

CenteringPregnancy: PERCEPTIONS OF PROVIDERS AND STAFF IN A PRIVATE OB  
PRACTICE

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Allison Faye Mills, BSN, RN

Liberty University

Lynchburg, VA

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Scholarly Project Chair Approval:

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Dr. Vickie Moore, DNP, FNP-C, RN Date

## ABSTRACT

Traditional prenatal care has been the stalwart of care in the United States since the 1920s; however, a new model of care is emerging: group-style prenatal care. This model of care has been well-documented within literature as having notable maternal and fetal outcomes, including increased patient satisfaction, decreased preterm birth rates, increased breastfeeding rates, and increased patient compliance, to name only a few. With such remarkable outcomes, it begs the question of why the group prenatal care model is not more widely utilized. This project aimed to determine if increasing the knowledge of healthcare providers in a private obstetrics practice regarding the CenteringPregnancy model of care led to increased intent to provide this model of care within the practice. A pre-education survey was given to 32 participants, followed by education regarding group-style prenatal care, followed by a post-education survey. Results suggested that an increase in knowledge regarding the CenteringPregnancy model leads to an increased interest in providing this model of care.

*Keywords:* pregnancy, obstetrics, prenatal care, group prenatal care, CenteringPregnancy

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PRACTICE

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**Dedication**

To Steve and Annette Mills, to whom I owe all my successes in life, academic and otherwise, who have offered me unwavering love, support, and encouragement for the entirety of my life: thank you. I love you.

### **Acknowledgments**

How bittersweet it is to come to the end of this academic journey. What a joy it was to be part of something so much greater than myself. I know with absolute certainty that this feat could not have been accomplished without the grace and mercy of Almighty God.

There was never a doubt within me that my academic training should take place at Liberty University. Even at a young age, it was apparent to me that the hand of God is upon this place. This was made even more apparent to me in the fall of 2010 when I began my career as a nursing student in the BSN program. When I knew that it was time for me to pursue higher nursing education, there was again absolute certainty that my academic training needed to take place at Liberty. The spirit of the Lord is evident in every aspect of the School of Nursing. From the graceful approach to holistic care, to the commitment to excellence, to the genuine empathy of the professors, especially that of Dr. Moore, the Chair of this project, who guided me with such grace, patience, and expertise-the commitment to serving “the least of these” is absolutely undeniable, and it is something that I treasure. What an honor and a privilege to be trained in such a place.

I would be remiss if I did not acknowledge my parents, who have sacrificed so much of their time, money, and resources to bring me to where I am today. I have no qualms with saying that everything that I have, everything that I have done, and everything that I will do is because of them. Their support, their encouragement, their example, and their drive has taken me further than I could have ever taken myself. There is no way to adequately repay them for all that they have done for me. All I can offer is a sincere and humble “thank you.”

To the staff of the clinic: I am so grateful for your time, participation, and enthusiasm regarding this project. It meant a great deal to me to be able to humbly teach you something new about a patient population that I love so much.

Finally, to all of my patients of the past and of the future: this project was inspired by you. There is no aspect of healthcare that I love more than obstetrics. It was always my dream to take care of mothers and their babies. Thank you for making that dream a reality. You hold such a special place in my heart.

“For I am confident of this very thing, that He who began a good work in you will perfect it until the day of Christ Jesus.” Philippians 1:6 (NASB)

**Table of Contents**

ABSTRACT ..... 3

Dedication ..... 5

Acknowledgments..... 6

List of Figures ..... 11

List of Abbreviations ..... 12

SECTION ONE: INTRODUCTION ..... 13

    Background ..... 13

    Problem Statement ..... 16

    Purpose of Project ..... 17

    Clinical Question ..... 17

SECTION TWO: LITERATURE REVIEW ..... 17

    Search Strategy ..... 17

    Critical Appraisal ..... 18

    Meta-Analyses ..... 19

    Controlled Trials ..... 22

    Qualitative Studies ..... 26

    Randomized Control Trials ..... 28

    Cohort Studies..... 29

    Expert Opinion..... 31

    Synthesis ..... 31

    Patient Satisfaction..... 31

    Decreased Preterm Birth Rates ..... 32

Increased Infant Birthweight.....	32
Increased Breastfeeding Rates .....	33
Community-Building .....	33
Conceptual Framework.....	34
Summary .....	35
SECTION THREE: METHODOLOGY.....	36
Design .....	36
Measurable Outcomes.....	36
Setting and Population .....	37
Ethical Considerations .....	37
Data Collection, Tools, and Intervention .....	38
Feasibility Analysis.....	39
Data Analysis .....	40
Measurable Outcome One.....	40
Measurable Outcome Two.....	42
SECTION FOUR: RESULTS.....	44
Sample Size.....	44
Demographics .....	45
Assumptions.....	47
Main Findings .....	47
Summary of Results .....	50
SECTION FIVE: DISCUSSION .....	50
Strengths .....	50

Limitations .....	51
Implications for Practice .....	51
Implications for Research .....	51
Sustainability.....	52
Dissemination Plan .....	52
Conclusion .....	52
References.....	54
Appendix A.....	59
Appendix B .....	71
Appendix C .....	72
Appendix D.....	74
Appendix E .....	75
Appendix F.....	76
Appendix G.....	81
Appendix H.....	82

**List of Figures**

Figure 1. <i>Pre-Education Knowledge Assessment</i> .....	42
Figure 2. <i>Participants' Responses to Open-Ended Survey Questions</i> .....	42
Figure 3. <i>Participants' Perceived Knowledge &amp; Interest Levels</i> .....	44
Figure 4. <i>Type of Healthcare Professionals</i> .....	46
Figure 5. <i>Years of Employment at Project Site</i> .....	46
Figure 6. <i>Years of Employment in Healthcare</i> .....	47

**List of Abbreviations**

The American College of Obstetricians and Gynecologists (ACOG)

Certified Nurse Midwife (CNM)

Depomedroxyprogesterone Acetate (DMPA)

Institutional Review Board (IRB)

Long-Acting Reversible Contraception (LARC)

Medical Doctor (MD)

Nurse Practitioner (NP)

Obstetrics/Gynecology (OB/GYN)

Registered Nurse (RN)

## SECTION ONE: INTRODUCTION

Prenatal care, or antenatal care, is an essential aspect of pregnancy in order to facilitate good maternal and fetal outcomes. The concept of formal prenatal care was first introduced over 150 years ago in Dublin, Ireland (Maloni, Cheng, Liebl, & Sharp, 1996). Traditional care in the perinatal period was individual and remains largely individual to this day. In recent years, a new model of care, centered around cohort style prenatal care, has emerged. New research regarding this model of care has shown evidence of improved health outcomes for mothers and infants in the perinatal period and beyond, as well as increased patient satisfaction; however, traditional prenatal care remains the stalwart of care in the United States. With research pointing to the fact that group-style care may be more beneficial for patients, it begs the question of why the culture has not begun to shift toward normalization and generalization of this model of antenatal care. This evidence-based project outlines the need for a practice change that explores the benefits of group-style prenatal care versus traditional prenatal care on health outcomes in intrapartum and postpartum women, as well as provides education regarding said style of care to obstetrics/gynecology (OB/GYN) providers to determine if there is an increased intent to provide this model of practice.

### **Background**

The idea of antenatal care was first conceptualized in the mid-1800s in Ireland, after physicians noticed some women experienced seizures during the perinatal period, noting the hallmark sign of eclampsia. A prenatal clinic was formed to deliver health care to pregnant women. It was discovered that women who were physically examined while pregnant and found to have edema and albuminuria, and subsequently treated for such, had improved outcomes and decreased complications. Around the same time in the United States, another discovery was

being made. Living quarters for poverty-stricken pregnant women were offered in Philadelphia, Pennsylvania. Healthcare providers noticed that, while living in these clean quarters, pregnant women experienced fewer infections and improved maternal and fetal outcomes. This, coinciding with monitoring and treating women for preeclampsia, resulted in improved patient outcomes, and sparked the modern model of prenatal care. Obstetrics as a specialty would not be taught in medical schools until the 1930s; meanwhile, nurses visited patients in their homes, provided perinatal care services, and involved themselves in government programs in order to contribute to the reduction of maternal and infant mortality. Eventually, prenatal care became physician-driven, and shifted into the current, widely-utilized model of one-on-one patient care (Maloni et al., 1996).

In the year 1925, the U.S. Department of Labor Children's Bureau issued a recommendation for standards and schedule of prenatal care. This included monthly healthcare visits with a physician for the initial six months of pregnancy, followed by bimonthly visits, and subsequently, a visit once per week of the last four weeks of pregnancy. This model is similar to the current model of individual prenatal care. Physicians were encouraged to obtain maternal vital signs and weight at each visit, as well as perform a urinalysis. It was also encouraged that women were counseled on a variety of relevant topics such as appropriate diet, exercise, sleep, self-care, etc. This is also not dissimilar to the current model of individual patient care (Thielen, 2012). However, modern routine prenatal visits typically only last between five and 15 minutes, leaving very little time, if any, for thorough, quality provider-patient education. Modern prenatal visits begin at eight weeks' gestation. Based on the current model of care, healthy women experiencing an uncomplicated pregnancy visit with their provider around twelve times. If each of those visits only lasts five to 15 minutes, this results in only 60 to 180 minutes of face-to-face

healthcare with a provider for each woman for the entirety of her pregnancy. While this model of care is certainly not ineffective, it does convey a lack of prioritization of patient empowerment through education.

The CenteringPregnancy model of antenatal care was developed in the 1990s when Sharon Rising, a certified nurse midwife, developed the idea of bringing women together for prenatal care in order to provide more effective care (Centering Healthcare Institute, 2019a). CenteringPregnancy “empowers patients, strengthens patient-provider relationships, and builds communities through these three main components: health assessment, interactive learning, and community building,” (Centering Healthcare Institute, 2019b). Through the concept of health assessment, CenteringPregnancy encourages and empowers patients to become engaged with their own healthcare through learning to take their own height, weight, blood pressure, etc. Although CenteringPregnancy is group-style care, patients are also able to spend one-on-one time with their provider during meetings. Through the concepts of interactive learning, patients are able to engage through interactive and educational games and group discussions. The concept of community building is based on the idea that it is encouraging for patients to learn that they are not alone in their fears, doubts, questions, and emotions. Group prenatal care facilitates friendships, support, and community (Centering Healthcare Institute, 2019b).

As a result of empowering patients with education and community, CenteringPregnancy and other group-style prenatal care has been shown to improve patient outcomes in a variety of areas. This includes lower preterm birth rates (Lathrop, 2013; Ickovics et al., 2008), reduced incidence of low birth weight (Lathrop, 2013), facilitating appropriate weight gain during pregnancy (Lathrop, 2013; Magriples et al., 2015), prenatal care adequacy (Lathrop, 2013), increased maternal knowledge regarding the perinatal period (Lathrop, 2013), increased

breastfeeding rates (Brumley, Cain, Stern, & Louis, 2016; Lathrop, 2013), increased treatment compliance in gestational diabetic patients (Schellinger et al., 2016), increased compliance in adolescent patients (Chhatre, Gomez-Lobo, Damle, & Darolia, 2013; Trotman et al., 2015), and increased satisfaction with care (Novick et al., 2011; McNeil et al., 2012). The CenteringPregnancy model has also been shown to reduce costs to the healthcare system as a whole significantly (Centering Healthcare Institute, 2019c; Strickland, Merrell, & Kirk, 2016).

The CenteringPregnancy model consists of group-style prenatal care, in which eight to 12 women who are at a similar gestational age form a cohort and participate in care together. The recommended schedule for CenteringPregnancy prenatal care consists of 10 appointments which are approximately 90 to 120 minutes in length (Strickland et al., 2016). Each appointment consists of physical assessments, education, discussion, and an interactive learning activity, such as a game (Centering Healthcare Institute, 2019b). Group prenatal care has been supported by The American College of Obstetricians and Gynecologists (ACOG) as a valid and beneficial alternative to traditional prenatal care, although it is recommended that this is presented as an option, rather than mandated at any practice (ACOG, 2018).

### **Problem Statement**

While pregnancy and childbirth can be one of the happiest times in a woman's life, it can also be one of the scariest times. Primigravidas can be especially vulnerable, as they have never experienced pregnancy and childbirth and may not know what questions to ask or where to seek help. Unfortunately, many women do not have appropriate support systems in place and could greatly benefit from being involved with a group of peers who are undergoing the same experience. CenteringPregnancy cohorts provide a dynamic atmosphere for education and sharing that is not easily created in a one-on-one encounter with a provider. As previously

stated, there is a clear lack of emphasis on empowering pregnant women through education in the traditional antenatal care model in the United States. As a result, women are likely to turn to inappropriate sources for information. In an age where false or misguided information is abundantly available to all people within seconds, this poses a danger to the health and well-being of women.

### **Purpose of Project**

The purpose of this scholarly project is to increase the knowledge of the providers at a private OB practice in central Virginia regarding the CenteringPregnancy Model of OB care, and to determine intent to provide this model of care in their practice.

### **Clinical Question**

Among OB/GYN providers at a private OB practice in central Virginia, does providing an evidence-based practice education program on the CenteringPregnancy Model, as compared to no previously available group prenatal program, lead to increased overall knowledge regarding CenteringPregnancy, and increased intent to provide this model of practice?

## **SECTION TWO: LITERATURE REVIEW**

### **Search Strategy**

In order to investigate the advantages of group-style prenatal care, an initial literature review was completed. It is essential to review current evidence that supports this model of care, in order to provide sufficient evidence of its benefits. The search strategy employed for this particular project including utilizing the following databases: CINAHL, EBSCO Quick Search, ERIC, Health Source: Nursing/Academic edition, Medline, Google Scholar, and Liberty University's Jerry Falwell Library. Keywords and phrases that were utilized within this search included "group prenatal care," "Centering," and "CenteringPregnancy."

Parameters included articles that were peer-reviewed, published within the last 20 years, written in the English language, and dealt with group prenatal care, or more specifically, dealt with the CenteringPregnancy model of prenatal care. Other parameters included articles that discussed the benefits of group prenatal care, both quantitatively and qualitatively. The initial number of articles generated from the search was estimated to be between 100 and 200 across all search engines; however, when considering the inclusion criteria, the number of appropriate articles obtained and utilized was 24. No articles included were obtained by the hand search method at this time. Studies that were not included did not meet criteria listed previously within this text. Many studies utilized are meta-analyses or of a qualitative nature.

### **Critical Appraisal**

Evidence utilized must be critically appraised in order to determine feasibility of use within the project. Overall, this project facilitator's search yielded eight meta-analyses (Level I), three randomized control trials (Level II), five controlled trials (Level III), three cohort studies (Level IV), five qualitative studies (Level VI), and one expert opinion (Level VII) that met criteria outlined previously. The following text will discuss the strengths, weaknesses, limitations, methods, and results of each type of evidence. Overall, results seem to support the idea that group prenatal care is beneficial in a multitude of ways. Recurring themes of increased breastfeeding rates, higher infant birth weights, increased patient compliance with care, and increased patient satisfaction, among others, were noted. Appendix A contains an article matrix that includes detailed information regarding each sample of evidence. The information gleaned from this literature review can be utilized to educate OB/GYN providers regarding the benefits of implementing a group prenatal care model, such as CenteringPregnancy.

## **Meta-Analyses**

Meta-analyses are Level I evidence, which is the highest level of evidence (University of Michigan, 2018). This search strategy yielded eight meta-analyses that were appropriately consistent with the criteria. These eight meta-analyses all determined that the group prenatal care model yields at least some kind of benefit for women in the antenatal period, whether it is qualitative or quantitative in nature, e.g., increased breastfeeding rates, increased infant birth weights, increased compliance with treatments, decreased social isolation, increased patient satisfaction, etc. (Byerley & Haas, 2017; Gaudion et al., 2011; Lathrop, 2013; Ruiz-Mirazo, Lopez-Yarto, & McDonald, 2012; Manant & Dodgson, 2011; Massey, Rising, & Ickovics, 2006; Picklesimer, Heberlein, & Covington-Kolb, 2015; Thielen, 2012). However, a recurring theme among the meta-analyses that have been utilized is the notion that there has not necessarily been sufficient study and investigation into the benefits of group prenatal care; therefore, this could be considered to be a weakness of this particular set of meta-analyses. Therefore, each of these meta-analyses was analyzed individually.

Thielen (2012) performed a meta-analysis regarding group prenatal care in order to explore this model of care and to investigate its proposed outcomes. Due to the nature of this study, there were no specific “subjects,” however, this analysis investigated the outcomes of 34 research studies dealing with group prenatal care between the years 1998 and 2009. Thielen (2012) noted that there was a correlation between patients participating in group prenatal care and longer gestation and higher birth weight. This analysis concluded that group prenatal care can be promoted by educators and providers as a potential method for improving perinatal outcomes; however, Thielen (2012) also notes that more research regarding group prenatal care is needed.

Byerley and Haas (2017) performed a meta-analysis in order to review and summarize outcomes for women enrolled in group prenatal care with high-risk conditions. Thirty-seven studies consisting of randomized trials, non-randomized trials, and group outcomes without controls were included in this particular analysis. Byerley and Haas (2017) noted that the studies investigated indicated that patients enrolled in group prenatal care experienced a decrease in preterm birth rates, an increase in patient satisfaction, an increase in breastfeeding rates, improved weight trajectories in adolescent patients, and increased attendance compliance in opioid addicted patients, adolescents, and low-income patients. While these benefits were positive, these authors also noted the need for further study and investigation into the benefits of group prenatal care (Byerley & Haas, 2017).

Gaudion et al. (2011) performed a meta-analysis in order to explore the group prenatal care model and its proposed outcomes. This meta-analysis considered seven studies of varying nature, and concluded that that, based on the findings of their meta-analysis, group prenatal care has the potential to improve clinical outcomes, patient satisfaction with care, self-efficacy, and health literacy. It was also noted that a benefit of group prenatal care is the reduced social isolation reported by participants. The purpose of this analysis was to determine feasibility of introducing group-style prenatal care within the United Kingdom; therefore, recommendations for further study within this publication is aimed at increasing study related to group prenatal care within the United Kingdom, rather than a recommendation for further study of this model of care in general (Gaudion et al., 2011).

Manant and Dodgson (2011) also conducted a meta-analysis regarding group prenatal care, specifically the CenteringPregnancy model, and its benefits. The purpose of this study was to “provide an analysis of the existing research on CenteringPregnancy and to provide

researchers, clinicians, and policy makers with additional information about this model” (Manant & Dodgson, 2011, p. ). This analysis consisted of 26 articles, including the following: 14 narrative descriptions, 10 quantitative studies, one mixed methods study, and one qualitative study. The results of this analysis pointed toward the fact that there is certainly some benefit to group-style prenatal care, specifically the CenteringPregnancy model. Such benefits include cost-effectiveness, increased breastfeeding rates, and community building. However, this analysis also noted that more research is recommended regarding this model of perinatal care (Manant & Dodgson, 2011).

Massey et al. (2006), also performed a meta-analysis regarding group prenatal care. The purpose of this analysis was to discuss the CenteringPregnancy model, and to evaluate and analyze current research regarding its impact on patient outcomes. This analysis drew conclusions from five different sources, all of a varying nature. Results of this analysis highlight CenteringPregnancy’s positive outcomes related to infant birthweight, patient satisfaction, and attendance at prenatal visits (Massey et al., 2006). Massey et al. (2006) recommend that further study regarding CenteringPregnancy and group prenatal care in general is completed, in order to provide more evidence supporting this model of antenatal care.

Picklesimer et al. (2015) performed a meta-analysis in order to conduct a review of current research regarding prenatal care and its outcomes and benefits. An undisclosed number of articles were reviewed, and it was determined that “the high rates of patient satisfaction and attendance, the positive care experiences of patients, and the lack of evidence that group prenatal care outcomes are worse than traditional prenatal care make group prenatal care a viable model for obstetric practices to consider adopting,” (Picklesimer et al., 2015, p. ). Recommendations for further research was not provided within this analysis, however, it was recommended by the

authors that group prenatal care be offered as an option and utilized within healthcare (Picklesimer et al., 2015).

Ruiz-Mirazo et al. (2012) also performed a meta-analysis related to group prenatal care in order to “compare the effects of group prenatal care and individual prenatal care on perinatal health outcomes, including our primary outcomes of preterm birth and low birth weight,” (Ruiz-Mirazo et al., 2012). This analysis reviewed a total of 85 articles associated with maternal and fetal health outcomes related to group prenatal care. Ruiz-Mirazo et al. (2012) noted that group prenatal care is linked to improved outcomes in the patient populations that it serves, specifically noting improvements in rates of pre-term births. These authors recommend that further high-quality studies regarding group prenatal care be completed (Ruiz-Mirazo et al., 2012).

Finally, Lathrop (2013) performed a meta-analysis regarding group prenatal care in order to explore the differences in outcomes between traditional prenatal care and group prenatal care. Twelve studies of an unidentified nature were analyzed, and it was determined that women who were enrolled in group prenatal care experienced a decreased incidence of preterm birth, increased birth weight, improved weight gain in pregnancy, increased adequacy of prenatal care, greater prenatal knowledge, and increased satisfaction with care (Lathrop, 2013).

Recommendations include further study in order to support group prenatal care as a valid and beneficial alternative to traditional prenatal care.

### **Controlled Trials**

Controlled trials, are Level III evidence, which is a higher level of evidence (University of Michigan, 2018). This search strategy yielded five controlled trials that were appropriately consistent with the aforementioned inclusion criteria. These articles noted that the implementation of a group prenatal care model had a variety of beneficial outcomes for patients

in the antenatal period. Weaknesses of these studies includes limitations such as the nature of the study (i.e., chart review), the population studied and potential lack of generalizability, as well as potential skewed results due to women self-enrolling in group prenatal care, therefore creating bias. Methods included single control trials and one chart review.

Cunningham, Lewis, Thomas, Grilo, and Ickovics (2017) performed a mixed-method control trial investigating the group prenatal care model, and its proposed outcomes including the reduction of adverse patient outcomes, as well as cost reduction. This study consisted of two-to-one matched cohort groups. One group consisted of 1,000 participants who were enrolled in group prenatal care, and another group consisted of 2,000 participants who were enrolled in traditional prenatal care. By obtaining both quantitative and qualitative data regarding preterm birth rates, birthweight, neonatal intensive care unit admission and duration, maternal psychosocial behaviors, maternal health behaviors, and maternal health outcomes, such as postpartum depression, breastfeeding, postpartum weight loss, and patient satisfaction with care, Cunningham, Lewis, et al. (2017) were able to determine that group prenatal care has exhibited the potential to reduce rates of adverse birth outcomes. Cost analysis was also explored, and it was noted that group prenatal care actually results in a lower cost to the patient, resulting from fewer adverse outcomes, and overall improved outcomes. Cunningham, Lewis, et al. (2017) also note that group prenatal care has the potential to meet the what is known as the “triple aim” of the healthcare system at large: better healthcare quality, improved patient outcomes, and lower costs. These authors note that a potential limitation of this study includes the fact that the participants of this study self-enrolled in which style of prenatal care they preferred, potentially skewing the results regarding patient satisfaction with care, as those that enrolled in group prenatal care may have had a premeditated affinity for this model of antenatal care.

Recommendations include utilizing the data formulated as a result of this study to make recommendations regarding group prenatal care (Cunningham, Lewis, et al., 2017).

Cunningham, Grilo, et al. (2017) performed a control trial regarding group-style prenatal care, in order to “identify determinants of group prenatal care attendance, and to examine the association between proportion of prenatal care received in a group context and satisfaction with care” (p.1). This study included sixty-seven different groups of patients consisting of three to fifteen participants each. Each participant was less than 24 weeks’ gestation initially, was considered to be a “low-risk” pregnancy, and was less than 22 years old. Through the collection of qualitative data, this study found that a higher proportion of prenatal visits occurring in a group context is associated with higher levels of care satisfaction. Limitations of this study include the fact that only young, low-income, minority patients were studied, so findings may not be generalizable to other populations. Cunningham et al. (2006) recommends that

future research should explore alternative implementation structures to improve pregnant women’s ability to receive as much prenatal care as possible in a group setting, as well as value-based reimbursement models and other incentives to encourage more widespread adoption of group prenatal care. (p.7)

Robertson, Aycock, and Darnell (2008) performed a quasi-experimental study in order to compare and contrast maternal and infant outcomes in Hispanic patients participating in the CenteringPregnancy model of care vs. traditional care. This study included 49 Hispanic women aged 18 and older in the antenatal period. Quantitative and qualitative data was collected regarding infant birthweight, gestational age at delivery, breastfeeding rates, health behaviors, breastfeeding rates, postpartum follow-up, and satisfaction of care. Overall, evidence suggests that group prenatal care compares to traditional prenatal care in terms of maternal and infant

outcomes, and yields high levels of satisfaction in Hispanic patients. The authors of this study noted that a potential limitation of this study is rooted in the fact that participants self-selected which kind of care they wanted to receive. Therefore, results related to satisfaction of care may be based within the possibility of patients having an existing affinity for group-style care. Additionally, this study utilized a small sample size. These authors recommend further study of this topic with a larger sample size in the future (Robertson et al., 2008).

Trotman et al. (2015) performed a retrospective chart review in order to determine if the CenteringPregnancy prenatal care model improves maternal health behaviors in adolescent pregnancies. This review consisted of one hundred and fifty pregnant adolescents. Reviewing these charts revealed that a higher rate of compliance with prenatal visits was noted for adolescents enrolled in group prenatal care. Adolescents enrolled in group prenatal care were also more likely to utilize long-acting reversible contraception (LARC) or depomedroxyprogesterone acetate (DMPA) methods of contraception. Group prenatal care participants also were more likely to meet weight gain guidelines, had improved rates of breastfeeding, and were less likely to be diagnosed with postpartum depression. Because this evidence was collected via chart review, data is limited to what was reported in patient charts. Subjects were a convenience sample, and self-enrolled in the study. No specific recommendations for practice or further study were noted by these authors, however, it was noted that this study supports group prenatal care, specifically the CenteringPregnancy model as a viable option for prenatal care within a high-risk adolescent patient population Trotman et al. (2015).

Chhatre et al. (2013) performed a retrospective chart review and stated that “this study aims to determine if the centering model of prenatal care could reduce obstetrical and neonatal

co-morbidities associated with adolescent mothers, improve intra and postpartum compliance, and reduce repeat unintended pregnancy” (p.1). It was noted that participants in group prenatal care experienced fewer incidences of postpartum depression, were more likely to choose long-acting contraceptive methods in the postpartum period, were less likely to become pregnant in the initial twelve months following the postpartum period, were more likely to breastfeed, and were more likely to be on par with the Institute of Medicine’s weight trajectories for pregnant women. This study was conducted via chart review; however, this was noted within the description as a limitation of the study (Chhatre et al., 2013). No specific recommendations for further study or practice were noted.

### **Qualitative Studies**

The literature search performed also yielded a notable amount of studies of a qualitative nature. Four of these studies aligned with the criteria stated previously. Qualitative studies are Level VI evidence, which is a lower level of evidence (University of Michigan, 2018). However, due to the nature of this project, reviewing qualitative studies is appropriate, as much of the benefit of group prenatal care comes from patient perceptions.

Heberlein, Frongillo, Picklesimer, and Covington-Kolb (2015) performed a study with the intent of determining if group prenatal care has any effect on food insecurity in the late pregnancy and early postpartum period. This qualitative study utilized a three-part survey assessing participants’ confidence in making appropriate food and nutrition choices in pregnancy. Participants included 248 racially diverse, low-income, pregnant women enrolled in CenteringPregnancy prenatal care or traditional prenatal care. Through survey and discussion, it was noted by Heberlein et al. (2015) that participants that were enrolled in group prenatal care were more likely to feel confident in food choices and resources. Limitations include the fact

that a small sample size was utilized, and that participants were allowed to self-enroll in the prenatal care style of their choice. “Further research should assess the range of severity of food insecurity in the household with sufficient sample size to fully investigate differential results, including those based on parity” (Heberlein et al., 2015, p. 1022).

McDonald, Sword, Eryuzlu, and Biringer (2014) performed a qualitative study in the form of a focus group in order to better understand the group prenatal experience and patient and providers’ perceptions of group prenatal care. During this focus group, nine women and five midwives participated in focus groups related to their experiences with group prenatal care. Through discussion, McDonald et al. (2014) noted that participants expressed a high level of satisfaction with group prenatal care. Limitations of this study were cited as data being subjective, however, such data is an expected result from a study of this nature. Other limitations cited include the fact that the sample population was not overly diverse, and that there was only a “brief time some patients had in the waiting room to complete the survey, which in turn produced some missing data in the latter portion of the questionnaire that collected demographic information,” (McDonald et al., 2014). No recommendations or further study were noted within this article.

McNeil et al. (2012) performed a qualitative study in order to understand the central meaning/core of the group prenatal care experience. Twelve postpartum women that were involved in group prenatal care were interviewed regarding their experiences. Interviews with participants were conducted in a focus group, and interviewers questioned participants regarding their experiences with group prenatal care including “What was it like?” “What was the best part?” “What was the worst part?” “What did this experience mean to you?” etc. This study found that participants were highly satisfied with their care. A limitation noted was the fact that

ten of twelve women were first-time mothers, however, the descriptions of their experiences and feelings regarding group-style prenatal care were similar to the multiparous participants. No recommendations or further study was noted by the authors (McNeil et al., 2012).

### **Randomized Control Trials**

In addition to the evidence discussed previously, this project facilitator's search also yielded three randomized control trials, which are Level II evidence, that met inclusion criteria. Randomized control trials are high levels of evidence, second only to meta-analyses (University of Michigan, 2018). Ickovics et al. (2008) performed a randomized control trial in order to "determine whether group prenatal care improves pregnancy outcomes, psychosocial function, and patient satisfaction and to examine potential cost differences." One-thousand forty-seven pregnant women ages 14-25 of ethnic minority participated in this study. Ickovics et al. (2008) noted that patients enrolled in group prenatal care had positive psychosocial outcomes, greater prenatal knowledge, a higher satisfaction with prenatal care, and felt more prepared for labor and delivery, as compared to those enrolled in traditional prenatal care. This study also noted that a restrictive sample size was utilized, and was cited as a limitation. "Future research will evaluate the biologic, behavioral, and social mechanisms by which group care may have its effects" (Ickovics et al., 2008, p. 338).

Magriples et al. (2015) performed a secondary analysis of a cluster-randomized control trial in order to "investigate whether group prenatal care has an impact on pregnancy weight gain and postpartum weight loss trajectories and to determine whether prenatal depression and distress might moderate these trajectories" (p. 2). Participants consisted of pregnant women, aged 14 to 21 years, interviewed in the second and third trimesters, as well as six and 12 months postpartum. Magriples et al. (2015) noted that there was a significant positive impact on weight

gain trajectories among patients enrolled in group prenatal care, versus those enrolled in traditional prenatal care. These authors did not note any study limitations. Recommendations based on this study include providers taking a more holistic approach to prenatal care as a whole.

Novick et al. (2013) performed a secondary analysis of a randomized control trial in order to examine the association of fidelity to process related to group prenatal care outcomes such as lower preterm birth rates, adequate prenatal care, and initiation of breastfeeding. Five hundred and nineteen women who received prenatal care via the CenteringPregnancy model were participants in the trial. Based on the analysis of the study, it was noted that, with greater process fidelity, there was significantly lower preterm births. Novick et al. (2013) noted that there was a restriction of range in the measurement of process fidelity, and this was noted as a limitation of the study. “Future research should explore fidelity prospectively to identify specific components of the CenteringPregnancy model that affect outcomes” (Novick et al., 2013, p. 5).

### **Cohort Studies**

Three cohort studies were also included in the article matrix. Cohort studies are Level IV evidence (University of Michigan, 2018). Hale, Picklesimer, Billings, and Covington-Kolb (2010) performed a cohort study to evaluate the impact of group prenatal care on the utilization of family-planning in the postpartum period. This study consisted of 570 women enrolled in group prenatal care and 3,067 women enrolled in individual prenatal care. The results of this study indicated that utilization of postpartum family-planning services was higher among women participating in group prenatal care than among women receiving traditional prenatal care. Hale et al. (2010) noted that their study may have been limited by the large nature of their cohort, as well as by the fact that their information was collected from charts, and was not initially collected for research purposes. According to Hale et al. (2010),

larger prospective, randomized trials are needed to confirm the favorable effects of GPNC on selected health and health service outcomes and provide additional insight on the specific mechanisms underpinning observed results. Future studies should also examine the content of GPNC visits and address long-term outcomes, such as the duration of the interconceptional interval and the outcome of subsequent pregnancies.

Brumley et al. (2016) performed a matched-case control study that “sought to examine the differences in pregnancy outcomes with a focus on gestational weight gain for women attending group prenatal care compared to standard individual prenatal care” (p. 1). Sixty-five women enrolled in group prenatal care and 130 women enrolled in standard, individual prenatal care participated, and it was noted that women enrolled in group prenatal care had a significantly higher rate of breastfeeding at six weeks postpartum. However, Brumley et al. (2016) cited a potential limitation of their study as being limited through lack of randomization of subjects, as well as limiting the review timeframe to only six weeks postpartum. There were no recommendations for further research stated within this article.

Schellinger et al. (2016) performed a retrospective cohort study in order to determine the impact of group prenatal care on Hispanic pregnant women with gestational diabetes mellitus. This study consisted of 460 pregnant Hispanic women with gestational diabetes, age 18 and older. Schellinger et al. (2016) found that participants receiving group prenatal care were more likely to complete postpartum glucose tolerance testing. Subjects enrolled in group care were less likely to require drug therapy for glycemic control. A limitation of this study includes the fact that there was a potential for the results to be non-generalizable, as the study focused solely on Hispanic women with gestational diabetes mellitus. Recommendations for further research were not included within this article (Schellinger et al., 2016).

**Expert Opinion**

Finally, this project facilitator's search results included one expert opinion that met inclusion criteria. Expert opinions are Level VII evidence, and are considered to be lower-level evidence (University of Michigan, 2018). While it may not be notably beneficial to include lower-level evidence such as opinion in research, this particular piece of evidence acts as a commentary and provides factual information regarding the positive financial benefits that group prenatal care has afforded the healthcare industry as a whole (Strickland et al., 2016). Strickland et al. (2016) commented on group prenatal care in order to review CenteringPregnancy's impact on patient experience, cost effectiveness, etc. These authors noted that group prenatal care has been linked to cost-effectiveness and financial savings within healthcare (Strickland et al., 2016).

**Synthesis**

The evidence in question seems to be heavily supportive of the concept of group prenatal care, based on its proven outcomes. While much of the evidence supports this model of care in terms of qualitative outcomes, such as higher satisfaction with care, decreased social isolation, etc., there is also sufficient quantitative evidence of positive group prenatal care outcomes above and beyond traditional prenatal care to support the implementation of group-style care, such as the CenteringPregnancy model within women's health practices.

**Patient Satisfaction**

One of the major overall themes that emerged from the literature review was the presence of high patient satisfaction with group-style prenatal care. Participants of the studies and analyses previously discussed consistently noted feeling highly satisfied with the care that they received while participating in group-style prenatal care. This is perhaps in part due to the fact that women participating in group prenatal care spend more time with and receive more

education from their provider, as well as feel the support of peers, compared to traditional prenatal care. It is reasonable to assume that women who have been well-equipped with the educational tools to take control of their own health and the health of their unborn child feel empowered, and therefore highly satisfied with their healthcare. Providers of OB/GYN services, including those that provide prenatal care, can ascertain from the information collected for this literature review that offering group-style prenatal care would be highly beneficial for patients, due to proven increased satisfaction rates. Group prenatal care would be a beneficial addition to a practice that provides prenatal care services, monetarily speaking. It would be a wise business decision to offer group prenatal care in order to increase “customer” satisfaction.

### **Decreased Preterm Birth Rates**

Another major theme that emerged from the literature review is a decreased rate of preterm birth among those enrolled in group prenatal care. Pre-term birth is an unfortunate occurrence, linked to adverse outcomes for patients. Because group prenatal care has been noted to decrease the occurrence of preterm birth compared to traditional prenatal care, it follows that practices that offer prenatal care services could utilize the implementation of this style of prenatal care in order to increase positive patient outcomes and decrease preterm birth rates.

### **Increased Infant Birthweight**

The literature review also revealed increased infant birthweight as a major recurring theme among studies related to group-style prenatal care. This is likely due to increased patient compliance and increased patient weight trajectories, two other favorable outcomes noted regarding group prenatal care. Lower infant birthweight has been linked to adverse patient outcomes. Therefore, it is reasonable that providers offering antenatal care services should consider including group-style prenatal care within their repertoire of services.

### **Increased Breastfeeding Rates**

Through the literature review, increased breastfeeding rates also emerged as a recurring theme. It has been noted that women who participate in group-style prenatal care have an increased rate of exclusive breastfeeding compared to women who receive traditional prenatal care. It is not unreasonable to assume that this may be due in part to the sense of community and empowerment that has been reported as a result of group-style prenatal care. Primiparous women often struggle with breastfeeding, especially in the initial postpartum period. It is not unreasonable to assume that women who feel supported and encouraged by others experiencing the same process are able to commit to and successfully breastfeed their infants. Additionally, as previously discussed, group prenatal care has been proven to decrease preterm birth rates. As a result, the presence of more full-term infants may have an effect on the number of infants being exclusively breastfed. Because of the abundance of health benefits of breastfeeding for both maternal and infant patients, it would be highly beneficial for healthcare providers offering antenatal care services to integrate group prenatal care into their offered services.

### **Community-Building**

The final theme that was noted as consistent throughout the literature regarding group prenatal care is patients' sense of community with their peers. Patients participating in group prenatal care are placed in a community of their peers, through which they are able to support, listen, encourage, and learn. Patients that enroll in group prenatal care experience a decrease in social isolation and fear, and instead feel empowered through a sense of community. This can be especially beneficial for primigravidas, as they have not yet undergone the experience of pregnancy, labor, and postpartum. Decreased fear and social isolation, and an increased sense of community, trust, friendship, and support can certainly increase satisfaction with care.

Therefore, providers of prenatal services should certainly consider the benefits of group prenatal care, as well as the benefits of offering it as a service within a practice.

The results of the literature review seem to support the idea that group prenatal care fosters a positive learning environment for women, while building a community of trust, support, and validation. As a result, patients develop a deeper, more comprehensive understanding of their care, which leads to higher rates of compliance, resulting in more positive maternal and fetal health outcomes. As previously stated, ACOG has determined group prenatal care to be a valid and beneficial alternative to traditional prenatal care (ACOG, 2018). Therefore, with the evidence gathered and discussed previously by this project facilitator and the support of the providers, there is ample scholarly support to justify implementing a group prenatal care model as a care option within a private OB practice in central VA.

### **Conceptual Framework**

The most applicable conceptual framework that was found to utilize for this project was the Iowa Model. This model served as a framework and guide during the construction and implementation of this project. However, the Iowa Model was not utilized in full, due to the nature of this project. The complete Iowa Model is composed of seven steps. These steps include the following: identifying a problem, forming a team, finding and critiquing literature, determining which outcomes need to be achieved, designing guidelines based on evidence, implementing changes, and evaluating changes (Brown, 2014). The first step of identifying a problem has been completed, and identified as a lack of emphasis on empowering pregnant women through education in the traditional antenatal care model in the United States. The next step in the Iowa Model framework for change is to form a team (Brown, 2014). Because of the nature of this project, the “team” that carried out the steps of the project such as researching,

developing the project, educating and surveying providers, etc. consisted solely of this project facilitator. Providers and staff of the office in which this project was implemented have been considered subjects of the study, rather than team members.

The third step outlined by the Iowa Model includes finding and critiquing literature (Brown, 2014). This step has been completed, and discussed previously within this text. It has been identified, through a critical appraisal of 24 pieces of evidence, that group prenatal care fosters both quantitative and qualitative benefits to the maternal-fetal population. The fourth step of this process is to identify what outcomes need to be achieved (Brown, 2014). While group prenatal care has been well-documented as a beneficial tool and an acceptable alternative to traditional prenatal care, the aim of this project was not necessarily to further this evidence, but rather to bring this evidence to light, to educate providers regarding the benefits of group-style care, and to determine if said education inspires providers to consider offering a group prenatal care model as an alternative option of care within their facilities.

Due to the nature of this project, it was determined that steps five, six, and seven of the Iowa Model were not necessary to be utilized. These steps could have been taken if the results of this project lead to the initiation and implementation of offering group prenatal care services within a practice setting. However, at this time, this project does not require the design of guidelines, or the implementation and evaluation of practice change.

### **Summary**

The literature review and critical appraisal performed by this project facilitator yielded results consistent with support for group prenatal care as a beneficial alternative to traditional prenatal care. As stated previously, traditional prenatal care is certainly effective; however, there is a distinct lack of prioritizing education and empowerment of patients through this model. The

results of this literature review point to the fact that prioritizing empowering patients through education and support yields beneficial results and outcomes, that some may argue are more desirable than the outcomes of traditional prenatal care. Outcomes such as increased breastfeeding rates, higher infant birth weight, increased care satisfaction, decreased preterm birth, decreased social isolation and increased sense of community, etc. were noted as recurring themes. The purpose of this scholarly project was to increase the knowledge of the providers at a private OB practice in central VA regarding the CenteringPregnancy Model of OB care and to determine intent to provide this model of care in their practice.

### **SECTION THREE: METHODOLOGY**

#### **Design**

In terms of design, this scholarly project was deemed to be evidence-based. It was modeled after the Iowa Model for Evidence-Based Practice. Permission was granted for use of the Iowa Model as a tool for this project. Please see Appendix B for the letter granting permission of use. Per the Iowa Model, practice change needs to be evaluated with a pilot study (Iowa Model Collaborative, 2017). In the case of this project, a descriptive study design was determined to be most appropriate for utilization. However, due to the nature of this project, steps five, six, and seven of the Iowa Model were utilized, as discussed previously within this text.

#### **Measurable Outcomes**

1. After completion of the aforementioned educational program, the participants will exhibit an increase in knowledge regarding group prenatal care and its maternal and fetal outcomes. This will be evidenced by a minimum of a 10 percent increase in scores on the post-education survey.

2. After completion of the aforementioned educational program, participants will exhibit an increase in intent to offer group prenatal care as an option for prenatal services within the practice. This will be evidenced by participants noting increased interest on the post-education survey, specifically questions nine and ten.

### **Setting and Population**

Data collection for this project was completed at a private OB practice in central VA. This practice does not currently offer group prenatal care as a service; however, another practice in the area offers the CenteringPregnancy model of prenatal care as an option for patients. The clinic's website states that it provides the most complete, wide-ranging care possible. However, this project facilitator believes that this statement has the potential to become more accurate through the implementation and dissemination of group prenatal care as an option within this practice. Therefore, the aim of this project was to increase providers' and staff knowledge of group prenatal care, and to determine if said increased knowledge led to an increased intent to implement this model into practice.

The subjects of this project were part of a purposive sample. Participating subjects included staff physicians, nurse practitioners, certified nurse midwives, registered nurses, licensed practical nurses, and other clinical staff of the practice setting that were willing to participate. All staff members in these categories were offered to participate. There were no specific inclusion criteria, aside from holding one of the positions mentioned previously within the setting.

### **Ethical Considerations**

Due to the nature of this project, ethical concerns and considerations were minimal. Human subjects of this project were surveyed and educated regarding a topic, effectively posing

no greater risk to participants than what they encounter in daily life. However, informed consent was obtained per request of Liberty University's Institutional Review Board (IRB). Please see Appendix C for a copy of said consent. No patient information was obtained by the project facilitator; therefore, confidentiality was not a concern. However, survey responses were anonymous, allowing for participants to respond freely and honestly. Despite lack of ethical concerns regarding this project, the project team (project facilitator and project chair) have completed research ethics training to ensure the protection of human subjects. Please see Appendix D for proof of this training. In its proposal form, this project was submitted to the IRB, and was approved for initiation by this project facilitator on July 17, 2019. Please note Appendix E, which contains a copy of proof of IRB approval of this project.

### **Data Collection, Tools, and Intervention**

Data collection related to this project was carried out in the following manner: This project facilitator first assessed the baseline knowledge of the subjects regarding the benefits of group prenatal care, as well as the process by which group prenatal care is typically facilitated. Interest in offering group prenatal care as a service option within the practice setting was also assessed. This assessment took place via survey, which utilized multiple choice questions, true or false questions, and questions modeled after the Likert scale. Said survey can be noted below in Appendix F. After the initial assessment, this project facilitator provided a short presentation to subjects, which lasted approximately fifteen minutes. This presentation educated subjects regarding group prenatal care, including its process and its benefits. A post-education survey, which contained the same questions and content as the pre-education survey, was given to subjects. Analysis of subjects' answers to the questions found within these surveys was conducted. Said analysis will be discussed at length in the data analysis portion of this text.

After a thorough literature search, this project facilitator did not find a suitable and relevant tool to utilize for this project. However, this project facilitator desired to employ the use of a survey for data collection and, subsequently, data analysis. Therefore, a survey was created by this project facilitator for purposes related to this project. Appendix F contains a copy of this survey. This survey was utilized in a test-retest model of assessment. According to Litwin (1995), test-retest reliability is “the most commonly used indicator of survey instrument reliability” (p. 8). The test-retest method is reliable; however, reliability must be documented over shorter periods of time in order to decrease measurement errors (Litwin, 1995). This survey was developed while considering the two measurable outcomes previously discussed. In order to effectively assess subjects’ knowledge regarding group prenatal care, as well as interest and intent to initiate and implement this model of care into the practice setting, survey questions were created related to these outcomes.

This project was conceived as a result of the project facilitator’s personal interest in the practice of obstetrics, and desire for increased patient empowerment and improved outcomes through healthcare education. With the assistance of the scholarly project chair, the development of this project was initiated and completed. Participants for this project were secured via written agreement for project completion from the project site. The process of data collection specific to this project has been discussed within this text. An analysis of the data and an evaluation of the outcomes of this project can be noted in the Data Analysis portion of this text.

### **Feasibility Analysis**

The project facilitator completed an analysis of feasibility prior to completion of the project. Permission to conduct this project at the desired site was gained by the project facilitator. Please see Appendix G for proof of permission. Necessary resources were minimal,

mainly consisting of two surveys per participant, consent forms for participants, and educational information regarding group prenatal care provided by the project facilitator via PowerPoint presentation. SPSS software was also utilized for statistical analysis of data, and Microsoft Excel was utilized to create visual representation of data (i.e., graphs). Personnel required for data collection related to this project included only this project facilitator and study subjects. In terms of budget for this project, cost was minimal and limited to the cost of printing surveys and consent forms for subject usage. These costs were handled by the project facilitator.

### **Data Analysis**

At the initiation of this project, the project facilitator determined that projected results include the following measurable outcomes:

1. After completion of the aforementioned educational program, the participants will exhibit an increase in knowledge regarding group prenatal care and its maternal and fetal outcomes. This will be evidenced by a minimum of a 10 percent increase in scores on the post-education survey.
2. After completion of the aforementioned educational program, participants will exhibit an increase in intent to offer group prenatal care as an option for prenatal services within the practice. This will be evidenced by participants noting increased interest on the post-education survey, specifically questions nine and ten.

### **Measurable Outcome One**

**Method and design.** This project facilitator created a unique pre- and post-education survey to be utilized for gathering data related to this project. One of the aims of this survey was to aid in determining the knowledge level of healthcare providers regarding the process of group

prenatal care, as well as its maternal and fetal benefits. The first seven questions of said survey were designed by this project facilitator to accomplish this goal.

**Sample.** This project's sample consisted of healthcare providers employed in a private OB/GYN practice located in central Virginia. Inclusion criteria included being a healthcare provider (e.g., medical doctor [MD], nurse practitioner [NP], certified nurse midwife [CNM], registered nurse [RN], etc.), employed at the practice site, and being at least eighteen years of age. Participation was voluntary. A total of 32 subjects participated.

**Data collection/tool.** As previously stated, this project facilitator created a unique survey for participants to complete. Both the pre- and post-education surveys took approximately five minutes to complete. Both surveys were identical, and consisted of seven questions designed to assess the knowledge of participants regarding the process and benefits of group prenatal care. These seven questions were related to measurable outcome one. Three additional questions related to measurable outcome two were also included on the survey. Participants filled out the pre-education survey prior to the project facilitator's presentation, and the post-education survey after the project facilitator's presentation.

**Statistical analysis.** The dependent variable was the participants' level of knowledge regarding group-style prenatal care. This was assessed via seven of 10 questions in the surveys provided to participants. These questions were a collection of true/false and multiple choice-style questions. Some multiple-choice questions were "select all that apply." The number of correct answers on each individual's pre- and post-education surveys were entered into SPSS for analysis. Data were also entered into Microsoft Excel in order to create a visual representation of pre- and post-education data via a bar graph (Figures 1 & 2).

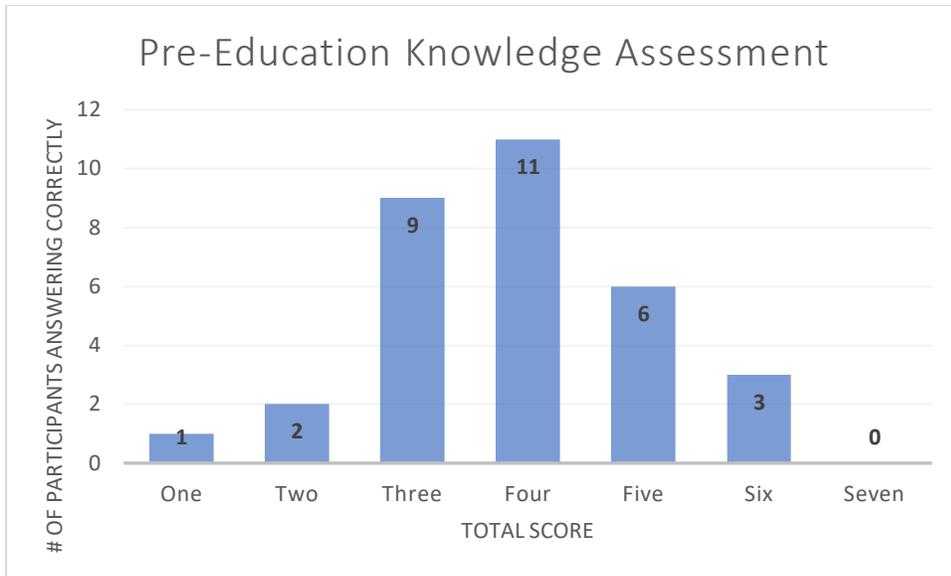


Figure 1. Pre-education knowledge assessment.

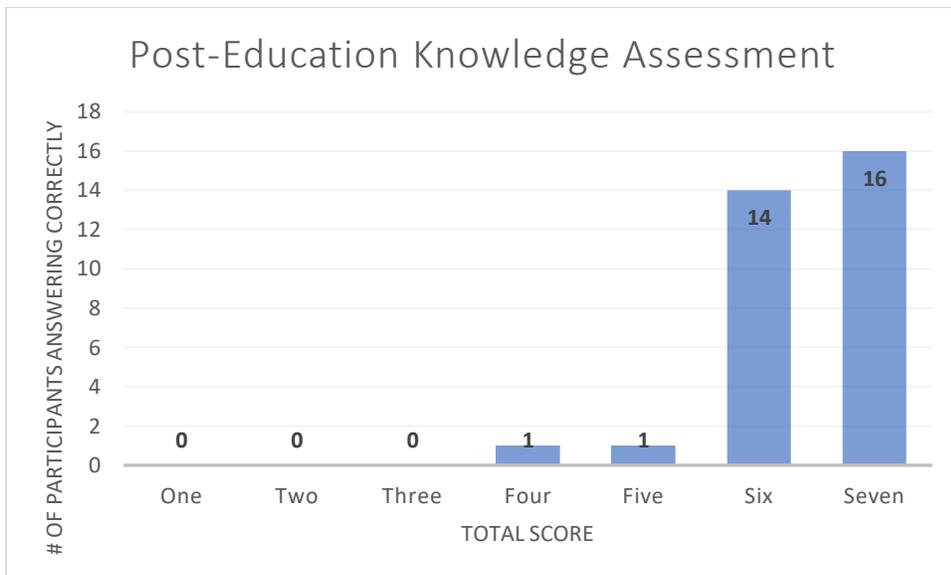


Figure 2. Post-education knowledge assessment.

**Measurable Outcome Two**

**Method and design.** This project facilitator created a unique pre- and post-education survey to be utilized for gathering data related to this project. One of the aims of this survey was to aid in determining participants’ familiarity with the concept of group prenatal care, as well as their interest level in this model of care being implemented in their practice setting. As stated

previously, the first seven questions of this survey were created with the intent to assess subjects' knowledge regarding group prenatal care in general. Questions eight, nine, and 10 of the survey were created with the intention of assessing participants' familiarity with the concept of group prenatal care, and to also assess their interest level related to group prenatal care being offered as a service in their office setting in the future.

**Sample.** This project's sample consisted of healthcare providers employed in a private OB/GYN practice located in central Virginia. Inclusion criteria included being a healthcare provider (i.e. MD, NP, CNM, RN, etc.), employed at the practice site, and being at least eighteen years of age. Participation was voluntary. A total of 32 subjects participated.

**Data collection/tool.** As previously stated, this project facilitator created a unique survey for participants to complete. Both the pre- and post-education surveys took approximately five minutes to complete. Both surveys were identical, and consisted of seven questions designed to assess the knowledge of participants regarding the process and benefits of group prenatal care. These questions were related to measurable outcome one. Three additional questions were also included on the survey. These questions were designed to assess participants' familiarity with group prenatal care, as well as their interest level in offering this model of care within their office setting. Participants filled out the pre-education survey prior to the project facilitator's presentation, and the post-education survey after the project facilitator's presentation.

**Statistical analysis.** The dependent variable was the participants' level of familiarity with the concept of group prenatal care, as well as their level of interest in potentially offering this model of care as an option within their office setting. This was assessed via three of 10 questions in the surveys provided to participants. Two of these questions were modeled after the Likert scale, and asked participants to choose the statement that best represented their feelings

regarding the question, e.g., “agree,” “disagree,” etc. One of these questions was open-ended, and asked subjects to share their rationale for their answer to question nine, which assessed subjects’ interest level in group prenatal care being offered as a service option within the practice. Please see Appendix F for the full survey. Data related to questions eight, nine, and 10 were entered into SPSS for analysis. Data was also entered into Microsoft Excel in order to create a visual representation of pre- and post-education data via a bar graph (Figure 3). A table reporting participants’ responses to question ten was also created (Appendix H).

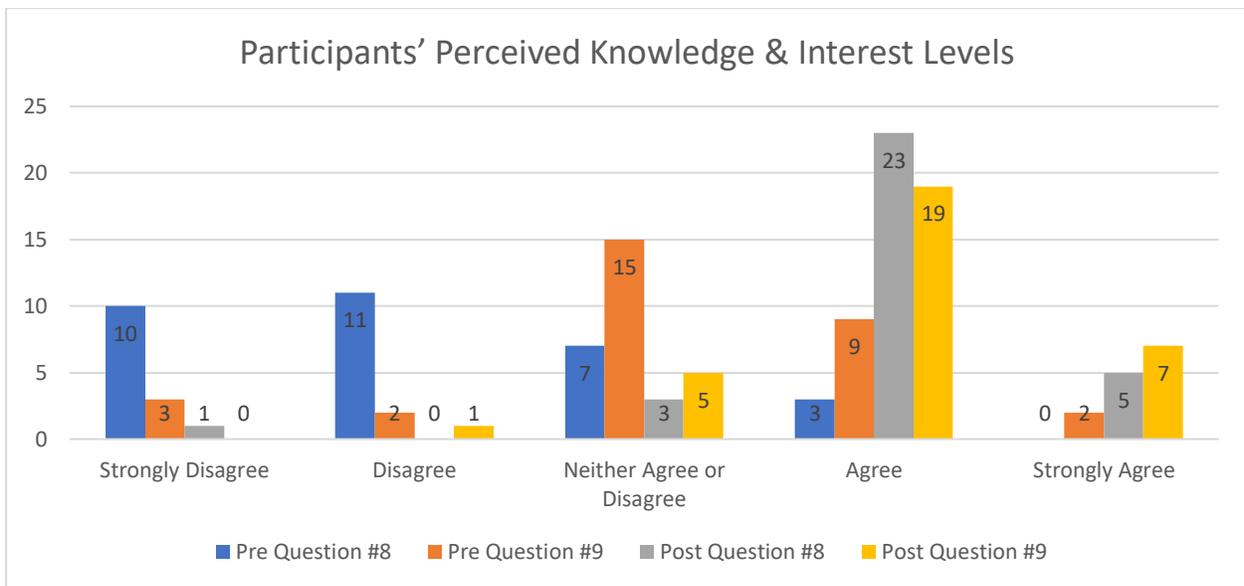


Figure 3. Participants’ perceived knowledge & interest levels.

## SECTION FOUR: RESULTS

### Sample Size

All clinical staff of the project site were invited to participate in this project. Thirty-two clinical staff members agreed to act as subjects. In addition to the aforementioned surveys, participants were also asked to complete a four-question demographics survey. This survey

assessed participants' titles (MD, NP, RN, etc.), length of employment at the project site, length of time working in healthcare, and gender.

### **Demographics**

Of the thirty-two participants of this project, eight identified themselves as MDs, two identified themselves as NPs, and one identified as a CNM. Ten participants identified themselves as RNs, two participants identified themselves as licensed practical nurses, and nine participants identified themselves as "other." Six participants reported being male, and 26 participants reported being female. Three participants reported being employed at the project site for less than one year, ten reported being employed at the project site for one to five years, five reported being employed at the project site for five to ten years, four reported employment between ten to fifteen years, and ten reported employment for fifteen years or more.

The final demographics survey question asked providers to identify the length of time that they have been active in the medical field. No participants stated that they have been a healthcare provider for less than one year. Four participants reported being a healthcare provider for four years. Seven participants reported being a healthcare provider for five to 10 years. Six reported being a healthcare provider for 10 to 15 years, and 15 participants reported being a healthcare provider for 15 or more years (See Figures 4, 5, and 6).

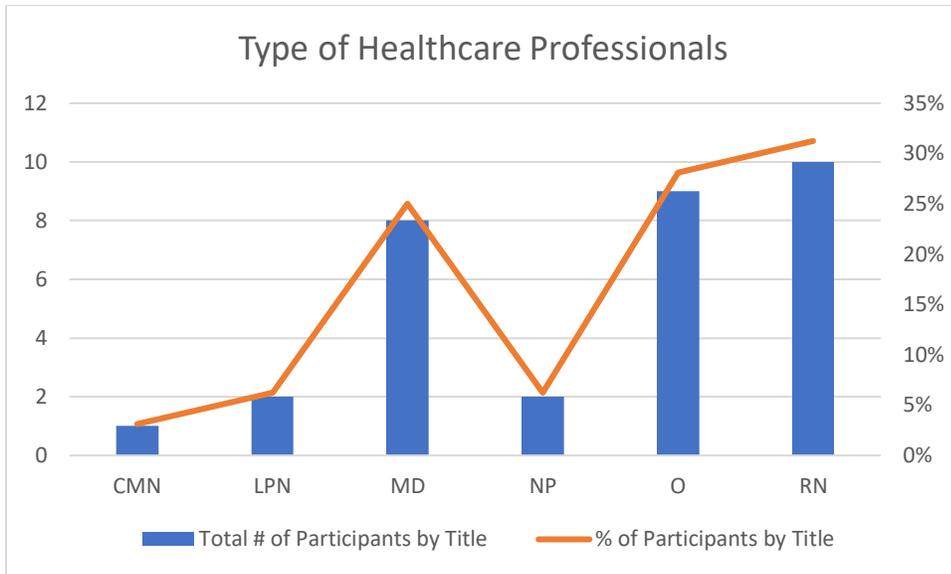


Figure 4. Type of healthcare professionals.

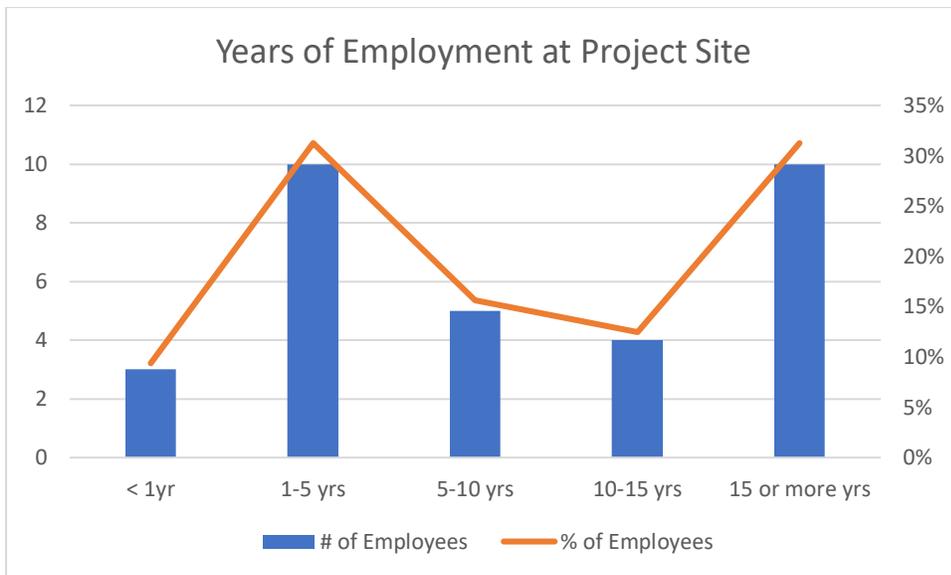


Figure 5. Years of employment at project site.

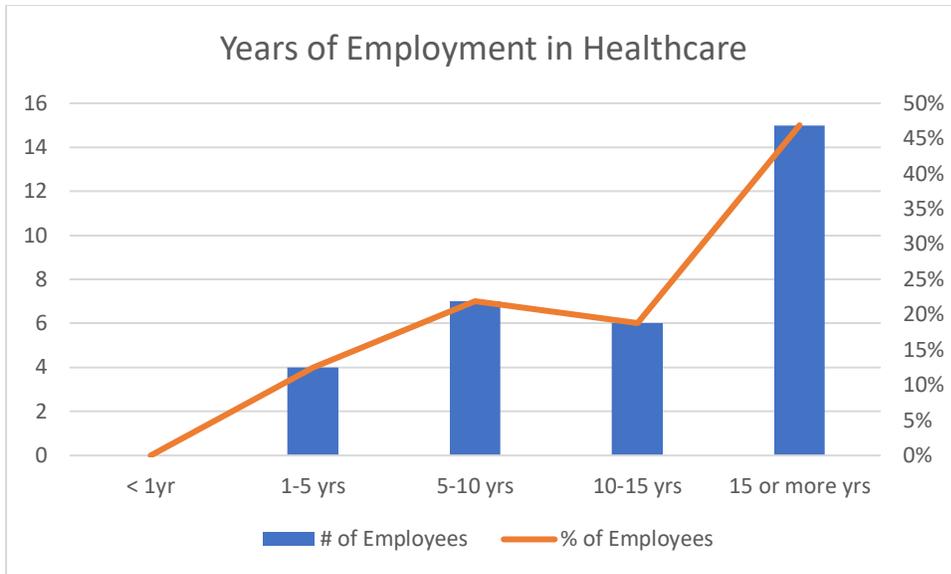


Figure 6. Years of employment in healthcare.

**Assumptions**

The project facilitator recognizes two assumptions regarding this project. First, that all subjects participated out of their own volition. Second, that all responses to the pre- and post-education surveys were given with candor.

**Main Findings**

Through the collection of data related to this project, several major findings were noted. First, regarding the knowledge assessment portion of the pre- and post-education surveys, or the first seven questions, the project facilitator noted that all but two participants exhibited at least a 10 percent increase in knowledge on the post test, evidenced by an increase in score. Two participants had the same score pre- and post-education. Sixteen participants, or 50 percent, received a perfect score, or seven out of seven questions, on the post-education survey. No participants received a perfect score on the pre-education survey. One participant had an increase in post-survey score of 71%. Cumulatively, the mean score of the pre-education survey was 55%. The cumulative post-education survey was 92%, with a mean increase in test scores of

36%. In other words, the participants met the goal set forth by the project facilitator of exhibiting at least a 10% increase in post-education survey scores related to knowledge of the process and benefits of the CenteringPregnancy model.

The project facilitator also noted that there was a distinct increase in participants' self-reported knowledge-level and interest in implementation of the CenteringPregnancy model as evidenced by participants' responses to the Likert scale questions of the post-education survey. Question number eight of both the pre- and post-education surveys asked subjects to rank their perceived level of confidence related to their current level of knowledge regarding group prenatal care on a scale of "strongly disagree" to "strongly agree." Pre-education, only three participants (10%) answered "agree" and no participants answered "strongly agree" to question eight. Seven participants answered "neither agree nor disagree," 11 participants answered "disagree," and 10 answered "strongly disagree" to question eight. Clearly, participants did not feel confident in their knowledge of group prenatal care prior to hearing the project facilitator's education. However, 72% of participants answered "agree" and 16% answered "strongly agree" to question eight on the post-education survey. While only 10% of participants stated that they felt confident in their knowledge of group prenatal care pre-education, 88% of participants reported feeling confident on the post-education survey. This is an increase of 78%.

Likewise, participants also exhibited an increase in interest regarding group prenatal care being offered as a service within the practice setting. Nine participants (29%) answered "agree" to question nine on the pre-education survey. Only two participants (six percent) answered "strongly agree" to question nine on the pre-education survey. Fifteen participants answered "neither agree or disagree," two answered "disagree," and three answered "strongly disagree" to question nine on the pre-education survey. However, on the post-education survey, 59% of

participants answered “agree” and 22% of participants answered “strongly agree” to question nine. While only 35% of participants stated that they were interested in group prenatal care being offered as a service in the WHSCV practice pre-education, 81% reported interest post-education. This is an increase of 46%. Based on this information, it can be said that the participants met the goal set forth by the project facilitator of exhibiting an increase in intent to offer group prenatal care as an option for prenatal services within the practice setting.

Notably, it seems that, of the participants, RNs had the highest increase in both self-reported knowledge of group prenatal care and in interest in offering group prenatal care within the practice. Among individual RNs, there was an increase in self-reported knowledge of group prenatal care, based on survey question eight, by greater than 50%. Similarly, there was also an increase in interest level, based on survey question nine, by at least 40% among individual RNs. This could be considered a significant change; however, it is also important to note that RNs started with a lower level of self-reported interest overall.

Both the pre- and post-education surveys included an open-ended write-in question which asked participants to share their rationale for their response to question nine. Pre-education, many participants noted that they felt as though they did not have enough information or education regarding group prenatal care to support it being offered as a service option within their practice. However, post-education, many participants stated that they felt as if group prenatal care would be beneficial to their practice and to their patient population. This further affirms the hypothesis set forth by the project facilitator that an increased knowledge level regarding the CenteringPregnancy model of care leads to increased interest and intent to provide said model in practice.

## **Summary of Results**

Both of the objectives set forth by this project facilitator were met through this project. First, an increase of at least 10% was noted regarding post-education survey scores related to the process and benefits of the CenteringPregnancy model. Second, there was a notable increase in interest and intent to provide said model of care within the practice setting. This was especially notable within the RNs that participated in this project. Open-ended survey questions revealed that many participants had little knowledge of the CenteringPregnancy model before participating in this project; however, in the post-education survey, participants reported feeling that implementing the model could potentially be beneficial to the practice and to the patient population the practice serves. Because of this, it is reasonable to ascertain that a lack of education regarding group prenatal care may be a large contributing factor related to why it is not more widely utilized within the United States.

## **SECTION FIVE: DISCUSSION**

### **Strengths**

Strengths of this project include the feasibility, reproducibility, and cost-effectiveness. This project was highly feasible and easily implemented. Therefore, it can easily be reproduced by others for future evidence-based projects regarding this topic. This project was, as previously stated, very low in cost, further contributing to its feasibility. Additional strengths include the mixed-method nature of this project. In other words, this project utilized both quantitative and qualitative measures related to data collection, i.e. multiple choice, true/false, and Likert scale survey questions, as well as an open-ended survey question.

**Limitations**

The project facilitator notes several limitations of this project. First, the sample size could be described as medium. As a result of a medium sample size, the findings may not be as applicable as the potential results of a larger sample size, therefore potentially not as applicable to other populations. Another notable limitation is the potential bias of the participants. It was disclosed to the project facilitator that implementing a group prenatal care model is something that has been previously discussed as a potential future endeavor within this office setting. Therefore, some of the survey responses in favor of the group prenatal model of care may have been biased.

**Implications for Practice**

Based on the results of this project, it is reasonable to infer that the group prenatal care model is generally supported by the clinical staff of the private OB practice where data were gathered. Therefore, it is reasonable to assume that providing education regarding the process and benefits of group-style prenatal care, specifically the CenteringPregnancy model, has the potential to increase both knowledge and interest in providing group prenatal care among healthcare providers within a private practice. Other practices offering OB services may replicate this project in order to determine if these findings are applicable to their specific setting.

**Implications for Research**

Based on the lack of similar studies, it is clear that research regarding this topic is needed. While it is reasonable to generalize the idea that increased knowledge regarding a topic such as group prenatal care leads to a more comprehensive understanding, research is needed in regard to whether increased knowledge leads to intent of implementation. At this time, the project facilitator has not been able to locate any studies comparable to this project, indicating that

research regarding this topic is certainly warranted. Research regarding this topic should be on a larger scale. This project was easily implemented and cost-effective, and could similarly be easily replicated by other evidence-based practice project facilitators interested in this topic.

### **Sustainability**

The sustainability of this project relies solely upon the staff of the clinic in terms of interest in initiating this model of care. The results of this project indicate that the staff of WHSCV is generally supportive of the notion to implement the CenteringPregnancy model of care within the practice, as evidenced by the fact that, once their knowledge regarding the topic increased, staff indicated increased interest in office implementation in questions nine and ten of the post-education survey. This, of course, is not necessarily a predictor of success of implementation and the sustainability of the actual practice of a group prenatal care model within the clinic. However, it is reasonable to assume that staff will continue their support of this model of care long-term, thus sustaining results.

### **Dissemination Plan**

The dissemination plan for the findings of this project include sharing the results with the participating staff members of the clinic. Other potential plans for dissemination include sharing the results of this project with the nursing and medical community via publication in scholarly journals, poster presentations, and podium presentations, should opportunity arise.

### **Conclusion**

Prenatal care is essential for positive maternal-fetal outcomes. The current model of prenatal care utilized in the United States is not ineffective; however, recent evidence points to the fact that group-style prenatal care leads to better patient outcomes compared to traditional prenatal care. Despite evidence supporting group prenatal care as an excellent alternative to the

traditional care model, group prenatal care is not widely utilized within the United States. It is plausible that this lack of utilization is due to a lack of knowledge, education, and understanding of the model among healthcare providers. The findings of this project illuminate the need for increased provider education regarding the benefits of group prenatal care. With increased knowledge, healthcare providers can initiate a change in the way that prenatal care is conducted, leading to better outcomes for obstetric patients.

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**Appendix A**

Evidence Table

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
<p>Thielen, K. (2012). Exploring the group prenatal care model: A critical review of the literature.</p>	<p>To explore the group prenatal care model, and its proposed outcomes.</p>	<p>No subjects, meta-analysis</p>	<p>No methods, meta-analysis</p>	<p>Studies comparing and contrasting traditional prenatal care and group prenatal care are limited.</p>	<p>Level I evidence: Meta-analysis.</p>	<p>None, meta-analysis.</p>	<p>Yes, meta-analyses are good sources of information.</p>
<p>Byerley, B. M., &amp; Haas, D. M. (2017). A systematic overview of the literature regarding group prenatal care for high-risk pregnant women.</p>	<p>To review and summarize outcomes for women enrolled in group prenatal care with high-risk conditions.</p>	<p>No subjects, meta-analysis</p>	<p>No methods, meta-analysis</p>	<p>Studies indicated that preterm birth rates were decreased, satisfaction rates were increased, breastfeeding rates were increased, improved weight trajectories in adolescent patients, increased attendance compliance in opioid addicted patients,</p>	<p>Level I evidence: Meta-analysis.</p>	<p>None, meta-analysis.</p>	<p>Yes, meta-analyses are good sources of information.</p>

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
				<p>adolescents, and low-income patients. More research is needed, but some benefit has been identified.</p>			
<p>Chhatre, G., Gomez-Lobo, V., Damle, L., &amp; Darolia, R. (2013). Centering prenatal care: Does group prenatal care improve adolescent pregnancy outcomes?</p>	<p>“This study aims to determine if the centering model of prenatal care could reduce obstetrical and neonatal co-morbidities associated with adolescent mothers, improve intra and postpartum compliance, and reduce repeat unintended pregnancy,” (Chhatre, Gomez-Lobo, Damle, Darolia, 2013).</p>	<p>All pregnant patients &lt;22 years old (150 patients) participating in group prenatal care within an OB/GYN practice.</p>	<p>Retrospective chart review.</p>	<p>Participants in group prenatal care were more likely to breastfeed, and obtain LARC for contraception. They were less likely to be diagnosed with postpartum depression, and to have a repeat pregnancy within 12 months. Participants in group prenatal care were able to meet IOM recommendations for weight gain in pregnancy.</p>	<p>Level III-controlled trial</p>	<p>This study was a chart review, so data is limited to what was reported in patient charts.</p>	<p>Yes, level III is a high level of evidence.</p>

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
<p>Cunningham, S. D., Lewis, J. B., Thomas, J. L., Grillo, S. A., &amp; Ickovics, J. R. (2017). Expect With Me: Development and evaluation design for an innovative model of group prenatal care to improve perinatal outcomes.</p>	<p>To explore the group prenatal care model, and its proposed outcomes including the reduction of adverse patient outcomes as well as cost reduction.</p>	<p>Two-to-one matched cohort groups, 1,000 of which were enrolled in group prenatal care, and 2,000 of which were enrolled in traditional prenatal care (3,000 total).</p>	<p>Mixed-method control trial</p>	<p>“Group prenatal care has shown promise to reduce rates of adverse birth outcomes,” (Cunningham, Lewis et al., 2017).</p>	<p>Level III-controlled trial</p>	<p>Women self-enrolled in the prenatal care style of their choice.</p>	<p>Yes, level III is a high level of evidence.</p>
<p>Massey, Z., Rising, S. S., &amp; Ickovics, J. (2006). CenteringPregnancy group prenatal care: Promoting relationship-centered care.</p>	<p>To “identify determinants of group prenatal care attendance, and to examine the association between proportion of prenatal care received in a group context and satisfaction with care.”</p>	<p>67 groups consisting of 3-15 women each, all of whom were less than 24 weeks gestation initially. Each participant had a low-risk pregnancy, and was less than 22 years old.</p>	<p>Control trial</p>	<p>This study found that a higher proportion of prenatal visits occurring in a group context is associated with higher levels of care satisfaction.</p>	<p>Level III-controlled trial</p>	<p>Young, low-income, minority patients were studied, so findings may not be generalizable to other populations.</p>	<p>Yes, level III is a high level of evidence.</p>
<p>Gaudion, A., Bick, D., Menka, Y., Demilew, J., Walton, C., Yiannouzis, K.,...&amp; Rising, S. S. (2011).</p>	<p>To explore the group prenatal care model, and its proposed outcomes.</p>	<p>No subjects, meta-analysis</p>	<p>No methods, meta-analysis</p>	<p>Group prenatal care has the potential to improve clinical outcomes, patient satisfaction with care, self-efficacy, health literacy, and</p>	<p>Level I evidence: Meta-analysis.</p>	<p>None, meta-analysis.</p>	<p>Yes, meta-analyses are good sources of information.</p>

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
				<p>to reduce social isolation.</p>			
<p>Hale, N., Picklesimer, A. H., Billings, D. L., Covington-Kolb, S. (2010). The impact of Centering Pregnancy prenatal care on postpartum family planning.</p>	<p>“The objective of the study was to evaluate the impact of group prenatal care (GPNC) on postpartum family-planning utilization,” (Hale, Picklesimer, Billings, &amp; Covington-Kolb, 2010).</p>	<p>570 women enrolled in group prenatal care and 3,067 women enrolled in individual prenatal care.</p>	<p>Cohort study</p>	<p>Utilization of postpartum family-planning services was higher among women participating in group prenatal care than among women receiving traditional prenatal care.</p>	<p>Level IV: Cohort study</p>	<p>Large cohort; data came from administrative billing data, and was not collected for research purposes.</p>	<p>Yes, level IV is strong evidence.</p>
<p>Heberlein, E. C., Frongillo, E. A., Picklemimer, A. H., Covington-Kolb, S. (2015). Effects of group prenatal care on food insecurity during late pregnancy and early postpartum.</p>	<p>To determine if group prenatal care has any effect on food insecurity in the late pregnancy and early postpartum period.</p>	<p>248 racially diverse, low-income, pregnant women enrolled in CenteringPregnancy prenatal care or traditional prenatal care.</p>	<p>3-part survey assessing participants’ confidence in making appropriate food/nutrition choices in pregnancy.</p>	<p>Participants enrolled in group prenatal care were more likely to feel confident in food choices and resources.</p>	<p>Level VI evidence: Evidence from a single descriptive or qualitative study.</p>	<p>Small sample size; women self-enrolled in the prenatal care style of their choice.</p>	<p>Yes, even though this study is lower-level evidence, part of this assessment relates to patient satisfaction; therefore, qualitative evidence is appropriate.</p>

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
<p>Manant, A., &amp; Dodgson, J. E. (2011). CenteringPregnancy: An integrative literature review.</p>	<p>“Provide an analysis of the existing research on CenteringPregnancy to provide researchers, clinicians, and policy makers with additional information about this model,” (Manant &amp; Dodgson, 2011).</p>	<p>No subjects, meta-analysis</p>	<p>No methods, meta-analysis</p>	<p>CenteringPregnancy results in some positive outcomes.</p>	<p>Level I: Meta-analysis</p>	<p>No limitations, meta-analysis</p>	<p>Yes, meta-analyses are good sources of information.</p>
<p>Massey, Z., Rising, S. S., &amp; Ickovics, J. (2006). CenteringPregnancy group prenatal care: Promoting relationship-centered care.</p>	<p>Discuss the CenteringPregnancy model, and to evaluate/analyze current research regarding its impact on patient outcomes.</p>	<p>No subjects, meta-analysis</p>	<p>No methods, meta-analysis</p>	<p>CenteringPregnancy results in some positive outcomes related to infant birthweight, patient satisfaction, and attendance at prenatal visits.</p>	<p>Level I: Meta-analysis</p>	<p>No limitations, meta-analysis</p>	<p>Yes, meta-analyses are good sources of information.</p>
<p>McDonald, S. D., Sword, W., Eryuzlu, L. E., &amp; Biringer, A. B. (2014). A qualitative descriptive study of the group prenatal care experience: perceptions of women with low-risk pregnancies and their midwives.</p>	<p>To better understand the group prenatal experience and patient and providers’ perceptions of group prenatal care.</p>	<p>9 women and 5 midwives participated in focus groups related to their experiences with group prenatal care.</p>	<p>Focus group for qualitative study.</p>	<p>Participants expressed a high level of satisfaction with group prenatal care.</p>	<p>Level VI evidence: Evidence from a single descriptive or qualitative study.</p>	<p>Subjective data based on participants’ feelings.</p>	<p>Yes, even though this study is lower-level evidence, part of this assessment relates to patient satisfaction; therefore, qualitative evidence is appropriate.</p>

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
<p>Novick, G., Sadler, L. S., Kennedy, H. P., Cohen, S. S., Groce, N. E., &amp; Knafel, K. A. (2011). Women's experience of group prenatal care.</p>	<p>To aid in providing women-centered care.</p>	<p>21 pregnant women participating in four separate prenatal care groups.</p>	<p>Qualitative study</p>	<p>Participants reported decreased social isolation and normalization of pregnancy-related fears.</p>	<p>Level VI evidence: Evidence from a single descriptive or qualitative study.</p>	<p>Subjective data based on participants' feelings.</p>	<p>Yes, even though this study is lower-level evidence, part of this assessment relates to patient satisfaction; therefore, qualitative evidence is appropriate.</p>
<p>Picklesimer, A., Heberlein, E. &amp; Covington-Kolb, S. (2015). Group prenatal care: Has its time come?</p>	<p>To conduct a review of current research regarding group prenatal care.</p>	<p>No subjects, meta-analysis</p>	<p>No methods, meta-analysis</p>	<p>Group prenatal care has been linked to positive patient outcomes.</p>	<p>Level I: Meta-analysis</p>	<p>No limitations, meta-analysis</p>	<p>Yes, meta-analyses are good sources of information.</p>
<p>Robertson, B., Aycock, D. M., &amp; Darnell, L. A. (2008). Comparison of Centering Pregnancy to traditional care in Hispanic mothers.</p>	<p>To compare and contrast maternal and infant outcomes in Hispanic patients participating in the CenteringPregnancy model of care vs. traditional care.</p>	<p>49 Hispanic women aged 18 and older in the antenatal period.</p>	<p>Quasi-experimental prospective comparative design.</p>	<p>Evidence suggests that group prenatal care compares to traditional prenatal care in terms of maternal and infant outcomes, and yields high levels of satisfaction in Hispanic patients.</p>	<p>Level III: Controlled trial, no randomization.</p>	<p>Participants self-selected which kind of care they wanted to receive.</p>	<p>Yes, level III is higher-level evidence.</p>
<p>Ruiz-Mirazo, E., Lopez-Yarto, M., &amp; McDonald, S. D. (2012). Group prenatal care versus individual prenatal care: A systematic</p>	<p>“To compare the effects of group prenatal care (GPC) and individual prenatal care (IPC) on perinatal health outcomes, including our primary outcomes</p>	<p>No subjects, meta-analysis</p>	<p>No methods, meta-analysis</p>	<p>This meta-analysis showed improvement in some outcomes, including rates of pre-term births.</p>	<p>Level I: Meta-analysis</p>	<p>No limitations, meta-analysis</p>	<p>Yes, meta-analyses are good sources of information.</p>

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
<p>review and meta-analyses.</p>	<p>of preterm birth (PTB &lt; 37 weeks) and low birth weight (&lt; 2500 g),” (Ruiz-Mirazo, Lopez-Yarto, &amp; McDonald, 2012).</p>						
<p>Strickland, C., Merrell, S., &amp; Kirk, J.K. (2016). CenteringPregnancy: Meeting the quadruple aim in prenatal care.</p>	<p>To review CenteringPregnancy’s impact on patient experience, cost effectiveness, etc.</p>	<p>No subjects, commentary.</p>	<p>Expert opinion/commentary</p>	<p>Group prenatal care has been linked to cost-effectiveness and financial savings within healthcare.</p>	<p>Level VII: Expert opinion</p>	<p>No limitations, commentary</p>	<p>Yes; information from this article was utilized for factual information regarding CenteringPregnancy’s impact on healthcare finances.</p>
<p>Lathrop, B. (2013). A systematic review comparing group prenatal care to traditional prenatal care.</p>	<p>To explore the differences in outcomes between traditional prenatal care and group prenatal care.</p>	<p>No subjects, meta-analysis</p>	<p>No methods, meta-analysis</p>	<p>Group prenatal care has been shown in the literature to have positive outcomes in patients.</p>	<p>Level I evidence: Meta-analysis.</p>	<p>None, meta-analysis.</p>	<p>Yes, meta-analyses are good sources of information.</p>
<p>Ickovics, J. R., Kershaw, T. S., Westdahl, C., Magriples, U., Massey, Z., Reynolds, H., &amp; Rising, S. S. (2008). Group prenatal care and perinatal outcomes: A</p>	<p>“To determine whether group prenatal care improves pregnancy outcomes, psychosocial function, and patient satisfaction and to examine potential cost differences,” (Ickovics et al., 2008)</p>	<p>1,047 pregnant women ages 14-25, of ethnic minority</p>	<p>Randomized control trial</p>	<p>Patients in group prenatal care had better psychosocial outcomes, more prenatal knowledge, higher satisfaction with prenatal care, and felt more prepared for labor and delivery, versus</p>	<p>Level II evidence: one or more randomized control trials.</p>	<p>Favorable results of the intervention were not uniform; sample is restrictive;</p>	<p>Yes, as Level II is a high level of evidence.</p>

<b>Article Title, Author, etc. (Current APA Format)</b>	<b>Study Purpose</b>	<b>Sample (Characteristics of the Sample: Demographics, etc.)</b>	<b>Methods</b>	<b>Study Results</b>	<b>Level of Evidence (Use Melnik Framework)</b>	<b>Study Limitations</b>	<b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b>
randomized control trial.				those in traditional care.			
Magriples, U., Boynton, M. H., Kershaw, T. S., Lewis, J., Rising, S. S., Tobin, J. N.,...Ickovics, J. R. (2015). The impact of group prenatal care on pregnancy and postpartum weight trajectories.	“To investigate whether group prenatal care has an impact on pregnancy weight gain and postpartum weight loss trajectories and to determine whether prenatal depression and distress might moderate these trajectories,” (Magriples et al., 2015).	Pregnant women, aged 14-21 years, interviewed in the second and third trimesters, as well as six and twelve months postpartum.	Secondary analysis of a cluster-randomized control trial	“Group prenatal care has a significant impact on weight gain trajectories in pregnancy and postpartum,” (Magriples et al., 2015).	Level II evidence: one or more randomized control trials.	None noted	Yes, as Level II is a high level of evidence.

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
<p>McNeil, D. A., Vekved, M., Dolan, S. M., Siever, J., Horn, S., &amp; Tough, S.C. (2012). Getting more than they realized they needed: A qualitative study of women’s experience of group prenatal care.</p>	<p>To understand the central meaning/core of the group prenatal care experience.</p>	<p>Twelve post-partum women that had participated in group prenatal care.</p>	<p>Phenomenological approach</p>	<p>Six common themes emerged from the participants, each supportive of the idea of high satisfaction with group-style prenatal care.</p>	<p>Level VI evidence: Evidence from a single descriptive or qualitative study.</p>	<p>Each woman surveyed completed the program, and did not drop out. Ten women surveyed were first-time mothers.</p>	<p>Yes, even though this study is lower-level evidence, part of this assessment relates to patient satisfaction; therefore, qualitative evidence is appropriate.</p>
<p>Novick, G., Reid, A. E., Lewis, J., Kershaw, T. S., Rising, S. S., &amp; Ickovics, J. R. (2013). Group prenatal care: Model fidelity and outcomes.</p>	<p>To examine the association of fidelity to process related to group prenatal care outcomes such as lower preterm birth rates, adequate prenatal care, and initiation of breastfeeding.</p>	<p>519 women who received prenatal care via the CenteringPregnancy model.</p>	<p>Secondary analysis of a randomized control trial.</p>	<p>Greater process fidelity was associated with significantly lower preterm births,</p>	<p>Level II, systematic review of a randomized control trial.</p>	<p>“The measure of process fidelity evidenced restriction of range; groups were fairly facilitative, with scores above the midpoint of the scale, limiting the variance and potentially our ability to find significant relationships,” (Novick et al., 2013).</p>	<p>Yes, level II is a high level of evidence.</p>

<b>Article Title, Author, etc. (Current APA Format)</b>	<b>Study Purpose</b>	<b>Sample (Characteristics of the Sample: Demographics, etc.)</b>	<b>Methods</b>	<b>Study Results</b>	<b>Level of Evidence (Use Melnyk Framework)</b>	<b>Study Limitations</b>	<b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b>
<p>Brumley, J., Cain, M. A., Stern, M., &amp; Louis, J. M. (2016). Gestational weight gain and breastfeeding outcomes in group prenatal care.</p>	<p>“This study sought to examine the differences in pregnancy outcomes with a focus on gestational weight gain for women attending group prenatal care compared to standard individual prenatal care.” (Brumley, Cain, Stern, &amp; Louis, 2016).</p>	<p>Sixty-five women enrolled in group prenatal care and one-hundred and thirty women enrolled in standard, individual prenatal care.</p>	<p>Matched case-control study.</p>	<p>Women enrolled in group prenatal care had a significantly higher rate of breastfeeding at six weeks postpartum.</p>	<p>Level IV evidence: Case-control study</p>	<p>Lack of randomization, potential selection bias</p> <p>Breastfeeding rates were assessed only at 6 weeks, after which time, many women return to work. Therefore, it would be beneficial to assess rates at a later interval for more accurate results.</p>	<p>Yes, level IV is strong evidence.</p>

<p><b>Article Title, Author, etc. (Current APA Format)</b></p>	<p><b>Study Purpose</b></p>	<p><b>Sample (Characteristics of the Sample: Demographics, etc.)</b></p>	<p><b>Methods</b></p>	<p><b>Study Results</b></p>	<p><b>Level of Evidence (Use Melnyk Framework)</b></p>	<p><b>Study Limitations</b></p>	<p><b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b></p>
<p>Trotman, G. Chhatre, G., Darolia, R., Tefera, E., Damle, L., &amp; Gomez-Lobo, V. (2015). The effect of Centering Pregnancy versus traditional prenatal care models on improved adolescent health behaviors in the perinatal period.</p>	<p>Determine if Centering Pregnancy prenatal care model improves maternal health behaviors in adolescent pregnancies.</p>	<p>One hundred and fifty pregnant adolescents</p>	<p>Retrospective chart review.</p>	<p>A higher rate of compliance with prenatal visits was noted for adolescents enrolled in group prenatal care. Adolescents enrolled in group prenatal care were also more likely to utilize LARC or DMPA methods of contraception. Group prenatal care participants also were more likely to meet weight gain guidelines, had improved rates of breastfeeding, and were less likely to be diagnosed with postpartum depression.</p>	<p>Level III-controlled trial</p>	<p>This study was a chart review, so data is limited to what was reported in patient charts. Subjects were a convenience sample, and self-enrolled in the study.</p>	<p>Yes, this is a higher level of evidence.</p>

<b>Article Title, Author, etc. (Current APA Format)</b>	<b>Study Purpose</b>	<b>Sample (Characteristics of the Sample: Demographics, etc.)</b>	<b>Methods</b>	<b>Study Results</b>	<b>Level of Evidence (Use Melnik Framework)</b>	<b>Study Limitations</b>	<b>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.</b>
Schellinger, M. M., Abernathy, M. P., Amerman, B., May, C., Foxlow, L. A., Carter, A. L.,...Haas, D. M. (2016). Improved outcomes for Hispanic women with gestational diabetes using the Centering Pregnancy© group prenatal care model.	To determine the impact of group prenatal care on Hispanic pregnant women with gestational diabetes mellitus.	460 pregnant Hispanic women with gestational diabetes, age 18 and up.	Retrospective cohort study	Participants receiving group prenatal care were more likely to complete postpartum glucose tolerance testing. Subjects enrolled in group care were less likely to require drug therapy for glycemic control.	Level IV	Not randomized. Results may not be as generalizable because this program was specifically geared toward Hispanic women.	Yes, because findings support the positive effects of group prenatal care on patients with GDM.

## Appendix B

### Iowa Model Use Permission Letter

**Kimberly Jordan - University of Iowa Hospitals and Clin...** June 19, 2019 at 7:18 PM 

To: Allison Mills  
Reply-To: Kimberly Jordan - University of Iowa Hospitals and Clinics  
Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

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You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care*. Click the link below to open.

[The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care](#)

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**Citation:** Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing*, 14(3), 175-182. doi:10.1111/wvn.12223

In written material, please add the following statement:  
*Used/reprinted with permission from the University of Iowa Hospitals and Clinics, copyright 2015. For permission to use or reproduce, please contact the University of Iowa Hospitals and Clinics at [REDACTED]*

Please contact [REDACTED] with questions.

## Appendix C

### Participant Consent Form

#### CONSENT FORM

CenteringPregnancy: Perceptions of Providers and Staff in a Private OB Practice  
Allison F. Mills, BSN, RN, DNP Student  
Liberty University  
School of Nursing

You are invited to be in a research study regarding the CenteringPregnancy model. This study will explore the knowledge and perceptions of participants regarding group-style prenatal care. You were selected as a possible participant because you are part of the clinical staff of [REDACTED]. Please read this form and ask any questions you may have before agreeing to be in the study.

Allison Mills, a doctoral candidate in the School of Nursing at Liberty University, is conducting this study.

**Background Information:** The purpose of this study is to determine if increasing healthcare providers' knowledge regarding group prenatal care increases intent to provide this model of care in practice.

**Procedures:** If you agree to be in this study, I would ask you to do the following things:

1. Answer all survey questions honestly and to the best of your current level of knowledge. Surveys take approximately 5 minutes to complete.

**Risks:** The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

**Benefits:** Participants should not expect to receive a direct benefit from taking part in this study.

**Compensation:** Participants will not be compensated for participating in this study.

**Confidentiality:** The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records. This is anonymous data, meaning that the researcher will not be able to link your responses to the survey to your identity. Data will be stored on a password locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

**Voluntary Nature of the Study:** Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or [REDACTED]. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

**How to Withdraw from the Study:** If you choose to withdraw from the study, please inform the researcher that you wish to discontinue your participation prior to submitting your study materials. Your responses will not be recorded or included in the study.

**Contacts and Questions:** The researcher conducting this study is Allison Mills. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [REDACTED]. You may also contact the researcher’s faculty chair, Dr. Vickie Moore, at [REDACTED].

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*Please notify the researcher if you would like a copy of this information for your records.*

**Statement of Consent:** I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

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Signature of Participant Date

---

Signature of Investigator Date

## Appendix D

### Proof of CITI Training

The screenshot shows the CITI PROGRAM website interface. At the top left is the CITI PROGRAM logo. To its right is the text "Collaborative Institutional Training Initiative". On the top right, the user name "Allison Mills" is displayed above a grey bar, with "Log Out" and "Help" links below it. A navigation bar below the header contains links for "Main Menu / My Courses", "My Profiles", "My Records", "My CEUs", and "Contact Us", along with a search icon. Below the navigation bar, the breadcrumb "Main Menu / My Courses" is shown. A dropdown menu for "Liberty University Courses" is open, displaying a table of course completion records.

Course ?	Status ?	Completion Record ?	Survey ?
Biomedical & Health Science Researchers	Passed 27-Sep-2018	View-Print-Share	Post-course evaluation
Social & Behavioral Researchers	Passed 27-Sep-2018	View-Print-Share	Post-course evaluation

## Appendix E

### IRB Approval Letter

# LIBERTY UNIVERSITY

## INSTITUTIONAL REVIEW BOARD

July 17, 2019

Allison F. Mills, BSN, RN

IRB Application 3882: Centering Pregnancy: Perceptions of Providers and Staff in a Private OB Practice

Dear Allison F. Mills, BSN, RN,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because evidence-based practice projects are considered quality improvement activities, which are not considered "research" according to 45 CFR 46.102(d).

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

If you have any questions about this determination or need assistance in identifying whether possible changes to your protocol would change your application's status, please email us at [irb@liberty.edu](mailto:irb@liberty.edu).

Sincerely,



**G. Michele Baker, MA, CIP**  
*Administrative Chair of Institutional Research*  
Research Ethics Office

**LIBERTY**  
UNIVERSITY.  
*Liberty University | Training Champions for Christ since 1971*

**Appendix F**

## Pre- and Post-Education Survey

Please answer the following questions to the best of your current knowledge level regarding group prenatal care:

1. The American College of Obstetrics and Gynecology (ACOG) supports group prenatal care as an acceptable and beneficial alternative to traditional prenatal care. True or False?
  - A. True
  - B. False
  
2. Literature has shown that group prenatal care has many benefits for patients. Which of the following outcomes have been proven to be a result of group prenatal care? (Select all that apply.)
  - A. Increased breastfeeding rates
  - B. Decreased preterm birth rates
  - C. Decreased postpartum hemorrhage rates
  - D. Increased infant birthweight
  - E. Increased patient satisfaction
  
3. How long do CenteringPregnancy sessions typically last?
  - A. 30 minutes to 1 hour
  - B. 45 minutes to 1 hour
  - C. 90 minutes to 2 hours

- D. 2+ hours
4. How many CenteringPregnancy sessions are recommended throughout the course of a pregnancy?
- A. 5
  - B. 7
  - C. 10
  - D. 12
5. Group prenatal care has been shown to increase patient compliance. True or False?
- A. True
  - B. False
6. Group prenatal care has been noted to (select all that apply):
- A. Improve clinical outcomes
  - B. Increase patient satisfaction with care
  - C. Increase patient self-efficacy
  - D. Increase patient health literacy
7. While group prenatal care has many benefits for patients, cost analyses have shown that it is not a cost-effective option. True or False?
- A. True
  - B. False

8. At this time, I feel confident in my current level of knowledge regarding the process of group prenatal care, as well as its benefits.

- 1. Strongly Disagree
- 2. Disagree
- 3. Neither agree nor disagree
- 4. Agree
- 5. Strongly Agree

9. Based on my current level of knowledge and familiarity regarding this topic, I am interested in group prenatal care being offered as a service within this practice.

- 1. Strongly disagree
- 2. Disagree
- 3. Neither agree nor disagree
- 4. Agree
- 5. Strongly Agree

10. Please share your rationale for your answer to question 9:

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## Demographics

1. What is your title?
  - A. MD
  - B. NP
  - C. CNM
  - D. RN
  - E. LPN
  - F. Other
  
2. How many years have you been employed at [REDACTED]?
  - A. Less than 1 year
  - B. 1 to 5 years
  - C. 5 to 10 years
  - D. 10 to 15 years
  - E. 15+ years
  
3. How long have you been a healthcare provider (MD, NP, RN, etc.)?
  - A. Less than 1 year
  - B. 1 to 5 years
  - C. 5 to 10 years
  - D. 10 to 15 years
  - E. 15+ years

4. What is your gender?

A. Male

B. Female

## Appendix G

### Project Site Permission Letter

June 25th, 2019

Attention: IRB  
Liberty University  
Lynchburg, Virginia

IRB Members:

Allison F. Mills, Liberty University Doctor of Nursing Practice Student (Principal Investigator) and Dr. Vickie Moore, DNP, FNP-C, Assistant Professor of Nursing, and DNP Scholarly Project Chair (Faculty Chair) have proposed to conduct Allison F. Mills' Doctor of Nursing Practice Scholarly Project.

[REDACTED] is committed to providing excellent, comprehensive care for our patients, facilitated by the pursuit of quality improvement. Allison Mills' Doctor of Nursing Practice Scholarly Project reflects our commitment that every patient receives optimal quality health care.

[REDACTED] is pleased to support Allison Mills' Scholarly project.

Feel free to contact me if I can be of further assistance.

Respectfully,

[REDACTED]

[REDACTED], MBA, CEO

**Appendix H**

Participants’ Responses to Open-Ended Survey Questions

Participant	Question 10 Pre	Question 10 Post
1	Need to know more.	Definitely something for us to explore and consider.
2	Interested to find out details of program to see where interest office integration lies.	Increased patient knowledge is always beneficial to increase patient compliance and outcomes. Feel it would decrease triage visits.
3	I don’t know enough to endorse this as an option.	This expanded option will probably be well received by patients and have options and this improves outcomes.
4	Offers a different prenatal care option to the traditional model - may improve patient satisfaction/education.	Still feel it is beneficial to many of our patients.
5	I do not know much about it.	Because I know more about it.
6	I am not familiar with this.	- Chose not to answer
7	Other practices offer it, we should too.	It’s good!
8	If there is benefit to patients, we should offer it.	- Chose not to answer
9	- Chose not to answer	I have always been interested.
10	- Chose not to answer	- Chose not to answer
11	- Chose not to answer	- Chose not to answer
12	Patient desire for more options.	A good alternative to traditional care with sure definite clinical outcome advantage.
13	I see very few OB patients.	I see a low number of OB patients.
14	I think group prenatal care is great!	Group prenatal care is great, it helps good prenatal care, strong relationships and allow patients to learn a lot about themselves, baby and life experiences.
15	We were unable to get our patients to attend a PP support that we offered, so how can we get them to attend prenatal groups together. Also, a lot of patients like personalized care.	Good that patients get more education, still not sure if enough people would participate.

16	I think that as a big office we should focus on individual patient care as much as possible and it would take away from that.	I think it may work well with small offices, but in a large practice it's not easy to facilitate.
17	As of now, I am unsure if this would be beneficial for clients or not based off my knowledge, but it sounds like a program that may be needed.	I have always thought group healthcare is much more beneficial than one on one care. I think this service is worth a trial as long as providers can still feel they will have a financial profit.
18	I do not yet understand the significance of group prenatal care.	Given the research regarding positive outcomes and ACOG recommendations, I believe it would be a great opportunity to improve patient care and satisfaction.
19	I do not know much about it at all.	I feel it would be a good option for patients who desire more of a community in pregnancy.
20	I don't know about group prenatal care and would like if we offered more about it.	I think this will help patients.
21	I neither agree nor disagree because I am not sure how patients will like the service. Some patients like that we are personal and some don't mind group settings.	I feel that some patients will benefit from group care, but on the other hand some just want private sessions.
22	I am not at all familiar with this process. I am very interested in the process and outcome.	I think it would depend on patient choice to participate in such a setting. Definitely different than the normal.
23	I feel group sessions would be more informative and cost effective. Patients would benefit from other patients questions and concerns. You could cover more topics in a short amount of time.	I think it would be worth a trial. The patient knowledge and compliance are very important issues.
24	- Chose not to answer	I feel it would increase patients and better their care.
25	I feel patients would get more education and a bond between their provider with face to face.	Patients will be more compliant and wanting to participate in their care.
26	I do not know enough about group prenatal care to know if I would be interested.	I think it sounds like a good idea.

27	- Chose not to answer	- Chose not to answer
28	I have worked with patients using both models. It's patient's preference.	Sounds beneficial!
29	You can address more concerns with more patients in a more timely manner, i.e. gestational diabetic teaching.	- Chose not to answer
30	I am not familiar enough to know all the pros and cons.	I can see this working with some of the providers and a portion of our patient demographic.
31	Depends on statistics - whether this helps patients, practice, etc.	Patients would benefit from this service being offered.
32	I feel there is a need for this as there is a trend of younger/teenage pregnancies this would benefit.	I feel there is a strong need for this to be offered.