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Designing, Implementing, and Evaluating a Community-Based Antenatal Education Program

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Designing, Implementing, and Evaluating a Community-Based Antenatal Education Program

Jennifer Lynn Zachary

A Dissertation Submitted to the Graduate Faculty of

GRAND VALLEY STATE UNIVERSITY

In

Partial Fulfillment of the Requirements

For the Degree of

Doctor of Nursing Practice

Kirkhof College of Nursing

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Dedication

This scholarly project is dedicated to my husband, Brandon Zachary. Without your endless love, support, and encouragement, this scholarly project would not have been possible. Thank you for being my best friend, biggest supporter, and for helping me to attain one of my greatest accomplishments. I would also like to dedicate this scholarly project to my children, McKenzie and Oliver Zachary, whom I love beyond measure. You two are my inspiration in all that I do. To my parents, Marti and Terry Key, without the foundation you gave me growing up, I never would have accomplished a goal of this size. Thank you for always pushing me to do my best in all that I do.

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Abstract

The United States has higher fetal and infant mortality than the majority of developed countries around the world. As of 2008, the United States was ranked 27th internationally for infant mortality among all developed countries (MacDorman, Hoyert, & Mathews, 2013). Infant morbidity and mortality is associated with numerous factors within a country; including access and quality of health care, maternal health status, public health, and socioeconomic status.

Despite recent declines in infant mortality across the country, the infant mortality rates for both Michigan and the project county remain alarmingly higher than the national averages. It is clear that innovative measures to decrease risk factors associated with infant morbidity and mortality are desperately needed in the county. The purpose of this project was to design, implement, and evaluate an innovative, community-based, antenatal education program that appealed to the high risk pregnant women in the county. The main goal of the antenatal education program was to educate pregnant women about various risk factors associated with adverse birth outcomes, infant morbidity, and infant mortality. A secondary goal was to provide a venue to promote the development of social support among pregnant women in the county, while linking them to community resources that may help them have a more successful pregnancy.

An eight week community-based antenatal education class was developed, implemented, and evaluated by a Doctor of Nursing (DNP) student. After identifying the practice problem, the DNP student completed an integrative literature review to analyze, critique, and synthesize relevant, evidence-based literature to determine if there is a sufficient evidence base to guide practice. Next, the DNP student began developing the class curriculum. Topics to be included

in the curriculum were chosen based on the results of the integrative literature review, the objectives of the Healthy Babies Healthy Start grant, and the principles of adult learning.

The antenatal education program was launched on Tuesday, January 26, 2016 and completed on Tuesday March 22, 2016. The goal was that four to six pregnant women would attend each antenatal education class and the main indicator to determine the effectiveness of the antenatal education program was participant satisfaction and perceived self efficacy. A range of three to seven pregnant women attended each antenatal education class and satisfaction feedback was collected after six of the eight classes and at the end of the project. The satisfaction feedback was analyzed throughout the project to be used for quality improvement in the current class and for future classes. Self-efficacy feedback was also collected at the end of the project to determine if the antenatal education program increased the pregnant women's perceived ability to decrease risky health and social behaviors and engage in health promotion behaviors outside of the class.

Overall, the pregnant women indicated that they were satisfied with the class and felt that the class helped them have healthier pregnancies. They perceived themselves as being able to decrease risky health and social behaviors and engage in health promotion behaviors outside of the class. Feedback was gathered through weekly surveys handed out at the end of six of the eight classes and utilized for quality improvement throughout the project and for future educational classes.

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CHAPTER 1

INTRODUCTION

One of the most critical indicators of the health of a country is infant morbidity and mortality rates (MacDorman & Mathews, 2008; MacDorman, Hoyert, & Mathews, 2013). While the 20th century marked a time of significant decline in infant mortality across the United States, the decline in infant mortality plateaued from 2000 to 2005 and then continued to decline from 2005 to 2013. Despite this recent decline in infant mortality, the United States still has higher fetal and infant mortality than many of the developed countries around the world. As of 2008, the United States was ranked 27th internationally for infant mortality among all developed countries, indicating that the nation's overall health status is worse than that of much of the developed world. Infant morbidity and mortality are associated with various factors, ranging from the individual level to the community and national levels, and include access to and quality of health care, maternal health status, public health, and socioeconomic status. (MacDorman & Gregory, 2015; MacDorman et al., 2013; Matthews, MacDorman, & Thoma, 2015; Zolotor & Carlough, 2014).

Practice Problem and Persons Affected

Adverse birth outcomes are one of the most significant risk factors associated with infant mortality. Of all adverse birth outcomes, gestational age at the time of birth, specifically preterm delivery, is one of the most critical indicators and risks for infant morbidity and mortality (Matthews et al., 2015). Preterm delivery is defined as birth before 37 weeks gestation. There are more 500,000 preterm deliveries in the United States every year (Zolotor & Carlough, 2014). In 2013, 67% of the infant deaths in the United States occurred among the 11.4% of infants born prematurely that year. In 2013, infants born at 37 to 38 weeks gestation had 63% higher

mortality rates than infants born at full term, or 40 weeks gestation. Pre-term birth related causes of mortality made up 36% of all infant deaths while Sudden Infant Death Syndrome made up 15% of all infant deaths that year (Matthews et al., 2015).

Low infant birth weight is another important risk factor for infant mortality. Infant mortality rates are highest among the smallest infants and decrease as infant birth weight increases. Infant mortality rates vary between male and female infants as well. In 2013, infant mortality was 21% higher for males, 6.51 per 1000 live births, than females, 5.39 per 1000 live births. Infant mortality for multiple births was almost five times the rate of single births, and was nearly 26 out of 1000 live births (Matthews et al., 2015).

In 2011, the leading causes of infant death in the United States were: congenital malformations followed, in order, by short gestation and low birth weight, Sudden Infant Death Syndrome, maternal complications, and finally, unintended injuries. In total, these individual causes of death in infants made up the majority, 56%, of all infant deaths in the United States that year (Chesser, Woods, Melhado, & Steventon, 2015; MacDorman et al., 2013).

In addition to adverse birth outcomes, there are several maternal social and health behavior risk factors that contribute to infant morbidity, mortality, and poor birth outcomes in the United States. Maternal social and health behaviors that have the strongest association with adverse birth outcomes, such as preterm birth and low birth weight, are: smoking, alcohol use, drug use, being homeless, being a victim of domestic violence, obesity, and teen pregnancy States (Kothari, Wendt, Liggins, Overton, & Sweezy, 2011). However, with the proper community resource utilization and antenatal education regarding risky health behaviors, unsafe maternal health behaviors can be decreased or eliminated, decreasing the risk of adverse birth outcomes, such as infant of preterm births and low birth weight. Decreasing and preventing

adverse birth outcomes will ultimately decrease infant morbidity, mortality, and poor birth outcomes in the United States (Kothari, Wendt, Liggins, Overton, & Sweezy, 2011).

In addition to having higher infant mortality rates than most developed countries, there is a disparity in the United States with regards to infant mortality related to race, ethnicity, maternal educational level, and marital status that can be seen at the community, state, and national levels in the United States. In underserved communities with larger populations of minorities and those of lower socioeconomic levels, infant mortality is often higher than the national infant mortality rates (Chesser et al., 2015). At the national level, the African-American infant mortality rate in the United States is 2.5 times higher than that of Caucasians, and African-American women have four times higher pregnancy related mortality than the general population (Fiscella, 2004). Due in part to maternal social and health behaviors and adverse birth outcomes, as described above, the United States continues to have higher infant mortality rates than most of the developed countries around the world, with the most alarming rates of infant mortality occurring among the African-American population (Kothari et al., 2011).

Data Supporting the Magnitude of the Problem

In 2000, the infant mortality rate for the United States was 6.91 out of 1000 live births and only declined to 6.87 out of 1000 live births from 2000 to 2005. From 2005 until 2011, there was a significant decline in infant mortality of 12% and the infant mortality rate was 6.05 out of 1000 live births in 2011 (MacDorman et al., 2013). In 2013, the infant mortality rate declined further to 5.96 out of 1000 live births, a 13% decrease since 2005. During these years, there continued to be a large racial disparity in infant mortality between African-American mothers and Caucasian mothers. In 2013, the African-American infant mortality rate was 11.11 out of every 1000 births while the Caucasian infant mortality rate was 4.07 out of every 1000 live

births. The African-American infant mortality rate is more than twice the Caucasian infant mortality rate and almost twice the national average for the general population (Matthews et al., 2015).

Despite recent declines in infant mortality nationally, the infant mortality for both Michigan and the county, where this scholarly project was being implemented, remain considerably higher than the national averages; with African-American infant mortality rates being the highest. In 2005, Michigan's infant mortality rate was 7.89 out of every 1000 live births and decreased by only 10.6% over the next eight years to 7.05 out of every 1000 live births in 2013 (Matthews et al., 2015). From 2000 to 2005, the infant mortality was 9.0 out of 1000 live births in the county where the scholarly project is being implemented (Kothari et al., 2011). From 2006 to 2010, the African-American infant mortality in the county was 18.7 out 1000 live births. The African-American to Caucasian infant mortality rate ratio was 3.5 during this time period. The racial disparity in this county for infant mortality is significantly higher than the racial disparity in the state and that in the nation; in fact, it is more than 1.5 times that of the national African-American to Caucasian infant mortality rate ratio. Looking at the nation's African-American to Caucasian infant mortality rate ratio during the same time period, it was 2.2 while Michigan's was slightly higher at 2.7 (Kothari, Zielinski, James, Charoth, & Sweezy, 2014).

Considering the above data, it can be seen that African-Americans have increased risk for poor maternal and infant health outcomes during and after pregnancy. Consequently, more African-American infants are being born at earlier gestational ages and smaller weights than babies of other races within the county (C. Kothari, personal communication, December 11, 2015). The exact risk factors contributing to the increased infant mortality among African-

American infants needs to be identified and preventive measures, such as antenatal education, community resource referrals and utilization, social support, and improved health care for this high risk population need to be a major focus of health care initiatives in the county.

Healthy Babies Healthy Start

High infant mortality rates, especially among African-Americans, spurred the implementation of the Healthy Babies Healthy Start program in the county. (T. Bautista, personal communication, October, 2015). This program is a federally funded program within the county's Health and Community Services Department. Healthy Babies Healthy Start is part of a national initiative, the National Healthy Start Program, which was created in 1991 in response to national infant mortality rates at that time. Promoting empowerment at the individual, community, and organizational level is one of the key objectives of the National Healthy Start Program. There is also a heavy emphasis on community involvement and the National Healthy Start Program encourages local programs to focus on community participation, improving community problem-solving, offering leadership training to community members, and being creative in the use of resources. Local programs should not only provide service integration for women and infants but also be able to show the impact the program has had on community development and empowerment (Minkler, Thompson, Bell, & Rose, 2001).

The mission of the Healthy Babies Healthy Start program in this county is to decrease infant mortality rates and eradicate racial disparities in both maternal and infant health. The goal of Healthy Babies Healthy Start is to provide services for high risk women and their families during pregnancy and the interconceptional phases. These services include: outreach and case finding, case management, education, risk screening, referral, infant spacing, and preconceptional care (Kalamazoo County Government, 2016). While education is one of the

objectives of the program, there is currently no antenatal education program being offered through the Healthy Babies Healthy Start in the county this project is being implemented (T. Bautista, personal communication, October, 2015).

Antenatal Education

When looking at the history of antenatal education in the United States, prior to the development of formal antenatal education programs, information regarding pregnancy and childbirth has traditionally been given to pregnant women by family members and other women in the community (Renkert & Nutbeam, 2001). Formal antenatal education programs were not developed in the United States until the 1960s. The main goals of the early antenatal education programs were to provide prenatal education regarding pregnancy, labor, and birth (Koehn, 2002). Antenatal education programs were created to decrease the pain associated with labor and improve birth outcomes, however, much of the research conducted regarding the outcomes of antenatal education programs indicates more research is needed to evaluate the effectiveness of antenatal education on decreasing pain, improving birth outcomes, and increasing social support among pregnant women (Svensson, Barclay, & Cooke, 2006).

While antenatal education programs are very common in the United States, there is no standardized set of guidelines or recommendations for antenatal education programs. As a result of the lack of standards and guidelines, antenatal education classes tend to vary across settings in length, goals, focus, and content (Renkert & Nutbeam, 2001). Despite this, antenatal education programs provide an important opportunity to promote social support among pregnant women and to educate them about healthy behaviors that may decrease infant morbidity and mortality risk (Lu et al., 2003).

Intervention

When considering the practice problem and the data supporting the magnitude of the problem, it is apparent that there is a significant need for more education and social support for high risk pregnant women in the county in which the intervention is being implemented, namely pregnant African-American women. Historically, nurses have been known for addressing gaps in health care by providing services to those with the greatest healthcare disparities, like those seen in this county (Cronenwett et al., 2011). Therefore, an evidence-based antenatal education program developed, implemented, and evaluated by a doctor of nursing practice student is one potential intervention that may address the educational and social support needs for high risk pregnant African-American women in this county.

Since there are no standardized guidelines for antenatal education in the United States, an antenatal education curriculum needed to be developed that meets the needs and expectations of the target population, while decreasing perceived barriers to attendance. Nolan (2009) conducted a review of qualitative studies to determine what educational approaches were most desired by and helpful to pregnant women. Thirteen studies from various countries were included in the review. The authors found that overall, pregnant women reported that they have a preference for small-group antenatal education classes that allow for interaction among the participants, question asking, and personal experience sharing. This indicates that the social support aspect of an antenatal education program is just as important as the educational aspect for pregnant women.

While it is generally encouraged, women in the United States are not required to attend antenatal education during pregnancy. Lu et al. (2003) found that like infant mortality, significant disparities in attendance at antenatal education programs exist among

sociodemographic classes in the United States. The authors found that African-American women and those of lower socio-economic status were less likely than Caucasian women and those of higher socio-economic class to attend antenatal education. Since a large percentage of the high risk pregnant women in the county this project is being implemented are African-American, it was important to use an innovative approach to design a class that attracts, engages, and meets the needs, availability, and interests of these high risk pregnant women in this county (Kothari et al., 2011).

Conclusion

Infant morbidity and mortality is a significant problem in the United States with many individual, community, and national risk factors. Antenatal education is one intervention that can be used to educate pregnant women about risk factors that increase infant morbidity and mortality, thereby decreasing risks for infant mortality in the United States. Chapter 2 provides an integrative literature review regarding the effects of antenatal education on pregnancy and social support among pregnant women.

CHAPTER 2

INTEGRATIVE LITERATURE REVIEW

As previously mentioned, there are no specific guidelines for antenatal education programs in the United States (Renkert & Nutbeam, 2001). However, antenatal education provides an important opportunity for health care providers to educate pregnant women regarding health promotion and risk reduction during and after pregnancy, ultimately promoting healthier pregnancies and decreasing adverse birth outcomes. A significant need has been identified for more education and support for high risk pregnant women in the county that this project will take place in, specifically among pregnant African-American women. The aim of this literature review is to analyze, critique, and synthesize the current literature available regarding the benefits of antenatal education in regards to increasing healthy pregnancies and social support, especially among high-risk pregnant women and pregnant African-American women.

Methods

The following six electronic databases were queried for articles to be included in this integrated literature review: CINAHL, PsychINFO, PubMed, Medline, Proquest, and Google Scholar, along with the reference lists from all of the selected articles. Several keywords and MeSH terms were identified and included in the search: “prenatal education,” “antenatal education,” “birth outcomes,” “fetal and infant morbidity,” “fetal and infant mortality,” “maternal risk,” “high risk pregnancy,” “social support,” “African-American,” “pregnant women,” and “prenatal support group.” Inclusion criteria were articles written in English, full text documents available for each article, and human studies. Since the highest levels of infant and fetal mortality in the county are among high risk pregnant women, especially pregnant

African-American women, African-American and high risk pregnancies were included as search terms. Participants of the studies had to be pregnant women and participating in studies evaluating the benefits or effectiveness of prenatal education on pregnancies, birth outcomes, maternal knowledge, anxiety, satisfaction, social support, and self-efficacy. No risk of bias as a result of excluding men from the studies was identified as men cannot bear children. Any type of prenatal or antenatal education was considered for this review. Primary outcomes were identified as healthy pregnancies, increased maternal knowledge regarding pregnancy, labor, delivery, and the post-natal period, decreased anxiety regarding the pregnancy and baby, increased self-efficacy, and increased social support through individual or group antenatal education sessions.

Initially, 41 articles were identified as potentially meeting the inclusion criteria for this review through reading the titles and abstracts for each article. After reading each of the 41 articles in its entirety, nine articles actually met the inclusion criteria and were selected for inclusion in this integrated literature review. The remaining 32 articles were excluded as they were determined not to meet the inclusion criteria. Data were extracted from the results sections of each of the nine articles selected for the review and entered into the evaluation and synthesis table, see Appendix A. The data were then rechecked for completeness and accuracy by the author.

Results

This integrative literature review explores the effect of antenatal education on healthy pregnancies. Results for each of the nine individual studies included in the review are detailed below and have been organized by study design. Two of the studies included in the review are randomized controlled trials, two are non-randomized controlled studies, one is a non-

randomized study, one is a prospective observational study, one is an exploratory study, one is a qualitative study, and one is a cross-sectional study. In addition to the nine articles used for this review, three literature reviews were examined and will be described in the discussion section below.

Klerman et al. (2001) conducted a randomized controlled study to assess whether augmented prenatal care improves pregnancy outcomes, patients' knowledge of their risks, satisfaction with care, and health promoting behaviors of high risk, Medicaid eligible, African-American women. A total of 619 women were included in the study and randomly assigned to either an experimental group or control. 318 of the women were assigned to the experimental group and received augmented care that included prenatal appointments scheduled every two weeks until the last month of pregnancy when appointments were scheduled on a weekly basis and 40 minute group antenatal classes before or after each prenatal appointment. The antenatal education classes provided education regarding pregnancy, healthy behaviors to decrease risk, and peer social support. 301 women were assigned to the control group and received standard prenatal care that was provided by either the county health department or the University of Alabama's obstetrics department and did not include an antenatal education class.

Data regarding patient care and birth outcomes were collected from clinic records and a computerized database that included health information for all Medicaid patients. A structured postpartum interview was conducted with the women in both the experimental and control groups during the first and second year of the study to ask participants about their perceptions of prenatal care, knowledge regarding risk conditions, motivation to improve risk conditions, and pregnancy outcomes. Data from the first interview was not included in the study as there were

inconsistencies in the administration of the interviews. To prevent these issues the following year, interviewers were blind to the study group.

The authors found that high-quality prenatal care that focuses on education, health promotion, and social support significantly improved the pregnant women's knowledge regarding risks and perceived mastery, but there was not a significant change in the number of low birth weight infants among the women in the study. Strengths of this study were that it was a randomized study, had a control group, and included a relatively large sample. Also, interviewers were blind to the study group during the second year's survey, to prevent issues with bias and validity (Melnyk & Fineout-Overholt, 2011). Weaknesses were that the validity and accurateness of self-report cannot be guaranteed (Polit & Beck, 2012) and that the data collected during the survey after the first year of the study was not able to be used in the study due to concerns regarding validity.

Kistin, Benton, Rao, and Sullivan (1990) conducted a randomized, controlled, prospective study to determine whether individual or group prenatal education classes increase breastfeeding rates among low-income African-American women. A total of 159 pregnant, African-American women, who were attending the Cook County Hospital Midwife Prenatal Clinic, and were less than 24 weeks pregnant were included in the study. Of the 159 women who began the study, 130 of them completed it. Women who attended the Monday clinic were randomly assigned to either group breastfeeding classes or individual classes. Women who attended the Friday clinic were assigned to the control group. The initial sample demographics of pregnant women in all three groups were similar in regards to education, age, primigravidas, multigravidas, those with prior breastfeeding experience, and those who planned to work after birth. However, the dropouts from the control group tended to be those who were older and

reported fewer intentions to breastfeed than dropouts from the other two groups. Despite this, it was determined that it was unlikely that all of the breastfeeding women in the control group were lost through dropouts.

Data were collected through interviews at each woman's initial contact with the prenatal clinic and within 4 days of delivery. The first interview was conducted at the pregnant women's first appointment at the clinic and contained questions regarding demographics, how each woman fed previous babies, plans for how she would feed the infant she was currently pregnant with, and social and environmental constraints. The post-partum interview occurred four days after delivery and before the women and infants were discharged from the hospital. This interview included questions regarding birth outcomes, chosen method of feeding the new infant, attitudes toward chosen feeding method, and hospital practices that affect each woman's choice on how to feed her infant. Women in all three of the study groups, who planned to breastfeed were intermittently followed up with through either telephone calls or preaddressed calls until breastfeeding was done.

The results indicated that prenatal breastfeeding education was associated with an increase in the incidence of breastfeeding. The group breastfeeding class, individual education class, and control group all had similar numbers of pregnant women who planned to breastfeed their infants prior to the study, however, 23% of the women in the control group, 45% of women in the group education, and 50% of the women in the individual education initially breastfed at birth. The authors found that women who attended group antenatal education classes, breastfed for longer than both those in the control group and who attended individual antenatal education classes. Strengths of this study were that the experimental groups were randomly assigned and there was a control group included in the study, although participants in this group were not

randomly assigned. Limitations to this study were that the control group was not randomly assigned, the study had a small sample size with quite a few of the participants dropping out before the conclusion of the study, although there was less than a 20% dropout rate, which is generally considered acceptable in randomized controlled studies (Melnyk & Fineout-Overholt, 2011). Additionally, data were collected through self-report, which is not always an accurate or validated method of data collection (Polit & Beck, 2012).

Turan & Say (2003) performed a non-randomized controlled study to examine the effect of a community-based antenatal education program on vaginal births, maternal and infant health behaviors, and contraceptive use after birth on first-time pregnant women in Istanbul, Turkey. The educational program consisted of eight daytime, two hour educational classes held over the span of a month. The classes were free of charge and women who completed all eight classes received a certificate of completion and a free gift.

A total of 257 pregnant women were included in the sample, a convenience sample of 100 women who attended a community-based antenatal education program for first-time pregnant women were included in the experimental group. For the control group, first time moms who had given birth at the same hospitals as many of the women in the experimental group were contacted three months after birth and asked to participate in a survey until a target number of women were recruited from each hospital selected for this study. A total of 157 women agreed to participate in the control group for the study. The authors found that there were some important differences between the experimental and control groups. Participants who attended the antenatal education classes were found to be a few years older than women in the control group when they gave birth, had a higher level of education, and were more likely to have greater access to resources as a result of being born in Istanbul.

Outcome data for the experimental group were collected through a pre and post-test to measure knowledge gained regarding health during pregnancy, birth, and the postpartum period, along with an in home postpartum interview that was held about two and a half to three months after birth to examine antenatal care received, birth experiences, infant feeding, health care utilization, and use of contraception after birth. Outcome data for the control group were collected through an in home postpartum interview held about two and a half to three months after birth to examine antenatal care received, birth experiences, infant feeding, health care utilization, and use of contraception after birth. The authors found that the participants who attended the community-based antenatal education program had significantly higher rates of breastfeeding, post-natal infant check-ups, and contraceptive use for future unwanted pregnancies. One weakness of this study is the fact that the participants were not randomly assigned to the experimental versus control group which increases the likelihood that there will be differences between the two groups before the intervention. The pre-test/post-test design decreases this risk, but is still not as effective as a randomized, controlled trial (Melnyk & Fineout-Overholt, 2011).

Serçekuş & Mete (2010) published a non-randomized quasi-experiment based on the Roy Adaptation Model to evaluate the effects of antenatal education on maternal prenatal and maternal postnatal adaptation. In the study, adaptation was defined as a positive reaction to a stimulus. A total of 120 nulliparous women from a large city in Turkey were included in the study between 2006 and 2008. Participants were divided into two experimental groups, individual antenatal education or group antenatal education, and one control group, which received standard prenatal care.

Antenatal education classes were advertised through posters and the internet and pregnant women applied for the educational classes. The women were able to choose whether they wanted to participate in group antenatal education or individual antenatal education. Group antenatal education consisted of two hour educational classes over a seven week time period and individual antenatal education consisted of two hour educational classes over a five week period of time. The same educational content was presented to both the group and individual antenatal education groups. The control group was made up of women who attended an outpatient maternity clinic at an urban university hospital. The sample size was determined prior to the start of the sample so that the study recruited adequate sample sizes. It was determined that each group should have at least 32 participants to achieve a power of 80%. However, more participants were recruited to account for potential dropouts. There were no significant differences in demographics between the experimental and control groups.

Data collection included demographics and the Prenatal Self-Evaluation Questionnaire (PSEQ) prior to the onset of the study; the PSEQ at the end of the education period for the experimental groups and at a similar time for the control group; and the Postpartum Self-Evaluation Questionnaire (PPSEQ) at six weeks postpartum. The internal consistency of the PSEQ was reported as 0.83, while that of the PPSEQ was 0.88. At the outset of the study, the authors found that women who received either group or individual antenatal education had significantly lower scores on the prenatal self-evaluation questionnaires than the control group, indicating better prenatal adaptation for those in the experimental groups than those in the control group. There were no significant differences in the scores of the postpartum self-evaluation questionnaires. The authors concluded that there were significant increases in maternal prenatal adaptation in the two experimental groups as compared to the control group

($P < 0.01$), but no significant differences in postnatal adaptation between the experimental and control groups ($P = 0.077$).

Several strengths were noted in this study. First the sample sizes were calculated before the onset of the study to ensure adequate sample sizes were used in the study. Additionally, a control group was included in the study to help determine the actual relationship between the independent and dependent variables. However, one weakness of that is the participants were not randomly assigned to control and experimental groups, which is the most effective way to control for individual characteristics between the control group and experimental group (Polit & Beck, 2012).

Hillier and Slade (1989) performed a non-randomized study to examine the changes in antenatal knowledge, anxiety, and confidence in women who attended hospital or community-based antenatal education classes. A total of 67 primiparous women who completed antenatal education classes in either one of five hospital based antenatal education classes or six community-based education classes in were included in the study. All antenatal classes conducted within the community and at the hospital were very similar in content and format, decreasing the likelihood that differences between the groups are the result of receiving different information.

Data were collected through surveys at the outset of the study including demographics, sources of information about pregnancy, reasons for attending antenatal education; the surveys also asked about knowledge, anxiety, and confidence. Surveys with questions related to sources of information about pregnancy information, knowledge, confidence, anxiety, social contact and support, relaxation and breathing skills, other gains, attendance rates, information about each woman's pregnancy were given at the end of the antenatal education classes. No significant

differences were found between those who attended classes based in hospitals versus those who attended classes based in the community in regards to class size, initial or final knowledge, anxiety, or confidence levels. Additionally there were no differences in social class, marital status, or educational level between hospital and community-based antenatal education classes. There were significant differences in age and stage of pregnancy the classes were attended during between the two groups. Those who attended antenatal education classes in hospitals were significantly older and attended classes later in pregnancy than those who attended in the community.

The authors found that there was a significant change in knowledge after the completion of the classes, both in the community and in the hospital setting, with knowledge rising on average from 54% to 75%. The final state anxiety was inversely related to the number of classes each woman attended and confidence increased significantly after class attendance. One difference found between the classes was that 33% of the women who attended antenatal education classes in the community reported forming more social relationships in the class whereas only 13% of women in the hospital-based antenatal education classes reported the same thing. The results of this study indicate that community-based antenatal education classes may be more likely to facilitate the development of friendships and social support among the pregnant women.

One weakness of the study was that a convenience sample of women attending antenatal education classes in one geographic area was used for the study, which may affect whether the results of the study can be generalized (Melnyk & Fineout-Overholt, 2011). A strength of the study was that a survey was given both at the beginning and again at the end of the classes to help determine the effect of the antenatal education on the participants. However, the study was

neither randomized, nor controlled, which is the gold standard for generating reliable evidence (Polit & Beck, 2012).

Artieta-Pinedo et al., (2010) conducted a prospective observational study to evaluate birth outcomes between women who receive antenatal education and those who do not. A total of 620 nulliparous, pregnant women, ages 18-42 were recruited for the study and 616 of those women completed the study. Participants were sought out from primary care centers in Bizkaia, Spain from September 2005 to May 2006 and a majority of the women in the study were Spanish and had medium to high level of education. The women in the study were divided into three groups: those who reported that they did not attend any antenatal education, those who reported that they attended one to four sessions of antenatal education, and those who reported that they attended five or more sessions. The effectiveness of antenatal education was evaluated in terms of whether participants arrived at the hospital in true labor, received an epidural, the length of the first and second stages of labor, maternal anxiety, type of birth, perineal injury, maternal satisfaction with birth process, and the infant's Apgar scores. Information regarding antenatal education attendance was gathered through self-report. Participant anxiety was measured with the Hospital Anxiety and depression questionnaire, which is a validated tool according to the authors, but information regarding the reliability and validity is not included in the article. The rest of the information was collected by a midwife from the medical record. The authors found that anxiety was significantly less for those who attended antenatal education, but there was no significant difference for any of the other birth outcomes between the groups. One strength of this study is that prospective studies are considered to be much stronger evidence than retrospective studies. Despite this, observational studies are considered to be level IV evidence,

meaning that they are not considered to be as rigorous as level I, II, or III evidence (Polit & Beck, 2012).

Chesser et al. (2015) performed an exploratory study to determine whether the March of Dimes “Becoming a Mom” prenatal program was effective in changing antenatal attitudes, knowledge, and health outcomes among high risk pregnant women in Kansas. The “Becoming a Mom” prenatal program is a group based prenatal education program that was developed for high risk pregnant women. This study was a pre-test/post-test comparison research design and a total of 114 pregnant women completed the study from four counties across the state of Kansas. A large number of pregnant women were lost to follow up as a total 323 pregnant women participated in the “Becoming a Mom” prenatal program during the study, but only 114 of the women were still in the program at the completion of the study due to the staggered implementation phase. Such a large loss of pregnant women at the completion of the study could threaten the internal validity or result in attrition bias if there are differences in those who completed the post-test compared to those who did not (Melnik & Fineout-Overholt, 2011; Polit & Beck, 2012). The results of the study showed statistically significant changes in 14 out of 32 of the knowledge questions, along with statistically significant changes in attitudes among the pregnant women. Breastfeeding initiation was 11% higher among the moms in the prenatal program than Kansas’s average and vaginal delivery was 10.8% higher as well. The authors concluded that the “Becoming a Mom” prenatal program can improve pregnant women’s antenatal knowledge, attitudes, and birth outcomes. Strengths of this study were that there was a pre-test and post-test and the pretest served as the control for the study. Additionally, consistent evaluation tools and data collection procedures were used across the different implementation sites. Limitations were that the study included a small sample with a very large percentage of the

sample who did not complete the program, almost 65% of the sample did not complete the study. Additionally, the prenatal program was not consistently implemented throughout all of the implementation sites, which can affect statistical conclusion validity (Polit & Beck, 2012).

Tighe (2010) published a qualitative study to evaluate the attitudes of first-time mothers toward antenatal education. Purposive sampling, selecting participants who will be most beneficial to the study (Polit & Beck, 2012), was used to recruit a very small sample of 16 first-time mothers, who had given birth in Ireland within the last 6 months for the study. One drawback to small sample sizes is that they generally do not represent the population that is being studied (Polit & Beck, 2012). Both women who attended antenatal education classes and women who did not attend were included in the study. Semi-structured focus group interviews were conducted six months after birth to gather data, using an interview guide. Each focus group interview included a mix of mothers who attended and did not attend antenatal education. Results showed several strengths, weaknesses, opportunities and barriers in regards to antenatal education. Pregnant women who attended antenatal education saw benefit in the peer and social support from other pregnant women throughout the classes. However, a need for better advertisement and promotion of the class, peer mentoring, class flexibility, and the use of the principles of adult learning as opposed to traditional education were all identified by the women as areas of improvement to the antenatal education classes that would benefit them.

Lu et al. (2003) conducted a cross-sectional study to evaluate the sociodemographic disparities among those who attend childbirth classes and those who do not attend childbirth classes in the United States. The association between childbirth education class attendance and breastfeeding was also evaluated in the study as a secondary outcome. Stratified random digital sampling was used to gather a large cross-sectional sample of 1540 women who were

nationally representative of the population in the United States. Data were collected via the National Survey of Early Childhood Health through 30 minute, structured phone interviews, in both English and Spanish. The authors found significant sociodemographic disparities between women who attend childbirth education and women who do not attend childbirth education classes. The authors found that African-American women and those of lower socioeconomic class were less likely to attend childbirth education classes than Caucasian women and those of higher socioeconomic status. Additionally, attending a childbirth education class was associated with a 75% increase in the odds that an infant would be breastfed. One of the strengths of this study is that it has a very large sample, making the results of this study generalizable to the population in United States. A limitation was that the study did not differentiate between biological and nonbiological mothers, meaning that step-mothers, foster-mothers, or adoptive mothers, who may have been less likely to attend antenatal education, may have been included in the sample. Additionally, the study only evaluated antenatal education class attendance, but nothing about what type of antenatal education class was attended, meaning that the women could have attended various types of antenatal education that covered different topics and may not have covered breastfeeding, which could affect the outcomes in this study.

Discussion

A total of nine articles have been included in this integrated literature review. Almost half of the articles included in this review were either randomized controlled studies or non-randomized-controlled studies. Randomized-controlled studies are considered level II evidence, which is the second highest level of evidence, with systematic reviews of randomized controlled studies being the highest level of evidence. Non-randomized controlled studies follow randomized controlled studies in strength of evidence but are not considered to be quite as strong

as randomized controlled studies as they do not use as stringent control methods (Melnyk & Fineout-Overholt, 2011; Polit & Beck, 2012). The rest of the studies included in this integrative review were non-experimental studies and consisted of observational studies, an exploratory study, a qualitative study, and cross-sectional studies.

Due to the large sample size and diverse population included in this review, the results are more likely to be generalized to a very large, diverse population, but it can be difficult to apply the result to a smaller, more specific population or a specific geographic and socioeconomic area. Most of the articles included in this review focused on the effects of antenatal education on pregnant women in general, only two articles were found that studied the effects of antenatal education on African-American women specifically, and one study was found that studied the effects of antenatal education on high-risk pregnant women specifically, which would most closely represent the population of pregnant women in the target population that have been targeted for this scholarly project.

Studies included in this review took place in multiple settings throughout the United States, Turkey, Ireland, and Spain. Results from studies conducted in Turkey, Ireland, and Spain may be more difficult to generalize to populations within the United States as there are social and cultural differences between the countries and populations studied. Additionally, only one study, by Lu et al. (2003), actually had a large, nationally representative sample that would be generalizable to the population in the United States.

Study results varied across all of the studies included in this integrative review, making it difficult to draw specific conclusions regarding the benefits of antenatal education on healthy pregnancies that would be applicable to the population of interest for this scholarly project. However, results from the two studies regarding pregnant African-American women, by

Klerman et al. (2001) and Kistin et al. (1990), both indicate that prenatal education can improve specific outcomes among pregnant African-American women. Klerman et al. (2001) found that prenatal care that had a focus on health promotion and social support significantly improved pregnant African-American women's knowledge and perceived mastery. While Kistin et al. (1990) found that prenatal education increased breastfeeding rates among pregnant African-American women in their study. An antenatal education program targeting high-risk pregnant African-American women in the project region may be effective in promoting healthy pregnancies among the target population of women for this scholarly project.

A need for antenatal education programs that promote social support among the participants was identified for this scholarly project. Three studies, Hillier and Slade (1989), Klerman et al. (2001), and Tighe et al. (2010) all noted a benefit to social support secondary to group antenatal education classes among participants. Additionally, Hillier and Slade found that women who attended antenatal education classes in the community reported forming more social relationships than those who attended antenatal education classes in the hospital. This suggests that group antenatal education programs delivered via a community-based initiative may be more effective in promoting social support than individual antenatal education programs would be. It can be concluded that a group antenatal education class would best suit this scholarly project.

Additionally, several other positive outcomes related to antenatal education were found through this integrative review. Svensson et al. (2009) found a significant increase in perceived maternal parenting self-efficacy and perceived parenting knowledge eight weeks after birth. Artieta-Pinedo et al. (2010) found that antenatal education decreased maternal anxiety and increased normal childbirths. Chesser et al. (2015) found significant changes in knowledge and attitudes among the women who received antenatal education. Serçekuş & Mete (2010) found

that there were significant increases in maternal prenatal adaptation as a result of antenatal education, but no significant differences in postnatal adaptation were found. Each study found positive changes or outcomes due to antenatal education.

In addition to the studies included in the integrative review, three literature reviews were found regarding the effects of antenatal education on birth outcomes. Gagnon and Sandal (2007) conducted a systematic review of randomized controlled studies to evaluate the effectiveness of antenatal education on maternal knowledge, anxiety, perception of control, labor, birth support, breastfeeding, ability to care for the infant after birth, and social and psychological adjustment to pregnancy and birth. The Cochrane Pregnancy and Childbirth Group's Trials Register, CINAHL, EMBASE, ERIC, PsycINFO, and the Journal of Psychosomatic Research, along with the references from the selected articles, were all searched for articles that met the inclusion criteria. A total of nine articles were selected for inclusion in the review and 2,284 women made up the sample. Studies selected for the review were randomized controlled trials of any type of educational program held during pregnancy and conducted by an educator. Consistent results were not found across the studies, making it difficult to make conclusions regarding the effectiveness of the interventions. However, several studies found beneficial effects of antenatal education on maternal knowledge, labor, attachment between the mother and infant, and maternal satisfaction. The authors concluded that more rigorous research is needed to determine the effects of antenatal education on birth outcomes.

Ferguson, Davis, & Browne (2013) performed a structured review of the literature to examine the effect of antenatal education on labor and birth. Four electronic databases were searched: Ovid Medline, CINAHL, Cochrane, and Web of Knowledge, for articles written in English from 2000 to 2012. One hundred and fifty two articles were initially selected for review

and three more were found through reviewing the reference lists of each article. After reviewing all 155 articles, 10 were selected for inclusion in the review. Six of the 10 articles were randomized controlled studies and four were observational cohort studies. Results were not consistent across all of the studies, but overall, the authors concluded that there may be a positive impact related to antenatal education, namely, a decrease in false labor admissions, more partner involvement, and decreased maternal anxiety. However, more research is needed to evaluate the effect of antenatal education on birth outcomes.

Koehn (2002) published an integrative review to evaluate childbirth education outcomes and to identify areas that need further research. An electronic search of four databases: MEDLINE, CINAHL, PSYCinfo, and Sociological Abstracts, was completed with a search period of 1995-2001. Only studies in English were included. Twelve articles were selected for inclusion in the review and a total of 1,213 pregnant women were included throughout all of the studies. Nine of the studies used convenience sampling to recruit participants while the remaining three studies used purposive sampling. All of the studies included in the review except one were non-experimental and most of them were descriptive in nature. The findings across the studies varied, with five of the twelve studies reporting antenatal education had beneficial effects on self-care or health behaviors. Overall, the author concluded that there was not enough evidence to make conclusions about the effectiveness of child birth education outcomes and more research of higher quality is necessary.

When examining the results of this integrative review along with previous literature reviews done on the effects of antenatal education on birth outcomes, it is clear that there is a need for more research to determine what the specific effects of antenatal education are on birth outcomes. Each of the three systematic reviews found various positive results on birth outcomes,

increased maternal knowledge, and decreased maternal anxiety, but not all of the studies in each review consistently found the same outcomes, similar to the results of this integrative literature review.

The evidence presented in this integrated literature review suggests that antenatal education may be an effective intervention in increasing healthy pregnancies, increasing prenatal knowledge, and increasing social support among pregnant women in the southwestern county of this Midwestern state. See Appendix A for more detailed information regarding each of the studies.

Conclusion

Several maternal and infant risk factors have been found to contribute to infant mortality and morbidity. Infant mortality is especially high among African-American women in the county this project is being implemented. There is a need for more antenatal education regarding pregnancy, decreasing risky health behaviors, and increasing support. This integrative literature review has established that antenatal education is an evidence-based intervention that can be used to increase healthy pregnancies, increase maternal knowledge, and increase social support during pregnancy. Based on the evidence presented in this integrative review, a community-based, antenatal education program to promote healthy pregnancies and social support was developed. Chapter 3 describes the conceptual framework and implementation model that will be used to guide this scholarly project.

CHAPTER 3

CONCEPTUAL FRAMEWORK

The purpose of this chapter is to introduce the conceptual framework and implementation model that will be used to guide this scholarly project. The Health Belief Model is the conceptual framework that will be used to guide this project while the Iowa Model of Evidenced-Based Practice to Promote Quality Care will be used to guide the process of implementation and evaluation for this project. The goal of this scholarly project is to establish a community-based antenatal educational program for high risk pregnant women in a county in a Midwestern state. This antenatal education program will not only educate pregnant women about decreasing health behavior risks and how to have healthy pregnancies, but will also encourage them to build a support network with other pregnant women in the community and connect them to resources within the community that may help them have more successful pregnancies. Antenatal education programs provide an important opportunity to educate pregnant women about health-promotion behaviors that may decrease their infant's morbidity and mortality risk while improving the health of both the mother and infant (Lu et al., 2003).

Health Belief Model

The Health Belief Model is a widely used conceptual framework for examining health-seeking behaviors, risk reduction, and disease prevention. According to the model, an individual's willingness to engage in health-seeking behaviors, such as an attending antenatal education program or making healthy choices during pregnancy, is directly related to the individual's perceptions regarding the threat and seriousness of a health problem and the amount of benefit from the particular health-seeking behavior. If an individual does not perceive that there is a serious enough threat to a health problem or benefit of health-seeking behavior, he or

she is not likely to engage in the health-seeking behavior (Janz & Becker, 1984; McEwen & Wills, 2011; Polit & Beck, 2012).

The Health Belief Model was originally created in the 1950s by several social psychologists who worked for the United States Public Health Services with the goal of understanding and improving society's use of preventive healthcare services (Janz & Becker, 1984; McEwen & Wills, 2011). This social-psychological model is composed of several concepts that were derived from a large body of psychological and behavioral theory with the goal of explaining an individual's health actions (Harrison, Mullen, & Green, 1992). The main concepts of the Health Belief Model are: perceived susceptibility of a health problem, perceived severity, perceived threat, perceived benefits, perceived barriers, self-efficacy, and cues to action (Janz & Becker, 1984; McEwen & Wills, 2011; Polit & Beck, 2012). Using the Health Belief Model to guide the establishment of a community-based antenatal education program can help the project designers understand and address the pregnant women's perceived barriers, motivation level, and the perceived benefits of antenatal education; making it more likely that high-risk pregnant women in this county will enroll in and attend the antenatal education program.

Perceived susceptibility is defined as how vulnerable or likely an individual feels he or she is to develop a particular health problem. In this case, the perceived susceptibility for adverse birth outcomes that would increase infant morbidity and mortality would be considered. If pregnant women in this county do not feel vulnerable to adverse birth outcomes that are likely to affect them or their infants as a result of their risky behaviors or environment, they are not as likely to attend the antenatal education program or implement any of the health promotion behaviors discussed throughout the program. Perceived severity is an individual's perception of

how serious a health problem might be on her own or her infant's well-being, either physically or socially. If perceived adverse birth outcomes do not seem likely to have an impact on a pregnant woman or her infant's life, she will be less likely to attend the antenatal education program or implement any of the health and lifestyle changes suggested in the program (Carpenter, 2010; Janz & Becker, 1984). Perceived threat is an individual's perception that they are vulnerable to a serious health problem. In this case, if pregnant women do not perceive themselves as vulnerable to adverse birth outcomes or infant mortality, they may be less likely to attend antenatal education classes and implement the health-seeking behaviors discussed throughout the antenatal education program (Rosenstock, Strecher, & Becker, 1988).

Perceived benefits are an individual's perception of how effective a health-seeking behavior, such as attending an antenatal education program, will be in preventing a particular health problem, adverse birth outcomes in this case. If pregnant women do not perceive the antenatal education program to be very helpful, efficacious, or feasible in preventing adverse birth outcomes, they will be much less likely to attend. Perceived barriers are the difficulties the individual believes he or she will encounter in trying to implement the health-seeking behavior. Barriers may include time, money, unpleasantness, pain, side effects, or inconvenience, among others (Carpenter, 2010; Janz & Becker, 1984).

When considering high-risk pregnant women in this county, there are many barriers they may perceive as preventing them from attending the antenatal education class or following any of the health-seeking behaviors discussed throughout the program. One barrier to be considered when developing this project is access to the antenatal education class. If pregnant women cannot access the class, they will not attend the class, and transportation may be one of the biggest barriers the pregnant women in this county face in attending the antenatal education

classes (T. Bautista, personal communication, October, 2015). Addressing access to the class may decrease this barrier.

Self-efficacy is an individual's perception of his or her ability to implement the health-seeking behaviors. Cues to action are stimuli, either external or internal, that motivate an individual to implement a health-seeking behavior as a result of some additional variable (Carpenter, 2010; Janz & Becker, 1984). In this case, a pregnant woman's perceived ability to attend the antenatal education program and implement the health-seeking changes would be examined when considering self-efficacy and pregnancy is the stimulus or cue to action that would motivate a woman to attend an antenatal education program. The components of the program would be cues to implement the health-seeking behaviors that would protect a pregnant woman and her fetus while decreasing the risk of adverse birth outcomes, infant morbidity, and infant mortality. See Figure 1.

Figure 1: Health Belief Model & Antenatal Education

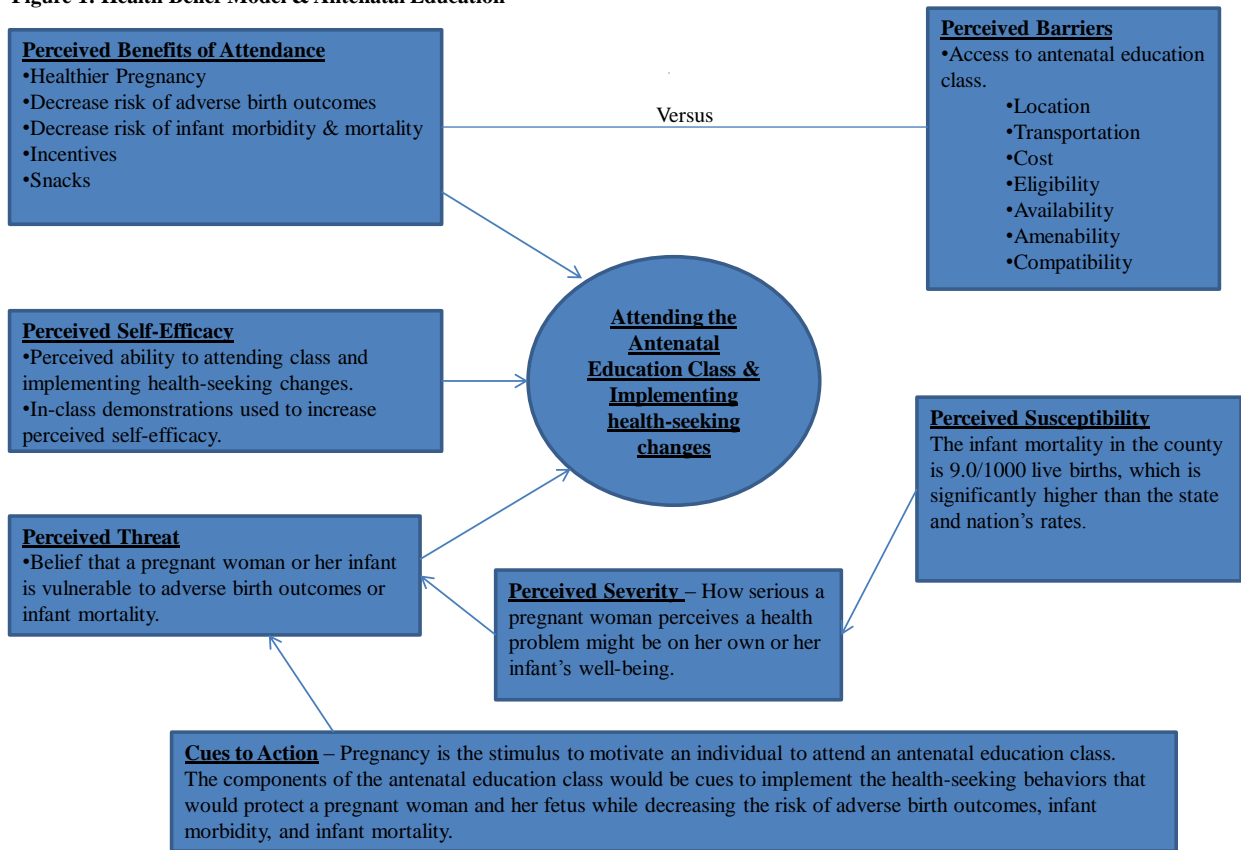


Figure adapted from Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education & Behavior*, 15, 175-183.

Iowa Model of Evidence-Based Practice to Promote Quality Care

The Iowa Model of Evidenced-Based Practice to Promote Quality Care is a widely used framework to guide the creation and implementation of a proposed change or intervention that promotes evidence-based care within an organizational setting (Fineout-Overholt, Melnyk, & Schultz, 2005; Polit & Beck, 2012). Using an evidence-based practice process, such as the Iowa Model, to guide the implementation of an intervention or change in practice provides a systematic method for decision making that facilitates a timely integration of evidence into practice (Newhouse, Dearholt, Poe, Pugh, & White, 2005).

The Iowa Model was originally titled the Iowa Model of Research-Based Practice to Promote Quality Care and was a product of the Quality Assurance Model of Using Research by Watson and colleagues. The first version was developed in 1994 and the model was initially used at the University of Iowa Hospitals and Clinics to guide the use of research in practice to improve patient care (Bliss-Holtz, 2007; Titler et al., 2001). Since its creation, the model has been widely used throughout nursing and has been revised into the Iowa Model of Evidence-Based Practice to Promote Quality Care (Titler et al.). The Iowa Model is an organizational model that is used to guide nurses in utilizing research to improve patient care and patient outcomes through a series of steps and decisions points to guide the project implementation of the project (Fineout-Overholt et al., 2005; Haxton, Doering, Gingras, & Kelly, 2012; Titler et al., 2001; van Achterberg, Schoonhoven, & Grol, 2008).

The most recent model begins with the identification of either a problem focused trigger, which could be a clinical problem or from internal issues or data; or a knowledge focused trigger, which could be from external information such as new research findings or practice guidelines (Bliss-Holtz, 2007; Titler et al., 2001). It is important to determine whether the identified trigger is a priority for the organization. The greater the priority the identified trigger is for the organization, the more invested the organization will be throughout the implementation process and the easier it will be to maintain interest and support from the members within the organization (Titler et al.). In this case, the identified trigger is the lack of an antenatal education program within the Healthy Babies Healthy Start project. Since Healthy Babies Healthy Start's grant requires that the project establishes and offers educational opportunities to clients and the community during this grant cycle, the identified trigger has been identified as a priority for Healthy Babies Healthy Start at this time.

The next step in the Iowa model is to form a team that will be in charge of the development, implementation, and evaluation of an evidenced based proposed change or intervention. It is important that the team be composed of interdisciplinary stakeholders who are interested in the project. After the team is formed, relevant, evidence-based literature should be reviewed, critiqued, and synthesized to determine if there is a sufficient evidence base to guide practice. This is a very important step in the model and evidence-based guidelines, systematic reviews, meta-analyses, and clinical studies should be included in the evidence base (Titler et al., 2001).

Once it has been determined that there is a sufficient evidence base to guide practice, the proposed project can be piloted and then adopted into practice. According to the model, structural, process, and outcome data should be monitored and evaluated throughout the project to determine the usefulness of the intervention and whether expected outcomes are being achieved or not. Finally, it is imperative that the results of the intervention are disseminated (Titler et al., 2001).

For this project, an interdisciplinary committee from the university and Healthy Babies Healthy Start was formed to guide the Doctor of Nursing Practice (DNP) student in the development, implementation, and evaluation of the scholarly project. Evidence-based literature was analyzed, critiqued, and synthesized by the DNP student to assess the literature base regarding the benefits of antenatal education on healthy pregnancies and included in Chapter 2 of this scholarly paper. Using the findings within the current evidence base that the student examined, the student began the development of the antenatal education program. Quality improvement data were collected throughout the project and at the end of the project; the data were analyzed throughout the project, and were used to continuously improve the class. Once

the project was completed, the results of the project were shared with colleagues and staff of Healthy Babies Healthy Start and disseminated through the submission of the scholarly project to ScholarWorks.

Conclusion

The Health Belief Model framework indicates that antenatal education can be designed to increase a woman's perceived susceptibility and severity of her infant being born with an adverse birth outcome due to individual and environmental risk factors. Additionally, the concepts in the Health Belief Model can be operationalized as strategies in the program to increase a pregnant woman's perceived benefits of antenatal education, health promotion behaviors, and perceived self-efficacy in implementing the health promotion behaviors to improve birth outcomes. The Iowa Model of Evidenced-Based Practice to Promote Quality Care can be used to successfully guide the development, implementation, and evaluation processes of this project. Chapter 4 will discuss the design, implementation, and evaluation of the scholarly project.

CHAPTER 4

PROJECT PLAN

The purpose of this chapter is to present the design, implementation, and evaluation of the originally proposed scholarly project, a community-based antenatal education program for high risk pregnant women in a southwestern county in a Midwestern state. The Health Belief Model was used to guide the design of the antenatal education program and the Iowa Model of Evidenced-Based Practice to Promote Quality Care was used to guide the process of implementation for this project. The proposed project was implemented in January 2016 and the final scholarly paper was submitted to ScholarWorks in May 2016.

Project Goals

As noted in Chapter 1 of this scholarly project, infant mortality is a major issue in the United States. Infant mortality rates are alarmingly high across the country, but they are even higher in the county where the project was implemented (Kothari et al., 2011; MacDorman et al., 2013). It is clear that innovative measures to decrease some of the risk factors associated with infant morbidity and mortality are desperately needed in the county in which this project was implemented. Innovative measures that were implemented through this scholarly project were in the form of an antenatal education program designed and modified to address the specific needs of the high-risk African American pregnant women in this county.

The goal of this scholarly project was to establish a community-based antenatal education program for high risk pregnant women in a southwestern county of a Midwestern state. The antenatal education program not only provided education regarding healthy pregnancies, but encouraged pregnant women in the county to establish a support network with other local

pregnant women and connect to community resources that may help each woman have a more successful pregnancy.

As concluded through the integrative literature review included in this scholarly paper, social support is an important component of antenatal education that should be integrated into the class (Hillier & Slade, 1989; Klerman et al., 2001; Tighe et al., 2010). Since it was also found through the integrative literature review that antenatal education can increase prenatal knowledge, healthy pregnancies, and social support among pregnant women, the main objectives of this antenatal education program were to help pregnant women and their partners fully engage in their pregnancy, increase their prenatal knowledge, learn how to be healthy during and after pregnancy, and gain social support within the community, ultimately decreasing adverse birth outcomes, infant morbidity, and infant mortality.

Design

The design phase of the project was the most extensive and time consuming aspect of the scholarly project. The Health Belief Model was used to guide the design of the project and to address the pregnant women's perceived barriers, perceived susceptibility and severity of health and behavior risks for both the women and infants, and increase the pregnant women's perceived benefits of the antenatal education program and health behavior changes discussed in the class. Following the Iowa Model, the target population was determined, the curriculum was designed, a location to hold the antenatal education program was chosen; community representatives from community resources were recruited to help facilitate classes and provide a connection to local resources that may be helpful for the women during and after their pregnancy. The DNP student began advertising and recruiting pregnant women to participate in the class. The design and curriculum for the class continued to evolve throughout the length of the project to accommodate

the identified needs and suggestions of the pregnant women attending the class and the needs, suggestions, and schedules of the community representatives who were contributing to the classes.

Target Population

The target population for this project was high risk pregnant women in a southwestern county of a Midwestern state. Lu et al. (2003) found that there is a sociodemographic disparity among those who attend antenatal education classes; African-Americans and those of lower socio-economic status are less likely to attend. The population of high-risk pregnant women in the county the project is being implemented is largely made up of African-Americans and those of lower socio-economic status (Kothari et al., 2011). This means that the high risk pregnant women in this county may be less likely to attend traditional antenatal education classes. A creative, innovative approach needs to be designed that will attract this population of pregnant women.

Even though the target population for this project was high risk pregnant women, this community-based antenatal education program was open to all pregnant women in the county and their partners or support persons. No pregnant woman was turned away from the class regardless of socioeconomic status, race, or any other factor, as that information was not asked or collected for this project. The only inclusion criterion for this project was that each woman who attended identified herself as a pregnant woman and identified her partner or support person, if he or she attended with the pregnant woman.

Pregnant women for this project were recruited through referrals from the Healthy Babies Healthy Start case managers. The antenatal education program was also advertised over the radio and with flyers posted throughout the community to recruit participants outside of the

Healthy Start Healthy Babies caseload. Participants were encouraged to bring a pregnant friend to each class. Finally, “freebies,” incentives that were particular to each class topic, were advertised and given to those attending each class as an effort to attract more pregnant women to the program. The goal was that four to six pregnant women would attend each meeting of the antenatal education program.

Location

As discussed in Chapter 3, the location of the antenatal education class will either facilitate or obstruct access to the class, and could be a perceived barrier that may prevent pregnant women from attending the class. When considering locations for the class, Norris and Aiken’s (2006) four attributes of healthcare access; availability, amenability, compatibility, and eligibility were taken into consideration as these attributes may increase perceived benefits and decrease perceived barriers for pregnant women in regards to attending the antenatal education program. Availability, which considers the geographic location of healthcare resources, was one of the major concerns when thinking about the location of the class.

According to Norris and Aiken (2006), community resources, such as this antenatal education program, should be located in an area that is accessible through public transportation and is a reasonable and safe walk for pregnant women who live in the surrounding community. Additionally, the convenience of the location for the pregnant women may affect access. Amenability is the willingness on the part of the pregnant women to utilize any healthcare resource that is available to them in the community. Compatibility encompasses concepts such as being sensitive to the needs of the pregnant women and providing culturally sensitive care. Finally, eligibility includes meeting the qualifications for utilizing community resources (Norris & Aiken, 2006).

The Family Health Center was chosen as the best location for the antenatal education program as it is located within a neighborhood setting and on the bus route, allowing for a safe walk for pregnant women who live in the surrounding community, while being accessible through public transportation for those who live farther away, decreasing perceived barriers to attending the antenatal education program. Since the Family Health Center already serves this population, they may be perceived as compatible and sensitive to the needs of the pregnant women than other locations. Eligibility for inclusion into this antenatal education program was kept very simple; women merely needed to identify themselves as being pregnant. Inclusive inclusion criteria allow for as many pregnant women and their support persons to the class as possible. Additionally, there was no fee charged to attend the antenatal education program in hopes of attracting those of lower socioeconomic status who would not be able to afford to pay for antenatal education classes.

As already mentioned, the Family Health Center offers obstetric services to pregnant women in the community, making it more convenient for pregnant women to attend the class before and after obstetric appointments. Considering obstetric appointment times, the availability of the facility, and other barriers, such as the time of day that school ends in the area, it was decided that the classes would be held every Tuesday from 1 pm to 2:30 pm, so that pregnant women could attend the class before and after obstetric appointments and could still be home when their children returned from school. In order to increase convenience, access, and decrease any further perceived barriers associated with location and transportation for the pregnant women, bus tokens and cab rides were offered to the pregnant women who wanted to attend the class.

Curriculum

Before and during the creation of the antenatal education curriculum for this project, the results of the integrative literature review were considered in determining the topics to be addressed throughout the program. Topics were also chosen that aligned with the Healthy Babies Healthy Start program goals and grant requirements. Eight topics: breastfeeding, nutrition, exercise, stress, intimate partner violence, preterm labor, family planning, and substance abuse, were included in the antenatal education curriculum. These topics were included in the curriculum based on evidence from the literature of their effect on infant morbidity and mortality, promotion of healthy pregnancies, and the objectives included in the Healthy Babies Healthy Start grant. These topics address several of the benchmarks included in the project's grant along with many of the maternal risk factors that have been found to be strongly associated with adverse birth outcomes, infant mortality, and infant morbidity. Some maternal risk factors associated with adverse birth outcomes include: smoking, alcohol consumption, drug use, domestic violence, obesity, and preterm delivery (Kothari et al., 2011).

When considering how to develop a curriculum based on these eight topics, it was noted in the literature review that Tighe (2010) found that women preferred antenatal education classes that utilized the principles of adult learning in the facilitation of the class. Andragogy, which describes the "art and science of teaching adults" (Forrest & Peterson, 2006, pp. 114), is one model that describes the principles of adult learning. Andragogy has a set of four assumptions in regards to teaching adults that will be applicable for this class. The first assumption is that adults are self-directed learners and want to have some direction over their learning experience. Due to this, adults should be considered partners when planning and carrying the class out (Forrest & Peterson). Therefore, pregnant women who attend the class were asked for input regarding any

particular topics they would like to learn about throughout the program and if there was anything specific they would like to learn about regarding each topic that is presented. Allowing for the pregnant women's input increased their perceived benefits of the class as any concerns they have regarding their pregnancy was addressed. Additionally, the instructor functioned as a facilitator, who guided the class instead of instructing the class. The participants were encouraged to participate in the class, ask questions, and participate in group discussion regarding topics.

The second assumption is that adults bring personal experience to the learning process (Forrest & Peterson, 2006). This personal experience was sought out during each meeting as the participants were asked what they already know about each topic, what experiences they have had with each topic, and women who have been pregnant previously, were asked if they would talk about their personal experiences throughout the classes. The third assumption is that adults come to educational experiences ready to learn (Forrest & Peterson). In this case internal forces, pregnancy and the desire to learn how to have a healthy pregnancy, prompts pregnant women into seeking out antenatal education experiences. Offering this class provided an opportunity for pregnant women who wanted to learn more about healthy pregnancies to accomplish that goal.

The final assumption is that adults desire education that is immediately applicable to their lives (Forrest & Peterson, 2006). Each topic that was offered in the antenatal education class pertained to pregnancy, labor, delivery, postpartum period, and the needs of the infant, which are the topics that were immediately applicable to the pregnant women who attend the class. The antenatal education classes allowed several opportunities for open discussion and questions so that health and behavior risks that are most immediately applicable and concerning to the pregnant women in the class could be shared and addressed in the class. This also helped the

facilitator address perceived susceptibility and severity of health and behavior risks and increase perceived benefits of the class.

Real life demonstrations of class topics were offered during the class to further increase immediate applicability of each class for the pregnant women. Providing real life demonstrations in class helped to increase the pregnant women's perceived self-efficacy, or ability to implement the health seeking behaviors learned in the class at home. Finally, representatives from organizations throughout the community, that the women may immediately benefit from, such as a dietician from Women, Infants, and Children (WIC) and a lactation consultant, came and talked with the women, answered questions they had, and connected them to services for which they may have qualified.

Implementation

The Iowa Model of Evidenced-Based Practice to Promote Quality Care was used to guide the implementation of this scholarly project. In following with the model, the first step of implementation was to identify a trigger (Titler et al., 2001). Per Healthy Babies Healthy Start's grant requirements, an antenatal education program for pregnant women in the county needed to be established. This was identified as the trigger and as a priority by Health Babies Healthy Start. Once the trigger was identified, the DNP committee was fully established and included two faculty members from the Kirkof College of Nursing, a faculty member from Grand Valley State University Department of Public Health, and one member from Healthy Babies Healthy Start initiative. The purpose of the committee was to guide and support the student in the design, implementation, and evaluation of the scholarly project.

In keeping with the next step of Iowa Model, an integrative literature review was undertaken by the student to evaluate antenatal education on birth outcomes and is included in

Chapter 2 of the scholarly project. While mixed results were found from the review of the literature, many of the studies reported some benefit from antenatal education. Given these findings, the DNP student determined that there was sufficient evidence to move forward with the project.

The DNP student moved forward by choosing the location for the class, developing the class curriculum, deciding upon a starting date, and advertising and recruiting pregnant women to participate in the class. The classes were scheduled to take place for 90 minutes, one afternoon per week, over an eight week period, and began on January 26, 2016. The DNP student was the program facilitator and turned the program over to the project's educational coordinator or another staff member at Healthy Babies Healthy Start at the end of the project.

Project Facilitators and Barriers

Several project facilitators and barriers have been identified and discussed throughout this chapter. The Healthy Babies Healthy Start initiative was required to establish a community-based education program per the requirements of their grant. As a result, the initiative and employees had a substantial buy in to the implementation of this scholarly project, which was a major project facilitator. There were funds available through the grant to be used in the establishment and maintenance of this program through the end of the grant cycle. Finally, Healthy Babies Healthy Start had a plethora of educational resources and agency experts available to reference and use throughout the educational program.

One of the main barriers to the project was access and transportation to the antenatal education program for the participants (T. Bautista, personal communication, October, 2015). Therefore, this antenatal education program needed to take place in a centrally located community space that was on or near the bus route. Additionally, there are two hospitals in the

county that already offer antenatal classes that may compete for the population that is being targeted in this project, so a location away from both hospitals, where no antenatal education class is offered was desired.

Both hospitals were contacted prior to the start of this antenatal education program to see what type of participant population they appealed to and they both are open to all pregnant women in the area. However, there is a charge for the classes at the hospitals and while some insurance plans cover the charge, not all cover the whole cost. So, the antenatal education program in this scholarly project was accessible to those who could not afford to pay for traditional classes.

Evaluation

Participant satisfaction was the main indicator to determine the success of the project. The goal of the project was to recruit four to six pregnant women from the community who would not otherwise attend an antenatal education class during her pregnancy. Another goal was that each participant would attend all eight modules in the program. Three surveys were handed out throughout the antenatal education program and these can be found in Appendix B. A satisfaction survey, titled “How Was the Meeting Today?”, was handed out at the end of each session to determine how satisfied the women were with the class, what they liked about the class, and what they thought should be improved at each class. There was also a summative satisfaction survey, titled “Please Rate the Baby Bump Club”, handed out at the end of the project to determine how the women thought the overall class went, what they liked about the class, and what they thought could be improved. Both of these surveys used Likert-type rating scales and open-ended questions to gather feedback from the women. Additionally, a self-efficacy survey, titled “How I Feel Now”, using a Likert-type rating scale was also distributed at

the end of the final class to determine whether the women believed that they could take what they learned during the class and apply it at home. Data from the Likert scales were tabulated using a frequency distribution of responses through a histogram and the frequencies of the responses for the open-ended questions were also reported. The information gathered from these surveys was used to improve the quality of the current classes and any future classes that will be held. Finally, each woman was asked to indicate which classes she attended so that whether or not women came to all of the classes could be tracked without gathering personal information from them.

Conclusion

A community-based antenatal education program was established in a southwestern county of a Midwestern state through the Healthy Babies Healthy Start initiative. The objective of the program was to educate pregnant women about some of the risk factors associated with adverse birth outcomes, infant morbidity, infant mortality, and to provide a venue to promote the development of social support among pregnant women in the county. Most of the project was completed throughout the design phase of the project; with small changes to the curriculum being made throughout the implementation phase according to the pregnant women's suggestions and identified needs. There were multiple facilitators and barriers that the DNP student had to consider throughout the design and implementation of the project, including transportation and other antenatal education programs and locations, in order to meet the goal of recruiting four to six pregnant women for the program. Chapter 5 will discuss the results of all three surveys used throughout the antenatal education class.

CHAPTER 5

RESULTS

The antenatal education program, “The Baby Bump Club,” was launched on Tuesday, January 26, 2016 in order to meet the requirements of the grant’s timeline for this fiscal year. Once approval was received from the Institutional Review Board (IRB), the DNP student began collecting feedback from the pregnant women participating in the antenatal education program on February 9, 2016, which was the third week of the class. As a result, individual class satisfaction surveys were collected for six out of eight of the class topics, however, the summative satisfaction survey and self-efficacy survey included questions from all eight of the class topics. The purpose of this chapter is to provide an in depth discussion of the feedback from on all three surveys used throughout the antenatal education program.

Attendance

Class attendance ranged from three to seven pregnant women per class, as shown in Table 1. The first two classes had three different pregnant women attend each time. It was not until the third week of class that the majority of the participants, who continued to attend the rest of the antenatal education classes, started attending. This change in attendance was a result of one of the Healthy Babies Healthy Start case managers specifically referring her pregnant clients to the class, setting up cab rides to and from the class for those pregnant clients who did not have transportation, and setting up her monthly or bimonthly visits with them at the Family Health Center, either before or after the antenatal education class. This case manager decreased perceived barriers for her clients to attend the antenatal education program and increased perceived benefits by offering more than one service with each class. This case manager’s actions illustrated two of the four attributes of healthcare access; convenience and compatibility

(Norris & Aiken, 2006). She increased the convenience of the antenatal education program by offering more than one service for the pregnant women at the Family Health Center. This case manager was also very sensitive to her clients' needs by making sure they were provided adequate transportation to and from the class.

Beginning in week three, there was a group of four pregnant women who consistently attended the majority of the remaining classes week to week. One of those pregnant women consistently brought one or two support people with her to the class, but most of the other pregnant women who attended the class did not bring a support person. The mode for class attendance for the pregnant women was 3, as three classes had three pregnant women, two classes had four pregnant women attend, two classes had five pregnant women, and one class had seven pregnant women attend. The class with the most pregnant women in attendance was the third class, which was the class to which the case manager began referring her pregnant clients, see Table 1.

Table 1

Class Attendance

Date	Class Title	# of Pregnant Women
1/26/2016	The Breast or the Bottle?	3*
2/2/2016	Things to Avoid During Pregnancy	3*
2/9/2016	Healthy Relationships during Pregnancy	7
2/16/2016	Planning Your Next Baby	4
2/23/2016	Dealing with Stress during Pregnancy	5
3/8/2016	Eating for Two: Making Healthy Choices	4
3/15/2016	Am I in Labor? Warning Signs of Premature Labor	3

* Individual Satisfaction Surveys not handed out during these classes.

Antenatal Education Classes

Each class began with the pregnant women taking a snack from a nearby table and then joining the group session. Once everyone was seated, the DNP student introduced the class topic for the day and introduced herself as the class facilitator. During her introduction, the DNP student shared some personal information to help the class participants get to know her a little better and feel a little more comfortable with her. After the DNP student completed her introduction, introductions were made around the room with each of the pregnant women. Each pregnant woman introduced herself and shared any information she felt comfortable sharing about herself and her pregnancy. Most often, the women shared how far along in their pregnancy they were, their due dates, what hospital they were planning to have their babies, whether this was their first or second pregnancy, and as they found out the gender or decided on a name, they would share that information as well. During the course of these discussions, two women shared that this was not their first pregnancy and they had had children before, but only one of those women consistently came to a majority of the classes week to week. It was noted that the group of four pregnant women who most consistently attended the class were all due within about 10 days of each other and were planning to deliver at the same hospital. This was an unexpected finding, but helped the women build more social support among themselves.

After introductions, the class typically progressed into either an icebreaker or class activity that related to the class topic, followed by a discussion on the class topic. The structure of the class was flexible, so that if the pregnant women had any particular questions or concerns, those were always addressed, or if they wanted to learn about or talk about something else, the

facilitator let the class discussion or activity flow in whatever direction the pregnant women thought it needed to go. This was done to increase perceived benefits among the pregnant women attending the class and also to allow for self-direction of learning, one of the principles of adult learning (Forrest & Peterson, 2006).

During five of the antenatal classes community representatives participated to help educate the women regarding risky health and social behaviors, address their questions and concerns, and provide information about any resources for which they may qualify for. The goal of this was to increase each woman's perceived susceptibility and severity of the consequences of her risky social and health behaviors for both herself and her infant and to provide the pregnant women with ways to make healthier choices. Community representatives who came to the classes included a lactation consultant, a community mom who breastfeeds, a Women, Infants, and Children (WIC) dietician, a representative from March of Dimes, a representative from Young Women's Christian Association (YWCA), and one of the Healthy Baby Healthy Start case managers. The majority of the individual satisfaction surveys indicated that the pregnant women really enjoyed having these community representatives participate in the antenatal education classes. They also indicated that most of the women found the information presented in the group useful and that it would help them have a healthier pregnancy, as illustrated on Table 2. Each class was scheduled for an hour and a half; however, the women often continued talking either among themselves or with the community representative at the end of class, and the classes often ran thirty minutes over the scheduled time.

Individual Satisfaction Surveys

At the end of each of the last six classes, the DNP student handed out individual satisfaction surveys, titled "How Was the Meeting Today?", to each of the pregnant women to

collect feedback on the class. These surveys consisted of five Likert-type questions. Each question used a four point scale on which the pregnant women could select strongly agree, agree, disagree, and strongly disagree to indicate how useful each class was, if they thought the information learned in the class would help them have a healthier pregnancy, whether the facilitator seemed knowledgeable about the topics, how much each pregnant woman enjoyed participating, and how satisfied they were with the group each day. There were also two open ended questions to gather feedback by asking the participant to identify two things each she liked best about the class and two things that could be improved.

Typically, all of the questions on the Likert-type scales were answered, but the open-ended questions were sometimes left blank. A total of 27 individual satisfaction surveys were collected through the course of this project and all of the 135 Likert-type questions included in the 27 individual satisfaction surveys were answered except three questions, which is a high response rate for the individual questions. Of the remaining 132 answered questions, 104 of the questions were marked strongly agree, 27 of the questions were marked agree, one question was marked disagree, and no questions were marked strongly disagree. A total of 43 of the 54 open-ended questions asked on the individual satisfaction surveys throughout the six classes were answered, leaving 11 questions unanswered. Of those 11 unanswered questions, eight unanswered questions were question number two on the survey and three of the unanswered questions were question number one on the survey.

Table 2

Individual Satisfaction Surveys

Questions	Strongly Agree	Agree	Disagree	Strongly Disagree	No Answer
1. The information presented today was useful to me.	20	6	0	0	1
2. The information provided today will help me have a healthier pregnancy.	19	6	1	0	1
3. The facilitator was knowledgeable about the topics discussed today.	20	6	0	0	1
4. I enjoyed participating today	21	6	0	0	0
5. Overall, I was satisfied with group today.	24	3	0	0	0
Total	104	27	1	0	3

The DNP student intended to use the feedback from question number two on the survey; “please list two things about the class that could be improved,” for quality improvement of the antenatal classes throughout the project and for future classes. As mentioned above, eight of the 27 surveys had no answer in question number two and on 15 of the surveys the pregnant women wrote none, nothing, or some variation of that answer. Only four of the surveys had any feedback that the DNP student could use to improve the class.

Healthy Relationships during Pregnancy

Appendix C contains histograms illustrating the responses to the individual satisfaction surveys handed out at two of the classes with the most pregnant women in attendance, Healthy Relationships during Pregnancy and Dealing with Stress during Pregnancy. As seen in Table 1, seven pregnant women attended the Healthy Relationships during Pregnancy class. However, not all of the surveys were included in the histograms as one survey had multiple answers to the

questions and was eliminated, leaving six surveys from that class for inclusion in this project. That was the only survey excluded from all of the surveys distributed over the course of the project.

Healthy Relationships during Pregnancy not only had the largest number of women in attendance throughout the whole antenatal education class, but it was also the first class that individual satisfaction surveys were handed out during. In Appendix C, Figures 2 through 6 display the pregnant women's answers to questions on the survey. In Figure 3, the pregnant women who selected disagree on the survey wrote a note on her survey that said "n/a to me at this point." This was the only question out of all of the individual satisfaction surveys that was marked disagree.

Most of the pregnant women answered the open-ended questions at the end of the survey during this class. Four women answered both questions, one woman only answered question number one, and one woman did not answer either question. Answers to the first open-ended question; "please list two things about the class that you liked the best," were "I liked the friendly atmosphere." "I like that they provide these classes." "All the statistics." "Resources" "People was nice." "The class was really helpful." "People telling their stories." "Learning about new things." Answers to the second open-ended question; "please list two things about the class that could be improved," were "The sharing/off topic discussions were slightly uncomfortable." "Didn't get through the information." Three pregnant women responded with "Nothing" and two women left this question blank.

Reviewing the responses from the first survey, most of the pregnant women were satisfied with the class and felt that it had a positive impact on their pregnancies. Only one woman marked disagree on one question and she wrote that it was not applicable to her right

now. Overall, the feedback gathered in the open-ended questions was positive as well. However, not a lot of information was gathered on how to improve this class so that changes could be made to attract more participants in the future. In future classes, the DNP student explained to the pregnant women how important it was to get feedback on anything that they pregnant women thought could be improved about the class for quality improvement purposes and to attract and engage more high risk pregnant women from the local community to the class.

Dealing with Stress during Pregnancy

Five pregnant women attended the Dealing with Stress during Pregnancy class. The individual histograms in Appendix C, Figures 7 through 11 show the pregnant women's answers to this class session. Reviewing open-ended questions, four of the pregnant women responded to both questions and one pregnant woman did not respond to either of the questions. Responses to the first open-ended question; "please list two things about the class that you liked the best," included "Making stress balls." "Talking about stress." "The stress balls." "Just being able to talk about everything." "Talking about stress and making a stress ball." "Everything."

Responses to the second open-ended question; "please list two things about the class that could be improved," included two women saying "Nothing." One woman said "Idk" and one woman said the "food," with a smiley face. The pregnant women verbally expressed in the class that they would like snacks brought in that were less healthy, such as brownies. However, the DNP student explained that per the Healthy Babies Healthy Start grant, only healthy food such as fruit, yogurt, or cheese could be purchased for the class. The DNP student used this as an opportunity to talk about the importance of healthy eating during pregnancy and asked the women if there were any healthy foods in particular they would like to have at the class, but no one had any suggestions.

By looking at the feedback from the Dealing with Stress during Pregnancy survey, it appears as though the woman really enjoyed the class topic and the class activity. The pregnant women spent a lot of time talking about their individual stressors and how they deal with them. Positive coping skills were also discussed and reinforced during the class. The women seemed to bond during this class, as some exchanged phone numbers and made plans outside of class. One of the pregnant women had to miss the next two classes due to other obligations, but she called another pregnant woman during each class to check in with everyone and reassure everyone that she would be returning to class in the near future. This shows that the pregnant women were building social support among themselves during the class.

Summative Satisfaction Survey

The last class for the project was Exercising Throughout Pregnancy. This class did not go as smoothly as the others did as a new pregnant woman and her support person attended. The DNP student knew that there might be a new pregnant woman coming to the class that day, but she was unaware that the new pregnant woman would bring a support person and her four children to the class. The children were disruptive and one began vomiting in the middle of the class. Children were allowed to come with pregnant women to the class with advanced notice so that an additional case manager can attend the class and an activity can be set up so that the children are occupied during the class. The support person with her children stated she had nowhere else to go and did not have transportation to leave until after the class, so the DNP student progressed through the class. One pregnant woman in particular remarked several times throughout the class that she did not think children should be allowed in the class and the open-ended questions for the surveys given that day reflected similar sentiments from the pregnant women.

An individual satisfaction survey, the summative satisfaction survey, and the self-efficacy survey were all handed out at the end of this class. Feedback from the summative satisfaction survey is included in Appendix D and information from the self-efficacy survey is included in Appendix E. Five pregnant women attended the class but only four women completed the summative satisfaction survey and the self-efficacy survey as this was the fifth pregnant woman's first class.

Looking at the feedback from the summative survey, one pregnant woman marked strongly disagree on all of the questions, but then she wrote in response to the first open-ended question; "please tell us if there are any particular presenters or topics you would suggest for inclusion in a future," "Everything is helpful." She answered "none" to the second open-ended question; "please tell us if there is anything you would suggest to improve this group for the future." She may have just gone down the line circling whatever answer, not really paying attention to what she was circling, she may have disliked the class but not been interested in elaborating, or she may not have understood the directions. Regardless, not much information was gathered from her responses on how the class could be improved in the future. Figures 12 through 16 show her responses along with the rest of the feedback gathered from the other three pregnant women who filled out the surveys.

Three of four of the pregnant women answered both open-ended questions on this survey and one did not answer either open-ended question on the survey. Answers to question number one; "please tell us if there are any particular presenters or topics you would suggest for inclusion in a future group," included: "learning more about baby," "all," and "everything is helpful." Answers to question number two; "please tell us if there is anything you would suggest

to improve this group for the future,” included; “none,” “nothing,” and “try and get more people and have them talk.”

Self-Efficacy Survey

The same four pregnant women who filled out the summative satisfaction surveys also filled out the self-efficacy survey, titled “ How I Feel Now.” The survey began with, “How I feel now: Now that I have been in the The Baby Bump Club, I feel that I will be able to.” Feedback from this survey is included in Appendix E. Figure 17 shows the answers to question one; “eat foods that are healthy for me and my baby.” All four women answered “really confident.” Figure 18 shows the answers to question two; “not drink beer or alcohol, do drugs, or smoke while I am pregnant.” Three women circled “really confident” and one woman circled “not confident at all.” Looking further into this question, all of the women also identified which classes they attended throughout the program and the woman who circled “not confident at all” did not attend the “Things to Avoid during Pregnancy” class, which addressed these subjects. The antenatal education program will continue to be offered after this project is completed, and this class was offered in April, 2016. Hopefully, this pregnant woman was among the pregnant women who attended at that time and received the information and resources she needed to help her avoid alcohol, drugs, and smoking.

Figure 19 shows the answers to question three of the survey, “ask my friends and family not to smoke around me.” Two of the women marked “really confident” and two of the women marked “sort of confident.” One of the women who marked “sort of confident” attended the “Things to Avoid during Pregnancy” class while the other one did not. Figure 20 shows the answers to question number four; “be physically active during my pregnancy.” Two women selected “really confident” and two women selected “sort of confident.” All four women

attended the “Exercising Throughout Pregnancy” class as it was the last class given when these surveys were handed out. Figure 21 shows the answers to question five; “make choices about when I want to be pregnant again,” and all four women circled really confident. Finally, Figure 22 shows the answers for question number 6; “ask people in my community for help.” Three women selected “really confident” and one woman selected “sort of confident.”

Considering the results of this survey, it appears that overall, the women were confident they could engage in the health-seeking behaviors encouraged throughout the classes. This indicates that the pregnant women perceive that they have the ability to implement the health-seeking behaviors discussed throughout the antenatal education program outside of the class. There were no open-ended questions included in this survey for written feedback from the women.

Conclusion

The community-based antenatal education program took place over an eight week period beginning on January 26, 2016 and ending March 22, 2016. Once IRB approval was received, satisfaction and self-efficacy feedback was collected at the end of six of the eight classes in the antenatal education program. Overall, the feedback gathered throughout this project indicated that the pregnant women were satisfied with the antenatal education program and that they perceived themselves as being able to implement the health-seeking behaviors discussed throughout the class. Chapter 6 will further discuss the DNP role in the design, implementation, and evaluation of the antenatal education program, the outcomes of the scholarly project, strengths and limitations of the project, sustainability, and recommendations for future classes.

CHAPTER 6

DISCUSSION

An eight week community-based antenatal education class was developed, implemented, and evaluated by the DNP student in a southwestern county of a Midwestern state. Over the course of the eight weeks of class, a range of three to seven pregnant women attended each class and gave feedback at the end of six of the eight classes. The feedback gathered from the pregnant women was then used to improve the quality of the next sessions and will be used to improve the quality of future classes in hopes of attracting and engaging more pregnant women from the local community. The purpose of this chapter is to discuss the how the DNP student enacted the Essentials of Doctoral Education for Advanced Nursing Practice throughout the development, implementation, and evaluation of this scholarly project. Additionally the outcomes of the community-based antenatal education class will be discussed as they relate to promoting healthy pregnancies and increasing social support among pregnant women in the local community. The strengths and weaknesses of the scholarly project will be discussed, along with the plans for sustainability of the antenatal education class, and the chapter will close out with a discussion regarding the recommendations for future classes.

Essentials of Doctor Education for Advanced Nursing Practice

The DNP student utilized the American Association of Colleges of Nursing's (AACN) eight Essentials of Doctoral Education for Advanced Nursing Practice throughout the development, implementation, and evaluation of this scholarly project. The Essentials of Doctoral Education for Advanced Nursing Practice are the foundational competencies that are the basis to all advanced nursing roles (AACN, 2006). The DNP student demonstrated

competency of seven of the eight Essentials throughout the design, implementation, and evaluation of the scholarly project.

Essential I relates to the scientific underpinnings for advanced nursing practice (AACN, 2006). In regards to this essential, the DNP student completed an integrative review to analyze, critique, and synthesize the current literature available regarding the benefits of antenatal education on increasing healthy pregnancies and social support, especially among high-risk pregnant women and pregnant women. Once it was determined that there was sufficient evidence base to guide practice, the DNP student moved forward with the project. Science-based theories were also used in the design, implementation, and evaluation of the scholarly project; including the Health Belief Model and the Iowa Model of Evidence-Based Practice to Promote Quality Care. In addition, principles from andragogy, the practice of engaging adults in learning, were used throughout this project.

Essential II relates to systems and organizational leadership in quality improvement and systems thinking (AACN, 2006). The DNP student developed an antenatal education program that met the needs of the current population of high risk pregnant women in the county. The student used advanced communication skills to throughout the development and implementation of the project and ensured that there were quality improvement measures in place throughout the implementation of the project and for future classes.

Essential III pertains to clinical scholarship and analytical methods for evidence-based practice (AACN, 2006). Throughout the design and implementation phases the DNP student was continuously analyzing, synthesizing, and critiquing the literature to determine the best evidence for the development of the class curriculum and for quality improvement of the class. Appropriate feedback was gathered for quality improvement throughout the project and for

future classes and outcomes were evaluated both throughout the project and at the end of the project.

Essential V pertains to health care policy and advocacy (AACN, 2006). Through the development and implementation of the scholarly project, the DNP student was able to advocate for high risk pregnant women in the county. Decisions made about location of the program and the topics included address the principles of social justice and influence health equity opportunities with this population. Providing this class is one resource that can help decrease the considerable disparity in infant mortality in the county.

Essential VI relates to interprofessional collaboration for improving patient and population health outcomes (AACN, 2006). Throughout all aspects of the scholarly project; the design, implementation, and evaluation, the DNP student collaborated with multiple community representatives both within the Healthy Babies Healthy Start initiative and outside of the initiative. All of the case managers and employees at Healthy Babies Healthy Start have different professional backgrounds and degrees; ranging from social work to psychology and substance abuse, and they were integral in the development of the class. The DNP student also consulted with dietitians, lactation consultants, and several other representatives throughout the community to provide the pregnant women with the most diverse and richest information possible.

Essential VII pertains to clinical prevention and population health for improving the nation's health (AACN, 2006). In the development of the project, the DNP student analyzed a large amount of data regarding the population of high risk pregnant women in the county. The information gleaned from these data was used throughout the project to help address social,

behavioral, and health issues specific to the population of high risk pregnant women in the county to promote healthy pregnancies within this population.

Essential VIII relates to advanced nursing practice (AACN, 2006). The DNP student demonstrated advanced levels of clinical judgment, systems thinking, and accountability throughout design, implementation, and evaluation of the antenatal education program using nursing science and other sciences as a basis. Through the implementation of the scholarly project, the DNP student was able to help guide and educate pregnant women in the county about healthy pregnancies and decreasing risky health and social behaviors.

Outcomes

The main indicator to determine the effectiveness of the antenatal education program was participant satisfaction. One of the goals of the project was to recruit four to six pregnant women from the surrounding community who otherwise may not attend an antenatal education class during her pregnancy and that each participant would attend all eight modules in the program. As mentioned previously, a range of three to seven women attended each of the eight classes in the antenatal education program, which is just outside of the stated goal of 4 to 6 women. However, none of the women consistently attended all eight of the classes. It took a couple of weeks to get the program started and achieve a consistent group of pregnant women attending each week. It was not until week three that a consistent group of pregnant women starting coming to the class on a regular basis.

The Iowa Model of Evidence-Based Practice to Promote Quality Care was used to guide the implementation and evaluation of this scholarly project. According to the Iowa model, structural, process, and outcome data should be monitored and evaluated throughout the length of the project to determine the effectiveness of the intervention and whether the expected

outcomes are being achieved (Titler et al., 2001). In following with the Iowa Model of monitoring and evaluating data throughout the project, individual satisfaction surveys were given at the end of six of the eight classes in the antenatal education program and evaluated for quality improvement changes that could be implemented throughout the project. Additionally, a summative satisfaction survey and self-efficacy survey were both given at the end of all eight of the classes in the antenatal education program to be evaluated for quality improvement changes that could be made to future classes.

All of the surveys that were distributed in the antenatal education class were completed and returned to the DNP student. The results of the individual satisfaction surveys included in Table 2, a majority of the women marked strongly agree or agree to all five questions on all of the surveys given out over the six classes that feedback was collected. Looking specifically at the feedback given for question five on Table 2; “overall, I was satisfied with group today,” 24 of the 27 questions were marked “strongly agree,” three of the questions were marked “agree,” and none of the questions were unanswered, marked “disagree,” or marked “strongly disagree.” This suggests that the class was effective as the pregnant women indicated that they were overall satisfied with the each class in which feedback was collected.

Four pregnant women filled out the summative satisfaction survey and three out of the four women strongly agreed that they were satisfied with the class and one strongly disagreed. The woman who disagreed did not leave any feedback regarding why she strongly disagreed nor did she leave much information in the two open-ended questions on the survey. It would have been helpful had the surveys asked the participants to please explain any questions that they mark disagree or strongly disagree as that information could be used for quality improvement of future classes. Another possibility is that the pregnant woman was tired of filling out so many

surveys and did not pay close attention to what she was marking. Despite this, three of the four women indicated that they were satisfied with the antenatal education program meaning that the project was overall successful. Looking at the feedback written in the two open-ended questions for quality improvement of future classes; one pregnant woman suggested that they learn more about the baby in class and the remaining three women did not have any suggestions. The DNP student will take that feedback and recommend that Healthy Babies Healthy Start use a portion of each class to talk more about the baby and the baby's development throughout pregnancy.

Four pregnant women filled out the self-efficacy survey at the final class of the project. According to the Health Belief Model, the conceptual model used to guide this scholarly project, self-efficacy is an individual's perception of his or her ability to implement the health-seeking behaviors (Carpenter, 2010; Janz & Becker, 1984). Collecting feedback regarding health beliefs, such as self-efficacy, facilitates the development of programs similar to the antenatal education class that better meet the needs of the target population (Rosenstock, Strecher, & Becker, 1988). According to the feedback gathered through the self-efficacy survey, the pregnant women felt "really confident" that they can eat healthy foods and make choices about when they want to be pregnant again, indicating that they perceive themselves as able to implement these two health seeking behaviors. Three of the four women perceive themselves as being able to abstain from drinking beer, alcohol, smoking, and doing drugs and one woman is not confident in her ability to do this. However, that woman did not attend the class during which substance abuse, smoking, and things to avoid during pregnancy were discussed. Two of the pregnant women felt really confident that they would be able to ask their friends and family not to smoke around them and be physically active during their pregnancy and two of the pregnant women felt sort of confident being able to implement those

two health-seeking behaviors. Three pregnant women felt really confident about asking people in their community for help while one woman felt sort of comfortable doing that. Overall, the feedback gained from the survey indicated that the women had high levels of self-efficacy regarding the health-seeking behaviors encouraged through this antenatal education program.

Another outcome of the community-based antenatal education program was to promote healthy pregnancies. When looking at the feedback given for question two of the self-efficacy survey, “the information provided today will help me have a healthier pregnancy,” 19 of the 27 questions were answered “strongly agree,” six were answered “agree,” one woman answered “disagree,” and one woman did not answer question two. This indicates that this outcome was achieved and antenatal education program may promote healthy pregnancies among these pregnant women in the local community.

The final outcome of the antenatal education program was to increase social support among the pregnant women who attended the class. This was apparent throughout the antenatal education class that the pregnant women were developing peer social support among each other. As mentioned in Chapter 5, the pregnant women would often stay up to 30 minutes past the class ending time talking amongst themselves or with the community representative. They also began exchanging phone numbers, sharing rides to class, and making plans outside of the antenatal class after the Dealing with Stress during pregnancy class as well.

Strengths

Multiple strengths were noted throughout this scholarly project. First, having access to the data regarding high risk pregnant women and infant mortality rates in the county the project was implemented along with using the concepts of Health Belief Model to address perceived barriers, perceived susceptibility, perceived severity, and perceived benefits to the antenatal

education class facilitated the design, implementation, and sustainability of this project. Additionally, there was adequate grant money available to conduct the classes for several weeks before the beginning of the next grant cycle. The DNP student was able to purchase all of the resources and supplies that would be needed throughout the course of the project with the available grant money. Furthermore, Healthy Babies Healthy Start has plethora of educational resources and agency experts available to reference and use throughout the educational program. This was invaluable as the agency experts contributed valuable input and suggestions for the class and curriculum.

Another strength was that all of the surveys that were handed out over the course of the project were filled out and turned back into the DNP student for a 100% response rate. Additionally, the group of pregnant women who continued to come to the classes beginning in week three of the program were approximately the same ages, late adolescents and young adults, and all in the same stage of pregnancy. Each of these pregnant women had due dates within about 10 days of each other and were all planning to deliver at the same hospital. This gave the pregnant women something to talk about and bond over during the course of the antenatal education program. All of the pregnant women found out the gender of their babies around the same time and went through many of the stages of pregnancy at the same time. They were excited to compare notes and experiences at each class. These behaviors indicate that the women were starting to build a social network.

Limitations

In addition to strengths, multiple limitations were noted within this scholarly project as well. First, the sample of pregnant women was relatively small and recruited through convenience sampling. Most of the participants who attended the class were Healthy Babies

Healthy Start clients and referred by their case managers, making it difficult to generalize the results to a larger or more diverse population. Second, a consistent group of pregnant women did not start and end the class together; different women attended throughout the length of the antenatal education program, as evidenced by the changes in attendance rates each week seen in Table 1.

A limitation regarding the surveys handed out during the project was that they did not ask for an explanation for any answers that were marked disagree or strongly disagree. Having that feedback would have been valuable for quality improvement purposes throughout the antenatal education program and for future classes. Finally, over the course of the scholarly project, a total of eight surveys; six individual satisfaction surveys, one summative satisfaction survey, and one self-efficacy survey, were handed out to each pregnant woman throughout all six classes in which feedback was collected. The pregnant women may have thought this many surveys was repetitive, which may be one reason they did not give much feedback in the open-ended questions of each survey.

Sustainability

In addressing the sustainability of the community-based antenatal education program, the Healthy Babies Healthy Start grant requires that the initiative provides educational opportunities for their clients. Therefore, the Healthy Babies Healthy Start initiative has a great interest in sustaining the program now that the scholarly project is complete. Additionally, the initiative is in the process of hiring a community educator who will assume the facilitation of the antenatal education class and be responsible for developing and maintaining educational programs similar to this in the future.

The DNP student will leave the antenatal education program's complete curriculum with Healthy Babies Healthy Start to be utilized throughout the existence of the antenatal education program and as a model for the development of future educational programs. Additionally, the DNP student has made many community contacts with different community representatives who have come in and contributed to the antenatal education classes. These contacts will be shared with the Healthy Babies Healthy Start community educator and can be used in both future antenatal education classes and other educational opportunities that the community educator may create.

An additional avenue for sustainability recently presented itself to Healthy Babies Healthy Start and the DNP student. There is another organization in the county, the YWCA, that is interested in hosting the community-based antenatal education class at their site. A representative from the YWCA is one of the community representatives who attends the Healthy Relationships antenatal education class at the Family Health Center to talk with the pregnant women about intimate partner violence. When the DNP student asked the organization if they would also be interested in hosting classes at their site, they were eager to meet and look into the possibilities. Holding the antenatal education class at the YWCA will be a great opportunity for Healthy Babies Healthy Start to not only sustain the program but to expand it and to involve more high risk pregnant women within the community in the classes.

Recommendations

The sustainability of the community-based antenatal education program is contingent on continuous referrals and recruiting of pregnant women within the county to attend the class. Therefore, the case managers at Healthy Babies Healthy Start will have to be invested in seeking out and referring their pregnant clients to the class. It would be especially helpful if the case

managers would provide bus tokens and set up taxi rides to help the pregnant women overcome any perceived barriers to transportation they may have. Additionally, case managers could make some of their monthly or bi-monthly appointments with their clients before and after the antenatal education classes. One case manager began doing this during the scholarly project and it was invaluable in the recruitment and engagement of pregnant women in the antenatal education class.

After looking at the pregnant women's feedback from the summative satisfaction survey, another recommendation is that more information about the baby and the baby's development throughout pregnancy be incorporated into the program's curriculum. The community educator should also continue collecting feedback from the pregnant women attending the antenatal education program regarding satisfaction and quality improvement. This will ensure that the antenatal education program continues to meet the pregnant women's needs and addresses the topics that are most important and applicable to the women attending the antenatal education class. The DNP student is willing to consult with the new community educator to assist her early work to provide the program.

Conclusion

The antenatal education program for this scholarly project ended on March 22, 2016. After evaluating the feedback collected from the pregnant women on the satisfaction surveys and self-efficacy survey, it can be concluded that the scholarly project met the desired outcomes of participant satisfaction and increasing social support among pregnant women in the community. The results from the antenatal education program suggest that it could be a valuable resource for the pregnant women in the county. Plans for sustainability after the project's completion are in place and the community educator for Healthy Babies Healthy Start will begin the facilitation of

the class once the DNP student has completed her work. Several recommendations for future classes were made using the pregnant women's feedback and the noted strengths and weaknesses of the project.

APPENDICES

Appendix A

Evaluation and Synthesis Table

Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement	Data Analysis	Findings	Appraisal: Worth to Practice
Klerman, Ramey, Goldenberg, Marbury Hou, & Cliver, 2001	No mention of a conceptual framework	This study is a randomized controlled study to evaluate whether augmented prenatal care improves pregnancy outcomes, patients' knowledge of their risks, satisfaction with care, and behavior of high risk African-American women.	A total of 656 women began the study, but only 619 of those women completed the study. Women included in the study were African-American, eligible for Medicaid, at least 16 years old, less than 26 weeks' gestation, and scored 10 or higher on a risk assessment scale and were in	IV 1: Augmented Care (educating the high risk women about their risky conditions and what behaviors could improve their pregnancy outcomes). DV 1: Fetal Death DV 2: Birth weight DV 3: Gestational age DV 4: Growth indicators	Data regarding patient care and birth outcomes were gathered from clinic records and the computerized database that contained data for all Medicaid patients. A structured postpartum interview was conducted with the women from both the control and experimental groups during the second year of the study to survey perceptions of prenatal care, knowledge of risk conditions, motivations to decrease risk	General linear models and co-varying or controlling for maternal and child variables, the data were tested for 2 and 3 way interactions.	Demographics and maternal risk factors were similar between the two groups. High-quality augmented prenatal care that had an emphasis on education, social support, and health promotion significantly increased high risk pregnant women's satisfaction, perceived mastery in their lives, and knowledge of their risk conditions. However, it did not decrease low birth weight among women in the study.	Strengths: Randomized controlled studies are the strongest level of evidence for interventions and there was a high patient follow-up rate. The sample size was determined prior to the study to ensure an adequate sample size to achieve a power of 80%. Weaknesses: The participants were only selected from one county in Alabama making it

			Jefferson county Alabama. The women were randomly assigned to either receive the augmented care or normal care.	DV 5: Child health status DV 6: Maternal health DV 7: Delivery outcomes.	conditions, and pregnancy outcomes. Interviewers were blind to the treatment groups. A risk scale was used to determine if the women were eligible for the study. The scale was developed from multiple analyses of a database with all Medicaid-eligible pregnancies, but the name of the scale was not included in the article.			difficult to generalize the results to a larger, more diverse population, only data from the postpartum interview from the second year was included in the study, not the data from the post-partum survey from the first year due to inconsistencies in the administration of interviews. Risk or harm if study intervention is implemented is low.
Kistin, Benton, Rao, & Sullivan,	There was no mention of a conceptual	A randomized, controlled, prospective	159 African-American pregnant	IV 1: Group antenatal breastfeeding education	Data were collected through interviews with each woman's	Multivariate analysis was used to examine the	Prenatal breastfeeding education was associated with an	Strengths: It was a randomized, controlled

1990	framework in the article.	study to determine whether antenatal education of low-income African-American women increases breastfeeding rates. The women in the study were randomly assigned to either individual or group antenatal education groups or a control group.	women born in the United States who attended a midwives prenatal clinic and were less than 24 weeks pregnant were selected for this study and 130 of those women completed the study.	IV 2: Individual antenatal breastfeeding education DV 1: Incidence of breastfeeding .	initial contact with the prenatal clinic and within 4 days of delivery. The first interview contained questions regarding demographics, how each woman fed previous babies, plans for how she would feed the infant she was currently pregnant with, and social and environmental constraints. The post-partum interview used questions regarding birth outcome, chosen method of feeding the current infant attitude toward current feeding method, and hospital practices that affect choice on how to feed	effect of the intervention after controlling for age, prenatal plans to breastfeed, prior breastfeeding experience, and perceived support by partner.	increase in the incidence of breastfeeding, the women who attended the group antenatal education classes, breastfed for longer than those in the control group and who attended individual antenatal education classes. The group antenatal education class, individual antenatal education class, and control group all had similar numbers of pregnant women who planned to breastfeed their infants, however, 23% of the women in the control group, 45% of women in the group	study. Weaknesses: There was a small sample size, large drop-out rate, and the sample was not very diverse. Additionally, the control group was not randomized and self-report was used for data collection, which is not always an accurate or validated method of data collection (Polit & Beck, 2012). The risks for harm for the study interventions are low.
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					infant		education, and 50% of the women in the individual education initially breastfed at birth.	
Turan & Say, 2003	No mention of a conceptual framework	A non-randomized controlled study to examine the effect of a community-based antenatal education program on vaginal births, maternal and infant health behaviors, and contraceptive use after birth.	A convenience sample of 257 women giving birth to their first child from Istanbul, Turkey were included in the sample. 100 were in the experimental group and 157 were in the control group.	IV 1: Community-based antenatal program. DV 1: Vaginal birth DV 2: Maternal and infant health behaviors DV 3: Contraceptive use	A pre-test and post-test was used to measure knowledge about health during pregnancy, birth, and postpartum for the experimental group. Two to three months after birth, in home interviews were conducted to determine whether there was a change in health behaviors for both groups.	Logistic regression was used to control for background differences among the two groups. Bivariate comparisons were made for health behaviors of those from both the experimental and control groups.	There were demographic differences between the experimental and control group. The women in the experimental group were a few years older than those in the control group, had higher education, and had greater access to resources due to being born in Istanbul. There was no significant difference between the control and experimental group for birth type (vaginal or cesarean) birth experience, or	Strengths: There was a control group and the authors controlled for background characteristics. Limitations: The sample was a convenience sample not randomized, small sample size, and the participants were selected from only one city in Turkey making it difficult to generalize the results to larger populations in different countries.

							<p>postpartum check-up for the mother. The experimental group had significantly higher rates of breastfeeding, postnatal check up for the infant at a health clinic, and contraceptive use for unwanted pregnancy. Women in the antenatal education groups were more likely to initiate breastfeeding within two hours of birth and be breastfeeding at time of post-partum interview. The authors conclude that a community-based antenatal education program may increase the likelihood that</p>	<p>There was no use of a validated tool for data collection</p> <p>The risks for harm for the study interventions are low.</p>
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							women will take part in more beneficial health behaviors after giving birth.	
Serçekuş & Mete, 2010	The Roy Adaptation Model	A non-randomized, quasi-experiment based on the Roy Adaptation Model to evaluate the effects of antenatal education on maternal prenatal and postpartum adaptation.	120 nulliparous women from a large city in Turkey were included in the study between 2006 to 2008. Participants were divided into 3 groups, 2 experimental groups where one received individual antenatal education, the second received group antenatal education, and a	IV 1: Individual prenatal care. IV 2: Group prenatal care. IV 3: Standard care. DV 1: Prenatal adaptation DV 2: Postnatal adaptation	Lederman's prenatal and postpartum self-evaluation questionnaires were used to collect outcome data. The internal consistency of the PSEQ was reported as 0.83, while that of the PPSEQ was 0.88.	One way ANOVA and chi-squared tests were used to evaluate differences in demographics between the three groups, hypotheses were tested and one way ANOVA was used to test the hypotheses. A post hoc test was used to determine the differences across the three groups	There were no significant differences in the demographics between the experimental and control groups. Women receiving either group or individual education had significantly lower scores on the prenatal self evaluation questionnaires, there was no significant difference between the antenatal education groups and the control group for the postpartum scale. This indicates that there was a significant	Strengths: There was a control group. The sample size was determined before beginning the study to ensure an adequate sample size to achieve a power of 80%. Limitations: Small sample size, non-randomized sample selection – the participants chose what group they wanted to participate in, the participants were selected from only one

			control group that received standard care.			if the omnibus F-test was statistically significant. The Kruskal–Wallis test was applied to test the H2 and H4 hypotheses.	increase in prenatal adaptation among both experimental groups but there was no difference in postnatal adaptation between the experimental groups and control group.	city in Turkey making it difficult to generalize the results to larger populations in different countries. Self-report surveys were used to collect data. It is a quasi-experiment which is susceptible to threats to internal validity (Polit & Beck, 2012). The risks for harm for the study interventions are low.
Hillier & Slade, 1989	There was no mention of a conceptual framework in the article.	A non-randomized study to examine the changes in knowledge, anxiety, and	67 primiparous women who completed antenatal education classes in	IV: Antenatal education classes DV 1: Knowledge	Surveys with questions regarding knowledge, sources of information used to find out about	The Fleish formula was used to assess the reliability of the surveys, Cohen's	No significant differences were found between those who attended classes based in hospitals versus those who	Strengths: All antenatal education classes used in the study were very similar in format and

		confidence for women attending hospital or community-based antenatal education classes.	either a hospital or community setting. Women who began prenatal education before 33 weeks in five antenatal education classes based in a maternity ward and six antenatal education classes based in the community.	DV 2: Anxiety DV 3: Confidence	pregnancy, reasons for attending antenatal education, confidence ratings, anxiety, demographic data, information regarding each woman's pregnancy was given at the beginning of the class and surveys with questions related to what information source the women used to find out about pregnancy information, knowledge, confidence, anxiety, social contact and support, relaxation and breathing skills, other gains, attendance rates, information about each woman's	kappa was used to calculate inter-rater reliability, independent t-test, Mann-Whitney U-test, and the chi-squared test were all used to examine differences between attenders of hospital based antenatal education classes and attenders of community-antenatal education classes.	attended classes based in the community in regards to class size, initial or final knowledge, anxiety, or confidence levels. Additionally there were no differences in social class, marital status, or educational level. Those who attended antenatal education classes in hospitals were significantly older and attended classes later in pregnancy than those who attended in the community. There was a significant change in knowledge after the completion of the classes with knowledge rising on average from	content. Weaknesses: There was no control group, the sample was a convenience sample, not a randomized sample, a large number of participants dropped out of the study. The risks for harm for the study interventions are low.
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					pregnancy.		54% to 75%, final state anxiety was inversely related to the number of classes each woman attended, there were significant increases in knowledge. 33% of the women who attended antenatal education classes in the community reported forming more social relationships in the class where as only 13% of women in the hospital-based antenatal education classes reported the same thing.	
Artieta-Pinedo et al., 2010	No mention of a conceptual framework in the article.	A prospective, observational study to evaluate birth outcomes between women who	616 Nulliparous pregnant women ages 18-42 were recruited from	IV 1: Antenatal Education Exposure (AE) (categorized into non-	Hospital Anxiety and Depression	The three groups were compared using chi-square test for dichotomou	Women who attended AE had lower levels of anxiety than those who did not. There was also a lower rate of	Strengths: A validated tool was used to measure anxiety in the participants. There was a

		<p>receive antenatal education and those who do not.</p>	<p>primary care centers in Bizkaia, Spain from September 2005 to May 2006. The participants were broken up into three groups: those who did not attend any antenatal education, those who attended one to four sessions of antenatal education, and those who attended five or more sessions.</p>	<p>attendees, attendees of one to four sessions, and attendees of five or more sessions). In Spain AE is based on the Lamaze obstetric psychoprophylaxis method.</p> <p>DV 1: Arriving at hospital in labor.</p> <p>DV 2: level of laboring woman's anxiety</p> <p>DV 3: Use of epidural anesthesia during active phase of labor.</p> <p>DV 4:</p>	<p>questionnaire</p> <p>The rest of the information regarding the DVs was collected by the patient's midwife from the patient's medical record.</p> <p>Antenatal Education Exposure was</p>	<p>s outcomes and an analysis of variance was used for the means of continuous outcomes. Stratified analyses were done to control for confounding variables. Adjusted measures of association were estimated along with their 95% confidence intervals.</p>	<p>normal childbirths in those who received AE. No other significant differences were seen between the three groups of women.</p>	<p>99% follow-up rate with the participants.</p> <p>Limitations: The reliability and validity of the Hospital Anxiety and Depression questionnaire was not discussed in the article, the sample size was relatively small and only nulliparous women were included in the study. The IV was reported through self-report, which is not always accurate and not all variables were recorded for all participants, leaving gaps in the data. The validity of the</p>
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				<p>Length of first stage of labor.</p> <p>DV 5: Length of second stage, delivery.</p> <p>DV 6: type of birth (vaginal, cesarean section)</p> <p>DV 7: Absence of serious perineal injury</p> <p>DV 8: Satisfaction with childbirth.</p>	measured through self-report.			<p>recorded measurements that were used from the medical record depends on how reliable those who recorded it were. There was a large imbalance between the groups, on 7.3% of the participants did not attend AE, 10.1% attended 1 to 4 classes, and 82.6% attended 5 or more classes.</p> <p>The risks for harm from the study interventions are low.</p>
Chesser, Woods, Melhado, & Steventon,	No mention of a conceptual	An exploratory study to determine	A total of 323 pregnant women	IV 1: "Becoming a Mom" prenatal	A pre-test and post-test was given at the first prenatal session	The difference in knowledge on the pre-	Statistically significant changes in 14 out of 32 of the	Strengths: The pretest serves as the control for the study.

2015	framework.	whether a “Becoming a Mom” prenatal program is effective in changing attitudes, knowledge, and health programs among high risk pregnant women. It was a pretest/post-test comparison research design.	from four counties across the state of Kansas participated in the program throughout the staggered implementation phase but only 114 pregnant women completed the study.	program. DV 1: Participants’ attitudes. DV 2: Participants’ knowledge DV 3: Birth outcomes DV 4: Breastfeeding	and the last prenatal session. Participants’ attitudes were evaluated using a four question Likert scale, there were 31 questions to assess each participant’s knowledge before and after the prenatal sessions, birth outcomes were collected from participants medical records, and breastfeeding information was collected through self-report.	test and post-test was evaluated by paired t-tests. Descriptive statistics were used to evaluate health outcomes and changes in attitudes.	knowledge questions were noted, along with statistically significant changes in attitudes. Breastfeeding initiation was 11% higher among the mom’s in the prenatal program than Kansas’s average and vaginal delivery was 10.8% higher as well. The authors concluded that the “Becoming a Mom” prenatal program can improve pregnant women’s knowledge.	Consistent evaluation tools and data collection procedures were used across the different implementation sites. Limitations: Small sample size, no randomization, no control, there were several participants lost to follow-up (323 began the study and 114 completed the study), and the prenatal program was not consistently implemented throughout all of the sites, which can affect statistical conclusion
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								validity (Polit & Beck, 2012). The risks for harm for the study interventions are low.
Tighe, 2010	Strengths, Weaknesses, Opportunities, Threats conceptual framework was used to develop the interview guide.	A qualitative study - An exploratory study to evaluate the attitudes of first-time mothers toward antenatal education.	32 first-time mothers who had given birth in Ireland within the last 6 months were asked to participate in the study and 16 actually did participate. The study took place in one local health care office.	IV1: Antenatal education DV 1: Attitudes regarding antenatal education	Semi-structured focus group interviews were conducted six months after birth to gather data, using an interview guide. Semi-structured focus groups included women who attended antenatal education classes and those who did not.	A topic guide and interview guide were developed to help code responses and analyze and interpret data. The framework used to develop the interview guide (SWOT) was used as the template for data analysis.	Results showed several strengths, weaknesses, opportunities and barriers in regards to antenatal education. Pregnant women who attended antenatal education saw benefit in the peer and social support from other pregnant women throughout the classes. However, a need for better advertisement and promotion of the class, peer mentoring, class flexibility, and the use of the	Strengths: Very specific information regarding women's feelings toward antenatal education was gathered. Weaknesses: A small sample size like what was used in this study may not reflect the population being studied (Polit & Beck, 2012). The risks for harm for the study interventions

							principles of adult learning as opposed to traditional education were all identified by the women as areas of improvement to the antenatal education classes that they would benefit from.	are low.
Lu, Prentice, Stella, Inkelas, Lange, & Halfon, 2003	No mention of a conceptual framework	A cross-sectional study to evaluate the sociodemographic disparities among those who attend childbirth classes and those who do not attend childbirth classes in the United States. The association between childbirth education class	Stratified random digit dial sampling was used to gather a large cross-sectional sample of 1540 women who were nationally representative of the population in the United States.	IV: Antenatal education DV: Breastfeeding CV1: Race/ethnicity CV2: Educational level CV3: Household income CV4: Marital status	Data were collected via the National Survey of Early Childhood Health through 30 minute, structured phone interviews, in both English and Spanish.	Bivariate and multivariate logistic regression analysis was used to assess disparities in attendance at antenatal education classes and association between attending antenatal education classes and breastfeeding	The authors found that about 2/3s of mothers had ever attended antenatal education. They found significant sociodemographic disparities between women who attend childbirth education and women who do not attend childbirth education classes. The authors found that African-American women and those of lower	Strengths: Very large, diverse sample that is nationally representative of the population. Weaknesses: No differentiation between biological and non-biological mothers and any antenatal education was considered for this study, so classes could

		attendance and breastfeeding was also evaluated in the study as a secondary outcome.		CV5: Maternal age		g. Pearson chi-squared was used for comparisons with P <0.05 as significant.	socioeconomic class were less likely to attend childbirth education classes than Caucasian women and those of higher socioeconomic status. Caucasian women are two times as likely as African-American women to attend antenatal education classes. Additionally, attending a childbirth education class was associated with a 75% increase in the odds that an infant would be breastfed.	have varied drastically. The risks for harm for the study interventions are low.
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Appendix B

Surveys

HOW WAS THE MEETING TODAY?

Thank you for participating in the Baby Bump Club today. Before you go, I would like to learn more about what you think of the group. None of these answers will be connected to you personally.

Please draw a circle around your answer to each statement.

1. The information presented in this group today was useful to me.
strongly disagree disagree agree strongly agree

2. The information provided in this group today will help me have a healthier pregnancy.
strongly disagree disagree agree strongly agree

3. The facilitator was knowledgeable about the topics discussed in group today.
strongly disagree disagree agree strongly agree

4. I enjoyed participating in the group today.
strongly disagree disagree agree strongly agree

5. Overall, I was satisfied with this group today.
strongly disagree disagree agree strongly agree

Please, list two things about the group today that you liked the best.

Please, list two things about the group today that could be improved.

Thank you,

Jen

PLEASE RATE THE BABY BUMP CLUB

Thank you for participating in the Baby Bump Club. Before you go, I would like to learn more about what you thought of the group over the last few weeks. None of these answers will be connected to you personally.

How many weeks did you come to the Baby Bump Club? _____

Please draw a circle around your answer to each statement.

1. The information presented at each group was useful to me.
strongly disagree disagree agree strongly agree
2. I enjoyed having the different presenters at the group each week.
strongly disagree disagree agree strongly agree
3. The facilitator was a good leader for the group.
strongly disagree disagree agree strongly agree
4. Based on my experiences, I would recommend this group to a friend.
strongly disagree disagree agree strongly agree
5. Overall, I was satisfied with this group.
strongly disagree disagree agree strongly agree

Please, tell us if there are any particular presenters or topics you would suggest for inclusion in a future group?

Please, tell us if there is anything you would suggest to improve this group for the future?

Thank you,

Jen

HOW I FEEL NOW

Thank you for participating in the Baby Bump Club. Before you go, I would like to learn more about how your experiences might have affected you. None of these answers will be connected to you personally.

Please draw a circle around your answer to each statement.

Now that I have been in The Baby Bump Club, I feel that I will be able to:

1. eat foods that are healthy for me and my baby.

really confident sort of confident not very confident not confident at all

2. not drink beer or alcohol, do drugs or smoke while I am pregnant.

really confident sort of confident not very confident not confident at all

3. ask my friends and family not to smoke around me.

really confident sort of confident not very confident not confident at all

4. be physically active during my pregnancy.

really confident sort of confident not very confident not confident at all

5. make choices about when I want to be pregnant again.

really confident sort of confident not very confident not confident at all

6. ask people in my community for help.

really confident sort of confident not very confident not confident at all

Thank you,

Jen

PLEASE TELL ME WHAT CLASSES YOU ATTENDED

Please, place a checkmark next to each class that you attended.

January 26, 2016: The Breast or the Bottle? _____

February 2, 2016: Thing to Avoid during Pregnancy _____

February 9, 2016: Healthy Relationships throughout Pregnancy _____

February 16, 2016: Planning Your Next Baby _____

February 23, 2016: Dealing with Stress During Pregnancy _____

March 8, 2016: Eating for Two: Making Healthy Choices _____

March 15, 2016: Am I in Labor? Warning Signs of Premature Labor _____

March 23, 2016: Exercising throughout Pregnancy _____

Appendix C

Individual Satisfaction Surveys

Healthy Relationships during Pregnancy

Figure 2: The information presented today was useful to me.

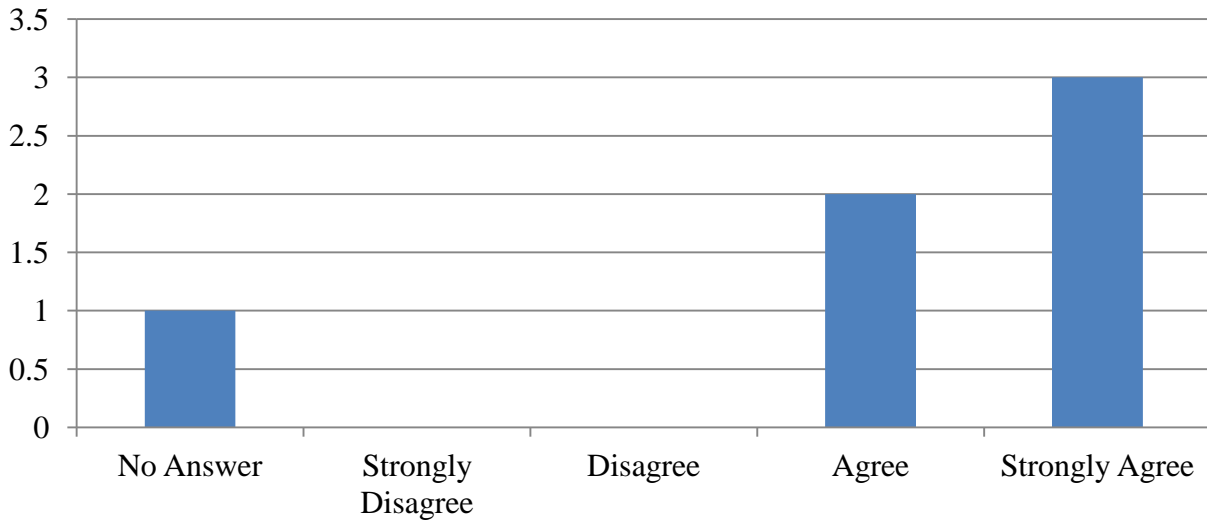


Figure 3: The information provided today will help me have a healthier pregnancy.

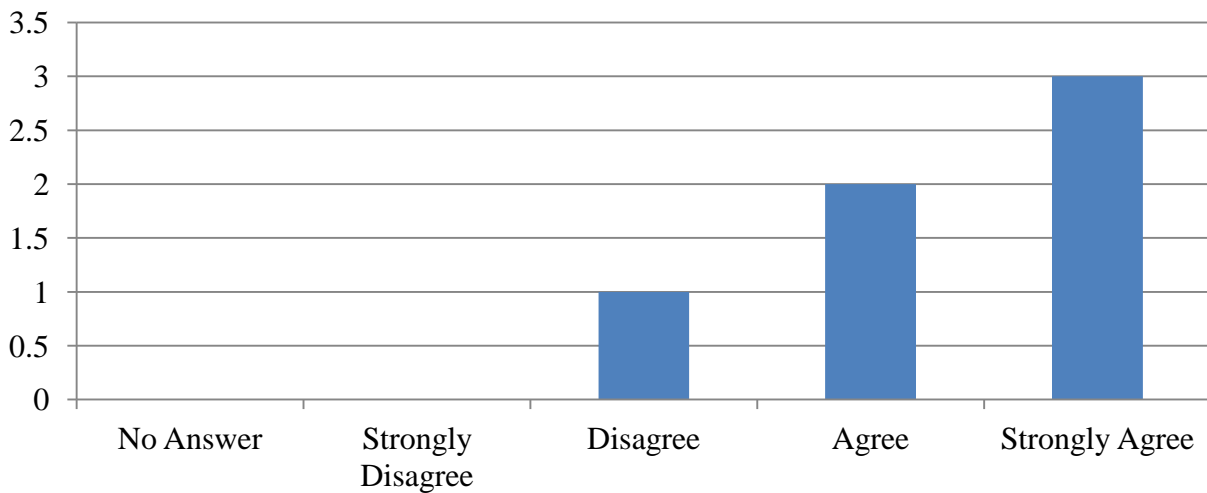


Figure 4: The facilitator was knowledgeable about the topics discussed today.

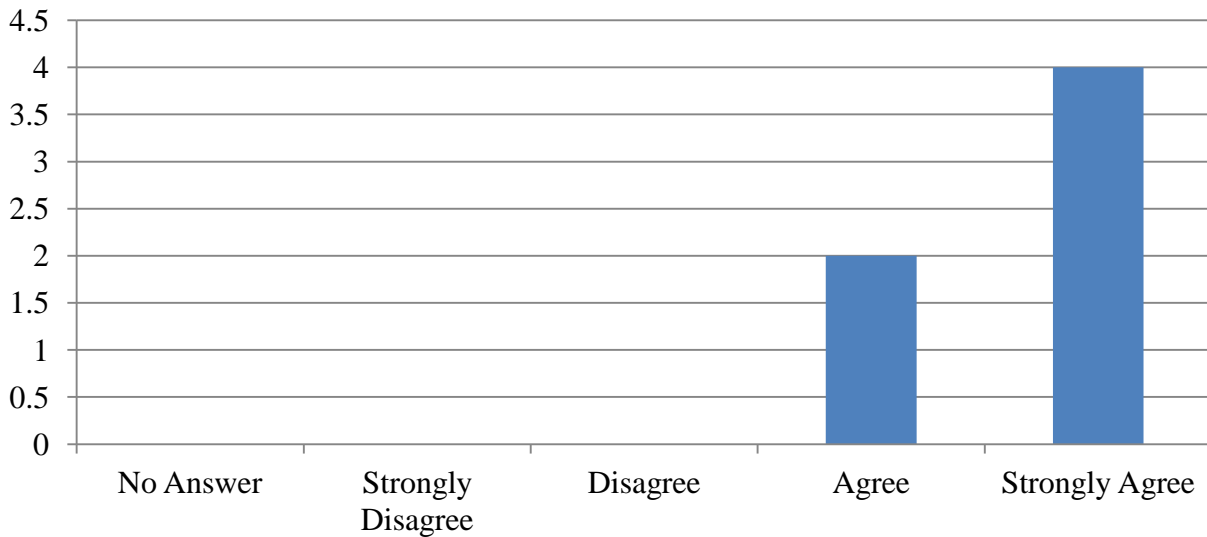
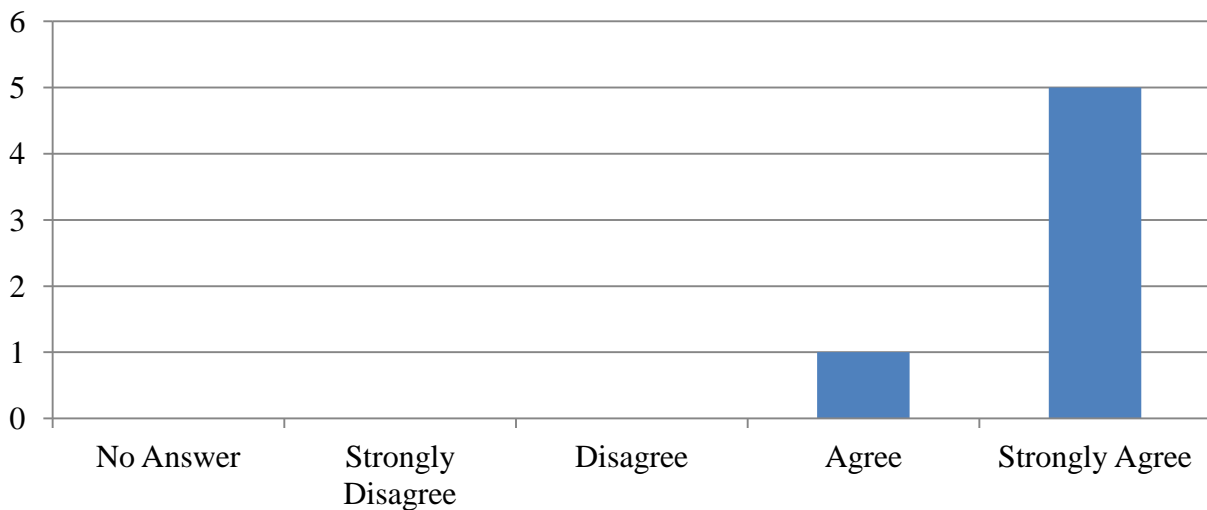
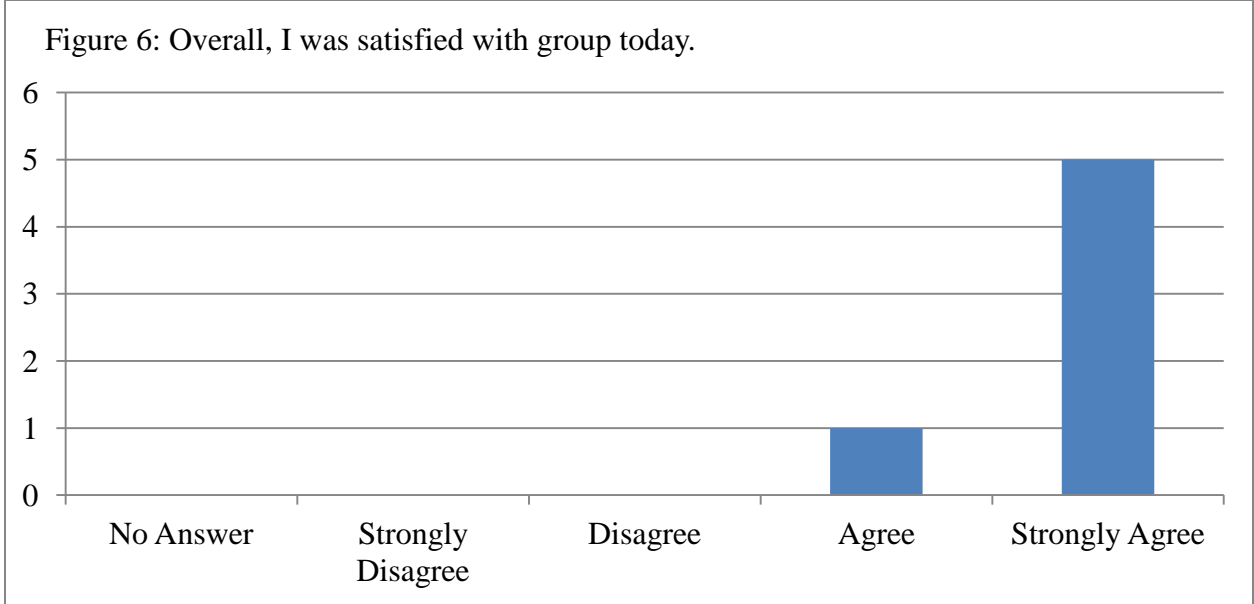


Figure 5: I enjoyed participating today.





Dealing with Stress during Pregnancy

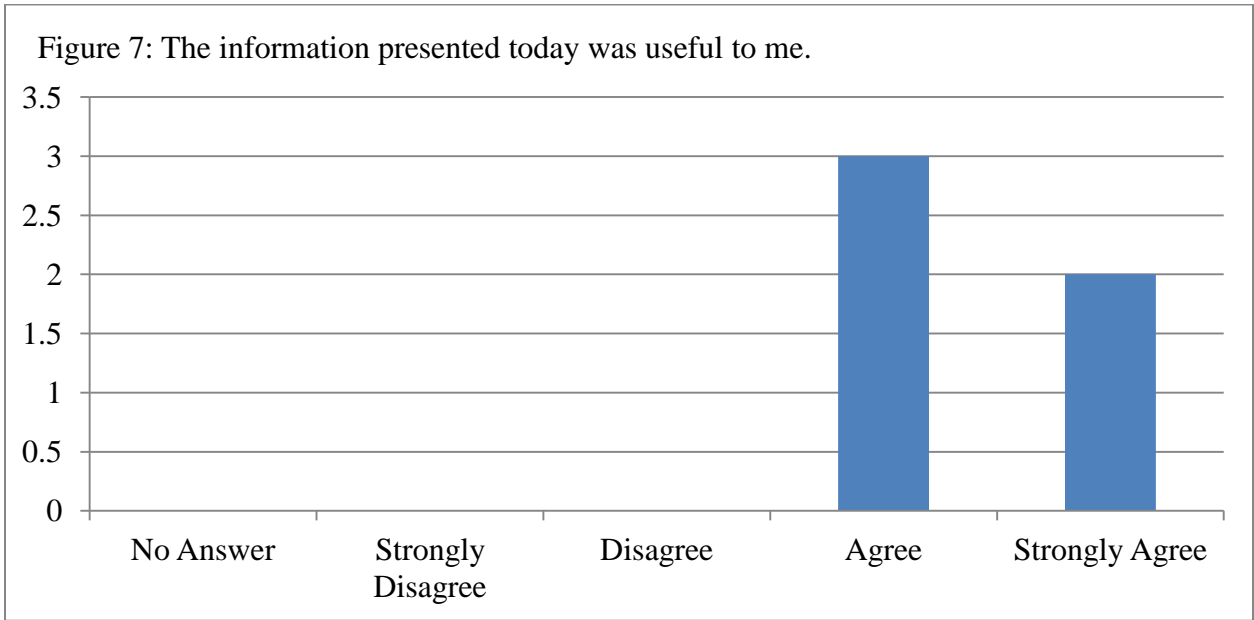


Figure 8: The information provided today will help me have a healthier pregnancy.

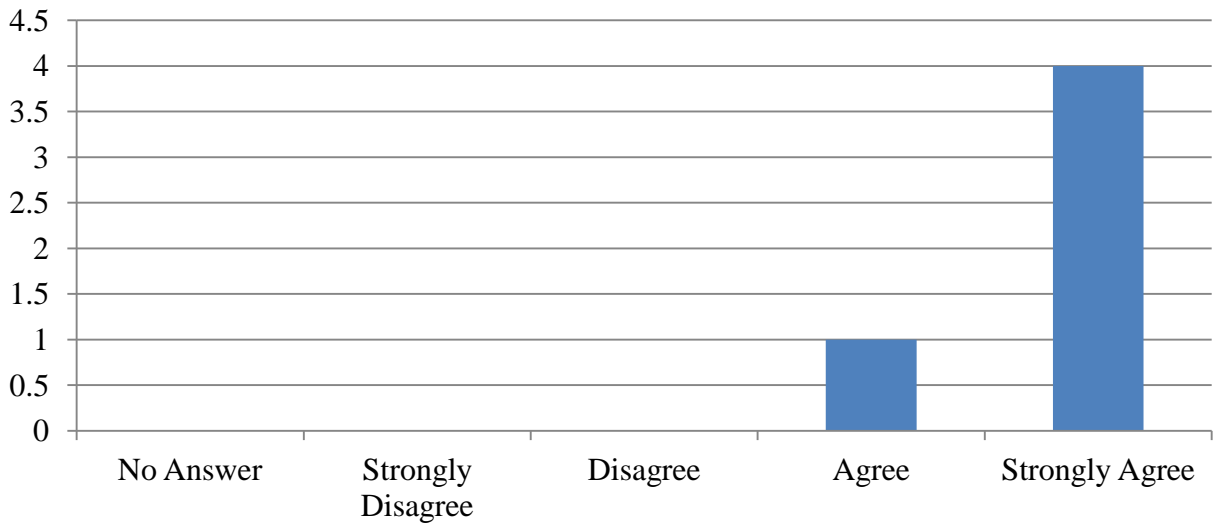


Figure 9: The facilitator was knowledgeable about the topics discussed today.

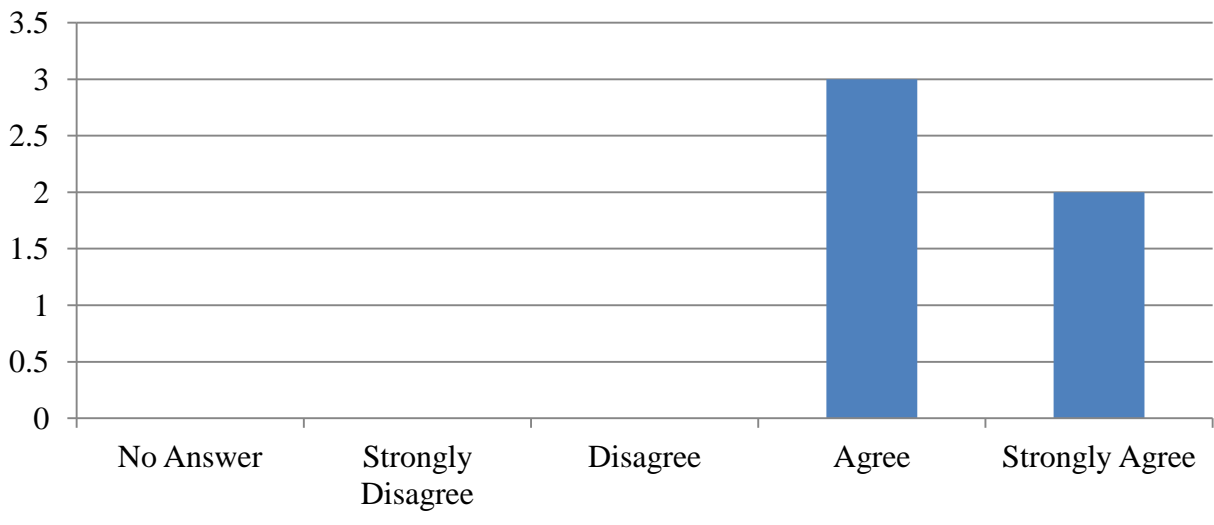


Figure 10: I enjoyed participating today.

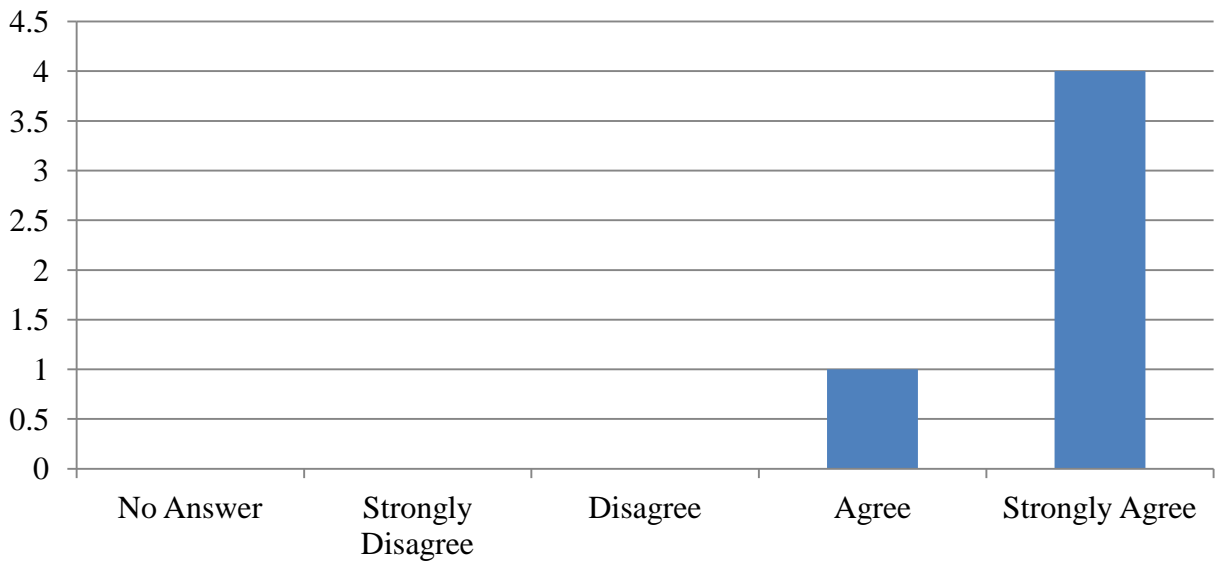
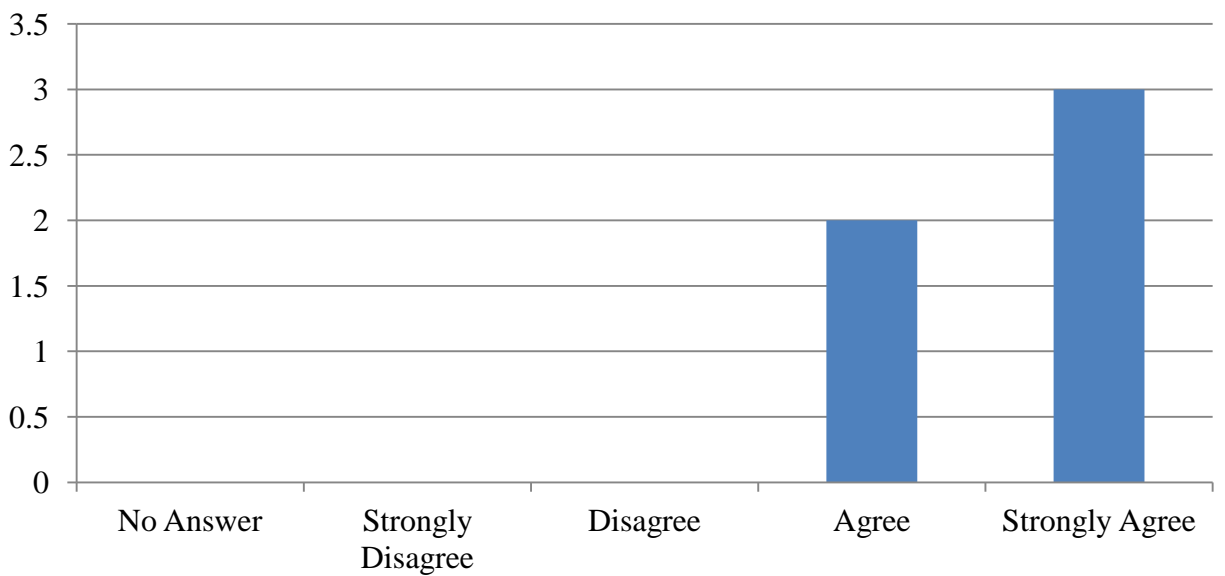


Figure 11: Overall, I was satisfied with group today.



Appendix D

Summative Satisfaction Survey

Figure 12: The information presented at each group was useful to me.

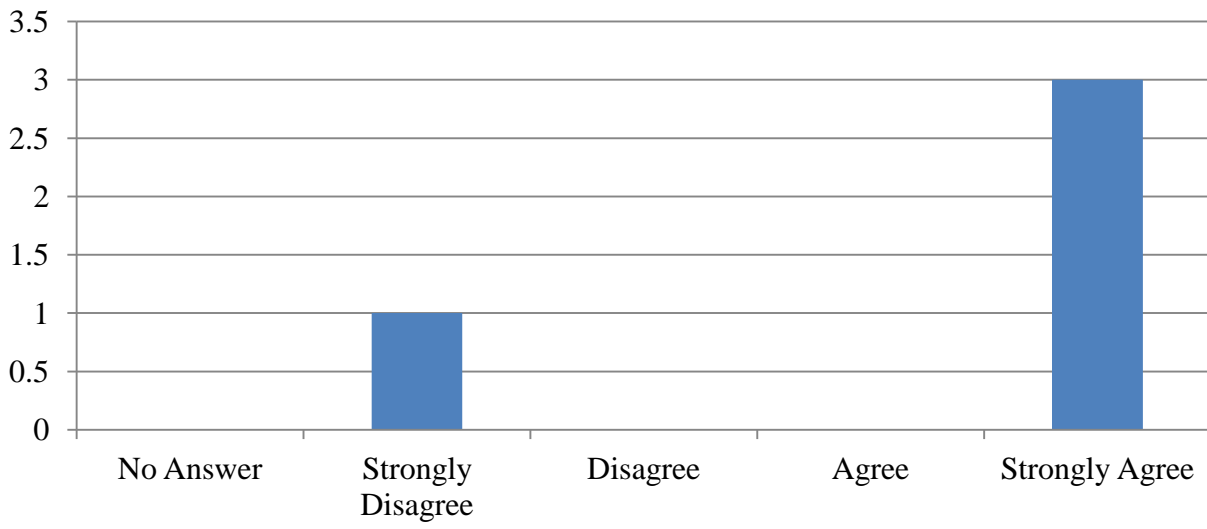


Figure 13: I enjoyed having different presenters at the group each week.

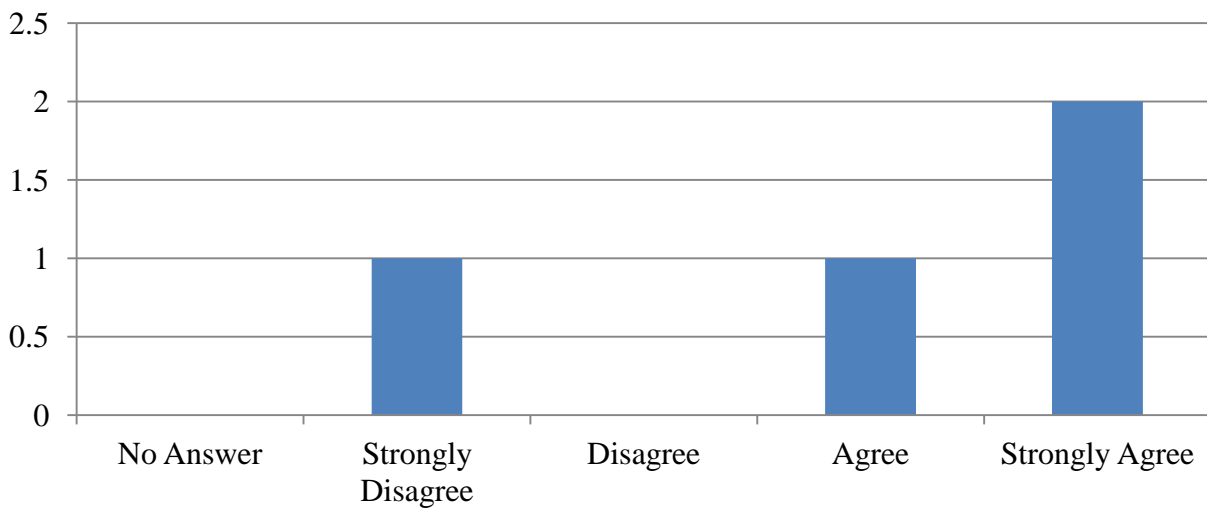


Figure 14: The facilitator was a good leader for the group.

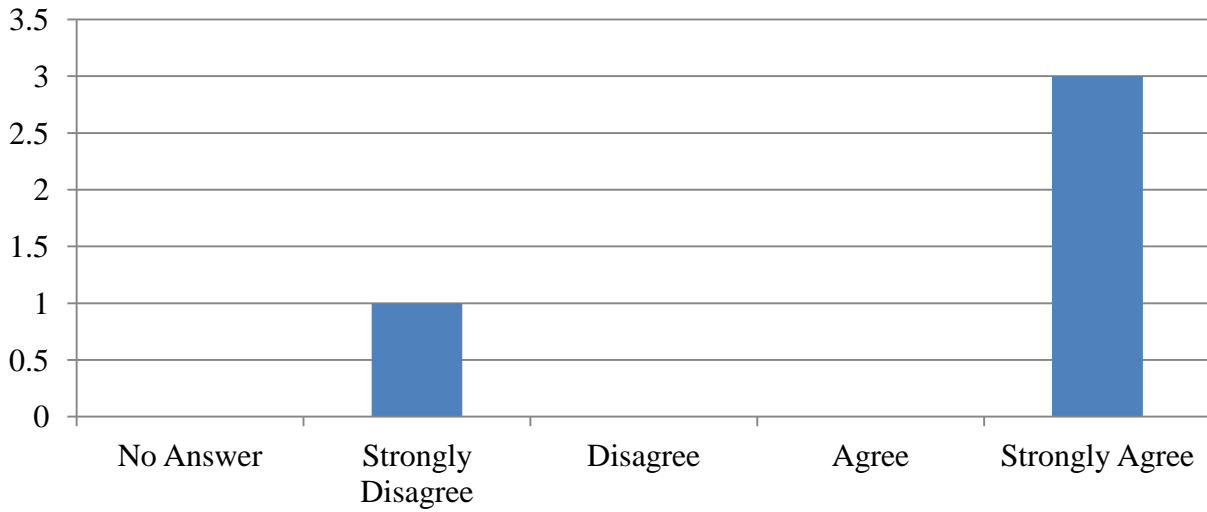


Figure 15: Based on my experiences, I would recommend this group to a friend.

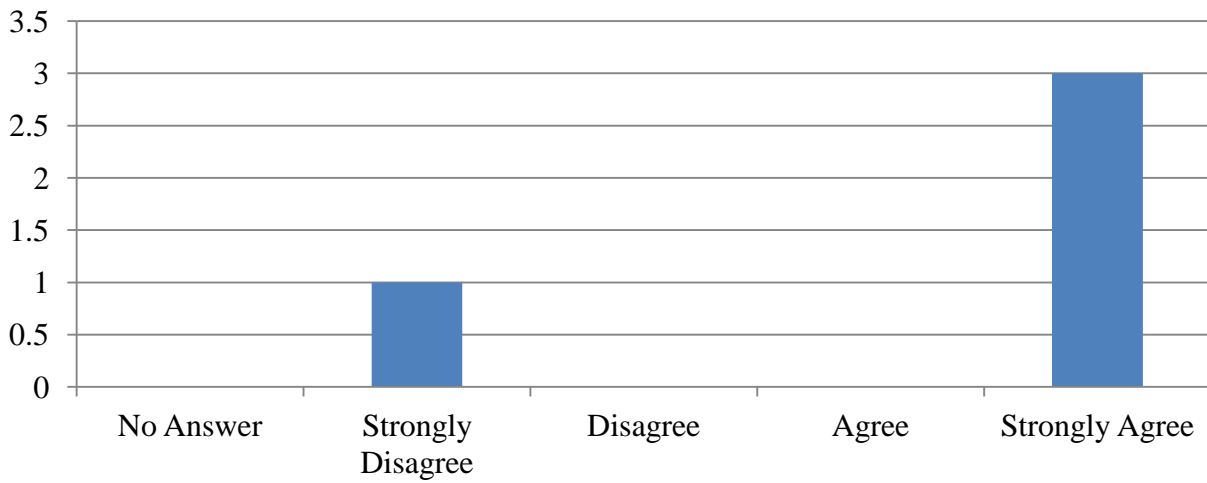
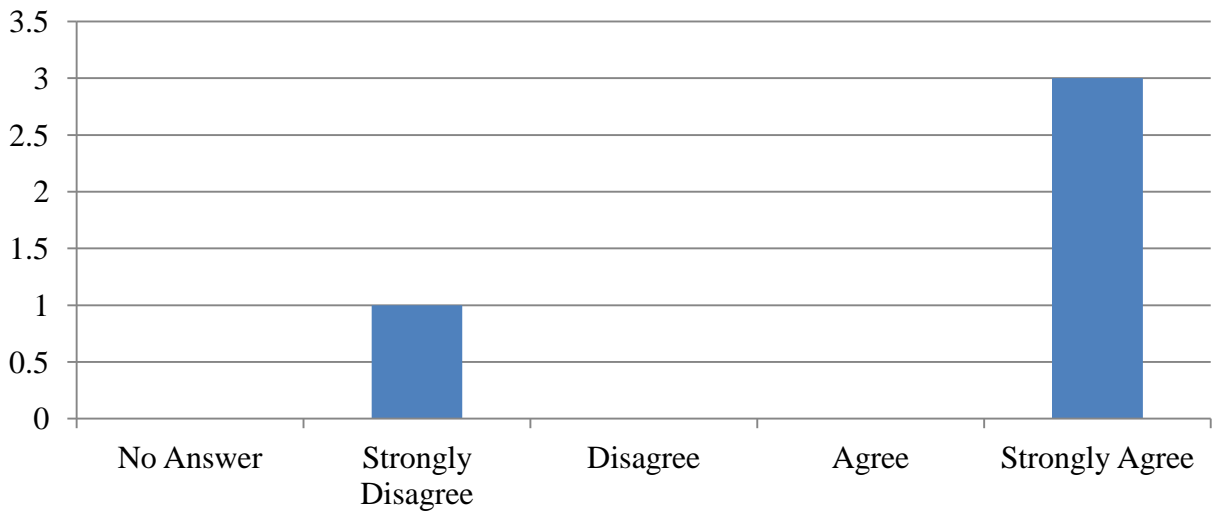


Figure 16: Overall, I was satisfied with this group.



Appendix E
Self-Efficacy Survey

How I feel now: Now that I have been in the The Baby Bump Club, I feel that I will be able to:

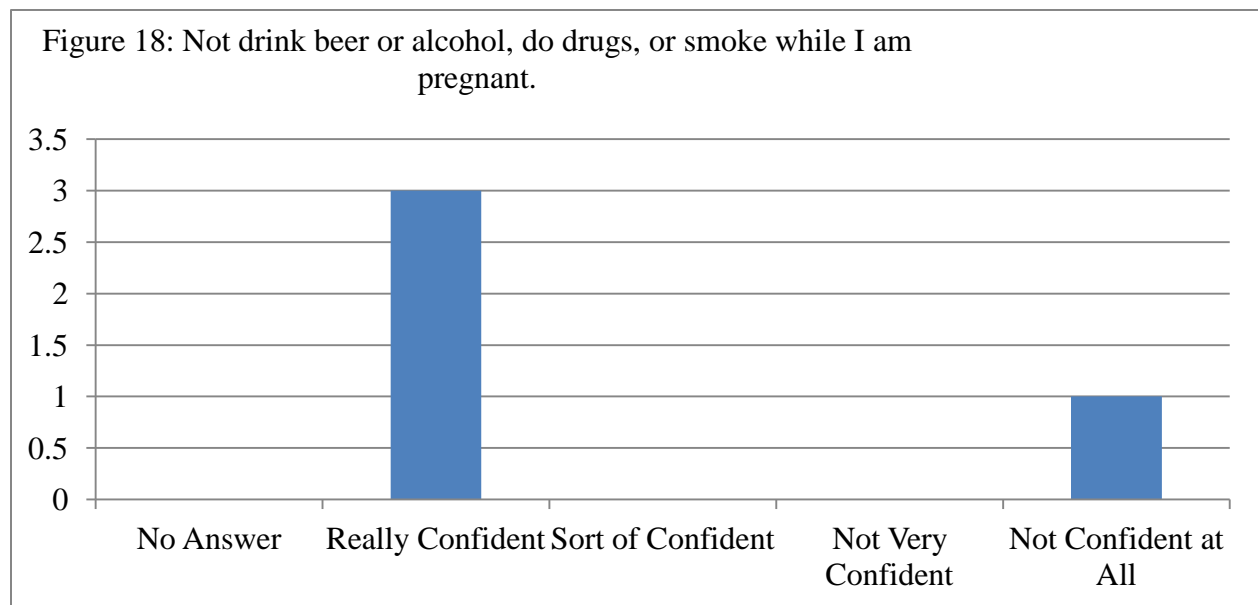
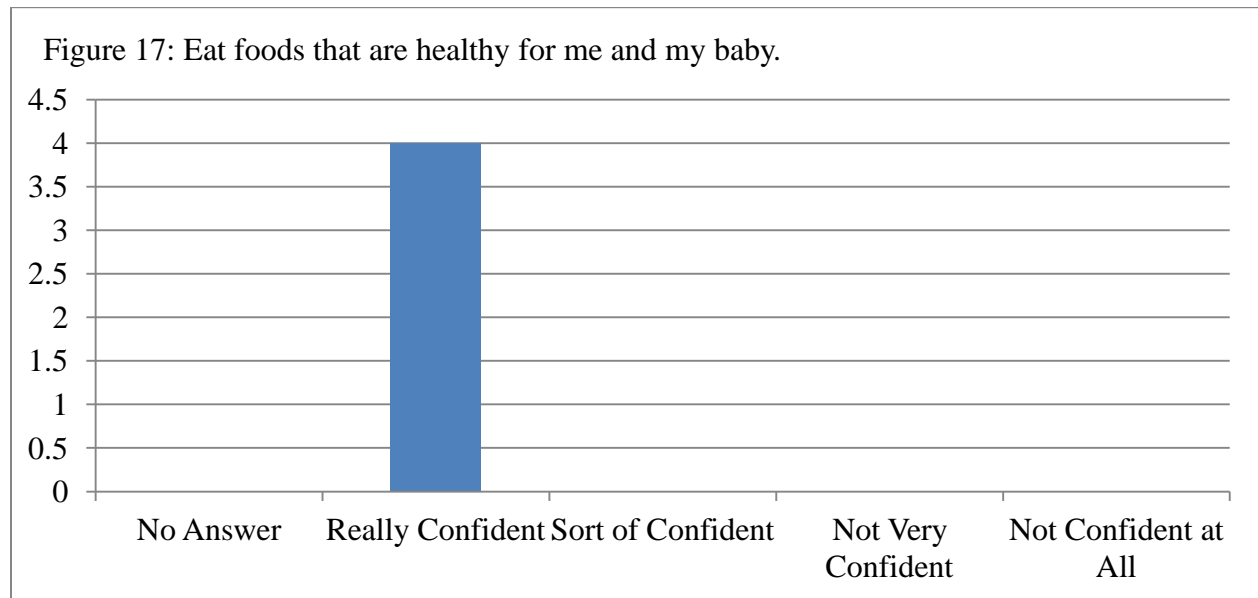


Figure 19: Ask my friends and family not to smoke around me.

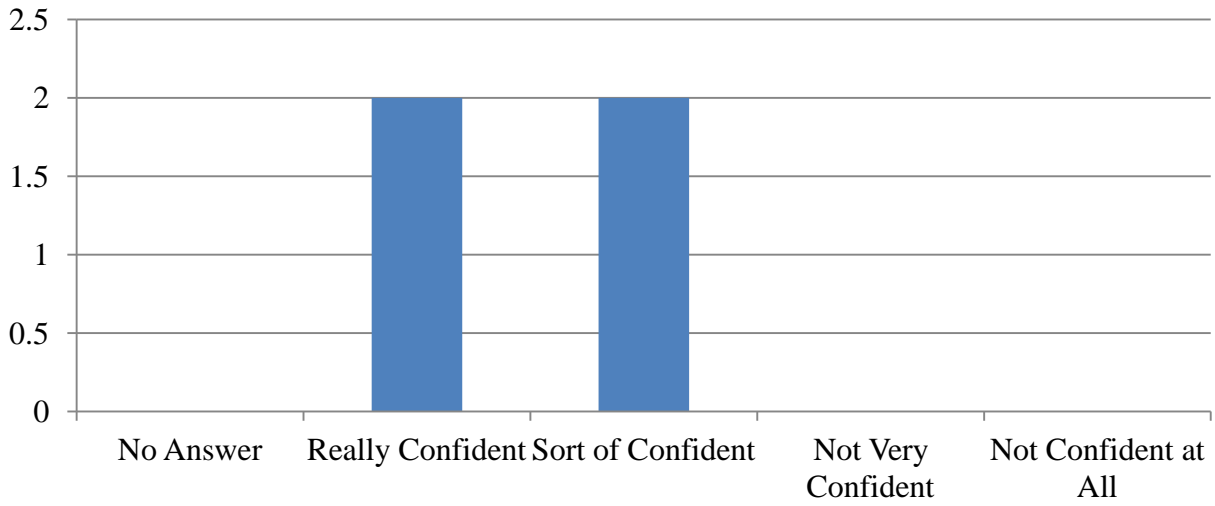


Figure 20: Be physically active during my pregnancy.

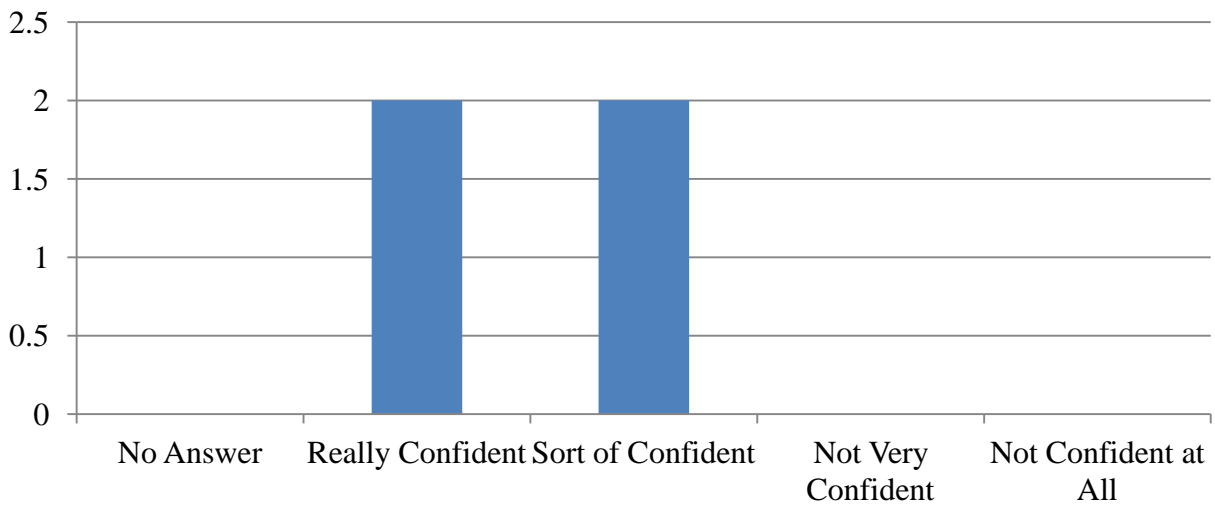


Figure 21: Make choices about when I want to be pregnant again.

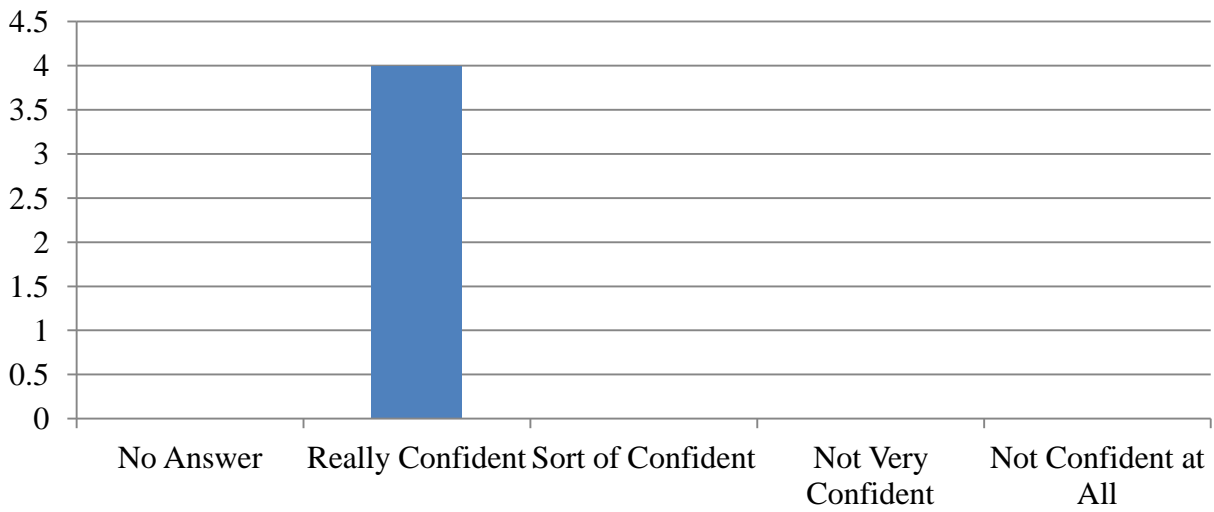
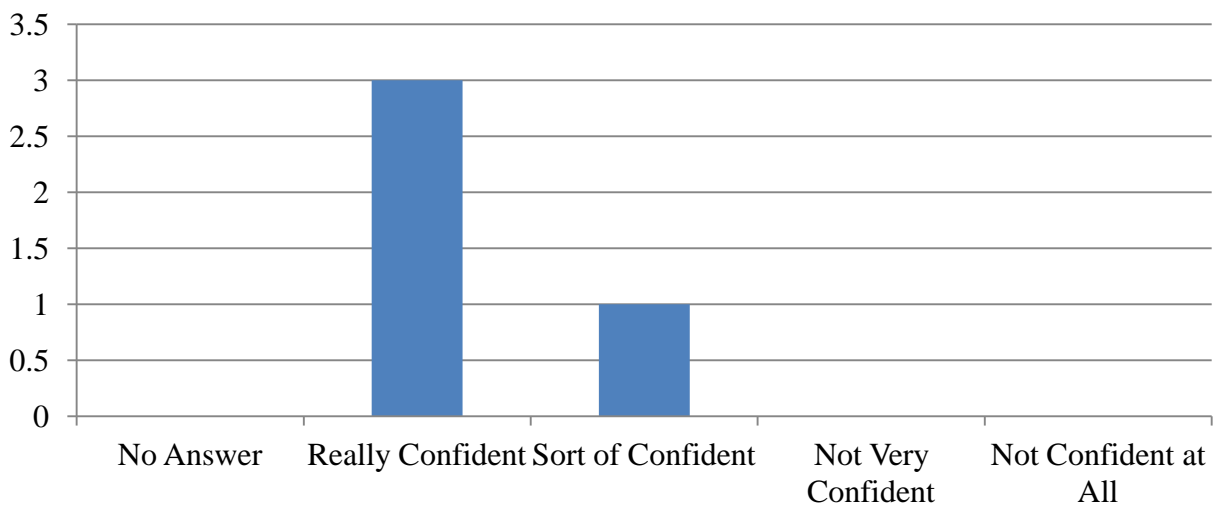


Figure 22: Ask people in my community for help.



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