offered through the University of South Florida and ensured the research met ethical standards. The investigator also completed HIPPA training, a complete background check and computer training on the Health Management System and new employee training with the Pinellas County Health Department.

Translator/Interviewer. The translator/interviewer held a position as a health educator and assisted in research at Fundación Familia Sana. She had previous training on qualitative research data collection and conducting interviews but was also trained by the investigator. The investigator trained the translator/interviewer on how to conduct the entire interview process including explaining the study objectives, obtaining informed consent from the participant and asking the interview questions and probes. During the training, the translator/interviewer was provided with the study objectives, interview guide, and the qualitative data collection protocol. She was also briefed on the CenteringPregnancy program and the process in which clients obtain prenatal care at the health department. The translator/interviewer conducted three practice interviews with Spanish speaking women who were not affiliated the health department. She also conducted one pilot interview with a woman who obtained prenatal care at the health department. The investigator reviewed strengths and weaknesses of the overall interview

process, conversation style and probing techniques with the translator/interviewer and suggested improvements.

Data analyst/Second coder. The second coder was previously trained in qualitative data collection and analysis and had experience with using the Atlas Ti software. However, he was also trained by the investigator. During the training, the second coder was provided with the study objectives, interview guide, and the qualitative data collection protocol and data analysis method and was also given the list of a priori codes. He was also briefed on the CenteringPregnancy program and the process in which clients obtain prenatal care at the health department.

Timeline

A project timeline is illustrated in Table 3.4. Preliminary work included conducting qualitative observations of women in the CenteringPregnancy group, competing all trainings and requirements of the health department and completing the requirements of the University of South Florida Institutional Review Board. All dissertation research was conducted between May 2010 and March 2011.

Table 3.4: Project Timeline

Preliminary Work	**Time Frame**
Completed Health Department HIPPA requirements and become volunteer	Fall 2009
Conducted observations in CenteringPregnancy groups	Fall 2009- Spring 2010
Met with health department administration to access data	Spring 2010
Completed PCHD computer training	Spring 2010
Completed IRB	Spring 2010
Data Collection and Analysis	**Time Frame**
Phase 1: Developed Microsoft Access database to store data	May 2010
Phase 1: Reviewed CenteringPregnancy electronic and patient charts and entered data into database	June 2010- July 2010
Phase 1: Based on ethnicity, language and month/year entered into prenatal care, a list of individual prenatal care participants who were matched to CenteringPregnancy participants was obtained. The list in each date category was randomized and medical records numbers of each random match participant was obtained.	July 2010
Phase 1: The individual participants charts were reviewed and data was entered into the database	July 2010- September 2010
Phase 2: Submitted IRB modification to conduct interviews	August 2010
Phase 1: A list of participants from both groups in which birth outcomes were missing in the chart was compiled. The investigator worked with the health department staff to obtain the missing information and it was entered into the database.	September 2010
Phase 2: Conducted training for interviewer/translator and conducted 3 practice interviews	September 2010
Phase 2: Worked with health department staff to complete a list of potential interviewees. The list was randomized and each woman was contacted to participate in the interview.	September 2010
Phase 1: Began to analyze quantitative data	October 2010
Phase 2: Pilot tested one interview, made small revisions of interview guide	October 2010
Phase 2: Interviewed CenteringPregnancy participants at the health department	October 2010
Phase 2: Sent all interviews to be transcribed and translated to Avalon Transcription Services	November 2010
Phase 2: Coded and analyzed interviews	November 2010- December 2010
Phase 1 and 2: Completed data analysis and summarized all data	December 2010- February 2011
Phase 1 and 2: Complete dissertation	January 2011- March 2011

Data Sharing

Findings from this study will provide much needed data on pregnancy outcomes that are associated with maternal obesity and related complications among Latinas, and on the effectiveness of CenteringPregnancy programs for Latina populations. All data collected for this study will be de-identified and stored in a password protected Microsoft Access and Microsoft Word file. The investigator will use data for the purposes of the dissertation and will prepare a report for the Pinellas County Health department. In addition, findings will be shared with academic peers in scholarly journals and conference presentations.

Human Subjects Protection

There are no known serious threats to subjects in this study. This research was submitted and approved by the University of South Florida institutional review board (IRB) and by the review board of the Pinellas County Health Department. In phase I: there was no interaction with participants and thus informed consent was not need. However, in Phase II informed consent was obtained from each woman who participated in the interview. All participants were asked to read and sign an informed consent which was provided in both English and Spanish. The investigator and translator read through the consent with the participant before asking them to sign. The participants were assured that all of the data collected would be kept confidential, and stored under electronic passwords.

For both phases of the study, data were kept in an electronic password protected file and was de-identified for use in analysis and reporting. The participant's names or any other identifying information was not used in the study.

CHAPTER FOUR:

RESULTS

This study examined pregnancy outcomes of women in CenteringPregnancy (CP) compared to women in individual prenatal care and explored women's perceptions of CenteringPregnancy compared to their past experiences with individual care. The results are presented in this chapter, in the order of the research questions.

Research Questions

1. Is there a difference in gestational age at delivery based on type of prenatal care?
2. Is there a difference in infant birthweight based on type of prenatal care?
3. Is there a difference in the method of birth based on type of prenatal care?
4. Is there a difference in maternal weight gain based on type of prenatal care?
5. Is there a difference in prenatal care and postpartum care attendance rates based on type of prenatal care?
6. Is there a difference in infant feeding method based on type of prenatal care?
7. What are women's perceptions of CenteringPregnancy prenatal care compared to their past experiences with individual prenatal care?

Phase I: (Research Questions 1-6)

Sample Characteristics

Intervention- CenteringPregnancy. Data were collected from a total of 247 charts of women who completed CP. The remaining 8 charts were not included because they were not available at the clinic. The mean age of women in CenteringPregnancy (the intervention group) was 24.63 years with a range of 14-40 years. All of the women identified themselves as Hispanic, however 42.1% identified as White-Hispanic and 49% identified as other-Hispanic, 8.9% did not indicate a specific race while none of the women identified as Black-Hispanic. The majority of the women indicated that their country of origin was Mexico (84.6%) while others were from El Salvador, Costa Rica and other Latin American and Caribbean countries. Most of the women in the intervention group also identified themselves as migrant (72.1%) when asked about their status in the U.S, while 8.5% said they were either permanent or temporary residents. It was surprising that most of the women stated that they were single (83.0%). However 40.1% of those women indicated they lived with their partners. This may have been due to issues with legal status and fear of documenting spouses. Few women said they were married (12.6%) and even fewer were separated (1.6%) or divorced (0.8%). The majority of the women graduated from high school or obtained an equivalent degree (58.3%). About 30% of women did not complete high school (about 19% of those women were < 18 years old and may have still been in high school), 3.6% had some college education and 4.5% graduated from college. It was not specified whether the degrees were obtained in the U.S. or abroad. The majority (53.8%) of women were primiparous, while 28.3% had one child, 12.1% had 2 children and 5.7% had 3 or more children. About 36% of

women either worked full time or half time when they began prenatal care. Most of the women said that they planned their pregnancies (61.9%) and only two women reported that they smoked cigarettes or cigars (0.81%) at the time of their initial prenatal care visit. Almost all of the women who received prenatal care at the health department also had their pregnancy tests completed at the health department. At that time, they were weighed for their pre-pregnancy weight. Pre-pregnancy BMI was calculated based on the women's height and her pre-pregnancy weight and was included in the woman's chart. Based on pre-pregnancy BMI, the overall proportion of births to obese and overweight women in both groups was greater than normal weight women, 14% and 33.1% respectively. The average BMI for women in CenteringPregnancy was 25.05 with a standard deviation of 4.62. Slightly more than half (55.5%) of the women in the CenteringPregnancy group were within a normal BMI range, 26.7% were in the overweight, 13.4% were obese, 2.5% were underweight and only 2 (0.81%) were morbidly obese. See Table 4.1.

Comparison- Individual prenatal care. Data from a total of 240 charts of women who completed individual prenatal care were included in the study. The mean age of women in individual care (the comparison group) was 25.95 years with a range of 15-44 years. All of the women identified as Hispanic but half (50%) identified as White-Hispanic, 43.8% identified as other-Hispanic, 6.3% did not indicate a specific race while none of the women identified as Black-Hispanic. Like the women in CenteringPregnancy, the majority of the women indicated that their country of origin was Mexico (91.7%). Most women in individual care also identified themselves as migrant (80%) when asked about their status in the U.S. and 3.3% identified as either a permanent or temporary residents (3.3%). Like in CenteringPregnancy, most women said they were

single (72.9%) yet 46.3% of those women were living with their partner. However, slightly fewer women in individual care said they were married (17.9%) and slightly more were separated (4.6%). Only one woman in individual care (0.4%) said she was divorced. Unlike the CenteringPregnancy, the majority (48.8%) of women in individual care said they did not complete high school (about 11% of those women were < 18 years old and may have still been in high school), while 40.8% completed high school or an equivalent degree. Almost 7% graduated from college and one woman (0.4%) completed some college. Compared to CenteringPregnancy fewer women in individual care were primiparous (33.4%), 28.8% had one child, 26.7% had two children and 11.3% had three or more children. Fewer women in the comparison group indicated that they worked at least part time (27.9%). Most of the women said they planned their pregnancies (65.8%) and only one woman reported that she smoked cigarettes or cigars (0.4%) at the time of her initial prenatal care visit. The average BMI for women in individual care was 25.96 with a standard deviation of 4.32. Fewer women in the comparison group had a BMI within the normal range (43.4%) while more women had a BMI in the overweight category (39.6%). Almost 13% of women were obese, while 1.3% of women were underweight and 1.3% of women were underweight. A little bit more than half (55.5%) of the women in the intervention group were within a normal BMI range, 26.7% were in the overweight range, 13.4% were in the obese range, 2.5% were underweight and only 2 (0.81%) were morbidly obese. See Table 4.1.

Differences between groups. Women in the CenteringPregnancy were younger than women group in individual care, t=-2.67, p=0.01. There were differences in educational attainment across both groups as well $\chi^2 = 25.68$, p=0.00. Compared to

women in individual care, more women in CenteringPregnancy graduated from high school or received an equivalent degree, $\chi^2 = 15.7$, $p<0.00$, fewer women did not complete high school or the equivalent ($\chi^2 = 18.21$, $p< 0.00$) and more women attended at least some college ($\chi^2 = 6.33$, $p=0.012$). There were also differences in parity between the groups. In general women in the CenteringPregnancy had lower parity than women in individual care, $t=-5.14$, $p=0.00$. Lastly, women in CenteringPregnancy tended to have a lower mean pre-pregnancy BMI than women in individual prenatal care (25.05 compared to 25.96), $t= -2.44$, $p=0.02$ (See Table 4.1).

Table 4.1: Sample Statistics for CenteringPregnancy and Individual Prenatal Care Clients

Variable	CP n (%)	Individual n (%)	t statistic or χ^2	df	p value
N	247 (100)	240 (100)			
Age			**t = -2.67**	**485**	**0.01***
<20 yrs	42 (17.2)	31 (12.9)			
20-24 yrs	89 (36.0)	75 (31.3)			
25-29 yrs	69 (27.9)	76 (31.7)			
30-34 yrs	35 (14.2)	41 (17.1)			
> 34 yrs	12 (4.9)	17 (7.1)			
Race			**χ^2 = 2.14**	**1**	**0.14**
White-Hispanic	104 (42.1)	120 (50)			
Other-Hispanic	121 (49.0)	105 (43.8)			
Missing	22 (8.9)	15 (6.3)			
Country of origin					.
Mexico	209 (84.6)	220 (91.7)			
El Salvador	9 (3.6)	2 (0.8)			
Costa Rica	5 (2.0)	0 (0)			
Peru	3 (1.2)	0 (0)			
Argentina	2 (0.8)	1 (0.4)			
Guatemala	2 (0.8)	2 (0.8)			
Honduras	2 (0.8)	3 (1.3)			
Chile	1 (0.4)	0 (0)			
Colombia	1 (0.4)	4 (1.7)			
Cuba	1 (0.4)	1 (0.4)			
Ecuador	1 (0.4)	0 (0)			
Venezuela	0 (0)	1 (0.4)			
Missing	11 (4.5)	6 (2.5)			

Country of origin combined			**$\chi^2 = 3.71$**	**1**	**0.05**
Mexico	209 (84.6)	220 (91.7)			
Other	27 (10.9)	14 (5.8)			
Missing	11 (4.5)	6 (2.5)			
Status in U.S.			**$\chi^2 = 13.07$**	**1**	**0.00***
Migrant	178 (72.1)	192 (80.0)			
Permanent/temporary resident	21 (8.5)	8 (3.3)			
Missing	48 (19.4)	40 (16.7)			
Marital status			**$\chi^2 = 5.43$**	**2**	**0.07**
Married	31 (12.6)	43 (17.9)			
Separated	4 (1.6)	11 (4.6)			
Divorced	2 (0.8)	1 (0.4)			
Single	205 (83.0)	175 (72.9)			
Living with Partner	99 (40.1)	111 (46.3)	$\chi^2 = 1.89$[a]	1	0.17
Missing	5 (2.0)	10 (4.2)			
Educational attainment			**$\chi^2 = 25.68$**	**3**	**0.00***
≥ Graduated College	11 (4.5)	16 (6.7)	$\chi^2 = 1.12$	1	0.29
Some college	9 (3.6)	1 (0.4)	$\chi^2 = 6.33$	1	0.01*
Graduated high school or equivalent	144 (58.3)	98 (40.8)	$\chi^2 = 15.69$	1	0.00*
< high school	74 (30.0)	117 (48.8)	$\chi^2 = 18.213$	1	0.00*
Missing	9 (3.6)	8 (3.4)			
Employment status			**$\chi^2 = 3.33$**	**1**	0.68
Employed (full or part time)	90 (36.4)	67 (27.9)			
Missing	10 (4.0)	16 (6.7)			
Pregnancy intention			**$\chi^2 = 0.424$**	**1**	**0.52**
Planned	153 (61.9)	158 (65.8)			
Unplanned	73 (29.6)	67 (27.9)			
Missing	21 (8.5)	16 (6.7)			

Tobacco Use			**χ^2 = 1.96**	**1**	**0.16**
Smokes cigarettes or cigars	2 (0.81)	1 (0.4)			
Does not smoke	241 (97.6)	233 (97.1)			
Unknown	4 (1.6)	6 (2.5)			
Previous preterm			**t = -0.047**	**485**	**0.96**
0	241 (97.6)	231 (96.3)			
1	4 (1.6)	6 (2.5)			
2	1 (0.4)	0 (0)			
Parity			**t = -5.14**	**484**	**0.00***
0	133 (53.8)	80 (33.4)			
1	70 (28.3)	69 (28.8)			
2	30 (12.1)	64 (26.7)			
≥3	14 (5.7)	27 (11.3)			
Prepregnancy BMI			**t = -2.44**	**478**	**0.02***
<19 kg/m^2 underweight	6 (2.5)	3 (1.3)			
19-24 kg/m^2 normal weight	137 (55.5)	104 (43.4)			
25-29 kg/m^2 overweight	66 (26.7)	95 (39.6)			
30-39 kg/m^2 obese	33 (13.4)	31 (12.9)			
≥ 40 kg/m^2 morbidly obese	2 (0.81)	3 (1.3)			
Missing	3 (1.2)	4 (1.7)			

Note. CP= CenteringPregnancy; individual = individual prenatal care; n = sample size df = degrees of freedom; t = test statistic to compare means; χ^2 = chi square statistic to compare means.

a. Follow-up chi square are listed for each multinomial variable. The follow-up chi square compare means differences between the groups in one category of the variable. Overall chi square for each outcome are bolded.

*p value < 0.05.

Preliminary observations about sample characteristics

Age. Women in the intervention group tended to be younger than women in the comparison group. Differences in age and parity may be related since women who have fewer children tend to be younger. Younger women may also have been open to participating in an alternative prenatal care program.

Education level. There was a statistically significant difference in education level between the two groups. Women in the intervention group tended to have more education than women in the comparison group. This may indicate that women with higher education chose the CenteringPregnancy prenatal care over individual prenatal care. Their higher education may also have been due to the fact that they tended to be younger and primiparious and thus had more opportunities to complete high school. Since women had the option to choose CenteringPregnancy, it may indicate that women who were higher educated were more open to alternative prenatal care with an education component.

Marital status. Given the age range and ethnicity of the women in both groups, it was surprising that most of the women reported their marital status as single. Further anecdotal analysis from discussions with health department staff indicated that many of the women may have been married in their country of origin but reported they were single for either the purposes of financial assistance or immigration issues. Several women who said they were single reported that they lived with their partner, who may either be a marital partner or may provide similar support as a marital partner. Further qualitative data is needed to better understand these findings.

Status in the U.S. Compared to the comparison group, fewer women in the intervention group reported they were "migrant" and more women reported they were permanent residents. This may be correlated to educational level and age. In general, most of the women in both groups were from Mexico and indicated they were of "migrant" status. The health department does not ask specific questions about whether women are documented and legal in the country and thus this information is not obtainable. There are very few people in Pinellas County who are actual migrant workers because of the low agriculture in the county. Based on chart information, the majority of women indicated they worked in retail, restaurants or housekeeping.

Parity. More women who had lower parity were in the intervention group compared to the comparison group. This may be because women who already had children chose individual care with the assumption that they did not need alternative prenatal care.

Pre-pregnancy BMI. Women in the intervention group tended to have a lower BMI than women in the comparison group. A higher percentage of women in the intervention group had a BMI in the normal range and fewer in the overweight range compared to the comparison groups. However the percentage of obese women in the intervention group was slightly higher compared to the comparison group. It may be that women with lower BMI tended to choose CenteringPregnancy rather than individual care.

Frequencies and unadjusted difference tests

Gestational age at delivery. The majority of women in both CenteringPregnancy (93.9%) and in individual care (95.8%) delivered their babies full term. Very few (5.7%) in CenteringPregnancy and 2.1% in individual prenatal care) delivered preterm. There were no statistically significant difference between the groups, t=-0.87, p=0.39. (See Table 4.2a).

Infant birthweight. There was a statistically significant difference in mean birthweight between the two groups, t = -2.06, p=0.04. There were slightly more women in CenteringPregnancy who had normal birthweight infants (87%) compared to women in individual care (81.7%), but also more women in CenteringPregnancy who had low birthweight infants (6.1%) compared to women in individual care (4.7%). Slightly fewer women in CenteringPregnancy had infants that were high birthweight (6.1%) compared to women in individual care (9.2%). See Table 4.2a.

Method of birth. More women in CenteringPregnancy (83.4%) had vaginal births as opposed to cesarean section deliveries (10.1%) compared to women in individual care (77.1% and 17.5% respectively), χ^2 =5.4, p=0.02 (See Table 4.2a). When information was provided, reasons for cesarean sections were noted for women in both groups. Although most of the reasons were unknown, breech and failure to progress were among the most common. (See Table 4.2b).

Birth hospital. The majority of the women in both groups gave birth at Morton Plant Hospital (78.1% in CenteringPregnancy and 77.1% in individual care). Fewer women gave birth at Bayfront Medical Center (4.1% in CenteringPregnancy and 6.3% in individual care) and only one woman, who was in the CenteringPregnancy group, gave

birth at Helen Ellis Hospital. There was no statistically significant difference in the birth hospital between the two groups, χ^2 =2.13, p=0.25. See Table 4.2a.

Maternal Weight. More women in CenteringPregnancy gained more than the recommended amount of gestational weight (41.3%) compared to women in individual care (29.6%), χ^2 = 7.12, p=0.01; while less women in CenteringPregnancy gained lower than the recommended amount of gestational weight (15.4%) compared to women in individual care (33.4%), χ^2 = 21.62, p=0.00. Although slightly more women in CenteringPregnancy gained within the healthy weight gain range (35.6%) compared to women in individual care (31.3%), it was not a statistically significant difference, χ^2 = 0.98, p=0.32. (See Table 4.2a).

There was a statistically significant difference in postpartum BMI between the groups, t = -2.72, p=0.01, reflecting that the mean BMI of women in CenteringPregnancy (mean=26.33) was lower than the mean BMI for women in individual care (mean=27.60). This was consistent with the difference in the mean pre-pregnancy mean BMI between the groups. (See Table 4.2a).

Attendance and adequacy of care. The overall proportion of women in both groups who initiated care before the 4th month of pregnancy was 81.3%. More women in CenteringPregnancy initiated prenatal care before the 4th month of pregnancy (90.7%) compared to women in individual care (71.7%), χ^2 = 39.1, p=0.00. However, all of the women in CenteringPregnancy who initiated prenatal care after the 4th month had a pregnancy test completed at the health department clinic prior to 4 months gestation. The pregnancy test is not a prenatal care visit, however, blood pressure, weight and family and medical history are completed at this visit. Thus, the women sought health care and

were placed into the health system before the 4th month of pregnancy. Depending on the weeks gestation they came in for their pregnancy test, either the women were not scheduled for their first prenatal care visit until after their 4th month or they did not make an appointment until after the 4th month. More than half (58.2%) of the women in individual care who initiated prenatal care after the 4th month also completed a pregnancy test at the health department clinic prior to 4 months gestation. (See Table 4.2a).

To determine adequacy of prenatal care, the women were first grouped in one of four categories based on the APNCU index which is derived using the initiation of prenatal care and the number of prenatal care visits. Since the sample size of women in the intermediate and adequate categories was low, the four categories were combined to form two categories. *Adequate plus* and *adequate* were combined to form the new *adequate*, and *intermediate* and *inadequate* were combined to form the *not adequate* category. More women in CenteringPregnancy had adequate prenatal care (91.9%) compared to women in individual care (63.8%) indicating they attended over 79% of their expected prenatal care visits, $\chi^2 = 55.13$, p=0.00 (See Table 4.2a).

There was also a statistically significant difference in attendance in the postpartum visit between the groups, $\chi^2 = 11.22$, p=0.00. More women in CenteringPregnancy attended their postpartum visit (86.7%) compared to women in individual prenatal care (74.6%) (Table 4.2a).

Infant feeding. More women in CenteringPregnancy (28.7%) indicated at their postpartum visit that they formula-only fed their babies compared to women in individual care (7.5%), $\chi^2 = 31.51$, p=0.00. In addition, fewer women in CenteringPregnancy indicated they were exclusively breastfeeding their infant (15.4%) compared to women in

individual care (25%), $\chi^2 = 12.05$, p=0.00. However, the majority of women in both groups indicated they were supplementing breastfeeding with formula (38.5% in CenteringPregnancy and 40.4% in individual care) and there was no statistically significant difference between the groups, $\chi^2 = 2.99$, p=0.09 (See Table 4.2a). When combining the breastfeeding only category with the breastfeeding and formula feeding category the percentage of women who non-exclusively breastfed their infants at 6 weeks postpartum was 53.9% for women in CenteringPregnancy and 65.4% for women in individual care.

Table 4.2a: Outcomes for CenteringPregnancy and Individual Prenatal Care Clients: Frequencies and Unadjusted Univariate Test for Differences

Variable	CP n (%)	Individual care n (%)	χ^2 or t statistic	df	p value
Total Sample Size (N)	247 (100)	240 (100)			
Initiation of Prenatal care			**χ^2 = 39.1**	**1**	**0.00***
Before 4th month	224 (90.7)	172 (71.7)			
After 4th month	10 (4.0)	55 (22.9)			
Missing	13 (5.6)	13 (5.4)			
Prenatal Care Adequacy (Modified APNCU Index)			**χ^2 = 211.5**	**3**	**0.00***
Adequate Plus	212 (85.8)	49 (20.4)	χ^2 = 210.8[a]	1	0.00*
Adequate	15 (6.1)	104 (43.3)	χ^2 = 96.8	1	0.00*
Intermediate	1 (0.4)	15 (6.3)	χ^2 = 16.1	1	0.00*
Inadequate	10 (4.0)	55 (22.9)	χ^2 = 39.0	1	0.00*
Missing	9 (3.6)	17 (7.1)			
Prenatal Care Adequacy (Modified APNCU index Binary)			**χ^2 = 55.13**	**1**	**0.00***
Adequate	227 (91.9)	153 (63.8)			
Not adequate	11 (4.5)	70 (29.2)			
Missing	9 (3.6)	17 (7.1)			
Postpartum Attendance			**χ^2 = 11.22**	**1**	**0.00***
Attended	214 (86.7)	179 (74.6)			
Did not Attend	33 (13.3)	61 (25.4)			
Missing	0 (0)	0 (0)			
Healthy Weight Gain			**χ^2 = 21.53**	**2**	**0.00***
Above Healthy Weight Gain	102 (41.3)	71 (29.6)	χ^2 = 7.12	1	0.01*
Below Healthy Weight Gain	38 (15.4)	80 (33.4)	χ^2 = 21.62	1	0.00*
Healthy Weight Gain	88 (35.6)	75 (31.3)	χ^2 =0.98	1	0.32
Preterm (no statistics)	14 (5.7)	5 (2.1)			
Missing	5 (2.0)	9 (3.8)			

Postpartum BMI			**t = .2.72**	**384**	**0.01***
<19 kg/m^2 underweight	2 (0.80)	2 (0.8)			
19-24 kg/m^2 normal weight	81 (32.8)	48 (20)			
25-29 kg/m^2 overweight	86 (34.8)	78 (32.5)			
30-39 kg/m^2 obese	39 (15.8)	42 (17.5)			
≥ 40 kg/m^2 morbidly obese	3 (1.2)	5 (2.1)			
Missing	36 (14.6)	65 (27.1)			
Method of Birth			**χ^2 = 5.41**	**1**	**0.02***
Vaginal	206 (83.4)	185 (77.1)			
Cesarean section	25 (10.1)	42 (17.5)			
Missing	16 (6.5)	13 (5.4)			
Hospital			**χ^2 = 2.13**	**2**	**0.25**
Morton Plant	193 (78.1)	185 (77.1)			
Bayfront	10 (4.1)	15 (6.3)			
Helen Ellis	1 (0.4)	0 (0)			
Missing	43 (17.4)	40 (16.7)			
Birthweight (grams)			**t = -2.25**	**479**	**0.03***
>4000 g	15 (6.1)	22 (9.2)			
2500 g – 4000 g	219 (87.0)	205 (81.7)			
<2500 g	11 (5.3)	9 (3.4)			
<1500 g	2 (0.8)	3 (1.3)			
Missing	2 (0.8)	4 (4.6)			
Gestational age at delivery			**t = -0.87**	**479**	**0.39**
≥ 37 weeks	232 (93.9)	230 (95.8)			
<37 weeks	14 (5.7)	5 (2.1)			
<35 weeks	6 (2.4)	2 (0.8)			
<32 weeks	0 (0)	2 (0.8)			
Missing	1 (0.4)	12 (5.0)			

Infant feeding			**χ^2 = 41.86**	**2**	**0.00***
Breast only	38 (15.4)	60 (25)	χ^2 = 12.05	1	0.00*
Formula only	71 (28.7)	18 (7.5)	χ^2 = 31.51	1	0.00*
Both breast and formula	95 (38.5)	97 (40.4)	χ^2 = 2.99	1	0.09
Missing	43 (17.4)	65 (27.1)			

Note. CP= CenteringPregnancy; individual = individual prenatal care; n = sample size df = degrees of freedom; t = test statistic to compare means (continuous); χ^2 = chi square statistic to compare means (categorical)

a. Follow-up chi square are listed for each multinomial variable. The follow-up chi square compare means differences between the groups in one category of the variable. Overall chi square for each outcome are bolded.

*p value < 0.05.

Table 4.2b. Reasons for Cesarean Section Delivery in Both Intervention and Comparison Groups

Reason for Cesarean Section	**CenteringPregnancy n (%)**	**Individual care n (%)**
Unknown (not indicated on hospital chart or no hospital chart data available)	15 (60%)	13 (31%)
Breech	5 (20%)	7 (17%)
Failure to progress	3 (12%)	8 (19%)
Fetal intolerance to labor	0 (0%)	1 (2%)
Induction then arrest of descent	1 (4%)	3 (7%)
Intrauterine pregnancy	0 (0%)	2 (5%)
Macrosomia	0 (0%)	1 (2%)
Pregnancy induced hypertension	1 (4%)	4 (10%)
Premature rupture of membranes	0 (0%)	2 (5%)
Scheduled- non emergency	0 (0%)	1 (2%)
Total Cesarean section count	**25**	**42**

Binary and Multinomial Logistic Regression

Research question 1: preterm birth. A binary logistic regression describing the relationship between the type of prenatal care and gestational age at birth was performed. The outcome variable of interest is a binary variable that takes on the value of *one* if a woman had a term birth and *two* if a woman had a preterm birth. The women who had term births are treated as the reference group. In an unadjusted model, there were no differences in the groups, OR=0.39 (95% CI: 0.14, 1.11) (See Table 4.3).

To control for other variable relationships with the outcome, a binary logistic regression adjusting for several covariates including, age, employment status, educational attainment, marital status, parity and pre-pregnancy BMI. In this analysis, the probability of the model chi square is statistically significant, χ^2= 23.3, p<0.05. The null hypothesis that there was no difference between the model without independent variables and the model with independent variables was rejected. However, the existence of a relationship between the type of prenatal care and gestational age at birth was not supported. The likelihood ratio test established that there was no statistically significant relationship between the type of prenatal care and gestational age at birth χ^2= 0.63, p=0.46 (See Table 4.4).

Employment status was statistically significant in the model indicating a relationship with method of birth, χ^2= 6.23, p=0.13. There is an increased odds of preterm birth among women who worked either part time or full time compared to women who did not work, aOR=3.97 (95% CI: 1.32, 11.96) (See Table 4.4).

Research question 2: low birthweight. A binary logistic regression describing the relationship between the type of prenatal care and infant birthweight was performed. The

outcome variable of interest is a binary variable that takes on the value of *one* if an infant was normal birthweight or high birthweight and *two* if the infant was low birthweight. In this case, normal birthweight and high birthweight were combined to form binary variable because there were too few high birthweight infants to form a multinomial variable. The combined normal birthweight and high birthweight category are treated as the reference group. In an unadjusted model, there were no differences in the groups, OR=0.84 (95% CI: 0.34, 2.10) (See Table 4.3).

To control for other variable relationships with the outcome, a binary logistic regression adjusting for several covariates including, employment status, marital status, and parity was performed. In this analysis, the probability of the model chi square is not statistically significant, χ^2= 14.99, p<.05. The null hypothesis that there was no difference between the model without independent variables and the model with independent variables was not rejected. The likelihood ratio test established that there was no statistically significant relationship between the type of prenatal care and infant birthweight χ^2= 0.38, p=0.54 (See Table 4.4).

The likelihood ratio for employment status as an independent variable was statistically significant, χ^2= 8.58, p=0.01 in the model. Women who worked part time or full time were 4.39 times more likely to have a low birthweight infant than women who did not work, aOR=4.21 (95% CI, 1.54, 11.52) (See Table 4.4).

Research question 3: method of birth. A binary logistic regression describing the relationship between the type of prenatal care and method of birth was performed. The outcome variable of interest is a binary variable that takes on the value of *one* if a woman had a vaginal birth and *two* if a woman had a primary cesarean section. The women who

had a vaginal birth are treated as the reference group. In an unadjusted model, there is an increased odds of vaginal birth as opposed to primary cesarean section among women in CenteringPregnancy compared to women in individual care, OR=1.87 (95% CI: 1.10, 3.19) (See Table 4.3).

To control for other variable relationships with the outcome, a binary logistic regression adjusting for several covariates including, age, educational attainment, parity, status in country, pre-pregnancy BMI, employment status and birth hospital was performed. In this analysis, the probability of the model chi square is statistically significant, χ^2= 50.98, p<.05. The null hypothesis that there was no difference between the model without independent variables and the model with independent variables was rejected. The existence of a relationship between the type of prenatal care and attendance in the method of birth was supported. The likelihood ratio test established that there was a statistically significant relationship between the type of prenatal care and type of birth χ^2= 6.60, p=0.01. Women in CenteringPregnancy were more likely to have a vaginal birth compared to women who completed individual prenatal care. There is an increased odds of vaginal birth as opposed to primary cesarean section among women in CenteringPregnancy compared to women in individual care, aOR=2.57 (95% CI: 1.23, 5.36) (See Table 4.4).

Parity was statistically significant in the model indicating a relationship with type of birth. Women who were primiparous were almost 8 times more likely to have a primary cesarean section compared to women who were multiparous, aOR=7.95 (95% CI: 3.45, 18.29). In addition, women who gave birth at Morton Plant hospital compared

to Bayfront hospital were less likely to have a cesarean delivery, aOR=0.20, (95% CI: 0.06, 0.65) (See Table 4.4).

Research question 4: gestational weight gain. A multinomial logistic regression describing the relationship between the type of prenatal care and gestational weight gain was performed. The outcome variable of interest is a nominal variable that takes on the value of *one* if a woman gained above the recommended weight during pregnancy, *two* if a woman gained within the recommended weight and *three* if a woman gained below the recommended weight, as defined previously from the 2009 IOM weight gain guidelines. The women who gained within the recommended amount of weight are treated as the reference group. In an unadjusted model, there were no differences in low weight gain between the groups, OR=1.22 (95% CI: 0.80, 1.89). However, there were differences between the groups in the unadjusted model for high weight gain, OR=0.41 (95% CI: 0.25, 0.66). Women in CenteringPregnancy were less likely to gain more than the recommended amount of weight than women in individual care (See Table 4.3). However, this did not hold true after covariates were controlled for.

To control for other variable relationships with the outcome, a multinomial logistic regression adjusting for several covariates including, age, educational attainment, employment, marital status, parity, pre-pregnancy BMI and status in the country. In this analysis, the probability of the model chi square is statistically significant, χ^2= 111.74, $p<.05$. The null hypothesis that there was no difference between the model without independent variables and the model with independent variables was rejected. The existence of a relationship between the type of prenatal care and maternal weight gain was supported. The likelihood ratio test established that there was a statistically

significant relationship between the type of prenatal care and maternal weight gain χ^2= 15.63, p=0.00. Women in CenteringPregnancy were less likely to gain below than the recommended amount of weight gain compared to women who completed individual prenatal care, aOR=0.41 (95% CI: 0.22, 0.78) but there was no statistically significant difference with women who gained more than the recommended amount of weight, aOR=1.45 (95% CI: 0.79, 2.62).

Classification accuracy is assessed to determine the utility of the multinomial logistic regression model. This measure compares the predicted group memberships based on the logistic model to the actual group membership (value of dependent variables) (Rudner, 2005). The benchmark that is used to characterize the model as "useful" is a 25% improvement over the rate of accuracy that can be achieved by chance alone (Rudner, 2001). The proportion by chance accuracy criteria is computed by summing the squared percentage of cases in each group of the dependent variable. The overall percentage accuracy rate produced in the SPSS computation is compared to 25% more than the proportional by chance accuracy. In this case, the classification accuracy rate (54.2%) is greater than the computed proportional by chance accuracy criteria (43.1%) indicating that the criteria for classification criteria is satisfied.

Pre-pregnancy BMI showed a statistically significant relationship with gestational weight gain. Women who were obese before pregnancy had higher odds of gaining above the healthy weight recommendations than women who were normal weight, aOR= 57.40 (95% CI: 15.7, 210.20) and gaining below the recommended amount of weight aOR=6.61 (95% CI, 1.64, 26.6). Women who were overweight before pregnancy also had

a higher odds of gaining below the healthy weight recommendations than women who were normal weight, aOR= 3.08 (95% CI: 1.67, 5.66) (See Table 4.4).

However, when the variable categories "gained under the recommended amount" and "gained more than the recommended amount" were combined to form one "unhealthy weight gain" category, there were no statistically significant differences between the two groups. The likelihood ratio test established that there was not statistically significant relationship between the type of prenatal care and maternal weight gain (healthy vs. unhealthy) χ^2= 0.61, p=0.44. However, there was an increased odds of gaining a healthy gestational weight among obese women and overweight women in both groups combined, aOR=25.98 (95% CI: 7.46, 90.41) and, aOR 2.17 (95% CI: 1.29, 3.65) respectively (See Table 4.4).

Research question 5: attendance in care

*Adequacy of prenatal care***.** A binary logistic regression describing the relationship between the type of prenatal care and the adequacy of prenatal care was performed. The outcome variable of interest is a binary variable that takes on the value of *one* if a woman received adequate care and *two* if a woman received inadequate care, as defined previously using a modified APNCU index. The women who received adequate care are treated as the reference group. In an unadjusted model, there was an increased odds of receiving adequate prenatal care among women CenteringPregnancy compared to women in individual care, OR=9.44 (95% CI: 4.84, 18.41) (See Table 4.3).

To control for other variable relationships with the outcome, a binary logistic regression adjusting for several covariates including, age, educational attainment, employment, marital status, parity, pre-pregnancy BMI, and status in the U.S. In this

analysis, the probability of the model chi square is statistically significant, χ^2= 58.10, p<.05. The null hypothesis that there was no difference between the model without independent variables and the model with independent variables was rejected. The existence of a relationship between the type of prenatal care and adequacy of prenatal care was supported. The likelihood ratio test established that there was a statistically significant relationship between the type of prenatal care and adequacy of prenatal care χ^2= 38.2, p=0.00. Women in CenteringPregnancy were more likely to have received adequate prenatal care rather than inadequate prenatal care compared to women who completed individual prenatal care. There was an increased odds of receiving adequate prenatal care among women CenteringPregnancy compared to women in individual care, aOR=11.03, (95% CI: 4.53-26.83) (See Table 4.4).

Pre-pregnancy BMI was statistically significant in the model indicating a relationship with type of birth, χ^2= 9.03, p=0.04. Women who were obese were less likely to have adequate prenatal care than women who were of normal weight, aOR=0.25 (95% CI: 0.08, 0.73) (See Table 4.4).

Attendance in postpartum visit. A binary logistic regression describing the relationship between the type of prenatal care and attendance in the postpartum visit was performed. The outcome variable of interest is a binary variable that takes on the value of *one* if a woman attended the postpartum visit and *two* if a woman did not attend the postpartum visit. The women who attended the postpartum visit are treated as the reference group. In an unadjusted model, there was an increased odds of attending the postpartum visit among women CenteringPregnancy compared to women in individual care, OR=2.2 (95% CI: 1.38, 3.51) (See Table 4.3).

To control for other variable relationships with the outcome, a binary logistic regression, adjusting for several covariates including, age, employment, marital status, parity, pre-pregnancy BMI and status in the U.S was performed. In this analysis, the probability of the model chi square is statistically significant, χ^2= 22.28, p<.05. The null hypothesis that there was no difference between the model without independent variables and the model with independent variables was rejected. The existence of a relationship between the type of prenatal care and attendance in the postpartum visit was supported. The likelihood ratio test established that there was a statistically significant relationship between the type of prenatal care and attendance in the postpartum visit χ^2= 6.71, p=0.01. Women in CenteringPregnancy were more likely to attend their postpartum visit compared to women who completed individual prenatal care. There was an increased odds of attending the postpartum visit among women CenteringPregnancy compared to women in individual care aOR=2.21 (95% CI: 1.20, 4.05) (See Table 4.4). No other covariates in model were statistically significant indicated any relationship with birthweight.

Research question 6: infant feeding method. A multinomial logistic regression describing the relationship between the type of prenatal care and the type of infant feeding was performed. The outcome variable of interest is a multinomial variable that takes on the value of *one* if the mother was supplementing breastfeeding with formula, *two* if the mother was using formula only to feed, and *three* if the mother was exclusively breastfeeding. Mothers who supplemented breastfeeding with formula are treated as the reference group. In an unadjusted model, there was an increased odds of formula-only feeding infants among women in CenteringPregnancy compared to women in individual

care, OR=4.03 (95% CI: 2.23, 7.26). There were no differences between the groups with women who exclusively breastfeed their babies, OR=0.65 (95% CI: 0.39, 1.06) (See Table 4.3).

To control for other variable relationships with the outcome, a multinomial logistic regression adjusting for several covariates including, age, birth hospital, employment, educational attainment, parity and pre-pregnancy BMI. In this analysis, the probability of the model chi square is statistically significant, χ^2= 59.72, p<.05. The null hypothesis that there was no difference between the model without independent variables and the model with independent variables was rejected. The existence of a relationship between the type of prenatal care and infant feeding was supported. The likelihood ratio test established that there was a statistically significant relationship between the type of prenatal care and infant feeding χ^2= 32.63, p=0.00. There was an increased odds of formula-only feeding infants among women in CenteringPregnancy compared to women in individual care aOR=6.07 (95% CI: 2.57, 14.31) (See Table 4.5).

Employment status was statistically significant in the model indicating a relationship with feeding method. Women who worked either part time or full time were less likely to exclusively breastfeed, aOR=0.44 (95% CI: 0.21, 0.94), or formula only feed their infants aOR=0.42 (95% CI: 0.21, 0.88) (See Table 4.5).

Table 4.3: Unadjusted Logistic Regression for Type of Prenatal Care

Outcome Variable	Unadjusted OR	95% CI
Preterm	0.39	[0.14, 1.11]
Low birthweight	0.84	[0.34, 2.10]
Method of birth	1.87*	[1.10, 3.19]
Gestational Weight Gain-binary	1.25	[0.85, 1.84]
Gestational Weight Gain-nominal	1.22 (low weight gain)	[0.80, 1.89]
(reference: healthy weight gain)	0.41*(high weight gain)	[0.25, 0.66]
Adequacy of prenatal care	9.44*	[4.84, 18.41]
Attendance in postpartum visit	2.20*	[1.38, 3.51]
Infant feeding method	4.03* (formula only)	[2.23, 7.26]
(reference: both breast and formula)	0.65 (breast only)	[0.39, 1.06]

Note. df = degrees of freedom; OR = odds ratio; CI = confidence interval
*p < 0.05.

Table 4.4: Adjusted Binary Logistic Regression for Type of Prenatal Care

Outcome Variable	Adjusted OR	95% CI	Wald Statistic	P value	Likelihood ratio test	Model fit χ^2 (df)
Preterm						23.30* (13)
Type of prenatal care	0.61	[0.18, 2.10]	0.61	0.44	0.63	
Age					3.27	
Education					1.07	
Employment	3.97*	[1.32, 11.96]	5.71*	0.02	6.23*	
Marital status					0.01	
Parity					0.33	
Pre-pregnancy BMI					0.26	
Low birthweight						14.99* (5)
Type of prenatal care	1.35	[0.52, 3.51]	0.38	0.53	0.38	
Employment status	4.21*	[1.54, 11.52]	7.89*	0.01	8.58*	
Marital status					0.07	
Parity					5.09	
Method of birth						50.98* (13)
Type of prenatal care	2.57*	[1.23, 5.36]	6.35*	0.01	6.60*	
Age					6.48	
Birth Hospital	0.20*	[0.06, 0.65]	7.12*	0.01	6.84*	
Education					4.24	
Employment					0.28	
Marital status					0.58	
Parity	7.95*	[3.45, 18.92]	23.76*	0.00	27.63*	
Pre-pregnancy BMI					1.25	
Gestational weight gain						64.4* (14)
Type of prenatal care	1.23	[0.73, 2.07]	0.61	0.44	0.61	
Age					9.04	
Education					1.75	

Employment					1.51	
Marital status					3.84	
Parity					0.04	
Pre-pregnancy BMI					51.23*	
Obese	25.98*	[7.46, 90.41]	26.20*	0.00		
Overweight	2.17*	[1.29, 3.65]	8.55*	0.00		
Status U.S					3.10	
Adequacy of prenatal care						58.10* (14)
Type of prenatal care	11.03*	[4.53, 26.83]	27.99*	0.00	38.2*	
Age					0.89	
Education					0.36	
Employment					0.66	
Marital status					2.21	
Parity					5.66	
Pre-pregnancy BMI						
Obese	0.25*	[0.08, 0.73]	6.41*	0.01	9.03*	
Status U.S					1.88	
Postpartum visit						22.28 (14)
Type of prenatal care	2.20*	[1.20, 4.05]	6.49*	0.01	6.71*	
Age					6.07	
Employment					2.29	
Marital status					2.51	
Parity					1.84	
Pre-pregnancy BMI					1.85	
Status in the U.S.					1.35	

Note. df = degrees of freedom; OR = odds ratio; CI = confidence interval
*p < 0.05.

Table 4.5: Adjusted Multinomial Logistic Regression

Outcome Variable	Adjusted OR	95% CI for OR	Wald	P value	Likelihood ratio test	Model fit χ^2 (df)
Gestational Weight Gain[a]						111.74* (28)
Type of prenatal care					15.63*	
	1.45 (high weight gain)	[0.79, 2.62]	1.42	0.23		
	0.41* (low weight gain)	[0.22, 0.78]	7.39	0.01		
Age					12.34	
Education					2.45	
Employment					2.02	
Marital status					3.59	
Parity					2.78	
Pre-pregnancy BMI					78.29*	
Obese	57.39* (high weight gain)	[15.67, 210.18]	37.39*	0.00		
	6.61* (low weight gain)	[1.64, 26.60]	7.06*	0.01		
Overweight	3.08* (high weight gain)	[1.67, 5.66]	13.04*	0.00		
Status on U.S.					3.62	
Infant feeding method[b]						59.72* (28)
Type of prenatal care	6.07* (formula only)	[2.57, 14.31]	16.93	0.00	32.63*	
	0.16 (breast only)	[0.33-1.19]				
Age					7.82	
Birth Hospital					1.09	
Employment					8.26*	
	0.44* (formula only)	[0.21, 0.94]	4.52*	0.03		
	0.42* (breast only)	[0.21,0.88]	5.24*	0.02		
Education					2.54	
Parity					1.01	
Pre-pregnancy BMI					2.27	

Note. df = degrees of freedom ; Wald = Wald test statistic; OR = odds ratio; CI = confidence interval
*p < 0.05.
a. Reference: healthy weight gain
b. Reference: breast supplemented with formula

Table 4.6: Summary of Statistically Significant Covariate Relationships to Outcomes

Outcome Variable	Independent Variable	Adjusted OR	95% CI	Wald	P value
Preterm	Worked	3.97*	[1.32, 11.96]	6.0*	0.01
Low birthweight	Worked[a]	4.39*	[1.62, 11.87]	8.48*	0.00
Vaginal birth	Primiparous	7.95*	[3.45, 18.29]	23.76*	0.00
Vaginal birth	Bay Front Hospital	0.20*	[0.06, 0.65]	7.12*	0.01
Low gestational weight gain	Overweight pre-pregnancy BMI	6.61*	[1.64, 26.60]	7.06*	0.02
Low gestational weight gain	Obese pre-pregnancy BMI	18.65*	[5.21, 66.73]	20.23*	0.00
High gestational weight gain	Overweight pre-pregnancy BMI	57.40*	[15.7, 210.20]	37.4*	0.00
High gestational weight gain	Obese pre-pregnancy BMI	3.08*	[1.67, 5.67]	13.04*	0.00
Formula-only feeding	Worked	0.43*	[0.22, 0.85]	5.88*	0.02
Exclusive breastfeeding	Worked	0.47*	[0.24, 0.89]	5.38*	0.02

Note. Wald = Wald test statistic; OR = odds ratio; CI = confidence interval
*$p < 0.05$.
a. Adjusted covariates to obtain model fit 15.104. Included only parity and treatment as covariates.

Univariate General Linear Model (Research Questions 1-2)

Descriptive statistics. Descriptive statistics for the continuous outcome variables are displayed in Table 4.7 and Table 4.7. For the CenteringPregnancy group, the mean age of the women was 24.6, the mean infant birthweight was 3,333.6 grams (SD=487.34) and the mean gestational age at birth was 39.1 weeks (SD= 1.51) (See Table 4.6). For the individual prenatal care group, the mean age of the women was 25.9, the mean infant birthweight was 3427.5 grams (SD=497.71) and the mean gestational age at birth was 39.1 weeks (SD= 1.6) (See Table 4.8).

Assumptions. There are three assumptions to be met to conduct a one-way ANOVA or ANCOVA using a general linear model, *normality, independent groups* and *equal variance across groups.* All three of these assumptions have been met for the two dependent variables, birthweight and gestational age at birth.

The birthweight variable for infants of women in CenteringPregnancy has a kurtosis value that is >|1| which indicates non-normality. However, since the within group degrees of freedom is >40 the ANOVA is robust to this assumption (Tabachnick & Fidell, 2007). The birthweight variable for women in individual care, the skewness and kurtosis values are >|1| which indicates non-normality. However, again since the within group degrees of freedom is >40 the ANOVA is robust to this assumption.

The two groups are assumed to be independent of each other since different women were sampled in each group who received their prenatal care at the same time period. Levene's test of equality variance was conducted which test the null hypothesis that the error variance of the dependent variables is equal across groups. For the dependent variable gestational age at delivery the test was not significant, F=0.869,

p=0.352 indicating that there is equal variance across the groups. For the dependent variable infant birthweight the test was also not significant, F=0.425, p=0.515 indicating that there is equal variance across the groups.

Table 4.7: CenteringPregnancy Descriptive Statistics

Outcome Variable	N	Min	Max	Mean		Std. Deviation	Skewness		Kurtosis	
				Statistic	Std. Error		Statistic	Std. Error	Statistic	Std. Error
Gestational age at birth (weeks)	239	33	42	39.13	0.10	1.51	-1.71	0.16	4.47	0.314
Birthweight (grams)	238	1361	4508	3333.63	31.59	487.34	-0.91	0.16	2.46	0.314

Note. N= sample size; Min= minimum; max= maximum, std.= standard

Table 4.8: Individual Prenatal Care Descriptive Statistics

Outcome Variable	N	Min	Max	Mean		Std. Deviation	Skewness		Kurtosis	
				Statistic	Std. Error		Statistic	Std. Error	Statistic	Std. Error
Gestational age at birth (weeks)	242	28	42	39.36	0.10	1.60	-2.81	0.16	16.31	0.31
Birthweight (grams)	243	907	4763	3427.35	31.93	497.71	-1.12	0.16	4.12	0.31

Note. N= sample size; Min= minimum; max= maximum, std.= standard

Research question 1: gestational age at delivery. An unadjusted one-way ANOVA statistical test performed in a univariate general linear model with no covariates indicated that the main effect for type of treatment showed no statistically significant relationship between the type of prenatal care and gestational age at birth, F=2.95, p=0.086, indicating there is no observed difference in average gestational age at birth between the two groups (See Table 4.9). When employment status, maternal age and parity are added to the model as covariates the ANCOVA model was statistically significant, F=1.80, p=0.045. The adjusted R^2 was 0.02 indicating 2% of the variance in gestational age at birth was accountable by the set of predictors. However, the main effect for type of treatment still showed no statistically significant relationship between the type of prenatal care and infant birthweight, F=0.778, p=0.38. On the other hand, the main effect for employment status showed a statistically significant relationship with gestational age at delivery, F= 7.18, p=0.01, indicating there was an observed difference in average gestational age at delivery between women who worked compared to women who did not work (See Table 4.10). A follow-up t-test indicated that there was a difference in the average birthweight of women who worked compared to women who did not work, t=-1.97, p=0.049, however, the p value was only slightly below 0.05 (See Table 4.11).

Table 4.9: Main Effects Test for Between-Subjects Effects for Dependent Variable, Gestational Age at Birth

Variable	Type III Sum of Squares	df	Mean Square	F	P value	Partial Eta^2	Adjusted R^2
Type of prenatal care	7.16	1	7.16	2.95	0.09	.01	0.00

Note. df = degrees of freedom ; F= Omnibus test for overall mean difference: Partial eta^2 = proportion of variance accounted for by the main effect or interaction; adjusted R^2 =the proportion of the variation in the dependent variable accounted for by the independent variables.
*p < 0.05.

Table 4.10: Tests of Between-Subjects Effects for Dependent Variable, Gestational Age at Birth with Covariates

Variable	Type III Sum of Squares	df	Mean Square	F	P value	Partial Eta^2	Adjusted R^2
Corrected Model	50.67	12	4.22	1.81	0.05	0.05	0.02
Type of prenatal care	1.82	1	1.82	0.78	0.38	0.00	
Age	0.29	1	0.29	0.12	0.73	0.00	
Parity	6.96	2	3.48	1.49	0.23	0.01	
Employment status	16.80	1	16.80	7.18*	0.01	0.02	
Type of prenatal care with Employment status	1.96	1	1.96	0.84	0.36	0.00	
Parity *with* Employment status	10.58	2	5.29	2.26	0.11	0.01	

Note. df = degrees of freedom ; F= Omnibus test for overall mean difference; Partial eta^2 = proportion of variance accounted for by the main effect or interaction; adjusted R^2 =the proportion of the variation in the dependent variable accounted for by the independent variables.
*p < 0.05.

Table 4.11: Follow-up Test for Dependent Variable Gestational Age at Birth

Parameter	t-test	P value	95% CI	Partial Eta^2
Women who worked	-1.97	0.049*	-1.47, -0.00	0.01

Note. df = degrees of freedom ; t = test statistic to compare means ; CI = confidence interval; Partial eta^2 = proportion of variance accounted for by the main effect or interaction

*p < 0.05.

Research question 2: birthweight. An unadjusted one-way ANOVA statistical test run in a univariate general linear model indicates that the main effect for type of treatment showed a statistically significant relationship between the type of prenatal care and infant birthweight, F=0.26, p=0.04, indicating that there is an observed difference in average birthweight between the two groups. The obtained R^2 was 0.01 indicating only 1% of the variance in birthweight was accountable by the set of predictors. See Table 4.12. A follow-up t-test shows women in CenteringPregnancy had on average lower birthweight infants than women in individual prenatal care, t=-2.06, p=0.04. See Table 4.13. However, when other covariates are added to the model in an ANCOVA this relationship does not hold true. When employment status, maternal age and parity are added to the model as covariates the main effect for type of treatment showed no statistically significant relationship between the type of prenatal care and infant birthweight, F=3.74, p=0.054. The obtained R^2 was 0.06 indicating 6% of the variance in birthweight was accountable by the set of predictors. In addition, the main effect for employment status, age and parity were not statistically significant (See Table 4.14).

Table 4.12: Main Effects Test of Between-Subjects Effects for Dependent Variable, Birthweight

Variable	Type III Sum of Squares	df	Mean Square	F	P value	Partial Eta Squared	Adjusted R^2
Type of prenatal care	1033570.20	1	1033570.20	4.26	0.04	0.01	0.01

Note. df = degrees of freedom ; F= Omnibus test for overall mean difference: Partial eta^2 = proportion of variance accounted for by the main effect or interaction; adjusted R^2 =the proportion of the variation in the dependent variable accounted for by the independent variables.
*p < 0.05.

Table 4.13: Follow-Up t-test for Dependent Variable, Birthweight

Parameter	T	P value	95% CI	Partial Eta Squared
CenteringPregnancy	-2.06	0.04	-181.02, -4.43	0.01

Note. df = degrees of freedom ; t = test statistic to compare means ; CI = confidence interval; Partial eta^2 = proportion of variance accounted for by the main effect or interaction
*p < 0.05.

Table 4.14: Main Effects Test of Between-Subjects Effects for Dependent Variable, Birthweight with Covariates

Variable	Type III Sum of Squares	df	Mean Square	F	P value	Partial Eta Squared	Adjusted R^2
Corrected Model	18240715.42	52	350782.90	1.51	0.02	0.16	0.06
Type of prenatal care	870089.41	1	870089.41	3.74	0.05	0.01	
Employment status	579029.88	1	579029.88	2.49	0.12	0.01	
Age	307094.90	4	76773.72	0.33	0.86	0.00	
Parity	819937.38	2	409968.69	1.76	0.17	0.01	

Note. df = degrees of freedom ; F= Omnibus test for overall mean difference: Partial eta^2 = proportion of variance accounted for by the main effect or interaction; adjusted R^2 =the proportion of the variation in the dependent variable accounted for by the independent variables.
*p < 0.05.

Phase II: (Research Question 7)

Study population. A total of ten women participated in in-person, in-depth interviews. All of the women completed CenteringPregnancy at the health department clinic and thus were all Latina and Spanish-speaking. All of the women were from Mexico and were multiparous. Their mean age was 27.9 years old. Most of the women indicated they were single but many were living with their partners, and most of the women did not work. All of the women who gave birth at Morton Plant Hospital and had full term normal birthweight infants through a normal vaginal birth (See Table 4.15).

Table 4.15: Descriptive statistics of women who were interviewed

Variable	Results for all 10 women
Marital Status	7 single (5 living with partner), 3 married
Mexican Origin	All 10
Maternal Age	Range: 22-33 Mean: 27.9
Employment Status	7 did not work, 3 worked
Type of Birth	All 10 vaginal
Birthweight	All normal birthweight
Gestational age at birth	All term
Birth Hospital	All Morton Plant

Families, codes and themes. The social support theory was used as a theoretical base when developing the research protocol. The interview guide was developed based on the social support theory to address specific issues related to CenteringPregnancy (CP), and to answer research question 7 (See Appendix E). The 5 types of social support (emotional, instrumental, informational, appraisal, companionship) were used as a priori codes to identify how the CP provides social support to the women. Additional codes were used to identify other topics or subtopics of the types of social support. Often, sections of the interview were double coded to identify a type of support and a specific topic area. Six families of codes were identified and the list of a priori codes was

combined with emerging codes that were formed while analyzing the data. The families and codes are listed in Table 4.16.

Table 4.16: Families and Codes for Qualitative Analysis

Families	List of Codes (A priori and emerging)
Social Support Theory[a]	Informational support Emotional support Companionship support Instrumental support Appraisal support
Overall experience	Positive experiences Negative experiences New things learned in CP Education compared to past Questions and concerns addressed Differences between CP and individual care Recommendations of CP
Nutrition	Nutrition education Information compared to past
Exercise	Exercise education Information compared to past
Preparedness of labor and birth	Well prepared Poorly prepared
Comfort	Comfort level compared to past
Support	From physician From other women From health educator or staff Friendships

Note. a. Social support theory codes overlapped with other codes

Based on the social support theory several themes and subthemes emerged that are included in the following descriptions.

Themes

Perceptions of Care- including positive and negative experiences and overall perceptions.

Informational Support-including any new information learned, nutrition education, exercise education and education on labor and birth.

Emotional Support – including the development of trusting relationships, addressing concerns and questions during CP, how comfortable women felt in the group, how well they felt they were prepared for labor and birth and differences in CP compared to individual care.

Companionship Support- including support from relationships with other women in the group, with the doctor and with the health educator/facilitator as well as the structure and style of the group.

Instrumental Support- including tangible services provided by the health department and by the CP program and differences in CP compared to individual care.

Appraisal/Validation Support: including constructive feedback, appraisal of progress, a forum for questions and concerns to be addressed and empowerment of women by knowledge and support to make decisions about their pregnancy and labor and birth.

Recommendations of CP- including which type of care women would want in the future and which type of care they would recommend to others.

The Social Support Theory identifies at least three pathways in which support is received and provided (Hupcey, 1998). These pathways are depicted in Chapter 2. The CP model of prenatal care most closely resembles the pathway in which the recipient of support received support for several providers as denoted in Figure 4.1. The maternity client is the recipient of care and the health department staff, physician, nurse and the health educator, and all of the other women in the group are the providers of care. However, in addition to receiving support from multiple providers, the maternity patient also provides support to other women in the group. This relationship is reciprocal, as other women also receive support. In addition, the health care providers not only provide support to women but they receive support back as well. Because the groups are discussion-based, all participants are engaged and are both recipients and providers of support. Thus, the CenteringPregnancy model does not fit directly into the current social support models. Rather, a model depicting the reciprocal support of all participants in the group (denoted by double arrows in the figure) more closely identifies the way in which support is provided and received (See Figure 4.2). The social support theory also describes five types of social support (House, 1981; Wills, 1985) that were used in the analysis. Each type of social support was identified as a theme along with several subthemes. An illustration of how a woman in CP receives each type of social support is provided in Figure 4.3.

Figure 4.1: Social Support Pathway that is depicted in CenteringPregnancy (Hupcey, 1998). R denotes the recipient of care.

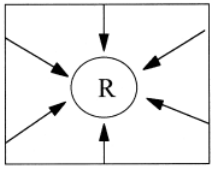


Figure 4.2: Illustration of the recipients of support, denoted by (R) receiving care from multiple providers, denoted by (P).

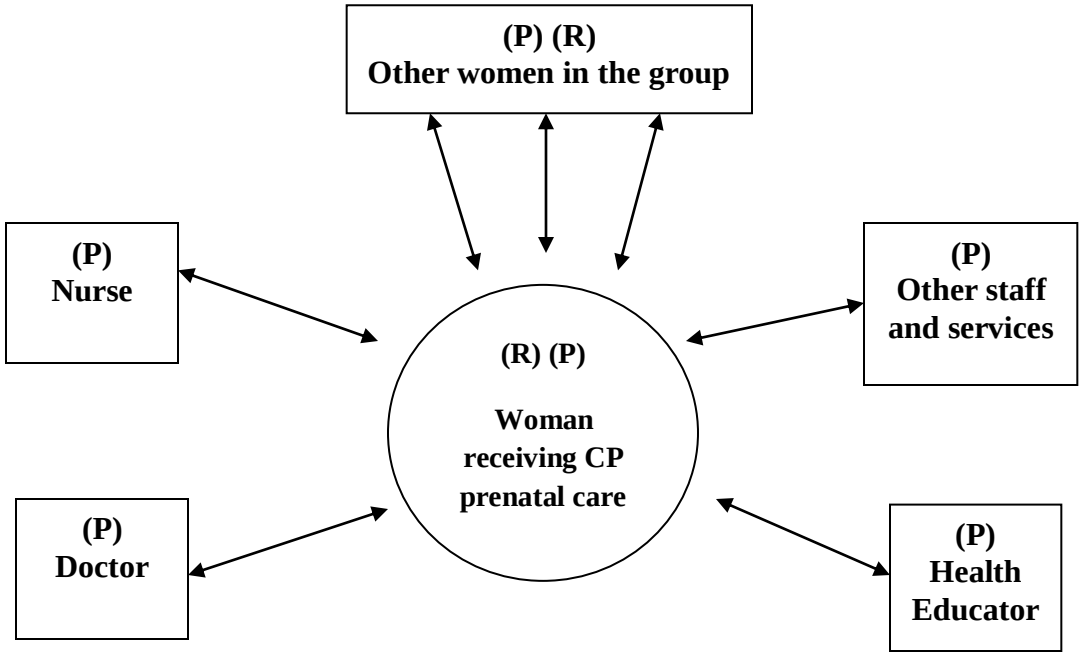
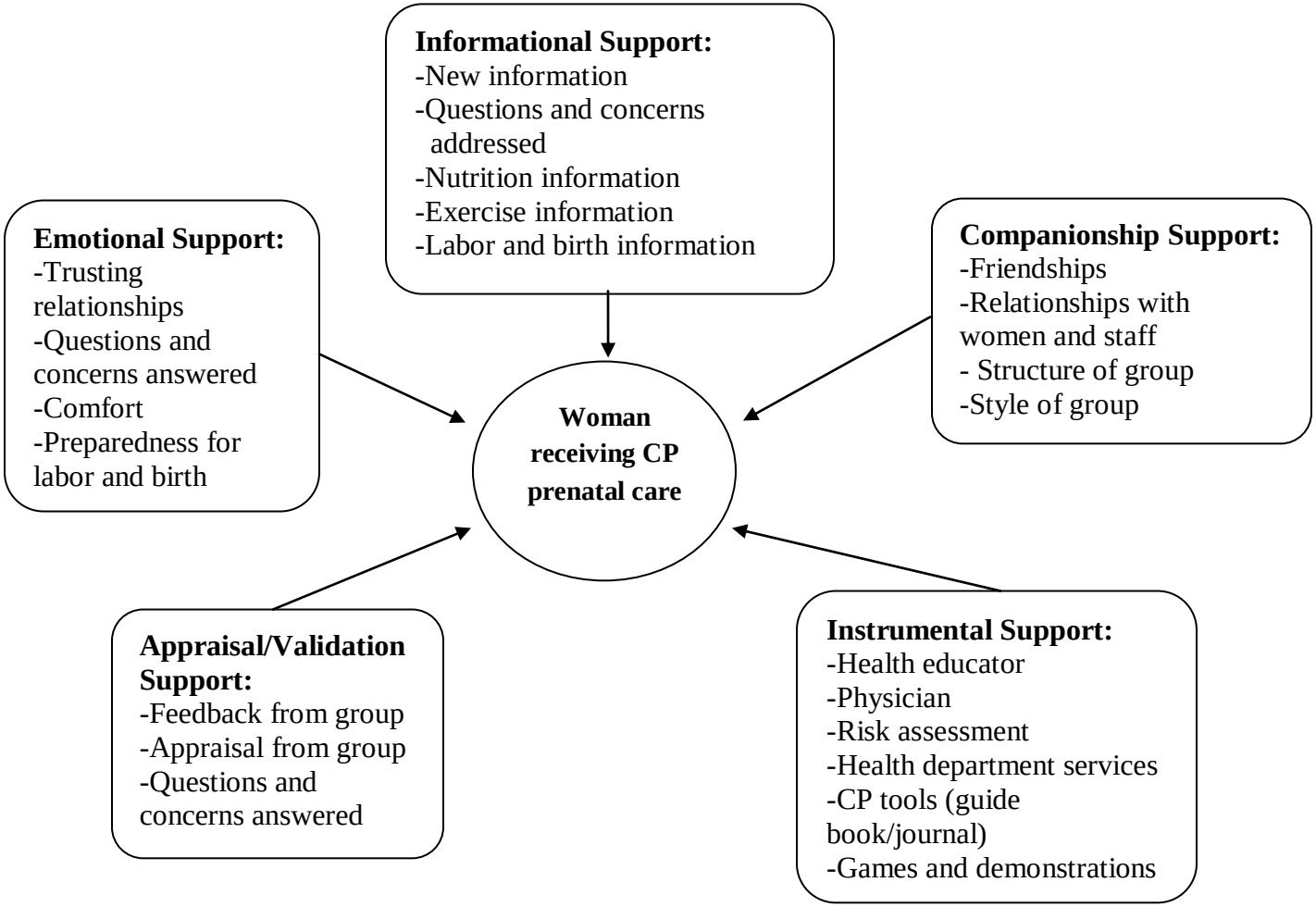


Figure 4.3: Types of Social Support in Social Support Theory provided to the women receiving CenteringPregnancy.



Perceptions of CenteringPregnancy. All of the women discussed very positive experiences they had with the CP program at the health department. They talked about several aspects of the program in particular that made their experience positive. The women appreciated the support they received from the staff at the health department and from other women in the group and the friendships they made. They also enjoyed the games they played to learn the information, especially those that involved preparing for labor and birth and caring for their baby. They were grateful that they did not have to spend much time in the waiting room, especially when they compared it to how long they normally wait for an appointment at the same clinic. They also valued the extent of and the quality of the interaction they had with the physician, nurses, health educator and other women in the group.

Positive experiences. The women were all asked to talk about their overall experience of CP, both positive experiences and negative experiences. However, women discussed many more positive experiences than negatives ones. A woman who volunteered her overall opinion of the program said, *"Why couldn't they have this 11 years ago when I had my first daughter? It was such a beautiful program."* Another woman said the following:

> *"Well for me it was a very pleasant experience because the people who run the group make you feel at home and support you and you meet friends. Any questions or doubts that you have, they answer it for you. They teach you how to nourish yourself and how to go through your pregnancy as best as possible. It was so nice to be able to count on people who support me and become my friend. I am very grateful to them. That is the truth."*

Several women mentioned that even though they already had children they still learned a great amount from CP and appreciated the information and support. Some

women said they did not realize how much they still had to learn about pregnancy and/or caring for the baby. One woman said, *"Even sometimes the women who had lots of children before…like on their 5th, they still had doubts and we all helped them get through things."* Another woman said, *"I felt like a first timer again because it was a long time since my last child and I learned so much I didn't know before."*

The women also enjoyed several other aspects of CP. Many women stated that they were glad they did not have to be in the waiting room and could go right into the CP room. All of the time spent at the health department for the women involved learning and interacting with other women and the staff. Even while they waited for each woman to have her individual exam, they were learning by playing games or completing their weight and blood pressure assessment. A few women said they enjoyed hearing the ultrasound monitor on the other women and listening to the baby's heart beat. Many women said they appreciated that the entire program was in Spanish and tailored toward Latina women. Some of them seemed surprised that such a program was offered. Almost all of the women said that they felt freer to talk about any problems they had and had more time to discuss issues or concerns. In addition to enjoying talking about their pregnancies, some of the women said they liked socializing in general with other women. They talked about other normal life issues and joys and were happy to make friends in the program. This may have been extremely helpful to women who had a weak social network outside of the clinic and were eager to interact with other women. Those women with weaker social networks may have been more recent immigrants, many of whom were from Mexico. Some women indicated that they appreciated that the doctor and

health educator would allow them to talk about their ideas on a certain topic first and talk to each other before the professional opinion was introduced.

In general, women were happy that the opportunity to participate in CP. They discussed some very positive experiences and showed their appreciation for the program. About their overall experience women made the following comments:

> *"Every time we went we learned something new that was really important."*
>
> *"At first it was embarrassing for me to be with all of the other pregnant women and the first day everyone kept to themselves but after that we all became friends and they couldn't get us to stop talking to each other. Sometimes we didn't want the time to end so we can keep talking."*
>
> *"My experience was very nice because we shared so many things with all of the other moms and we talked about everything from our pregnancy, babies and ourselves. It was like we were all family…really."*

Negative experiences. When asked specifically about negative experiences with the program, most women said that they did not have any and enjoyed every aspect of the program. However, some women discussed some things they disliked or made them feel uncomfortable. One woman indicated that she felt uncomfortable with fathers/ male partners in the group, especially when the women had to do exercises. She said that this was the only problem she had but did show some concern with it. In general, fathers and partners are welcome to participate in the CP program with the pregnant woman. In many of the groups, the fathers/ male partners participated in the first few classes but then as time went on they did not come as often or at all. However, in some classes, they stayed in the group over the entire course of the pregnancy. Only one of the women interviewed said it sometimes bothered her that males were in the group, but it was not asked

specifically to each woman how she felt. Future qualitative research is needed to understand women's perspectives on including or excluding fathers/partners.

A problem another woman remarked on was that she felt uncomfortable with all of the women in the group knowing each other's medical information. Specifically, she discussed her issues with the doctor doing the individual examinations in the back of the room behind a screen. She did not say that she was completely unsatisfied with the approach but she mentioned a specific instance that bothered her. She said that one day the doctor had to tell one of the women in her group some bad news about her baby's health. She indicated that it was very sad to hear this and she did not think that it was appropriate for the doctor to discuss this in the same room as the other women. She said that once everyone in the room heard, all of the women were upset. It is not known whether the woman who was told wanted to be told in the group or discuss it in the group or if she preferred to discuss it in private. In conversations with other women and the staff, in general if women want to talk about something in private they are welcome to do so.

One person said that although she enjoyed the classes they were slightly too long. She had other children to attend to and it was too long to be there without her children being allowed to come with her. The woman was asked by the interviewer if there would still be a concern if there were free childcare at the health department during CP. The woman's response was, *"No, that would be very good, I like being in the group, but I have other children to attend to."*

Another woman said that she did not like when they sent her out of the CP room to get laboratory work completed because she felt like she would miss something. While

some women were sent for laboratory work, the health educator continued to do activities with the women who were still in the group. This was something some women actually liked so that when others were sent out of the room they still had something to do. However, as indicated it caused some concern for one woman.

Informational Support. Informational support is support that involves gathering and sharing information and advice. The women were all asked about specific information they learned in CP that was either new to them or something that was particularly helpful to them. Most of the women said they were glad they learned how to take their blood pressure and calculate their gestational age, which were skills they appreciated learning more about. It was an empowering experience for women to be able to understand these health assessments better. One woman even indicated that she still took her own blood pressure even after she was done with CP, *"I'm glad we took our blood pressure because this is something I didn't know how to do before. I do it now still with my own machine."*

Healthy weight gain was something several of the women mentioned as well. They said the doctor talked to them about "gaining a healthy weight" rather than just "gaining weight because they were pregnant." A few women demonstrated that they understand that the amount of weight to gain during pregnancy depends on pre-pregnancy BMI. The women all charted their weight in a grid that shows healthy weight gain each time they went to the CP class and one woman mentioned this grid during the interview. The women also said they learned about nutrition and exercise during pregnancy and the importance of eating healthy for the mother and the baby.

All of the women said they learned about caring for the baby and most of them named activities about this topic as their favorite. They stated that they learned how to have patience with the baby, bathe the baby, feed and nurse and learn the meaning of the baby's cries. A game that the women played about learning the babies cries and what each cry means was what most of them said was their favorite activity. They enjoyed this activity because many of them said they did not realize the baby had different cries and it was good to learn different sounds may mean the baby has different wants and needs.

Another topic most women discussed and elaborated on was being prepared for labor and birth. The women mentioned a video they enjoyed watching, spoke about exercises to quicken the labor, and said they learned pain management and relaxation techniques for labor. One woman said her entire group went to the hospital as a "field trip" and they were given a tour of the facilitates and shown what to do on the arrival day. She said, *"They took us to the hospital and showed us how we were going to arrive that day so that you are not struggling while the pain is strong. They showed us how to get there and what were going to do when we got there and showed us the whole place."* This facility tour was done for every CP group. Women were asked to meet the health educator at Morton Plant hospital and then continue with their CP session after the tour. Two other women mentioned a video they were shown of what will happen when a laboring mother arrives at the hospital to deliver the baby. The women said the video was very helpful for them to see even though they already had children.

Other topics women mentioned were, the babies growth and changes during pregnancy, signs and symptoms of pregnancy complications, a video on breastfeeding, discussion about sexual intercourse during pregnancy and postpartum depression and

mood changes during and after pregnancy. Some other comments by women are as follows:

> *"I didn't know how much the baby moves in the belly and that it even goes to the bathroom…hehe."*
>
> *"We were novices before. Not that we are experts now, but we know so much more now because of Centering."*
>
> *"I never left not knowing something. They always explained what I didn't know or what I had questions about."*
>
> *"You learn so much more by sharing with others."*

Nutrition information. The doctor, health educator and a nutritionist facilitated discussion with the women to eat healthy during their pregnancy and to sustain healthy eating habits postpartum. The women discussed several nutrition topics they went over in CP such as, the food pyramid, portion sizes, food to avoid during pregnancy and nutrients and minerals that are especially important. In addition to the doctor, the nutritionist also discussed weight gain during pregnancy and talked about the importance of gaining a healthy weight. The women said they learned it is important to eat healthy not just for the baby but for the mother as well. They talked about the importance of maintaining healthy eating habits and staying healthy after the baby is born.

More specifically, the women said they learned they should eat plenty of green vegetables and fruit, choose low-fat milk and dairy products, drink plenty of water and exercise daily. They also discussed what they learned about sugar and not eating too many sweets. Most of the women said they learned about portion control, which was something that seemed new to many of them. About portion control one woman said, *"This really helped me with digestions. Instead of eating a lot at once because I was hungry, I ate in smaller portions and it really made me feel better."* In one CP class, they

played games to learn portion sizes and had to guess what size they thought was the correct portion. The women seemed to enjoy the games they played to learn information. A few women indicated that the games also helped them to remember the information better.

The women liked that there was a separate nutritionist who came into the group to talk to them. Some of the women indicated that the nutritionist talked about what is healthy to eat but also talked about many myths of consuming certain food during pregnancy. It seemed very helpful to the women to talk to the nutritionist. Some women's comments about eating healthy are as follows:

> *"I learned to eat greens, fruits, whole grain bread, and low fat milk and dairy. They told us to stay away from salt and soda and coffee."*
>
> *"Even now I still listen to what they told us. Before we used to drink the red cap milk, the whole milk but now we drink 1%."*
>
> *"Now I have really learned what it is that makes us gain weight and I try to be very healthy now."*
>
> *"I was never able to talk to a nutritionist before; that was really nice and helpful."*

Exercise/physical activity information. The women discussed various physical activity exercises they were taught and encouraged to do during their pregnancy, but walking was one that all of the women mentioned. They said the doctor told them to stay active by walking if it did not put too much strain on them. They were also encouraged to stretch their muscles often. One woman said, *"We were told to walk to get exercise unless we had some kind of problem that we couldn't. But he always told us to walk with someone else to be safe."* The women were also given several exercises to do if they had certain pains either in their stomach or back. They were shown different positions,

stretches and exercises to get more comfortable during their pregnancy. Another woman said, *"I walked a lot in the morning and afternoon. It helped me with a healthy weight and now I do the same thing with my baby in the stroller now."*

Some of the women indicated that they continue to get exercise by walking every day even after they had their babies. Many of them walk their children to school or walk to work. One woman said that she walks longer now that she is not pregnant and that exercise feels good and helps her to increase her energy. She said, *"I do longer walks now because I realized that you feel more energy to do more things when you finish exercising. So now that I have my baby I go walking with her."* Other women said that they knew they should still walk and get more exercise but they did not do it as much as they should. This indicates that it may be beneficial to implement a feature or program to help encourage women postpartum to continue to exercise and stay healthy.

Information about labor and birth. The women discussed the information they learned about labor and birth. All of them said that they were given advice about pain management and relaxation techniques to try during labor contractions and pains. Many of them said that the doctor encouraged them to walk around as much as possible during early stages of labor to help the progression. They also spoke about exercises they learned to help progression and pain management. They practiced many of the exercises in the group and were very grateful that they were able to do this. The following are quotes from three different women about the techniques they learned to help with labor and birth:

> *"With my first delivery I didn't know that relaxing and knowing how to relax myself would help so much with the delivery. It was easier to delivery when I relaxed and practices the exercises they gave us."*

"I did all of the exercises they taught us and knew more about the delivery and come time for the delivery I wasn't scared, I wasn't nervous, I knew what was going to happen because we went through it and I did the exercises. It went by faster more relaxing, more normal without any nervousness."

"I remembered the exercises they taught us to do during labor and I did them to try to help the pelvis open more during delivery."

About pain management the women said they learned to focus on certain things, to breathe and concentrate on breaths and not to be ashamed for making noise and screaming if they needed to do that to manage pain. About her labor and birth experiences, one woman said, *"Even though it was very painful, I knew how to control it better than I did with my first."*

Emotional Support. Emotional support involves empathizing and listening as well physical comforts such as hand holding or hugging. There are many aspects of CP that encourage and provide emotional support to women. The group is structured for emotional support in that women are encouraged to listen to each other, discuss problems or concerns and joys, and develop relationships with each other. At the end of each group, everyone in the group circle holds hands for the final words of the session to promote an idea of connectedness and unity. Women talked about several concepts and experiences in the group that depicted how emotional support was provided. These topics include, addressing concerns, comfort in the group and preparedness for labor and birth. A few women mentioned that there was good support from other women in the group who all talked about their own experiences, either past or current. Women talked about pain management techniques and what they were planning to do in their labor, what they do to stay comfortable, what eat, how they deal with stress among other topics. One woman said, "*It was so nice to be able to count on people who support me and become*

my friend. I am very grateful to them." The same woman also said, *"It just nice to hear other women go through it to...you know? We can help each other."* The relationships women formed with other women and the health care providers is also part of emotional support. *"They [women and health care providers] all made me feel comfortable. I was happy to be there and be among friends."*

Addressing concerns. The women were asked if they felt that all of their questions and concerned were answered during their time in the CP program. All of the women indicated that they always received answers and had their concerns addressed either from other women in the group or the doctor/staff. This seemed to make the women feel more at ease with their pregnancy. A woman said, *"There were hardly any doubts because my group mates would ask something and we would respond amongst ourselves or the doctor would sometimes answer the questions for us."* Several women mentioned their questions were always answered and often times their myths were dispelled. They said that some of them would bring up different things they heard from friends, neighbors and relatives about the pregnancy, birth or childcare and would ask the group about what they heard to make sure they knew the truth. The doctor and health educator encouraged women to answer each other's questions but intervened when needed. A woman said, *"When one of us maybe didn't know, then the doctor would tell us."* Being able to ask questions and having the time to get answers not just from a doctor but from other women who were also pregnant was something that many women cherished.

Comfort. All of the women said they felt more comfortable in CP than in individual care. The primary reason was because of the comfort they felt with other women in the group. They enjoyed the fact that they made friends and they were in the

program together. Many said they felt more comfortable because they were able to talk and think more. They did not often leave the group with many concerns or problems. They felt the concerns they may have been worried about or thinking about were addressed. Three of the women said the following:

> *"I chatted and my doubts were dissipated."*
>
> *"You can freely go to the doctor and speak to her. You felt closer to her and more comfortable. It was much easier to talk about what you wanted to talk about."*
>
> *"I felt more comfortable in Centering. I would get there and know that I was going to be with other mothers and be with the friendly people there. That was a day I had to myself, it was my time and the babies when we were there."*
>
> *"It was much better in Centering because of my back hurt, or my legs hurt, they showed us like about five difference positions to alleviate it."*

However, this level of comfort was not always felt over the whole CP program. Some women said that at first they were hesitant to be in a group with other women and not all of the women bonded in the beginning. One woman said, *"At first it was embarrassing for me to be with all of the other pregnant women and the first day everyone kept to themselves but after that we all became friends and they couldn't get us to stop talking to each other. Sometimes we didn't want the time to end so we can keep talking."* Another woman said, *"I thought it was strange at first, I wasn't used to that. We weren't all friends at first, people were quite. But after a few times it was much different."*

Preparedness for labor and birth. The women were asked to speak specifically about how well they were prepared for labor and birth. All of the women said they felt prepared and many said they were more prepared than they were in the past because of

information they learned in CP. About her birth one woman said, *"Yes, for me I felt more prepared this time. I learned things in the group I didn't know before, even though I've already done it [gone through labor] before."* A few of the women said that they were glad they learned that they could speak out about the type of labor and birth they wanted to have at the hospital. They said they were taught to take control of their pregnancy and to discuss with the labor team what they wanted and did not want and to do what was comfortable for them. One woman said, *"I was vocal about what I wanted at the hospital, I just told them."* Another said, *"They tried to give me pain medicine but I told them I didn't want it. I had to tell them several times but then they listened."* Comments such as these show how CP can serve to empower women especially in terms of taking control and making their own decisions about their labor and birth.

Differences between CP and individual care. The emotional support of other women was identified as a main difference between CP and individual care. The women really enjoyed and appreciated the support they received in CP and how it made them feel. They also liked that they could ask questions to other women as well as the health care providers. *A woman said, "My girlfriends from the group would call me and say well you're only this many weeks away."* Another woman said, *"Well I didn't make any friends in the other prenatal care that I had…hehe…I have friends from the Centering group."*

The women also said that compared to individual care, the CP program was more fun, more encouragement and the people involved provided more support to get through the pregnancy. A woman said, *"You're not in it alone…you don't feel like you're pregnant and now what? You have other people to go through it with you. Seeing your*

group member you get excited about your pregnancy." Another woman said, *"In the group, the doctor's visits were not boring. We had fun with everyone."* The women indicated that they enjoyed being in the group and enjoyed the CP program more than their previous experience with individual care.

Overall, CP seemed to dissipate some of the women's worries and concerns. Several of the women indicated that they did not feel the same nervousness during their pregnancy as they had with past pregnancies because it was so comfortable for them. They did not have as many doubts because they always had questions answered and learned so much more than they have in the past.

Companionship Support. Companionship support involves relationships that provide comfort, stability, friendship and having camaraderie. Many relationships are formed in CP that help provide this support. One of the main concepts of CP is to provide a forum for women to develop friendships with other pregnant women and establish positive relationship with the clinicians and staff. The structure and style of the CP program helped women to develop relationships and gain companionship support. In the group, women had to work with each other in teams during activities and games, they sat in a circle for the entire class to encourage unity and they were encouraged to help each other during the self assessments (taking weight and blood pressure). In each group, the health educator also asked women to exchange phone numbers so that they can call each other outside of CP if they needed additional support. The relationships with other women, the doctor and the health educator were all discussed.

Women. All of the women talked about the friendships they developed in CP. Some of them still keep in communication with the women they met in their group. One

said that she developed a very close relationship with one of her group mates and is living with her now as they continue to support each other. She said, *"I have many friends from the group. In fact, I live with one of them now. Her husband left her so now we are roommates, we help each other."* In this particular circumstance, the women who met in the group became great supporters for each other beyond the CP program.

Many of the women who already had children would help the new mothers with their questions and concerns. The women with children enjoyed helping the other women and dissipating their fears. All of the women mentioned the friends they made and indicated that being able to develop relationships with other pregnant women was one of the greatest benefits of CP. Women made contact with each other postpartum as well to get support and help from the other members of the group. Some of them called each other after they had their babies to tell them about their experience and to talk about any concerns they had. A woman said, *"One of the girls called me to ask what she needed to do with her baby…when she needed to take him to the doctor for his checkup. I talked to her about it and helped her."* A few of the women indicated that they still keep in touch with other women in their group and get together occasionally. There may be more primiparous women who get together more or talk since they are learning how to take care of their child for the first time. In fact, one woman said that she was friendly with everyone but some of the first timers were closer to each other. She said, *"We were all friends but I think the new moms in our group would call each other more to talk"* This was not something that was explored further in the interviews because all of the women interviewed already had children.

Doctor. The doctors and other staff were very supportive and helpful to the women. Most of the women said they talked about many issues amongst themselves and when the doctor had to intervene he/she did. The doctor talked to women separately about any specific health concern or problem they had. One woman said that she needed to watch her weight and she talked to the doctor about it on her own in addition to discussing it in the group. She said she felt comfortable talking about it in the group but liked that she was able to talk to the doctor on her own as well. Several women said that the doctor was always there the whole time in the group and was always willing to answer questions or talk about things they wanted to talk about. One woman said, *"Yes the doctor was always there. She would do our own exams. I don't know how she got all of us in but she did. Then she would participate in the group"* They appreciated and were surprised that the doctor was with them the full 2-3 hours of the session. Another woman said*, "Yes the doctor was in the group with us, all the time. It was a long class and she was there with us for all of it."*

Health educator. The health educator who facilitated the group was an integral part of the group dynamic as she set the tone for each session. The women enjoyed the health educator and talked about the demonstrations she would do and the activities and games she would coordinate. The said that the health educator would show them exercises they had to do and different positions to lay in to get more comfortable later in pregnancy. The women appreciated that they were shown what to do rather than just told. This seemed to be a key difference in women's experiences with CP compared to individual care. The women also seemed to appreciate the general encouragement they received from the health educator. About the general staff, women said:

"I had problems with weight gain with my other pregnancy because it was difficult for me to eat. They would say to me at Centering…'did you eat today? If not, try to at least eat some fruit now' and they would have it for me. They would search for a solution for me to find things I could eat that wouldn't make me sick at home."

"Yes [health educator name] was very good…She did a lot of activities with us…yes they [the games] were helpful."

Instrumental Support. Instrumental support involves tangible goods and services that may provide needed assistance. The CP program in itself is a service that is provided to women and serves as instrumental support. In addition, components of the program such as the staff (doctor, health educator and other staff), clinical risk assessment services, other referral health services (such as The Healthy Start Coalition or Women Infant & Children (WIC)), the tools used in the sessions (guide book and gestational calculator) and games, activities and demonstrations all serve as instrumental support.

When asked about their favorite activities, the women mentioned playing games, especially those they involved preparing for labor and birth and caring for their baby. Several women talked about a game of learning the baby's cries and what each cry meant. One woman said, *"Um…my favorite thing was the games, it made it fun. It was good to learn the baby's cries. I know now, hehe, that they can mean different things. Sometimes is a diaper change, sometimes she is hungry…Yeah that game helped me."* Women also talked about demonstrations that were done when the health educator was showing the women different positions that are more comfortable. They appreciated that the information was shown to them in creative ways that helped them retain the information better. All of the women were given a guide book to follow during each session. The women had to bring the book to every class. This served as a tool to help women follow along with the topics of that session and to complete self assessments. The

self assessments were used as data for the CP program but they were also used for the women to reflect on what they have learned, concerns they had any factors they were either positively or negatively effecting their pregnancy. Although all of the activities were not mentioned in the interviews, the women participated in either an activity or a game for whichever topic was being discussed in every CP session.

Differences between CP and individual care. The women discussed many differences between their experience with CP and individual prenatal care. One of the main differences women talked about was that they learned so much more in CP. They said that in individual care they were given many brochures and pamphlets about keeping a healthy pregnancy but in CP they were able to talk and discuss the information they were given, and were able to practice some of it as a group. It may not have been that the content of the information was very different but it was the way in which the information was presenting that made a difference in how the women learned. One woman said, *"In Centering they said, do you want to do it? Or you know how to do it? If you don't know, we will show you, and that was the difference."* Another women said, *"You can learn only so much alone...but with other women in a group...you can learn from each person's experiences."* The techniques of the education and care are what women identified as what made them learn more in CP. One woman said, *"I would definitely choose CenteirngPregnancy over the regular appointment. It was a wonderful experience in the group."*

Another difference women talked about was the time it took for the appointment. In general, they discussed that they only had a limited time in individual care (for example 5-10 minutes). They appreciated the 2-3 hours they had in CP to discuss the

information and get questions and concerns answered. They also enjoyed that they did not have to wait to be seen as they did in individual care. They appreciated that the whole time they were in the clinic they were involved in some kind of activity for their prenatal care. Even when they were waiting to be seen by the doctor individually behind the screen in the room, they were taking their blood pressure, weight, talking with other women or doing an activity with the health educator. Some of the women said even though they were in the group for 2-3 hours, the time would pass quickly, unlike when they had to wait hours in the waiting room. One woman said, *"We really took advantage of the time. We learned so much about nutrition, exercise, how to care for your baby, how to labor. We took better advantage of the time in Centering than in individual care."*

A few women talked about bringing what they learned back home to their partner and family. One woman talked about how every time she went back home after CP she would tell her husband what she learned and show him her CP manual so that he could learn too. A few women mentioned the manual and liked that they were able to look ahead on what they were going to cover in the next class and bring home their notes to their family. Another woman said that she liked that she could read ahead and come to the class with questions. Having the manual was a benefit to the women because they were able to keep track of everything they learned and use it to disseminate information to their family.

Appraisal/Validation Support. Appraisal/validation support involves receiving constructive feedback and affirmation. This is done in every CP session when women are given the opportunity to talk to each one another about specific problems or topics and provide feedback. Many times women will ask a question or pose a topic to talk about

and the other women in the group will share their own similar experiences to help provide either an answer to a question or simply affirm that the problem exists for them as well.

The women indicated that they enjoyed learning about other women's pregnancies, feelings, concerns, questions and opinions. They revealed that they really liked being with other women in the group so they could learn about each other's pregnancies, compare experiences, understand what was normal and empathize with others. Many women also enjoyed helping each other with different symptoms or discomforts. They talked to each other about what worked and made them feel better to know that they were not alone in their concerns. One woman said, *"We helped one another. Whenever anyone had a problem, between all of us we were able to help. Sometimes they would have a lot of fear but after talking to all of us they felt much better, more calm."* Since the participants who were interviewed all already had children, they spoke about how they liked helping the women who were first time mothers. One woman said, *"I enjoyed it when women would ask me questions about my first pregnancy and I would happily answer the first-timers who didn't know. I enjoyed telling them about my experience and giving them advice."* Another woman said, *"They would ask questions to those of us who were moms and um I enjoyed participating a lot and explaining what a baby is like, how to care for her, how to nurse and help like that."* The experience of mentoring each other seemed to be empowering to the women who had children already and it made their experience more enjoyable. In fact, the health educator and doctor would sometimes ask or defer questions to the women with children and sometimes the new mothers would directly ask questions to the women with children. The mother's said

they enjoyed being asked questions because it made them feel useful in the class, "*I liked to answer their questions…I had a role there too.*"

In the individual session, the doctor provided feedback for women on how well their pregnancies were progressing on a more individual level. The doctor along with the health educator also answered questions in the groups that helped women feel more at ease with their concerns. As previously discussed, women felt as though their questioned and concerned were answered of not by other women in the group, then by the doctor or health educator.

Empowerment. One of the overall themes that emerged that was not specifically linked to codes was *empowerment.* The CP program provided needed prenatal care for women by assessing risks and providing education and support but it also empowered women to take control of their health and their pregnancies. Women were very happy with their care and mentioned several things that showed they were given control.

Women would take their own blood pressure, weight and calculate their gestational age. They would help each other take these measurements and had assistance from the nurse, especially in the beginning of the program. Women talked about this experience in a very positive manner and were very happy to learn how to do these measurements themselves. They were grateful that they learned how to do them on their own and seemed as though they felt more in control of their prenatal care by doing so. They were not only taught how to do these measurements but they learned what they mean and how they affected the status of their pregnancy. Another important point was the women's sense of control over their pregnancy and labor. When they spoke about their experience in the group and at the time of their labor and birth they seemed

confident and had power in the situation. They had the knowledge to be able to make their own decisions.

The women interviewed who previously had children also talked about their mentorship in the program. The doctor and other women in the group would specifically direct questions to the multiparous women so they could discuss their previous experiences. They were also respected as mothers who had experience with labor and birth and caring for infants. The women appreciated this respect and were happy to be able to share their knowledge.

Recommendations of CenteringPregnancy. All of the women said that they would recommend CP to other pregnant women and many of them said that they already recommended it to friends and family. Some of the women's comments are as follows:

> *"I already recommended it to a friend who got pregnant and I think she is in it now."*
>
> *"I say to someone, Centering 100%."*
>
> *"As a matter of fact, I have a sister-in-law who is trying to get pregnant and I told her to come to the CP classes."*

One woman said she would recommend CP to other women but she questioned the fact that they discouraged children from attending the group. She said, *"The only thing is someone told me that she couldn't do CP here because she had to bring her other child in and they told her she couldn't. I didn't think that was true because sometimes mother's brought their children but I don't know."* She seemed as through this was the only problem with recommending CP because if women already have children it may be difficult for them to arrange child care.

Two of the women mentioned that they would recommend CP to everyone but especially single mothers who did not have a partner. They felt as though the support in CP would be very essential to women who may not have much support at home from a partner. One woman said:

> *"You know sometimes with single moms you can be very sad and depressed and at CP at least you have women there who ask you how your pregnancy is going and they talk to you about depression there. They give you a number to call a help center if anyone feels depressed and needs extra help."*

Summary. Women talked very positively about their experiences with CP. They were very happy with their care, appreciated the staff and doctor giving them time to talk and express themselves, being able to ask questions to the staff and other women and the friendships they made and support they received from other pregnant mothers. They all had a very positive attitude toward CP and felt they were more in control with CP than they were in their past experience with individual care. There were a few negative aspects of the group the women mentioned including lack of childcare, lack of privacy at times and the presence of male partners in the group. However, these did not overshadow the women's perceptions of the program. Although they mentioned some negative aspects, overall they had more positive perceptions than negative ones.

Although all types of social support were identified when women spoke about the program, informational support and companionship support were the most prominent. Women talked extensively about how much information they were provided in CenteringPregnancy and how much more they learned in the program compared to their past experience with individual care. Throughout the interviews they also spoke about the friendships they made and the relationships they had with the health care providers. They

really appreciated the comradeship that was developed and the support they obtained from other women in the group. The women identified this type of companionship support as biggest difference between the CenteringPregnancy program and their past experience with individual prenatal care, and that it was the most appreciated aspect of the program. A summary of all of the results listed by each research question can be found in Table 4.17.

Table 4.17: Summary of results based on each research question

Research Question	Summary Findings
Research question 1: Is there a difference in gestational age at delivery based on type of prenatal care?	There were no differences in gestational age at delivery based on the type of prenatal care
Research question 2: Is there a difference in infant birthweight based on type of prenatal care?	There were no differences in infant birthweight based on the type of prenatal care
Research question 3: Is there a difference in the method of birth based on type of prenatal care?	Women in CenteringPregnancy were less likely to have cesarean section deliveries compared to women in individual prenatal care
Research question 4: Is there a difference in maternal weight gain based on type of prenatal care?	Women in CenteringPregnancy were less likely to gain below the recommended amount of weight (based on 1990 IOM guidelines) compared to women in individual prenatal care.
Research question 5: Is there a difference in prenatal care and postpartum care attendance rates based on type of prenatal care?	Women in CenteringPregnancy were more likely to have adequate prenatal care and were more likely to attend their postpartum visit compared to women in individual prenatal care.
Research question 6: Is there a difference in infant feeding method based on type of prenatal care?	Women in CenteringPregnancy were more likely to formula-only feed their infants compared to women in individual prenatal care.
Research question 7: What are women's perceptions of CenteringPregnancy prenatal care compared to their past experience with individual prenatal care?	Women had many positive experiences with CenteringPregnancy and identified many aspects of the program that provided them each of the 5 main types of social support. Women enjoyed the companionship they had with other women in the group and felt they learned more about their pregnancy and childbirth in CenteringPregnancy than they did in past individual prenatal care.

CHAPTER FIVE:

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Summary of Research Protocol

CenteringPregnancy is a model of group prenatal care that can be used in place of individual prenatal care. The program brings about 8-10 women of similar gestational age together into small groups to receive their care and education, and is based on risk assessment, education, and support. The model is client-centered and designed to empower pregnant women and support persons. The literature on the effectiveness of the program show mixed results in terms of birth outcomes, but illustrate positive outcomes in terms of breastfeeding initiation, attendance in care and satisfaction of care. A CenteringPregnancy program was implemented at the Pinellas County Health Department-Clearwater clinic for Latina women in late 2006. No formal assessment of the program had been conducted to compare pregnancy outcomes with women in CenteringPregnancy compared to women in individual care. In addition, few studies have assessed Latina women in CenteringPregnancy and thoroughly examined maternal weight gain. In addition, more studies are needed that better understand the relationship of CenteringPregnancy with improved birth outcomes. The purpose of this research was to fill the gaps in the literature, and compare pregnancy outcomes of Latina women in CenteringPregnancy to women in individual prenatal care, and explore their perception of

CenteringPregnancy compared to their past experiences with individual care. Both quantitative and qualitative methods were employed to specifically examine gestational age at delivery, infant birthweight, method of birth, maternal weight gain, attendance in prenatal and postpartum visits, infant feeding method and women's perceptions of care. A total of 487 patient charts were extracted, 247 were from women who completed CenteringPregnancy and 240 were from women who completed individual care. In addition, 10 women who recently completed CenteringPregnancy and completed individual prenatal care in the past completed in-person in-depth interviews. Logistic regression, ANCOVA and qualitative analysis were conducted to answer seven research questions about pregnancy outcomes, maternal factors and perceptions of care.

Findings

Gestational age at delivery (preterm). There was no difference in gestational age at delivery based on the type of prenatal care. A slightly higher percentage of women in CenteringPregnancy delivered preterm; however this difference was not significant when other covariates were examined in a logistic regression model. This finding is consistent with some of the literature including, Robertson et al. (2009) who also examined Latina women and Klima et al. (2009), but is inconsistent with others such as, Ickovic et al. (2003), Grady & Bloom (2004) and Ickovic et al. (2007). With the exception of Robertson et al. (2009), there is little in the literature that explores CenteringPregnancy programs with Latina women. Thus, is difficult to compare these findings. However, based on literature of birth outcomes for Mexican American women in the U.S., this finding was expected. Mexican American women in general have lower rates of preterm birth than other minority populations in the U.S (McDonald, 2008; Brown, 2007;

Hummer, et al., 2007)). In addition, the women included in the study were all considered to be low risk maternity patients. The proportion of preterm birth for both the intervention and comparison group in this study was already low, and thus it was unlikely that a difference between the two groups would be found. However, a positive finding is that the overall proportion of preterm births for all women in the study who received care at the health department clinic was smaller (3.9%) than the proportion for Hispanic women Pinellas County as a whole (13.1%) ("Florida Charts County & State Profile," 2009).

Both the logistic regression model and the ANCOVA models showed that women who worked either part time or full time were more likely to have a preterm infant than women who did not work. This may have been due to additional stress from work. Most of the women who worked had low-paying jobs in various food industry positions, retail or housekeeping. These types of jobs may have added physical strain or additional stress on the women. The literature on employment status and adverse birth outcomes shows mixed results about either being employed or unemployed and having an adverse birth outcome (Jansen, 2010; Rodrigues & Barros, 2008; Savitz, 1996) found that long work hours (≥ 40 hrs/week) were associated with an increased risk for low birthweight among infants born to mothers in the Netherlands. Savitz et al. (1996) found elevated risk for preterm birth and still birth among certain groups of workers, including women working in food service and janitorial positions. On the other hand, Rodrigues et al. (2008) found that unemployed women had a significant increase in the risk of preterm birth, and the duration of weekly work had no effect on outcomes. Further research into the specific

types of jobs and weekly duration of work of the maternity patients at the clinic is needed to further explore this relationship.

Infant birthweight (low birthweight). There was no difference in infant birthweight based on the type of prenatal care. Both unadjusted and adjusted logistic regression models showed no differences in low birthweight between the two groups. When examining gestational weight gain as a continuous variable, an ANOVA model without adjustments showed a statistically significant relationship but an ANCOVA adjusting for covariates showed no statistically significant relationship. Similarly to preterm birth outcomes, this finding is consistent with studies by Robertson et al. (2009) and Klima et al. (2009) but inconsistent with Ickovic et al. (2003) and Grady & Bloom (2004). Based on literature of birth outcomes for Mexican American women in the U.S., this finding was also expected. Like preterm birth, Mexican American women in general have lower rates of low birthweight infants compared to other minority populations in the U.S (Brown, et al., 2007; Hummer, et al., 2007). The proportion of low birthweight infants for both groups was low, and thus it was unlikely that a difference between the two groups would be found. A positive outcome is that the overall proportion of low brithweight infants for all women in the study was smaller (4.1%) than the proportion for Hispanic women in the overall county (6.4%) ("Florida Charts County & State Profile," 2009)

Similarly to preterm birth, the logistic regression model showed that women who worked either part time or full time were more likely to have a low birthweight infant compared to women who did not work. However, the ANCOVA model examining birthweight as a continuous variable did not show a statistically significant relationship

between employment status and infant birthweight. Low birthweight is related to preterm birth and thus a similar relationship with employment status was expected. It may be that similar reasons of additional physical and emotional stress may be the cause of the relationship however; further research is needed to examine this finding.

Method of birth. There was a statistically significant difference between the method of birth and the type of prenatal care. Women in CenteringPregnancy were more likely to have a vaginal birth as opposed to a primary cesarean section compared to women in individual care. This relationship was found with an unadjusted logistic regression and when covariates were controlled for in an adjusted model. These findings are not consistent with the one study that reported method of birth among adolescent girls in CenteringPregnancy (Grady & Bloom, 2004).

One of the emerging themes in the qualitative analysis portion of this study was that of appraisal support and empowerment. Especially when talking about the labor and birth process experiences in the hospital, women said they felt more in control after they completed CenteringPregnancy, and were more comfortable with speaking up and talking to the hospital staff about the kind of birth they wanted. Some women gave specific examples of their experience in the hospital and refusal for pain medication. CenteringPregnancy seemed to give women a voice and give them the power to make decisions for the pregnancy and birth. This may have contributed to the low number of cesarean sections. Empowerment of women to make their own decisions about the method of birth they prefer is especially important among the group of women being studied in this investigation. Most of the women were born outside of the U.S. and were not fluent English speakers. They already had a difficult time communicating with health

care professionals and lack the confidence to make their opinions about their care, pregnancy and birth experience clear. The education and support they received through CenteringPregnancy may have contributed to women making more decisions to have a normal vaginal birth or to interfere with interventions that may have led to cesarean sections. More qualitative research is needed with a greater number of women who experienced both CenteringPregnancy and individual care to further investigate this finding. In addition, gathering more data on why cesarean sections were done at the hospital would help with further understanding this outcome.

The overall proportion of births by cesarean section for women at the health department was 13.8%, which was lower than the overall rate for Hispanic women in Pinellas County, 31.1% ("Florida Charts County & State Profile," 2009). Because the women were also low risk at the clinic and never had a prior cesarean section delivery most likely contributed to the lower rate.

In the logistic regression model, parity was found to have a statistically significant relationship with type of birth. Women who were primiparous were more likely to have a primary cesarean section than women who were multiparous. Again, all of the women in the clinic were low risk and thus the multiparous women never had a cesarean section delivery. Because they had vaginal births in the past they may have been more likely to have a subsequent normal vaginal birth.

Women who gave birth at Morton Plant Hospital compared to Bayfront Hospital were less likely to have a cesarean section delivery. This may be because most of the births that occur at Morton Plant hospital are with a midwife who, based on the midwifery model, may be less likely to defer to a cesarean section unless absolutely

needed. Unlike Morton Plant Hospital, it is primarily physicians who attended births at Bayfront Hospital.

Maternal weight gain. There was a statistically significant relationship with maternal weight gain based on the 1990 IOM recommendations (IOM, 1990) and the type of prenatal care. Women in CenteringPregnancy were less likely to gain below the recommended amount of weight gain compared to women who completed individual prenatal care. Although there were more women in CenteringPregnancy who gained more than the recommended amount of weight, there was no statistically significant difference between the groups. After initial analysis, the weight gain categories were combined to form a binary variable (healthy vs. unhealthy). The proportion of women in CenteringPregnancy who gained a healthy weight as opposed to an unhealthy weight was higher than women in individual care, but this difference was not statistically significant. However, the findings did indicate that in both groups combined, younger women had higher odds of gaining a healthy weight compared to older women.

Only one study examined weight gain in women who completed CenteringPregnancy (Klima, et al., 2009). Klima (2003) found that women in CenteringPregnancy had significantly higher weight gain (mean=32.2 lbs) than women in individual care (mean=28.5 lbs). Although both weights are within normal range for a woman of normal pre-pregnancy BMI, it does not appear as though the authors used pre-pregnancy weight or any guidelines to distinguish healthy weight gain. Thus, it is difficult to compare the findings to this research.

Due to the emphasis on prenatal nutrition and exercise in CenteringPregnancy it was expected that women in the CenteringPregnancy group would be more likely to gain

a healthy weight compared to women in individual care. Although this difference in not significant, the qualitative findings help to better understand any differences. Women indicated that they learned more about nutrition and exercise in CenteringPregnancy compared to individual care, and in the interviews they discussed many healthy habits and behaviors they learned in the group. They talked specifically about gaining healthy weight in pregnancy and gave some examples of what they learned from the guest nutritionist and health educator. The women seemed to understand the information on nutrition and exercise and indicated they followed some of the recommendations that were made to them. Women said they ate plenty of fruits and vegetables and said they took the doctor's advice and got exercise through walking. Yet, there was still no difference between women in CenteringPregnancy and women in individual care in terms of healthy weight gain. Only about 1/3 of women in both groups were gaining healthy weight. It may be that what is needed for pregnant women is not to learn the information for the first time after they are already pregnant and in the middle of prenatal care, but to learn the information before pregnancy. Preconception care and education may be a more useful tool to encourage women to eat healthy, exercise, maintain a healthy weight and try to gain a healthy weight during pregnancy (Korenbrot, Steinberg, Bender, & Newberry, 2002; Jack & Culpepper, 1990).

Another finding about maternal weight gain was that women who were obese or overweight before pregnancy were more likely to gain either higher than the recommended amount or lower than the recommended of gestational weight. This does not necessarily mean that more women with higher pre-pregnancy BMI are gaining more weight during pregnancy. Rather, it means that more women with higher pre-pregnancy

BMI are not gaining weight within their recommended categories. This may have been because the recommendations for women with higher pre-pregnancy BMI (overweight or obese categories) were to gain less gestational weight than normal weight women. Obese women in this study either gained too much or too little. The women who gained too much were not able to keep their weight gain to the limited amount of weight; for obese women this was 15 pounds and for overweight women it was 15-25 lbs. The women who gained too little, either were not able to gain a healthy amount of weight throughout their whole pregnancy, or they may have lost a significant amount of weight in the first few weeks of pregnancy and then began to gain more weight but still did not gain up to the recommendations. The women's weight charts indicated that some women (in all weight categories) lost between 5-15 lbs in the first few weeks of pregnancy. This may have been due to a sudden change in their diet to a healthier lifestyle, or to being sick during the first few weeks and not being able to eat or keep food down. The weight gain data only tabulated the total weight gain from the pre-pregnancy BMI through the last prenatal care visit and thus it did not capture initial weight loss. For example, an obese woman may have lost an initial 15 lbs during the first trimester and then gained the 15 lbs back plus 14 additional lbs throughout her pregnancy. She gained 29 lbs total, but from the baseline weight she only gained 14lbs, which was less than the recommended amount.

Based on pre-pregnancy BMI, the overall proportion of births to overweight women in this study (both groups) was greater (33.1%) than that of all women in Pinellas County (23.3%), while the proportion of obese women was lower among women in this study (14.2%) compared to all women in the county (19.3%) ("Florida Charts County &

State Profile," 2009). A breakdown of ethnicity was not available for the county and thus there is no comparison of Hispanic-only women.

Utilization of care

Attendance in prenatal care visits. According to the modified APNCU index, about 86% of women in CenteringPregnancy had "adequate plus" care indicating they initiated care before the 4th month of pregnancy and attended over 110% of their expected number of visits. Women in CenteringPregnancy may have attended more than the 11 expected visits for various reasons. First, a woman may have had additional individual care visits due to a specific problem with her pregnancy which caused her to need an additional appointment. Second and more likely, a woman may have had additional appointments because did not give birth by the time the CenteringPregnancy group ended. If she did not give birth by the end of the program, she would attend weekly individual visits with the doctor until the birth. It may also have been a combination of these two that contributed to the higher number of women who had adequate plus care. Due to the vagueness of what may constitute additional visits, the APNCU index was further modified further to form a binary variable and examine only adequate vs. non-adequate care.

There were statistically significant differences between the two groups in prenatal care adequacy. A logistic regression analysis indicated that women in CenteringPregnancy were more likely to obtain adequate prenatal care as opposed to non-adequate care compared to women in individual care. This relationship was found both in the unadjusted and adjusted models.

This finding was expected and was consistent with findings from other studies (Grady & Bloom, 2004; Ickovics, et al., 2007; Klima, et al., 2009). Using the same APNCU index, Ickovicks et al. (2007) found that women in a randomized controlled study were less likely to have less than adequate care in CenteringPregnancy than in individual care. Klima et al. (2009b) only examined the number of prenatal care visits and found that women in CenteringPregnancy attended significantly more visits than women in individual care (9.7 vs. 8.3). Grady & Bloom (2004) found that adolescent girls in CenteringPregnancy had fewer no-show appointments (19%) compared to women in individual care (28%).

This finding was further explained with what was found in the qualitative analysis. First, women seemed to develop a sense of cohesiveness with the group and had companionship in the class. Women may have been more likely to attend their care because they were part of a larger group that they in which they belonged. Not attending would perhaps alter that cohesiveness since they women realized it took all of them to make up the group. Second, the women said they enjoyed attending the program and liked being in the group. They liked that there was social time, they played games, ate food and made friends at the group and truly looked forward to seeing each other. In general, the women viewed the classes as an enjoyable experience. Enjoying the time spent in the program may have contributed to high attendance since women looked forward to attending. Third, the women did not want to miss out on any information by not attending. Some women mentioned that even when they had to leave the group for laboratory work they felt that they may be missing information or an activity that they wanted to participate in. They felt as though they were learning in the group and wanted

to be there to obtain the information and participate. From preliminary research observations, when a woman missed a session, other women in the group would ask where she was and if anything was wrong, and sometimes would call her to follow-up. This companionship support may have encouraged women to attend.

Attendance in postpartum visit. There were statistically significant differences between the two groups in postpartum care attendance. Women in CenteringPregnancy were more likely to attend their postpartum care visit compared to women in individual care. This was true in both the unadjusted and adjusted logistic regression models. Similar to reasons why women attending prenatal care, this difference may also have occurred because of the relationships that were formed and the cohesive of the group. This finding is consistent with the only study that reported on postpartum rates among women in CenteringPregnancy (Grady & Bloom, 2004). Grady and Bloom (2004) examined postpartum attendance with women in CenteringPregnancy. Although they did not compare attendance rates to women in individual care they found that 87% of the women in CenteringPregnancy attended their postpartum visit within 8 weeks which was consistent with the findings is this study (86.7%).

Although the postpartum visit is an individual visit, women may have been more likely to attend the visit because of the relationships they made with the doctor and nurses. Many women who came to their postpartum visit brought food in for the staff and thank you cards to show their appreciation. The postpartum visit served as an additional time to follow-up with the doctor and staff not only with maternity care but for the women this was also time to talk about their experience with the childbirth and to bring their baby in for the staff to see. The postpartum visit is very important to assess any

maternal morbidities or problems, test for postpartum depression, check postpartum weight and provide essential family planning which includes contraception and education on baby spacing. An increase in utilization of care both in terms of prenatal care and postpartum care is a positive outcome of CenteringPregnancy that may be an important factor for the women's future health.

Infant feeding method. There was a statistically significant difference in the infant feeding method and the type of prenatal care. Women in CenteringPregnancy were more likely to formula-only feed their infants at six weeks postpartum. Although fewer women in CenteringPregnancy exclusively breastfed their infants at six weeks postpartum there were no statistically significant differences between the two groups either in the unadjusted or in the adjusted logistic regression model. This finding was surprising since breastfeeding is highly encouraged in CenteringPregnancy and infant feeding is covered as an educational topic. However, the proportion of women who both breast and formula fed their infants was similar between the two groups and the majority of women in both groups reported using both feeding methods.

The finding that women in CenteringPregnancy are more likely to formula-only feed than women in individual care is not consistent with the literature on breastfeeding among women in CenteringPregnancy (Klima, et al., 2009; Ickovics, 2007; Grady & Bloom, 2004). However, the data on breastfeeding from each study come from different time periods, and thus they cannot be directly compared to data in this study. Grady & Bloom (2004) did not do a comparison but found that at hospital discharge, 46% of the adolescent girls who attended CenteringPregnancy were breastfeeding. Data on whether they were exclusively breastfeeding or breastfeeding beyond hospital discharge was not

reported. This cannot be directly compared to finding in this study because infant feeding was assessed at six weeks postpartum and not at hospital discharge. Klima et al. (2009) also reported that breastfeeding at hospital discharge was higher among women who attended CenteringPregnancy than women who were in individual care, $p<0.05$. Ickovics et al. (2007) examined initiation of breastfeeding from a six month postpartum interview with mothers and found more women in CenteringPregnancy initiated breastfeeding than women in individual care, $p=0.001$.

The rates of breastfeeding are higher among Hispanic women, especially Mexican-American women, than other ethnic groups in the U.S (McDonald, Suellentrop & Morrow, 2008). In Pinellas County, the proportion of new mothers who reported ever breastfeeding was 80.9%, and the proportion of new mothers who reported breastfeeding at two months postpartum was 54.9% ("Florida Pregnancy Risk Assessment Monitoring System (PRAMS)," 2008). Data specifically for Hispanic women in the county and data on exclusive breastfeeding vs. supplementing breast feeding was not available. The percentage of women in the current study who non-exclusively breastfed (combination of two variables, exclusively breastfeeding and breastfeeding supplemented with formula) their infants at six weeks postpartum was 53.9% for women in CenteringPregnancy and 65.4% for women in individual care which is still higher for women in individual care, however both groups are comparable to the two month postpartum breastfeeding report for Pinellas County.

The reason for the difference in women formula-only feeding their infants is unknown. In most CenteringPregnancy groups, breastfeeding is a high priority of the education, especially among groups of African American women. In this group, it may

not have been emphasized as much, assuming that Hispanic women will breastfeed anyway; however, breastfeeding was covered as an important topic in the group. A conversation with WIC lactation consultants at the health department provided some anecdotal information to help explain the findings. The WIC lactation consultants indicated that they do not speak fluent Spanish and often have trouble with communicating with Spanish-speaking women about breastfeeding. This may have contributed to fewer women in both groups (treatment and control) not exclusively breastfeeding or formula only feeding; however it does not explain the difference between the two groups. Additional qualitative interviews of women and of health department staff, including WIC staff, may contribute to better understanding reasons for infant feeding methods.

Two other variables that were thought to influence infant feeding method was status in the U.S. and employment status. Some research has indicated that women who were recent immigrants were more likely to breastfeed their infants than those who were permanent resident or citizens (Byrd, Balcazar, & Hummer, 2001). However, in this analysis there was no difference in infant feeding methods based on status in the U.S. There were very few women who were permanent or temporary residents and the length of time in the U.S. was unknown. Some research also indicates that women who are employed may be less likely to breastfeed and more likely to formula feed due to convenience and restrictions at work (Ryan, Wenjun, & Arensberg, 2006). In this analysis employment status was related to method of feeding; women who worked either part time or full time were more likely to supplement breastfeeding with formula than exclusively breastfeed. Most women who obtained care at the health department had jobs

in the food service industry or housekeeping positions and may not have had the financial privileges to take much time off of work after having their baby and may have had limited opportunities to pump breast milk while at work. This may have been due to either, limited time, a lack of privacy at work and a lack of refrigeration. A new provision from the U.S. Department of Labor requires employers with 50 or more employees to provide a reasonable amount of break time and a private area to pump milk other than a bathroom ("Fact Sheet #73: Break time for nursing mothers under the FLSA," 2010). As this new provision begins to be implemented it will be interesting to reexamine infant feeding methods of women who work.

Women's perceptions of care.

Overall perceptions. Women had very positive experiences with CenteringPregnancy, and would choose CenteringPregnancy over individual care. The women discussed many positive experiences but mainly they expressed their appreciation for the friendships with other women in the group, the time that was devoted to them for care and the creative ways of learning new information such as the activities and games that were played. The women interviewed were all multigravida and spoke especially about their pleasure in learning new things and helping to teach the primigravida women. Some of the women expressed that they did not think they were going to learn many new things since they already had children but they were surprised with what they learned in the program. The idea that even multigravida women were learning more and that they enjoyed teaching other women is a positive outcome for CenteringPregnancy. The program engages all women and helps to increase knowledge among both new mothers

and mothers who already have children. Overall, the women were all very appreciative of the care they received and enjoyed the CenteringPregnancy program.

There were a few women who expressed some negative experiences, but nothing that indicated women did not enjoy the group overall. Lack of privacy at times was a concern for one woman. She spoke about one specific instance where should would have appreciated a matter be taken care of in private for another woman. None of the other women said privacy was a problem and thus more information is needed to determine if privacy was a larger issue.

Childcare was a problem that another woman mentioned, mainly because of the time that needed to be dedicated to the visit. She enjoyed coming to the group but often had issues with leaving her other children and would have appreciated childcare at the health department. Although this was only mentioned in one other interview, it was discussed in more details during the preliminary observation research. Women with young children in particular had difficulties with obtaining childcare and would benefit from the health department proving a childcare service. Women in individual care are able to bring their children with them because the majority of time spent at the health department is in the waiting room. If childcare was provided at the health department for women in CenteringPregnancy, it may interest more women in attending CenteringPregnancy and may help alleviate barriers to women in CenteringPregnancy to attending the group.

Another woman discussed some discomfort with male partners being in the group. The woman said she especially felt uncomfortable doing exercises in the groups with males. None of the other women mentioned this as a problem. In addition, qualitative

data from preliminary observations indicated that many women did not mind male partners and felt more comfortable with them as the group continued. Additional qualitative research specifically addressing comfort levels of women with male partners in the group is needed to better assess this concern.

Informational support. All of the women indicated they learned more in CenteringPregnancy than in individual care. The women discussed many topics in the group and learned about nutrition, exercise, pain management, labor and birth and care for the baby among others. They especially liked learning about pain management and discussed specific activities such as talking about their own experiences and listening to others, watching videos, and going to the hospital to see what the process would be on their delivery day. Even though all of the women who were interviewed had children already, they said they still learned things in the group that either they did not know before or had to be reminded of. They appreciated the discussions with other women because they learned more when they heard other women's experiences. There were a few education topics that CenteringPregnancy provides that were not mentioned during the interviews including, contraception and family planning, depression and family violence. The women may not have discussed these topics because they were not specifically asked about in one of the interview questions. Along with companionship support, aspects of informational support were the most commonly talked about in the interviews. Women felt as though they were receiving more information about their pregnancies and childbirth in CenteringPregnancy than what they received in previous prenatal care. In addition, they felt as though the information that was given to them in CenteringPregnancy was better taught in more creative teaching strategies that helped

them learn. Since one of the most important aspects of prenatal care is education, it is positive outcome that women indicated they learned more in CenteringPregnancy and were given more information and taught in innovative learning styles.

Emotional support. Aspects of emotional support were frequently discussed in the interviews. The women talked about how much they appreciated the relationships they had with the doctor, the health educator and the other women in the group. They were able to talk about their emotions, feelings and concerns. In general the women indicated they felt very comfortable in the group and had their concerns addressed, which made them feel less stressed and less nervous. These findings were inconsistent with the study by Shakespear et al. (2009) who indicated that women's health behavior index scores were lower possibility due to a lack of questions and concerns being addressed. The women in the current study also indicated they felt prepared for their labor and birth and empowered to make their own decisions about the process. Being able to share and listen to each other's stories about childbirth, especially in terms of pain management, seemed to help put women at ease and made them feel more comfortable about their own upcoming childbirth experience. Overall aspects of emotional support that women discussed were that they developed better relationships in CenteringPregnancy, had more encouragement and enjoyed being in the presence of other women and the health care providers. The emotional support that was provided to the women seemed to be key component in what mediated any stress or concernment that may have affected the women's emotional and physical health.

Instrumental support. The CenteringPregnancy program in its inception is based on providing a service to women to give them support during their prenatal care. Thus,

one of the main objectives of the program is to provide this support for women. The services the doctor and the health educator provided, the additional services at the health department and the tools and activities that were used in the CenteringPregnancy program all served as instrumental support for the women. In particular, women enjoyed the activities and games that were played and indicated they were helpful learning tools. One of the main differences they spoke about when comparing CenteringPregnancy to individual care was that in CenteringPregnancy the information was taught to them in unique ways to help them learn rather than just information in a brochure or other handout. Another difference in the service was that women did not have any wait time with CenteringPregnancy like they did with individual care. Women appreciated that the time they spent at the health department was well used and they were able to participate in the program for the whole duration of their visit. This may also be a key component as to why attendance rates were higher for women in CenteringPregnancy. If they thought the quality of their whole experience at the health department was high they may have been more likely to attend.

Appraisal support/validation support. Feedback and appraisal was something that the women also talked about as a positive aspect of CenteringPregnancy. They were able to talk about things in the 2-3 hour sessions that they normally may not have time to discuss in an individual appointment. They received feedback not only from the doctor but also from the health educator and other women in the group. In fact, often it was the other women in the group who provided much of the feedback and encouragement. The women really appreciated that this kind of support came from other pregnant women.

Although specific questions were not asked in the interview, empowerment emerged as a subtheme of appraisal support. Many women indicated that they felt more comfortable in the class, gained more knowledge, were more in control, and thus were able to make more decisions about their own pregnancy and childbirth. Women learned to take their own blood pressure, chart their weight and estimate their gestational age. A few women also said that felt more in control at the hospital during their birth to tell staff what decisions they made about their birth plan. This may have played a role in the outcomes that women in CenteringPregnancy were less likely to have cesarean sections compared to women in individual prenatal care. Empowerment of women is a goal of CenteringPregnancy and it was clear that the women interviewed felt empowered through the program.

Companionship support. Along with informational support, companionship support was one of the most common types of support discussed with the women. All of the women talked about the friendships they made and the appreciation they had for the companionship of other women in the group. According to the women, this was an integral part of why they both enjoyed the group and why they had such great support. Some women discussed the closeness of the friendships and contact they had even after the CenteringPregnancy program was complete. Women also discussed the relationships they developed with the doctor and health educator and voiced that it was unlike the interactions they had with health care providers in past prenatal care or in other types of doctor's visits. The women were not used to other women being a part of their care or having the doctor so much a part of the education and support. This was a different experience for women but also a much appreciated and welcoming aspect of care. The

relationships formed were an integral part of women receiving companionship support. As previously discussed, companionship support may have played a role in why women in CenteringPregnancy attended care more often and felt very satisfied with their care.

Recommendations of CenteringPregnancy. All of the women said they would both complete CenteringPregnancy again with future pregnancies and they would recommend CenteringPregnancy to others. A few women said they already have recommended it to others. One woman said that the only issue she would have recommending it to other women who have children is that there is no childcare provided. An inclusion of childcare at the health department for women in CenteringPregnancy would most likely eliminate a major barrier of choosing CenteringPregnancy for women with children.

Summary of perceptions of care. All of the women interviewed spoke very positively about CenteringPregnancy, would participate in the program again and would recommend it to others. They appreciated the information they learned and the educational techniques used to teach the information. They enjoyed making new friends and the relationships they developed and the support they received from other women in the group and from the health care providers.

Social Support Theory. The women identified aspects of all five types of social support that they received through the CenteringPregnancy program and identified several providers of social support. The support may have been received in several ways. The support may have acted as a mediator to stress by way of helping women cope better with stress, or through the perceptions of available support which can lead to appraising situations as less stressful (See Figure 2-2). Women stated they felt more comfortable in

CenteringPregnancy. They felt more at ease because their questions and concerns were always answered. Although this did not improve birth outcomes it may have contributed to higher utilization of care which can lead to increased utilization of care for future visits to the health care provider.

Through influencing self-esteem, the social cognitive perspective predicts that perceived social support can affect health outcomes, and the symbolic interactionist perspective predicts that support can positively affects a person's identity which in turn affects health outcomes (Cohen, 2000) (See Figure 2-3). A theme that emerged from speaking to women about their experiences with CenteringPregnancy was empowerment. Women felt more in charge of their health and more in control of their decision making. An increase in self-esteem and a greater sense of self through the support may have influenced the women's health. The women indicated that they felt more comfortable and felt as though they had the knowledge to make decisions and have a healthy pregnancy. One outcome that may have been influenced by women's empowerment is a lower number of cesarean sections for women in CenteringPregnancy. Although it is not completely clear as to why the cesarean section rate is lower for women in CenteringPregnancy, an increase in women's self esteem and positive self identity from social support from the group may have influenced this outcome.

The relationship perspective which conceptualizes support as part of a larger interrelated relationship (Cohen, 2000) also played a role in how support was delivered through CenteringPregnancy. Healthy relationships with others can provide companionship and intimacy and a low conflict environment. Many women spoke about the friendships they made in the group and the pleasure of spending time with other

pregnant women who understood what they might be going through. In CenteringPregnancy the friendships that were made between the women was one of the most important avenues of social support that may have improved outcomes. Specifically, prenatal care attendance rates were higher among women in CenteringPregnancy than in individual care. Many women spoke about not wanting to miss class and wanting to spend time with the friends they made in the group. In addition, women had positive relationships with the health department staff including the health educator and the doctor. The women talked about their appreciation for the staff and close relationships they developed. The support from the relationships may have contributed to an increase in prenatal and postpartum care attendance. Women wanted to come back for care so they could socialize and spend time with the people they developed relationships with.

Conclusions. In general, the women at the health department had good birth outcomes compared to the overall county. Since all of the women were low-risk obstetric clients, it was expected that they would have overall good birth outcomes and that differences between the groups would be difficult to find. However, there were differences in utilization of care and in the type of birth. In addition, women had very positive perceptions of their care and were generally more satisfied with CenteringPregnancy than with their past experience with individual prenatal care.

For over a century, prenatal care has been evolving and has been recognized as an essential component of health care for pregnant women (Kiely & Kogan, 1994). Several studies have shown positive effects of the utilization of prenatal care on birth outcomes and maternal health (Kiely & Kogan, 1994; Koonin, Atrash, Lawson, & Smith, 1991'

Greenberg, 1984;) but high racial disparities with adverse infant outcomes are still seen (Rosenthal, 2011; MMWR, 2005; Guyer, 1999). Preventing adverse outcomes requires a re-conceptualization of prenatal care and the role it plays along with health promotion and education throughout the life course (Lu, et al., 2003). Traditional prenatal care focuses on the important task of assessing risks for both the mother and baby and providing education to the mother to help her maintain a healthy pregnancy. However, innovative group prenatal care programs, such as CenteringPregnancy, show that prenatal care can be used for more than just risk assessment and basic education. CenteringPregnancy provides essential risk assessment but also educates women with interactive approaches to teaching such as with games, activities and group discussion that help women learn more and better understand their health. In addition, the program provides a system of social support that encapsulates all types of social support to provide relief of stress, encourage positive relationships and empower women to help facilitate healthy pregnancies. This holistic approach to prenatal care has shown in this study to increase utilization of care, empower women and connect mothers to each to facilitate additional support and resources. This group care approach along with preconception and interconception care fits into the life course model of helping women stay healthy throughout their reproductive age. However, improvements in preconception care are needed. Several studies (Coonrod, Bruce, Malcolm, Crachman & Frey, 2009; Delgado, 2008; Frey & Files, 2006) found that women are not receiving messages about preconception care from their obstetrician/gynecologist or primary care providers. Specifically examining knowledge and attitudes of preconception care of Mexican American women Coonrod (2009) also found that although most women did not receive

messages, they were interested in preconception education and agreed that preconception health leads to improves pregnancy health (Coonrod, Bruce, Malcolm, Crachman & Frey, 2009). Thus, a greater effort to incorporate preconception care along with CenteirngPregnancy among Latina women to help improve outcomes may be an appropriate should be made

Study strengths. There are several strengths to this research. First, compared to other studies assessing CenteringPregnancy, the sample size is larger and includes both an intervention and comparison group from the same clinic over the same time frame. Second, there are several outcomes studied in this research including both birth outcomes and maternal factors that are not often assessed in a single population. It is important to examine a variety of the possible outcomes of the program including maternal weight gain which is not often studied with CenteringPregnancy participants. Third, this study employed both quantitative and qualitative methods to fully understand differences in prenatal care. This helped to answer all of the research questions and helped triangulate data to better understand outcomes. Fifth, this study included a population of Latina Spanish-speaking women which addresses a gap in the current literature on CenteringPregnancy outcomes. To date, only one other study has been published on Latina women in the program, yet many Spanish-speaking groups are being implemented.

Study limitations. There are several limitations to this study. First, since this was a retrospective study, women were not randomized to the intervention or comparison group. At their time of their first initial appointment at the clinic both types of care were explained to all of the women, and they were able to choose their type of care. The

reasons women chose CenteringPregnancy or individual care were not accounted for but may have contributed to differences in outcomes. There are several reasons why women may not have chosen CenteringPregnancy. On paper, the program had a longer time commitment since the CenteringPregnancy appointments were 2.5 hours. Although with wait times, individual appointments sometimes last just as long. However, this was not accounted for in the appointment time. CenteringPregnancy did not provide child care (although some women did bring their children) which may have also deterred some women from choosing the program. In addition, some women who already had children may have felt as though they did not need to attend a program for their prenatal care since they have already gone through the process before. Nonetheless, the population from which the sample of women from both groups was drawn was the same and with the exception of age and parity there were no major demographic differences between the groups and most of the variables that may have contributed to differences were controlled for in the analysis model.

Second, the study was done on a single population of women at a health department clinic, and thus the study findings can only speak to this population of women in Pinellas County, FL. The women were mainly of Mexican descent and most were born in Mexico. The research findings are distinct to this particular population of women. This is a limitation in that the findings are not generalizable to a larger population but the strength is that these findings fill in a gap in the literature about this specific population.

Third, the women in prenatal care at the health department were all low-risk obstetric patients, and thus were less likely to have adverse birth outcomes. If a woman became high risk at some point in her pregnancy, she was transferred to a high risk clinic.

These women were not included in the study since they did not complete their prenatal care at the clinic. Thus, the findings are limited to low-risk obstetric patients.

Fourth, in the qualitative phase, women were asked to compare their experiences with past individual prenatal care. This required women to think back to their last pregnancy and thus there may have been some recall bias. In addition, the only requirement on where the individual care occurred was that it was in the U.S. and thus there may have been large variation in the comparison of the care. However, this was only a small portion of the overall study and the comparison of care was only one section of the complete interview.

Future research. CenteringPregnancy and group prenatal care is becoming a more popular way to deliver prenatal care, especially at public health clinics. Future studies, particularly randomized controlled trials with large sample sizes, are needed to assess pregnancy outcomes of women in CenteringPregnancy to determine the effectiveness of care. More qualitative research is needed to assess women's and health care provider's perceptions of care, as well as to provide evidence to support quantitative research findings. Specific issues such as maternal weight gain, prenatal and postpartum depression, violence during pregnancy, gestational diabetes, gestational hypertension and stress during pregnancy is all lacking and should be addressed to determine if these outcomes are influenced by CenteringPregnancy.

A cost analysis comparing the overall cost to the health department for CenteringPregnancy and individual care should be computed. This will provide evidence to show whether or not the program is cost-effective even if pregnancy outcomes are not different between the groups. Ickovic et al. (2007) was the only study on

CenteringPregnancy that reported costs associated with care. The authors determined that there was no significant difference in cost associated with prenatal care or birth and concluded that CenteringPregnancy was an efficient program.

In the current research, some outcomes need to be further examined. First, a difference between the groups was found in the method of birth, indicating fewer women in CenteringPregnancy had cesarean sections, controlling for age, educational attainment, parity, status in country, pre-pregnancy BMI, employment status and birth hospital. Further information about the birth is needed to understand this outcome including which interventions were done, if any, and more complete data on the reason for the cesarean section. Some research indicates that the use of medication to artificially induce or augment a labor can lead to cesarean sections (Wilson, Effken, & Butler, 2009) and thus this information is important to assess. In addition some research has indicated that mother's small stature may lead to cesarean sections (Scott, Hankins, Strickland, & Gilstrap, 1989). Research examining the relationship between mother's height and type of birth may also help explain differences in type of birth.

Second, an outcome that was not expected was that women in CenteringPregnancy were more likely to formula-only feed their infants compared to women in individual prenatal care. Further qualitative research is needed to understand this outcome better and determine why women would be more likely to formula-only feed. The qualitative analysis may include interviews and focus groups with women who completed CenteringPregnancy and with health care providers. In addition, an assessment of the utilization and extent of use of WIC for women in each group may help indicate

whether support through WIC had an effect of infant feeding method. All women at the health department were referred to WIC, but the extent of use is not currently known.

Third, the findings indicated that there was no relationship between the type of prenatal care and preterm birth or low birthweight. However, further research should also explore additional birth outcomes such as the combined variable preterm low birthweight, small-for-gestational age infants, and large-for-gestational age infants. These outcomes are all important to assess in determining the health of the infant in addition to the ones assessed in this research.

Another area to investigate is assessing consumption of food and health behaviors before, during and after pregnancy for women who completed CenteringPregnancy and women who completed individual care. This assessment would help in understanding differences in food consumption that may contribute to differences in weight gain and perhaps reflect the education women received in either type of care.

Implications for Practice. This research has implications for practice in that it adds to the evidence of research on CenteringPregnancy programs. The research findings help with the evaluation of the CenteringPregnancy program at the Pinellas County Health Department and provide evidence of outcomes to show positive effects as well as areas to improve. The findings also provide evidence for other public health clinics as they decide to develop CenteringPregnancy programs or maintain current programs.

Although this investigation showed the CenteringPregnancy program was not associated with any improved birth outcomes, it was associated with higher utilization of care in terms of attendance in prenatal care and postpartum care, and with less cesarean section deliveries. In addition, women had better experiences and had more social support

in CenteringPregnancy compared to their past experience with individual care. These are very important outcomes especially for immigrant non-English speaking Latina women who, in general, have low access to health care and low social networks. However, based on this research, two areas that may need more attention are promoting healthy weight gain and breastfeeding. Partnering with The Healthy Start Coalition and WIC to further promote healthy eating/exercise and exclusive breastfeeding may be a way to improve weight gain and infant feeding outcomes. Proving additional counseling in Spanish on breastfeeding along with ways to overcome barriers of breastfeeding and pumping milk (financial, environmental, time) may be beneficial.

Recommendations. Qualitative findings indicated that many women became friends in the CenteringPregnancy group and stayed friends beyond the program. The lasting friendships and support that existed beyond the program may have implications for future programming for parenting support. Programs such as CenteringParenting© which is also part of the Centering Health Care Institute may benefit women who want to continue being part of a system of support in their health care center. This can be especially beneficial for a population similar to the one in this study who are not native to the county and may have limited social networks, problems with communication and navigating the health care system and have a limited ability to speak English.

Nutrition and exercise was an integral part of the CenteringPregnancy program at the health department, and women discussed the various topics they were taught and indicated that some behavior changes were made. However, there were a high proportion of women gaining above the recommended amount of gestational weight. Trying to encourage women to gain a healthy weight during pregnancy and eat well and exercise is

an important part of prenatal care. However, it may be more beneficial to couple this with preconception care and interconception care programming to help women obtain and maintain a healthy weight and develop good eating habits and exercise behaviors. These suggestions align with the Healthy People 2020 goals for maternal and child health ("Healthy People 2020: Maternal, Infant and Child Health," 2011). Culturally and linguistically appropriate programming that promotes healthy lifestyles to encourage healthy pregnancies before and in between pregnancy is needed.

A negative finding was that women in CenteringPregnancy were more likely to formula-only feed their infants than women in individual care. There was no significant difference in women who exclusively breastfed their infants or in women who supplemented breastfeeding with formula but this outcomes is still troubling. A recommendation to the health department based on this research finding is to first further assess this finding and then reevaluate how infant feeding is discussed in the CenteringPregnancy group to encourage exclusive breastfeeding.

Based on this research, there are two recommendations for the Centering Health Care Institute as they reevaluate their program and plan the future of CenteringPregnancy. The first is to link theory to practice. In the current investigation, the Social Support Theory was used to guide the research and assess women's perceptions of care. CenteringPregnancy uses the Social Support Theory, along with feminism theories as a framework to their model (Rising, 1998). However, it may be beneficial to further dissect the CenteringPregnancy model as a whole to show how the key components align with theoretical frameworks such as the Social Support Theory. In this research, it was clear that the CenteringPregnancy program provided the five types of

social support as are noted in the results chapter. A model was also developed to illustrate how the support is provided and received in the program. Perhaps an important step for the Centering Health Care Institute is to use more theory-based research to strengthen research findings and link theory to practice.

Another possible step for the Centering Health Care Institute is to begin to increase the use of technology in the CenteringPregnancy program. The internet and Smartphones with text messages, video messaging, and phone application are used often in the U.S. and proving to be powerful tools in promoting health even among low-income populations (Santosh, Boren, Balas, 2009; Patrick, William, Griswold, Raab, Intille, 2008; Buhi, Oberne, Trudnak, Martinasek, Furhman and McDermott, ND). It may be a time for the CenteringPregnancy model to move in the direction of including some of these technologies into their program. An example is developing a CenteringPregnancy phone application or internet site for women to utilize and keep track of their blood pressure, weight, gestational age etc. and send questions and comments to other women in their group. This type of communication is currently done during the group session, but using technology can allow the women to access the information and talk to each other at any time. Since teenagers and young adults are more likely to have and use such technologies (Lenhart Purcell, Smith & Zickuhr, 2010), a pilot intervention with adolescent CenteringPregnancy groups may be beneficial to see if/how the use of technology increases support. Depending on the age, income status and geographic location of women, there will be variation in who has access to cell phones and the internet and thus this will need to be taken into consideration when implementing an

intervention. Some health related programs provide phones to participants for the duration of an intervention (Patick et al., 2008).

Take home message. Although there were no differences in infant birthweight or gestational-age-at-delivery, women in CenteringPregnancy were more likely to receive adequate prenatal care, more likely to attend their postpartum visit, less likely to have cesarean deliveries, less likely to gain below the recommended amount of weight and more likely to use formula-only to feed their infants compared to women in individual prenatal care. Qualitative findings indicated that women who completed CenteringPregnancy were more satisfied with their care, received more education and support, felt more comfortable with their care, felt more prepared for labor and birth, and felt more empowered to make decisions about their pregnancy and childbirth. These outcomes are especially important for the women in this study population who are all low-income, Spanish-speaking, non U.S. born and often have low social networks. Among this population of women, CenteringPregnancy at the Pinellas County Health Department increased health care utilization and informed and empowered women through social support.

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APPENDICES

APPENDIX A: COMPONENTS OF ROUTINE PRENATAL CARE BASED ON THE ACOG PRENATAL CARE GUIDELINES

CenteringPregnancy Session	Individual Care (Gestational Age)	Assessments	Routine Laboratory/Diagnostic procedures	Routine Prenatal Education
Initial visit	Up to 12 Weeks	• Screen for Preterm labor (PTL) risk factors • Screen for sexually transmitted disease • Calculate BMI and set weight gain goals for pregnancy • Assess for gestational diabetes mellitus (GDM) risk factors and screen if high risk • Assess oral health and refer for dental care if needed • Ask about tobacco use • Screen for substance abuse	• Complete Blood Count or HCT/HGB • Urinalysis with culture • Blood Group & Rh type • Antibody screen • Syphilis screen • Cervical Cytology • Hepatitis B • Rubella Antibodies • Chlamydia and gonorrhea screen • HIV test • Gestational diabetes screen • Genetic disorders screen based on family history	• Premature labor signs and symptoms • Appropriate weight gain based on BMI • Exercise • Nutrition • Smoking Cessation • Toxoplasmosis • Communicable diseases • Sexual activity • Breastfeeding • Seat belt use during pregnancy • Dental hygiene • Stressful or prolonged work hours • Substance abuse • Domestic violence • HIV risks and prevention
Sessions 1-3	12-28 Weeks	• Continued risk assessment for PTL • Test fetal anomalies, multiple gestations dates • Ask about tobacco use • Re-screen for substance abuse	• Maternal serum alphafetoprotein • Ultrasound • Urinalysis for albumin and glucose • Repeat antibody test for un-sensitized Rh negitive (28 wks) • Screening for gestational diabetes	• Breastfeeding • Appropriate weight gain • Interpretation of routine lab results • Smoking cessation if needed • PTL – identifying and managing signs and symptoms • Substance abuse-counsel, provide interventions and/or referrals for tobacco, alcohol or illicit drug use • Domestic violence

Sessions 4-6 (nutrition is covered in session 1)	28-36 Weeks	• Assessment for PTL • Perform US for poorly controlled GDM and inadequate fetal growth • Screen when appropriate and treat if indicated for reproductive tract infections • Assess for PIH (pregnancy induced hypertension)	• Repeat HCT/HGB • Prophylactic administration of Rho (D) immunoglobulin (28 wks) • Urinalysis for albumin and glucose at each visit • Group B Strep screen	• Nutrition • Weight gain • Seat belts • Meaning of test results • Review signs of PIH/preeclampsia • Smoking cessation counseling • Teach daily fetal movement assessments as a means of antepartum fetal surveillance • Discuss preterm birth and discourage elective deliveries before 39 weeks gestation
Session 10 (Education on labor and readiness for baby discussed in sessions 6-10)	After 36 Weeks	• Continued risk assessment • Assess for PIH	• Urinalysis for albumin and glucose at each visit • Flu vaccine	•Review onset of labor, bleeding, membrane rupture • Pain management and analgesic/anesthetic options • Fetal movement counts reinforced • Smoking cessation counseling • Assess readiness for infant • Pediatric care choice • Recommend that elective deliveries not be performed before 39 weeks gestation to minimize prematurity-related prenatal Complications
Individual visit	After 41 Weeks	• Continued antepartum assessment	• Fetal heart rate testing, evaluation of amniotic fluid volume, biophysical profile (BPP)	• Fetal movement counts reviewed • Discussion of possible induction

APPENDIX B: PRENATAL HIGH RISK PATIENT CRITERIA

BAYFRONT MEDICAL CENTER
REGIONAL PERINATAL INTENSIVE CARE CENTER
PRENATAL CRITERIA – HIGH RISK

Two (2) previous losses – 2 D+C OR 2 EAB with D+E
Chronic hypertension – Mean arterial pressure > 95 second trimester or
> 105 for third trimester or requiring medication
Premature rupture of membranes
Preterm labor or delivery < 34 weeks
Multiple gestation
Transplants
Abnormal amniotic fluid AFP
Cardiac disease including rhythm abnormalities
Class 1, 2, 3, 4
Mitral stenosis, mitral insufficiency, aortic stenosis,
aortic insufficiency, pulmonary hypertension
All insulin dependent diabetics
Gestational diabetes
Screen with hour glucose test
If greater than 135 do 3° GTT
If value is 182 no 3° GTT, treat as gestational diabetes
Values of 3° GTT
If 2 abnormal values – hi risk
FBS less than 105 (if FBS greater than 105 repeat fasting, if still high consider diabetic)
1° less than 190
2° less than 165
3° less than 145
Placenta previa > 24 weeks or complete previa
Isoimmunization
Severe pre-eclampsia, mild pregnancy induced hypertension
Hemoglobinopathies – Sickle cell disease
Recurrent intrauterine growth retardation by history
Malignancy
Autoimmune disease
Thromboembolic disease – previous or current
Full anticoagulation or prophylactic use of heparin
Incompetent cervix, history of cervical conization,
> Two elective abortions with D+E (not methotrexate)
Proven DES exposure
Previous cerebral vascular accident
Thyrotoxicosis, hypothyroidism, hyperthyroidism
Asthma with history of intubation
Cystic fibrosis disease

Mother with neurologic pathology

Gastro intestinal bypass surgery
Active Crohn's on immunosuppressive treatment
Aplastic anemia
Myasthenia gravis
Guillain Barre
Antiphospholipid syndrome
Previous placental abruption
Chronic renal disease
- Serum creatinine ≥ 1.00
- Proteinuria > 0.5 gm/2r hours
- Dialysis
- Anuria

Renal calculi
HIV
Psychiatric diagnosis requiring medication
Depression, severe requiring medication
Genetic evaluation
Abnormal ultrasounds, oligohydramnios, polyhydramnios
- Fetal anomaly, molar pregnancy partial or total
- Intrauterine growth retardation (IUGR) < 10%
- Abnormal Quad Screen
- Ultrasound abnormality
- Amniocentesis, CVS, PUBS
- Cytogenetics
- Polyhydramnios >20 AFI
- Oligohydramnios < 5 AFI
- Fetal anomalies
- Fibroid uterus
- Advanced maternal age
- Substance abuse or daily use of controlled drugs
- Methadone use

INTRAPARTUM CRITERIA – HIGH RISK TRANSPORTS

Pre term labor <34 weeks
Placenta previa (persistent of bleeding)
Abruption
Fetal scalp sampling
Malpresentation
Severe pre-eclampsia/eclampsia
Disseminated intravascular coagulation – clinical, lab
Prolonged pregnancy ≥ 42 weeks
Oligohydramnios
Fetal anomalies
Hemoglobinopathies

Chorioamnionitis and/or fever of undetermined origin
Shock
Multiple gestation
Cesarean section
Anticoagulation
Pulmonary edema and /or embolism
Active varicella or V. pneumonia
Maternal cardiac disease
Maternal trauma
Unexplained jaundice
Von Willibrand's
Hemophilia

POSTPARTUM – HIGH RISK CRITERIA

ICU care required
Pulmonary embolism
Aspiration pneumonia
Postapartum hemorrhage with transfusion and/or shock
Eclampsia
Severe pre-eclampsia

APPENDIX C: PINELLAS COUNTY HEALTH DEPARTMENT PRENATAL CARE PROTOCOLS

Initial Prenatal Visit

I. TITLE: Protocol for the management of the initial prenatal visit for pregnant clients

II. TYPE OF STANDARD: Service

III. OUTCOME: Improve pregnancy outcome resulting in a full-term, healthy infant, and a healthy mother

IV. PERSONNEL: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., L.P.N., R.D., L.D., and Aides/Techs, Health Educator within the constraints of their individual practice acts and protocols

A. Subjective and objective data gathering: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., R.D., L.D., L.P.N., Aide/Tech.

B. Assess and evaluate: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., R.D., L.D.

C. Planning/ Education/ Counseling: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., L.P.N., R.D., L.D, Health Educator

D. Intervention: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., L.P.N., R.D., L.D.

E. Evaluation: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., R.D., L.D.

F. Emergency: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N.

G. Documentation: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., L.P.N., R.D., L.D. Aide/Tech, Health Educator

V. COMPETENCIES: Health care providers must demonstrate knowledge of the responsibilities related to pregnancy according to the constraints of their individual practice acts and protocols. Professional personnel records should document training as appropriate for their individual practice acts. This should include didactic, practicum, and clinical training that covers pharmacology, clinical studies, patient selection, counseling, client management, complications, and side effects. The practitioner may practice independently in each skill area once proficiency is obtained in that skill area.

VI. AREAS OF RESPONSIBILITY: For County Health Departments Who Provide The Initial Prenatal Visit Only And Refer Client To Another Provider For Ongoing Prenatal Care:

The following components must be completed in order to classify this visit as an initial prenatal visit:

A. History

B. Explanation of Healthy Start screening.

C. Weight, blood pressure and fetal heart tones.

D. Education appropriate for gestational age.

E. Blood tests appropriate for gestational age and TB testing, if indicated.

F. Provide HIV pretest counseling and offer HIV testing.

G. Referral to WIC.

FOR COUNTY HEALTH DEPARTMENTS WHO PROVIDE THE INITIAL PRENATAL VISIT AND ONGOING PRENATAL CARE:

TA-MATERNAL 2-p.1 TECHNICAL ASSISTANCE: MATERNAL 2 July 1, 2003

VII. AREAS OF RESPONSIBILITY: For County Health Departments Who Provide The Initial Prenatal Visit And Ongoing Prenatal Care:

A. **Assessment**

1. The subjective factors are:

a. Obtain a medical and obstetrical history. This history should include, at a minimum, the information on the Prenatal Record Form, DH 3142, pages 1-2.

b. Healthy Start Prenatal Risk Screening

(1) Complete the Healthy Start Screening Form, DH 3134.

(2) Assess the screening score or documentation of refusal.
(3) Assess the client's need for follow-up according to the Healthy Start Standards and Guidelines.

c. Complete a nutritional assessment.

d. Assess the client's risk for underlying tuberculosis infection.

Risk factors:
(1) Client has recent contact to persons with infectious TB disease.
(2) HIV-positive individual or those at high risk for HIV infection (IV drug user or high-risk sexual behavior).
(3) Organ transplant recipient and other immunosuppressed person (e.g., receiving > or = 15 mg/d of prednisone for a month or longer.
(4) Recent immigrant (within the last 5 years) from a high TB prevalence country, (e.g., Asia, Africa, Latin America, Eastern Europe, Russia).
(5) Client with one or more of the following clinical conditions:
(a) Silicosis
(b) Diabetes mellitus

(c) Chronic renal failure

(6) Client with some hematological disorders, (e.g., leukemia and lymphomas).

(7) Client with other specific malignancies (e.g., carcinoma of the head, neck or lung).

(8) Client with weight loss of equal or greater than 10% of ideal body weight.

(9) Client with gastrectomy or jejunoileal bypass.

(10) Residents or employees of high-risk congregate settings (e.g., nursing homes, jails, hospitals).

(11) Fibrotic changes on chest x-ray consistent with prior TB disease.

e. Assess for high risk factors for gestational diabetes.

Risk factors:

(1) Overweight > or =120% overweight or BMI > or = 26

(2) Personal history of gestational diabetes

(3) Previous adverse pregnancy outcome

(4) Strong family history of diabetes

(5) Glycosuria

f. Assess for history of a previous infant with invasive Group B streptococcus (GBS) disease. A positive finding must be clearly documented in the client's record to assure that treatment according to the standards of care for prevention of perinatal GBS is provided to the client.

g. Assess for substance abuse.

Risk Factors:

(1) Drank alcohol in past and smoked more than three cigarettes in the month before pregnancy.

OR

(2) Drank alcohol in the month before pregnancy.

h. Assess for signs of depression. The following two brief

screening questions have been found to be highly predictive of depression. The screening test is considered positive if one or both depression symptoms are present.

(1) "During the past month, have you often been bothered by feeling down, depressed or hopeless?"

(2) "During the past month, have you been bothered by having little interest or pleasure in doing things?"

i. Assess for signs of domestic violence:

Because abuse is so common in people's lives, we are now asking our female clients the following client screening questions:

(1) Are you in a relationship in which you are being hurt or threatened?

(2) Do you feel unsafe in your home?

If the client answers yes to either question, assess client further to fully evaluate abuse and clients safety. Refer to TA General 15, Domestic Violence Screening, Identification and Referral.

2. The objective factors are:

Complete a physical assessment. This assessment should include, at a minimum, the information on the Prenatal Record Form, DH 3142, pages 3-4.

B. **Planning/Education/Counseling**

1. Develop all education and counseling to be culturally, educationally, and linguistically appropriate, client–centered, and non-judgmental.

2. Provide education and counseling on pregnancy and childbirth at the appropriate gestational period. This information should include, at a minimum, the information on the Prenatal Record Form DH 3142, page 5.

3. Provide HIV pre-test counseling to all prenatal clients. This counseling is outlined in TA-HIV/AIDS 9: Provision of HIV Counseling and Testing Services.

4. Educate and counsel the client on identified high-risk medical conditions.

5. Educate and counsel the client on good oral hygiene.

6. Educate and counsel the client on all diagnostic tests and procedures.

7. Educate and counsel on signs and symptoms that require urgent medical follow-up.

C. **Intervention**

1. Develop and implement an individualized plan of treatment for the client to include, but not be limited to; services, treatment, additional diagnostic testing and/or procedures and referrals appropriate for gestation. Additionally, the treatment plan is to include special client needs such as substance abuse, tobacco use, oral hygiene/dental care, domestic violence and depression.

2. Develop and implement an individualized and appropriate plan of treatment for the high-risk client, as determined in your assessment, which should include, but not be limited to; extra services and testing, home visits, more frequent prenatal visits, and/or referral to a Regional Perinatal Intensive Care Center (RPICC) or other high risk providers.

3. Healthy Start

a. Inform and explain to the client her Healthy Start screening score.

b. Place a copy of the Healthy Start Prenatal Risk Screening Form in the client's medical record and give a copy to the client.

4. Provide client a written referral to WIC for nutritional services.

5. Provide or arrange for vitamins and iron and folic acid supplementation as medically indicated. If folic acid is not included in the vitamins, provide or arrange for folic acid supplementation.

6. For the client who has had an infant with a neural tube defect, provide or arrange for appropriate folic acid supplementation. Refer to Internal Operating Policy, Maternal 1, Folic Acid Supplementation for At-Risk Women to Prevent Neural Tube Defects.

7. Glucose Tolerance Testing

a. Clients determined at minimal risk of having gestational diabetes do not require glucose testing at the initial prenatal visit. **This minimal risk category only applies to those clients who meet all of the following characteristics**:

(1) Age < 25 years
(2) Weight normal before pregnancy
(3) Member of ethnic group (generally white non-Hispanic) with a low prevalence of gestational diabetes
(4) No known diabetes in first degree relative
(5) No history of abnormal glucose tolerance, and
(6) No history of poor obstetrical outcome

b. Test any client for glucose tolerance **IF** client is at 24-28 weeks or greater gestation at the initial prenatal visit.

c. Test any client for glucose tolerance at this initial visit **IF** client is HIGH-RISK for gestational diabetes AND less than 24 weeks gestation. If negative results, retest between 24-28 weeks gestation. **This high risk category applies to those women that meet any one of the following criteria**:

(1) Overweight. > or = 120% overweight or BMI > or = 26
(2) Personal history of gestational diabetes
(3) Previous adverse pregnancy outcome
(4) Strong family history of diabetes

(5) Glycosuria

d. Refer to TA Guideline Chronic 9: Gestational Diabetes Mellitus.

8. At the **initial** visit, each client should receive the following laboratory tests:
   a. Blood group, Rh type determination and antibody screen.
   b. Hemoglobin/hematocrit.
   c. Rubella antibody titer measurement if there is no documentation of immunity by previous screening or vaccination.
   d. Syphilis (RPR, both quantitative and qualitative).

e. Hepatitis B surface antigen (HBsAg).
f. Encourage and offer HIV testing. Complete DH3161, Statement of Objection to HIV testing, if client refuses HIV testing.
g. Administer Mantoux Tuberculin Skin Test (TST) to clients at risk for underlying tuberculosis infection listed under Assessment 1 d.
h. Urinalysis with microscopic exam for bacteriuria.
i. Culture and sensitivity (C&S), if indicated. Urine specimens from prenatal clients should be clearly labeled to reflect patient's pregnancy status. Document any findings of group B streptococcus clearly in the client's record to assure that treatment according to standards of care for prevention of perinatal GBS is provided to the client.
j. Pap smear.
k. Sensitive test for Neisseria gonorrhea (GC), e.g., amplified test technology.
l. Sensitive test for Chlamydia trachomatis, e.g., amplified test technology.
m. Wet mount and KOH or other test with improved sensitivity and specificity as indicated to differentiate vaginal infections, including bacterial vaginosis.
n. Screening for abnormal hemoglobin (Sickle cell) using Hemoglobin Electrophoresis for client of African, Southeast Asian, or Mediterranean descent, unless the record contains documentation of previous testing.
o. Tay-Sachs for client of Jewish descent.
p. Offer Multiple Marker Screening testing if client is between 15-20 weeks gestation on initial prenatal visit.
q. Urine dipstick for glucose, protein, ketones, leukocyte esterase and nitrites
r. If at this initial visit the client is at 35-37 weeks' gestation, Group B streptococcus (GBS) current recommendations include vaginal and rectal GBS screening cultures at 35-37 weeks' gestation for ALL pregnant women. If the patient has a history of positive GBS in this pregnancy (i.e. GBS bacteruria)

or a previous infant with invasive GBS disease, screening cultures at 35-37 weeks' gestation are **not** necessary. In these cases, clearly mark the chart for GBS prophylaxis in labor.

9. Provide additional diagnostic testing as indicated.
10. Refer clients for genetic counseling if indicated.
11. If ALL these factors are present with client, give antenatal Rho (D) immune globulin.
    a. RH negative blood type
    b. Rh titers are negative
    c. The initial visit is at 28 weeks gestation with negative antibody screen
12. Provide intervention and referrals as indicated for substance and tobacco use and abuse.
13. Refer to mental health professional for psychosocial assessment if screening test is positive for depression or other mental health need.
14. Domestic Violence: Refer to Domestic Violence shelter or 800# if client's immediate safety is at risk. If client is unwilling, strongly encourage client to talk to an advocate in person or by telephone during the visit if this can be accomplished without jeopardizing safety.
15. Schedule follow-up visits based on individual needs, risk factors and weeks gestation. A client with an uncomplicated pregnancy should generally be seen every four weeks for the first 28 weeks of pregnancy, every two to three weeks until 36 weeks of gestation, and weekly thereafter.
16. TB:
    a. Interpretation of a positive Tuberculin Skin Test (TST). Refer to TA - TB 5: Tuberculin Skin Testing (TST), pages 5-7.
    b. For treatment of a positive TST refer to TA- TB 3: Targeted Testing and Treatment of Latent TB Infection (LTBI)
    c. Refer client to TB clinic for follow-up
17. Provide a written referral to a dentist for cleaning, oral hygiene instruction, early childhood caries prevention education, and possible

treatment of disease during the second trimester. Assist in locating affordable dental care, as needed.

18. Follow-up or facilitate follow-up with client who does not keep her appointment.

D. **Evaluation**

1. Evaluate and assure that the client assessment, education and counseling, interventions and plan of treatment have been completed.

2. Schedule follow-up visits based on individual needs, risk factors and weeks gestation.

E **Emergency**

1. Call 911 for life-threatening situation.

2. In all cases, contact M.D. or D.O. and follow orders.

F. **Documentation**

1. Document all client information on Prenatal Record 3142, page 1-5. If a similar DOH approved form is used, the information must include, at a minimum, the information identified on this form.

2. Document client needs on the Problem List, DH 3115. Documentation should include, but be not limited to these categories; physical, psychosocial, and environmental.

3. Document NO SHOW and follow-up for client who has not kept her appointment.

4. Document and plot weight on Prenatal Weight Gain Grid, DH 3086D.

5. Document the client's risk for underlying tuberculosis infection.

6. DOH Approved Forms:

a. Prenatal Record, DH 3142, pages 1-5

b. Florida's Healthy Start Prenatal Screening Instrument, DH 3134

c. Tell Us About Yourself, DH 3131

d. Adult and Adolescent Nutrition Assessment, DH 3086E

e. Prenatal Weight Gain Grid, DH 3086D

f. Statement of Objection to HIV Testing, DH 3161

g. Problem List, DH 3115

h. Medication Profile, DH 3116

i. Progress Notes, DH 3056

j. Referral Form, DH 5065

k. Domestic Violence Documentation Form, DH 3202

l. Other DOH approved forms as indicated

VIII. SUPPORTIVE DATA:

A. 2001 Compendium of Selected Publications, American College of Obstetrics and Gynecology ACOG)
B. Physician Coverage and Limitations Handbook, Florida Agency for Health Care Administration (AHCA).
C. Understanding the Health Culture of Recent Immigrants to the United States: A Cross-Cultural Maternal Health Information Catalog. American Public Health Association publication, 11/2000.
D. Best Practice Guidelines from specific program areas in DOH.

E. Florida Statute 384.31.

F. Revised CDC Guidelines (MMWR), Prevention of Perinatal Group B Streptococcal Disease, 08/16/02.

Subsequent Prenatal Visits

I. TITLE: Protocol for the management of the subsequent prenatal visits for pregnant clients

II. TYPE OF STANDARD: Service

III. OUTCOME: Improve pregnancy outcome resulting in a full-term, healthy, infant and a healthy mother

IV. PERSONNEL: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., L.P.N., R.D., L.D., and Aides/Techs, Health Educator within the constraints of their individual practice acts and protocols

A. Subjective and objective data gathering: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., R.D., L.D., L.P.N., Aide/Tech.

B. Assess and evaluate: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., R.D., L.D.

C. Planning/ Education/ Counseling: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., L.P.N., R.D., L.D, Health Educator

D. Intervention: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., L.P.N., R.D., L.D.

E. Evaluation: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., R.D., L.D.

F. Emergency: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N.

G. Documentation: M.D., D.O., C.N.M., A.R.N.P., P.A., R.N., L.P.N., R.D., L.D. Aide/Tech, Health Educator

V. COMPETENCIES: Health care providers must demonstrate knowledge of the responsibilities related to pregnancy according to the constraints of their individual practice acts and protocols. Professional personnel records should document training as appropriate for their individual practice acts. This should include didactic, practicum, and clinical training that covers pharmacology, clinical studies, patient selection, counseling, client management, complications, and side effects. The practitioner may practice independently in each skill area once proficiency is obtained in that skill area.

VI. AREAS OF RESPONSIBILITY:

A. Schedule client follow-up visits based on individual needs, risk factors and week of gestation. A client with an uncomplicated pregnancy should generally be seen every four weeks for the first 28 weeks of pregnancy, every two to three weeks until 36 weeks of gestation, and weekly thereafter.

B. Schedule client follow-up visits for a high-risk client as indicated to meet individual health care needs.

C. <u>Assessment</u>

1. The subjective factors are:

a. Assess the client's current status with Healthy Start.

b. Assess client for any changes in the nutritional assessment, including WIC status.

c. Assess client for any changes in risk factors for underlying tuberculosis infection. Refer to TA -TB 5: Tuberculin Skin Testing (TST), page 5.

d. Assess client for any changes in risk factors for Gestational Diabetes. Refer to listing of risk factors in TA: Maternal: Guidelines 2: Initial Prenatal Visit, page 3-4.

e. Assess client for previous history of birth of infant with invasive GBS disease.

f. Assess status of alcohol, tobacco, and other drug use.

g. Assess for signs of depression. The following two brief screening questions have been found to be highly predictive of depression. The screening test is considered positive if one or both depression symptoms are present.

(1) "During the past month, have you often been bothered by feeling down, depressed or hopeless?"

(2) "During the past month, have you been bothered by having little interest or pleasure in doing things?"

h. Assess for signs of domestic violence by asking the following client screening questions only when complete privacy of the patient is assured. Because abuse is so common in people's lives, we are now asking our female clients the following client screening questions:

(1) Are you in a relationship in which you are being hurt or threatened?

(2) Do you feel unsafe in your home?

If the client answers yes to either question, assess client further to fully evaluate abuse and clients safety. Refer to TA

General 15, Domestic Violence Screening, Identification and Referral.

i. Assess client for any changes in risk factors for exposure to STDs.

2. The objective factors are:

a. Update prenatal assessment. This assessment should include, at a minimum, the information on the Prenatal Record Form, DH 3142 page 4.

b. Review laboratory and diagnostic test results.

D. **<u>Planning/Education/Counseling</u>**

1. Develop all education and counseling to be culturally, educationally, and linguistically appropriate.

2. Provide education and counseling on pregnancy and childbirth at the appropriate gestational period. This information should include, at a minimum, the information on the Prenatal Record Form, DH 3142, page 5.

3. Provide HIV post-test counseling to all prenatal clients that received HIV testing. This counseling is outlined in TA-HIV/AIDS 9: Provision of HIV Counseling and Testing Services.

4. Educate and counsel the client on identified high-risk medical conditions.

5. Educate and counsel the client on good oral hygiene.

6. Educate and counsel the client on all diagnostic tests and procedures.

7. Educate and counsel the client on signs and symptoms of conditions that require urgent follow-up, e.g., preterm labor, decreased fetal movement, etc.

E. <u>Intervention</u>

1. Update and implement an individualized plan of treatment for the client to include, but not be limited to; services, treatment, additional diagnostic testing and/or procedures, and referrals appropriate for gestation. Additionally, the treatment plan is to include special client needs such as substance abuse, tobacco use, oral hygiene/dental care, domestic violence, and depression.

2. Update and implement an individualized and appropriate plan of

treatment for high-risk clients which should include, but not be limited to; extra services and testing, home visits, more frequent prenatal visits, and/or referral to a Regional Perinatal Intensive Care Center (RPICC) or other high risk providers.

3. Refer client to Healthy Start as indicated.

4. Follow up on WIC referral.

5. Address nutritional needs as indicated.

6. Glucose Tolerance Testing
    a. Test all prenatal clients at 24-28 weeks gestation unless previously tested positive for gestational diabetes at initial visit.
    b. Retest prenatal clients at high-risk for gestational diabetes at 24-28 weeks gestation if initial testing was negative.
    c. Refer to TA Guideline Chronic 9 Gestational Diabetes Mellitus.
7. Each client should receive the following laboratory tests.
    a. Routine:
    (1) Urine dipstick for glucose, protein, ketones, leukocyte esterase, and nitrites at each visit.
    (2) Hemoglobin/Hematocrit at 32-36 weeks
    (3) Syphilis (RPR, both quantitative and qualitative) at 28-32 weeks. Clients who have a reactive (positive) RPR must receive a treponemal test such as EIA-IGG or MHA-TP. Clients with a positive test should be tested monthly.
    (4) Repeat Hepatitis B Surface Antigen (HbsAg) at 28-32 weeks for patients who initially tested negative at the first visit but are considered high–risk for Hepatitis B.
    (5) If previous HIV test during this pregnancy was negative, another HIV test should be encouraged and offered at 28-32 weeks.
    (6) Sensitive test for Neisseria gonorrhea (GC), e.g., amplified test technology at 28-32 weeks.
    (7) Sensitive test for Chlamydia trachomatis, e.g., amplified test technology at 28-32 weeks.

(8) Wet mount and KOH or other test with improved sensitivity and specificity as indicated to differentiate vaginal infections, including bacterial vaginosis at 26-32 weeks.
(9) Group Beta Strep (GBS): Current recommendations include vaginal and rectal GBS screening cultures at 35-37 weeks' gestation for ALL pregnant women. If the patient has a history of positive GBS in this pregnancy (i.e. GBS bacteruria) **or** a previous infant with invasive GBS disease, screening cultures at 35-37 weeks' gestation are **not** necessary. In these cases, clearly mark the chart for GBS prophylaxis in labor. Collection of cultures between 35 and 37 weeks' gestation is recommended to improve the sensitivity and specificity of detection of women who remain colonized at delivery. Cultures before 35 weeks gestation may have a less predictive value for carrier status at delivery. Swabbing both lower vagina (not cervix) and rectum (i.e. through the anal sphincter) increases the yield substantially as compared with sampling the cervix or sampling the vagina without also swabbing the rectum. Because the lower vaginal area as opposed to cervical cultures are recommended, cultures should **not** be collected by speculum examination.
b. As indicated:
(1) Hemoglobin/Hematocrit at 24-28 weeks
(2) Genetic Studies
    (a) Chorionic Villus Sampling (CVS) at 10-13 weeks
    (b) Amniocentesis at 15 –20 weeks
(3) Offer Multiple Marker Screening testing if client is between 15-20 weeks gestation on initial prenatal visit.
(4) Rh Factor
    (a) Antibody screen and titers at 28 weeks if client is Rh negative.
    (b) Antibody screen and titers at 36 weeks if client is Rh negative and did not receive Rhogam at 28 weeks.

(5) Ultrasound
(6) UA for C&S if client has history or symptoms of UTI.
(7) Wet mount and KOH or other test with improved sensitivity and specificity, as indicated to differentiate vaginal infections, including bacterial vaginosis.

8. Provide additional diagnostic testing as indicated.
9. Refer clients for genetic counseling if indicated.
10. For Rh-negative clients, if Rh titers remain negative at 28 weeks gestation, give antenatal Rho (D) immune globulin.
11. Provide intervention and referrals as indicated for substance and tobacco use and abuse.
12. Refer to mental health professional for psychosocial assessment if screening test is positive for depression or other mental health concerns.
13. Domestic Violence: Refer to Domestic Violence shelter or 800# if client's immediate safety is at risk. If client is unwilling, strongly encourage client to talk to an advocate in person or by telephone during the visit if this can be accomplished without jeopardizing safety.
14. TB
    a. Interpretation of a positive Tuberculin Skin Test (TST). Refer to TA - TB 5: Tuberculin Skin Testing (TST), pages 5-7.
    b. For treatment of a positive TST refer to TA- TB 6: Treatment of Tuberculosis (TB) Disease, page 4.
    c. Refer client to TB clinic for follow-up.
15. Reinforce the need for ongoing good oral hygiene practices. Assist client in locating affordable dental care during the second trimester, as needed.
16. STD
    a. Monthly RPR and titers as indicated for clients found to be infected at initial screen.
    b. Follow-up sexual risk assessment.
    c. Treatment as appropriate with penicillin desensitization, if indicated.

17. Immunizations: The Advisory Committee on Immunization Practices (ACIP) General Recommendations on Immunizations (February 8, 2002/Vol. 51/No. RR-2, page 20) it states "The benefits of vaccinating pregnant women usually outweigh potential risks when the likelihood of disease exposure is high, when the infection would pose a special risk to the mother or fetus, and when the vaccine is unlikely to cause harm." Follow the latest recommendations of the ACIP, which currently includes the following vaccination recommendations for pregnant women:
    a. Td toxoid is indicated routinely for pregnant women. Previously vaccinated pregnant women who have not received a Td vaccination within the last 10 years should receive a booster dose. Pregnant women who are not immunized or only partially immunized against tetanus should complete the primary series. Although no evidence exists that tetanus and diphtheria toxoids are teratogenic, waiting until second trimester of pregnancy to administer Td is a reasonable precaution for minimizing any concern about the theoretical possibility of such reactions.

    b. Women in the second and third trimester of pregnancy have demonstrated to be at increased risk for hospitalization from influenza. Therefore, routine influenza vaccination is recommended for healthy women who will be beyond the first trimester of pregnancy (i.e., $\geq$ 14 weeks of gestation) during influenza season (usually December-March in the United States).
    c. Hepatitis B vaccine may be considered for susceptible pregnant women who are at risk hepatitis B infection.
18. Follow-up or facilitate follow-up with clients who do not keep their appointment.

F. **Evaluation**

1. Evaluate and assure that the client assessment, education and counseling, interventions and plan of treatment have been completed.

2. Schedule follow-up visits based on individual needs, risk factors and weeks gestation.

G. **Emergency**

1. Call 911 for life-threatening situation.
2. In all cases, contact M.D. or D.O. and follow orders

H. **Documentation**

1. Document all client information on Prenatal record 3142, pages 1-5. If a similar DOH approved form is used, it must include, at a minimum, the information identified on these forms.

2. Document client needs on the Problem List, DH 3115. Documentation should include, but be not limited to these categories; physical, psychosocial, and environmental.

3. Document NO SHOW and follow-up for client who has not kept her appointment.

4. Document and plot weight on the Prenatal Weight Gain Grid, DH 3086D.

5. DOH Approved Forms:
   a. Prenatal Record, DH 3142, pages 1-5

   b. Florida's Healthy Start Prenatal Screening Instrument, DH 3134

   c. Tell Us About Yourself, DH 3131

   d. Adult and Adolescent Nutrition Assessment, DH 3086E

   e. Prenatal Weight Gain Grid, DH 3086D

   f. Statement of Objection to HIV Testing, DH 3161

   g. Problem List, DH 3115

   h. Medication Profile, DH 3116

   i. Progress Notes, DH 3056

   j. Referral Form, DH 5065

   k. Domestic Violence Documentation Form, DH 3202

   l. Other DOH approved forms as indicated

VIII. SUPPORTIVE DATA:

A. 2001 Compendium of Selected Publications, American College of Obstetrics and Gynecology (ACOG).
B. Physician Coverage and Limitations Handbook, Florida Agency for Healthcare Administration (AHCA).
C. Understanding the Health Culture of Recent Immigrants to the United States: A Cross-Cultural Maternal Health Information Catalog. American Public Health Association publication, 11/2000.
D. Best Practice Guidelines from specific program areas in DOH.
E. Guidelines for Vaccinating Pregnant Women, Advisory Committee on Immunization Practices (ACIP), 10/1998.
F. The Advisory Committee on Immunization Practices (ACIP), General Recommendations on Immunizations, 02/2002.
G. Revised CDC Guidelines (MMWR), Prevention of Perinatal Group B Streptococcal Disease, 08/16/02.

APPENDIX D: INFORMED CONSENT FORMS

English Informed Consents

Study ID:Ame1_Pro00001071 Date Approved: 8/12/2010 Expiration Date: 6/2/2011

USF
UNIVERSITY OF
SOUTH FLORIDA

Informed Consent to Participate in Research

Information to Consider Before Taking Part in this Research Study

IRB Study # Pro00001071

Researchers at the University of South Florida (USF) study many topics. To do this, we need the help of people who agree to take part in a research study. This form tells you about this research study.

We are asking you to take part in a research study that is called: "A comparison of Latina women in Centering Pregnancy and individual prenatal care"

The person who is in charge of this research study is Tara Trudnak, MPH. This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge.

The research will be done at The Pinellas County Health Department

This research is being paid for in part by The University of South Florida College of Public Health, College of Public Health, Department of Community and Family Health

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Purpose of the study

The purpose of this study is to

- Complete a doctoral dissertation
- Compare maternal and birth outcomes of women in Centering Pregnancy and women in individual prenatal care at the Pinellas County Health department
- Understand perceptions of care among women in the Centering Pregnancy prenatal care program compared to their past experiences with individual prenatal care.

Study Procedures

If you take part in this study, you will be asked to

1) Participate in a one 20-25 in person interview that will be conducted in Spanish.
2) The interview will take place at the Pinellas County Health Department- Clearwater clinic and will be scheduled at your convenience.
3) The interview will be audio recorded but your name and any identifying information will be excluded. The audio recordings will be stored in a password protected audio file for three years before they are destroyed. Only members of the research team will have access to the audio recordings.

- Alternatives

You have the alternative to choose not to participate in this research study.

Benefits

We don't know if you will get any benefits by taking part in this study.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Compensation

We will not pay you for the time you volunteer while being in this study. However we will provide you with a small baby gift for your time and you will be entered into a raffle to receive a $50.00 gift card to Target.

Confidentiality

We must keep your study records as confidential as possible. We will store the audio recording for three years before they are deleted. We will not include any identifying information with the audio recording or interview transcript. Only research personnel will have access to the audio recording.

However, certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

- The research team, including the Principal Investigator, study coordinator, research nurses, and all other research staff.
- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety.) These include:
    - The University of South Florida Institutional Review Board (IRB) and the staff that work for the IRB. Other individuals who work for USF that provide other kinds of oversight may also need to look at your records.
    - The Department of Health and Human Services (DHHS).
    - the Florida Department of Health, people from the Food and Drug Administration (FDA)

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are.

Voluntary Participation / Withdrawal

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study, to please the investigator or the research staff. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study. Your decision to participate or not to participate will not affect your patient status or job status.

Questions, concerns, or complaints

If you have any questions, concerns or complaints about this study, call Tara Trudnak at 813-777-0840 (cell)

If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the Division of Research Integrity and Compliance of the University of South Florida at (813) 974-9343.

If you experience an unanticipated problem related to the research call Tara Trudnak at 813-777-0840 (cell)

If you have questions about your rights as a person taking part in this research study you may contact the Florida Department of Health Institutional Review Board (DOH IRB) at (866) 433-2775 (toll free in Florida) or 850-245-4585.

Consent to Take Part in this Research Study

It is up to you to decide whether you want to take part in this study. If you want to take part, please sign the form, if the following statements are true.

I freely give my consent to take part in this study. I understand that by signing this form I am agreeing to take part in research. I have received a copy of this form to take with me.

_____ _____

Signature of Person Taking Part in Study Date

_____

Printed Name of Person Taking Part in Study

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect.

I hereby certify that when this person signs this form, to the best of my knowledge, he or she understands:

- What the study is about.
- What procedures/interventions/investigational drugs or devices will be used.
- What the potential benefits might be.
- What the known risks might be.

_____ _____

Signature of Person Obtaining Informed Consent Date

_____

Printed Name of Person Obtaining Informed Consent

English Informed Consents

USF
UNIVERSITY OF
SOUTH FLORIDA

Consentimiento Informado para participar en Investigación

Información a Considerar Antes de Tomar Parte in este Estudio de Investigación

Estudio IRB # Pro00001071

Los investigadores de la Universidad del Sur de la Florida (USF) estudiamos muchos tópicos. Para hacer esto, nosotros necesitamos la ayuda de personas que acepten participar en un estudio de investigación. Este documento le explica a usted acerca de este estudio de investigación en particular.

Nosotros le estamos solicitando participar en un estudio de investigación llamado: "Estudio comparativo de Mujeres Latinas con Centering Pregnancy en equipo y Atención Prenatal Individual".

La persona a cargo de este estudio de investigación (Proyecto de Investigación) es Tara Trudnak, MSP. Esta persona es llamada el Investigador Principal. No obstante, otros investigadores del equipo pueden formar parte del estudio y actuar en representación del Investigador Principal.

La investigación será realizada en el Departamento de Salud del Condado de Pinellas.

Esta investigación está siendo financiada parcialmente por la Escuela de Salud Publica de la Universidad del Sur de la Florida, y el Departamento de Salud de la Comunidad y la Familia

Objetivo del Estudio

El propósito de este estudio es:

- Culminar una disertación doctoral
- Comparar resultados maternos y neonatales en mujeres en Centering Pregnancy en equipo y mujeres en Atención Prenatal Individual en el departamento de Salud del condado de Pinellas
- Entender la percepción de atención entre las mujeres en cuidado prenatal como Centering Pregnancy en equipo en comparación a sus pasadas experiencias con cuidados prenatales individuales.

Procedimiento del Estudio

Si tomas parte en este estudio, se te solicitará:

1. Participar en una entrevista personal de 20-25 minutos que será realizada en español.
2. La entrevista tendrá lugar en la Clínica de Clearwater del Departamento de Salud del condado de Pinellas y será programada a tu conveniencia.
3. La entrevista será grabada en audio pero excluirá tu nombre y toda información que te identifique. El audio grabado se depositará en un archivo de audio protegido con contraseña por tres años, luego de los cuales será destruido. Solo los miembros del equipo de investigación tendrán acceso a los audios grabados.

- **Alternativas**

Tú tienes la opción de escoger no participar en este estudio de investigación.

Beneficios

Nosotros no sabemos si tú tendrás algún beneficio por tomar parte en este estudio.

Riesgos o Incomodidad

Esta investigación es considerada de mínimo riesgo. Esto significa que los riesgos asociados con este estudio son iguales a los que tú encaras día a día. No existen riesgos adicionales conocidos para aquellas que participen en este estudio.

Compensación

Nosotros no te pagaremos por el tiempo que dediques voluntariamente a este estudio. Sin embargo, te compensaremos con un pequeño regalo para tu bebe por tu tiempo y participarás en una rifa de una tarjeta de regalo de Target por 50 dólares.

Confidencialidad

Nosotros debemos mantener tus archivos del estudio tan confidencial como sea posible. Nosotros depositaremos el audio grabado por tres años antes de que sea borrado. Nosotros no incluiremos ninguna información que te identifique en el audio grabado o en la entrevista escrita. Solo personal de investigación tendrá acceso a los audios grabados.

No obstante, ciertas personas pueden necesitar ver tus archivos del estudio. Por ley, toda persona que mire en tus archivos debe mantenerlos completamente confidenciales. Las únicas personas que serán autorizadas para ver esos archivos serán:

- El equipo de investigación, incluyendo el investigador principal, el coordinador del estudio, las enfermeras investigadoras y todos los otros miembros del equipo de investigación.
- Ciertas personas del gobierno y la Universidad que necesiten conocer más acerca de este estudio. Por ejemplo, las personas que supervisan este estudio pueden necesitar mirar tus archivos. Esto es hecho para asegurarnos de que nosotros estamos haciendo el estudio de la manera correcta. Ellos también necesitan estar seguros de que nosotros estamos protegiendo tus derechos y tu seguridad. Estos incluyen:
    - El Comité de Revisión Institucional (IRB en ingles) de la Universidad del Sur de la Florida y el equipo que trabaja para el IRB. Otras personas que trabajan para la USF proveyendo otras clases de supervisión pueden también necesitar miras tus archivos.
    - El Departamento de Salud y Servicios Humanos (DHHS en ingles).
    - El Departamento de Salud de Florida, personal de la Administración de Alimentos y Medicamentos. (FDA en ingles)

Nosotros podríamos publicar lo aprendido de este estudio. Si nosotros lo hacemos, no dejaremos a ninguna persona conocer tu nombre. Nosotros no publicaremos nada que pudiera dejar saber a las personas quien eres tú.

Participación Voluntaria / Retiro Voluntario

Tú debes participar en este estudio solo si quieres hacerlo voluntariamente. Tú no debes sentir que existe ninguna presión para participar en este estudio, para complacer al investigador o a los miembros del equipo. Tú eres libre de participar en esta investigación o retirarte en cualquier momento. No existe ninguna penalidad o pérdida de los beneficios que estás destinada a recibir si tú dejas de participar en el estudio. Tu decisión de participar o no participar no afectarán tu condición como paciente o tu trabajo.

Preguntas, Inquietudes o Quejas

Si tienes alguna pregunta, inquietud o queja acerca de este estudio, llama a Tara Trudnak al 813-777-0840 (celular).

Si tienes preguntas acerca de tus derechos como participante en este estudio, preguntas generales, o alguna queja, inquietud o asunto que quieras discutir con alguien que no pertenezca a la investigación, llama a la División de Integridad y Cumplimiento en Investigación de la Universidad del Sur de la Florida al 813-974-9343.

Si presentas algún problema inesperado relacionado con la investigación llama a Tara Trudnak al 813-777-0840 (celular).

Si tienes preguntas acerca de tus derechos como una persona participante en este estudio de investigación puedes contactar el Departamento de Salud del Comité de Revisión Institucional de Florida (DHO IRB en ingles) al (866) 433-2775 (llamada gratis en Florida) o al 850-245-4585.

Consentimiento para Participar en este Estudio de Investigación

Tú puedes considerar y decidir si quieres participar en este estudio. Si quieres participar, por favor firma este documento, si los siguientes enunciados son ciertos.

Yo libremente doy mi consentimiento de participar en este estudio. Yo entiendo que firmando este documento estoy acordando tomar parte en la investigación. Yo he recibido una copia de este documento para mi persona.

_____ _____

Firma de la Persona Participante en el Estudio Fecha

_____

Nombre Legible de la Persona Participante en el Estudio

Declaración de la Persona Obteniendo el Consentimiento Informado

Yo he explicado cuidadosamente a la persona participante en el estudio lo que él o ella pueden esperar.

Yo por medio de la presente certifico que cuando esta persona firmó este documento, a mi mejor entendimiento, él o ella entendieron:

- De qué se trata el estudio.
- Qué procedimientos/intervenciones/drogas experimentales o dispositivos serán usados.
- Qué beneficios potenciales podría haber.
- Qué riesgo desconocidos podría haber.

_____ _____

Firma de la Persona Obteniendo el Consentimiento Informado Fecha

_____

Nombre Legible de la Persona Obteniendo el Consentimiento Informado

APPENDIX E: INTERVIEW GUIDE

Interview Questions-English

The following guide was used qualitative phase (objective 3). These questions were formulated using the theory of social support constructs (emotional support, instrumental support, informational support, companionship support, appraisal/validation support).

CenteringPregnancy Assessment

Interview Guide

Introduction

Thank you for taking the time to talk with me today. I'm going to ask you a few questions about your experience with CenteringPregnancy compared to your experience with individual prenatal care that you've received in the past. I just want to remind you that you do not have to complete this interview and this is strictly volunteer. This will not affect the care that you receive at the health department.

If it is okay with you I am going to record our conversation. Our conversation will be kept confidential and your identity will not be disclosed in this research. I appreciate your honest answers.

Questions about experience with CenteringPregnancy

1) Tell me about your experience with prenatal care here at the health department.
   Probe: How did you like receiving your care through the CenteringPregnancy group?
2) Tell me about your favorite part of CenteringPregnancy.
   Probe: What were some things in your group sessions you liked best?
3) Tell me about your least favorite part about CenteringPregnancy.
   Probe: What were some things that you didn't like about your prenatal care?
4) What were one of the most important things you learned in the CenteringPregnancy sessions?
5) Do you think that CenteringPregnancy prepared you for your labor and delivery? (instrumental support, validation support)
   Probe: How so? Or Why not? What do you wish you would have known or understood?
6) Did you become friends with other women in the group? Did these friendships help you get through your pregnancy? (companionship support, emotional support)
   Probe: Do you still talk to other women in your group?
7) Do you feel your concerns and questions were addressed in the group by other women or by the health educator or doctor? (validation support)

Nutrition during pregnancy

8) What were some things that your health care provider talked with you about regarding nutrition and eating healthy during pregnancy?

Probe: Was this information helpful to you? What made it helpful or not helpful?

Probe: Did you use this information and make any changes in your diet?

Probe: Did you learn about nutrition and things that are good and bad to eat during pregnancy? What this important for you to learn?

Probe: Were the food examples and tips given to you appropriate for the types of foods you normally eat?

Physical activity during your pregnancy

9) What were some things that your health care provider talked with you about regarding physical activity or exercise during pregnancy?

Probe: Was this information helpful to you? What made it helpful or not helpful?

Probe: Did you use this information and make any changes in your daily activity?

Questions about your past experience with individual prenatal care (not CenteringPregnancy).

10) Tell me about your overall experience with prenatal care with individual prenatal care that you received in the past when you were pregnant before.

Probe: How did you like receiving your care individually compared to the CenteringPregnancy group?

11) What were some of the main differences between CenteringPregnancy and your experience with regular individual care?

Probe: What were some things in your individual care you liked and dislikes compared to CenteringPregnancy?

12) Did you learn more or less about your pregnancy and childbirth in individual care compared to CenteringPregnancy ?

13) Did you feel more or less comfortable in individual prenatal care compared to CenteringPregnancy ?

Probe: What were some things that made you feel more comfortable in either?

14) How did CenteringPregnancy prepare you for your labor and childbirth that may hve been different from what you learned or how you were prepared in your past experience with individual prenatal care?

15) Think about the information you received on nutrition during your pregnancy. Did you learn more, the same or less about nutrition in individual care compared to CenteringPregnancy ?

Probe: What are some things you learned about nutrition in the Centering groups that you didn't learn individual care or vice versa?

16) Think about the information you received on exercise during your pregnancy. Did you learn more, the same or less about exercise in individual care compared to CenteringPregnancy?

Probe: What are some things you learned about exercising in the Centering groups that you didn't learn individual care or vice versa?

17) Would you recommend CenteringPregnancy or individual prenatal care to a friend?

Probe: Why did you pick that choice? What are some reasons you would recommend that choice?

18) If you have another baby would you chose CenteringPregnancy or individual prenatal care?

Probe: Why did you pick that choice? What are some reasons you would recommend that choice.

Interview Questions-Spanish

Evaluación de CenteringPregnancy en Equipo
Guía para Entrevista

Introducción: Gracias por tomarte este tiempo para hablar conmigo hoy. Voy a hacerte unas pocas preguntas acerca de tu Experiencia con el CenteringPregnancy en equipo en comparación con tu experiencia en atención prenatal individual vivida en el pasado. También quiero recordarte que no tienes que completar esta entrevista si no quieres y que la misma es estrictamente voluntaria. Tu decisión no afectará los cuidados que recibes en el Departamento de Salud.
Si te parece bien voy a grabar nuestra conversación. Nuestra conversación será mantenida confidencial y tu identidad no será mostrada en esta investigación. Yo agradezco tus respuestas honestas.

Preguntas acerca de la experiencia con CenteringPregnancy de forma Grupal

1) Háblame acerca de tu experiencia de cuidados prenatales en el departamento de salud.
   Probe: Que te gustó de recibir tus cuidados a través del grupo de CenteringPregnancy en equipo?
2) Háblame acerca de tu actividad favorita en CenteringPregnancy en equipo.
   Probe: Cuales fueron las actividades de tus sesiones de grupo que más te gustaron?
3) Háblame acerca de la actividad/es que menos te gustó en CenteringPregnancy en equipo.
   Probe: Cual fue la actividad/es que no te gustó en tu reciente cuidado prenatal?
4) Dime qué fue lo más importante que aprendiste en las sesiones de CenteringPregnancy en equipo?
5) Piensas que CenteringPregnancy en equipo te preparó para tu trabajo de parto y parto?
   Probe: Cómo fue eso? O por qué crees que no sucedió? Qué cosas desearías haber conocido o entendido durante las sesiones?
6) Hiciste amigas entre las compañeras del grupo? Te ayudaron esas nuevas relaciones de amistad a superar tu embarazo?
   Probe: Todavía mantienes relación con alguna de las mujeres de tu grupo?
7) Sientes que tus inquietudes o preguntas fueron dirigidas adecuadamente por las otras compañeras de grupo o por tu educador de salud o doctor?

Nutricion durante el embarazo

8) Menciona algunas de las cosas, de las que tu proveedor de salud te habló, respecto a nutrición y comer saludable durante tu embarazo?

Probe: Fue esta información de ayuda para ti? Que la hizo útil o no?

Probe: Usaste esa información e hiciste algún cambio en tu alimentación?

Probe: Aprendiste acerca de nutrición y cosas que son buenas y malas de comer durante el embarazo? Por que fue importante para ti aprender eso?

Probe: Fueron los ejemplos de comidas y pequeños consejos dados apropiados para ti y el tipo de comida que normalmente comes?

Actividad Fisica durante tu embarazo

9) Menciona algunas de las cosas que tu proveedor de cuidados de salud hablo contigo respecto a la actividad física o ejercicio durante el embarazo?

Probe: Fue esa información útil para ti? Que la hizo útil o no?

Probe: Usaste esa información e hiciste algunos cambios en tu actividad diaria?

Preguntas acerca de tu experiencia anterior con cuidados prenatales individuales y CenteringPregnancy

10) Háblame acerca de tu experiencia en cuidado prenatal, respecto a la atención prenatal individuales que recibiste cuando estuviste embarazada previamente.

Probe: Que te gustó de los cuidados prenatales individuales recibidos en comparación con el CenteringPregnancy en equipo?

11) Cuales fueron algunas de las principales diferencias entre el CenteringPregnancy en equipo y tu experiencia con los cuidados prenatales individuales?

Probe: Que cosas te gustaron o que cosas no te gustaron en tu atención prenatal individual comparada con el CenteringPregnancy en equipo?

12) Aprendiste más o menos acerca de tu embarazo y el nacimiento del bebe en la atención prenatal individual en comparación con el CenteringPregnancy en equipo?

13) Te sentiste más o menos cómoda en la atención prenatal individual en comparación con el CenteringPregnancy en equipo?

Probe: Menciona algunas de las cosas que te hicieron sentir más cómoda en cualquier de los dos?

14) Que cosas aprendiste acerca del trabajo de parto y el parto en el grupo de CenteringPregnancy comparado con tu anterior experiencia en trabajo de parto y parto?

15) Piensa en la información nutricional que recibiste durante tus embarazos. Aprendiste mas, lo mismo o menos acerca de nutrición en atención individual comparada con el CenteringPregnancy en equipo?

Probe: Menciona algunas cosas que aprendiste de nutrición en tu CenteringPregnancy en equipo que no aprendiste en la atención individual y viceversa?

16) Piensa en la información que recibiste de actividad física y ejercicio durante tus embarazos. Aprendiste mas, lo mismo o menos en cuanto al ejercicio en la atención individual en comparación con el CenteringPregnancy en equipo?

Probe: Menciona que cosas aprendiste acerca del ejercicio en el CenteringPregnancy en equipo que no aprendiste durante la atención individual y viceversa?

17) Recomendarías el CenteringPregnancy en equipo o la atención prenatal individual a una amiga?

Probe: Por qué hiciste esa elección? Dime algunas de las razones por las que recomendarías esa opción?

18) Si tuvieras otro embarazo, escogerías CenteringPregnancy en equipo o atención prenatal individual?

Probe: Por qué escogiste esa opción? Menciona alguna de las razones por las que escogerías esa opción?

ABOUT THE AUTHOR

Tara E. Trudnak grew up in Clarks Summit, Pennsylvania and earned a B.A. degree in Anthropology from Muhlenberg College in Allentown, Pennsylvania. She moved to Florida in 2005 and earned her M.P.H in Global Health from the University of South Florida, during which time she completed her field experience and research in the Dominican Republic. She continued on to her doctoral program in the Department of Community and Family Health in the College of Public Health at the University of South Florida. She currently works for a non-profit health foundation and hopes to continue her career in the field of maternal and child health.