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Impact of the Centering Pregnancy Model on Sustaining Normal Gestation Weight Gain

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Hyacinth Dennis-Crooks

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2018

Abstract

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by

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MS, Kennesaw State University, 2004

BS, College of Mount St. Vincent, 1990

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

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Abstract

Obesity during pregnancy has increased in prevalence over the last decade and is associated with adverse outcomes for mothers and babies, especially Black mothers. In the local setting of this project, the group-centered centering pregnancy model (CPM) was implemented to improve outcomes of pregnancy. The model had not been evaluated for its effectiveness in reducing weight in Black pregnant women; therefore, there was a need for an evaluation of the effectiveness of the CPM in decreasing excessive gestational weight gain (EGWG). The health belief model was used to guide the project, which compared mothers' weights early in the 2nd trimester, antepartum, and 6 weeks postpartum for Black patients who participated in the CPM and those who did not. Deidentified data from patient charts were provided by a local clinic on 16 patients who participated in the CPM and 29 patients who did not. Only patients who identified as Black and had no comorbid conditions and no pregnancy complications were included in the sample. A *t* test was conducted to determine whether changes in weight from the second trimester and the postpartum period between the 2 groups were statistically significant. No significant differences were found ($p > .05$), which might indicate that standard treatment and the CPM were equally effective in managing EGWG. The value of the CPM in preparing mothers for delivery has been well documented in the literature. In this project the value of the CPM in reducing EGWG was not supported; future evaluations involving larger sample sizes may be helpful. The project might promote positive social change by helping CPM providers revise their education efforts to improve strategies for managing EGWG in Black pregnant women.

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Dedication

This project was mainly conducted in one social group, namely Black pregnant women in the United States. Caring for these women was an interesting journey, during which I spent most of the time providing care and gaining valuable educational experience despite challenges and some complexities. The nurses and other practitioners who accompanied me in the journey shared knowledge and encouraged me to apply a number of practices that were considered beneficial.

I dedicate the proposal to my late grandmother, Maude Spence Dennis, an unsung hero who has worked for years as a midwife delivering babies in Prospect, a small rural district in the hills of St. Elizabeth, Jamaica. Your enthusiasm, focus, and hard work in providing maternal healthcare in rural Jamaica with limited resources while caring for your own family stand as a sign of your strength and commitment to humanity.

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Section 1: Nature of the Project

Introduction

Excessive gestational weight gain may lead to obesity during and after pregnancy. Approximately one-fifth of pregnant women gain less than the recommended weight, whereas nearly half gain more than the recommended weight (Lau, Liu, Archer, McDonald, & Liu, 2014). The problem of excessive gestational weight gain is widespread and affects a considerable number of women.

Obesity in women during pregnancy is associated with a range of adverse health outcomes for both mother and child. Overweight and obesity during pregnancy are associated with a higher risk of development of congenital anomalies in the fetus, as well as obesity in childhood (Ickes & Sharma, 2013). Obesity during pregnancy can result in gestational diabetes, pre-eclampsia, and hypertension (Gante, Amaral, Dores, & Almeida, 2015). Various complications during the delivery process and the need for Cesarean section may also occur (Benli, Cetin Benli, Usta, Atakul, & Koroglu, 2015). Importantly, this condition affects not only pregnancy outcomes, but also the life of a woman long after the delivery of the baby. The excessive weight that women gain during pregnancy is likely to stay even after they give birth and may trigger the development of other health complications such as heart disease and diabetes (Gante et al., 2015). The effects of obesity are a significant problem for the population at large; therefore, it is essential to develop interventions for reducing obesity and its comorbidities during and after pregnancy.

Qualified postpartum care for women who are overweight or obese can significantly improve pregnancy outcome. There remains a need for further investigation of the problem of overweight and obesity in pregnant women. One method to address obesity during pregnancy involves the use of the Centering Pregnancy model (CPM), which has been effectively implemented for group care for pregnant women since the early 1990s (Regnaert, 2015). In CPM, women with similar gestational periods are brought together and provided with care and educational interventions (Regnaert, 2015). The CPM model has been approved by the Agency for Healthcare Research and Quality and Centers for Medicare and Medicaid Services (Benediktsson et al., 2013). Due to the group nature of CPM work, significantly lower operating costs are needed as compared to standard care (Benediktsson et al., 2013).

The CPM can be recommended for improving pregnancy outcomes for vulnerable populations, including Black women with low incomes. A detailed study of implemented CPM and pregnancy outcomes is needed. This project focused on the use of the CPM for decreasing excessive gestational weight gain (EGWG) in Black women seen in one large obstetric practice.

Section 1 covers the problem statement, purpose, nature, and significance of this project, concluding with a summary.

Problem Statement

Local Nursing Practice Problem

The project focused on the problem of EGWG in Black women. This condition leads to overweight and obesity in women during and after pregnancy. Obesity during pregnancy is a widespread problem (Lau et al., 2014).

Another significant problem is that excessive weight often remains even after pregnancy. In one study, 15% of females retained at least eleven pounds at 1 year postpartum (Bogaerts et al., 2013). A significant increase of body mass index (BMI) between pregnancies has been associated with a higher risk of obesity during a following pregnancy (Bogaerts et al., 2013). Therefore, excessive weight gain during pregnancy and after delivery represents a problem with which nursing practices must deal.

Overweight and obesity are dangerous conditions that affect the health of people in many ways. Obesity during pregnancy is associated with adverse pregnancy outcomes for both mother and newborn because it can cause complications in the delivery process, excessive postpartum weight, and associated health problems such as diabetes, cardiovascular disease, and musculoskeletal system impairments (Benli et al., 2015; Gante et al., 2015; Ickes & Sharma, 2013). The appropriate nursing care provided for pregnant women can reduce EGWG. Nursing care includes educational interventions, as well as personalized care and advice.

The local nursing practice problem is the need for the implementation of appropriate care interventions to reduce EGWG in Black women with a view toward improving their pregnancy outcomes. This problem is directly connected with nursing

practice. Nursing interventions and care can be useful in improving the situation. Several opportunities can be provided to pregnant women for reducing EGWG. Standard care is personal; thus, it can be costly. An alternative is group care, which is both highly efficient and cost friendly. The CPM is an example of a group care model. This model has been proven to be more effective than standard care (Regnaert, 2015).

Local Relevance and Practice Environment

The project is relevant to the local context because the CPM was implemented at the project site in 2014. The project was performed in a health care center for women located in Georgia. Although the CPM had been in place for over 4 years, no effective evaluation of the project had taken place.

The program was implemented to help reduce the obesity problem seen in pregnant Black women in the state for several reasons. First, the rate of obesity in Georgia is high; about 30-35% of the population is overweight (Centers for Disease Control and Prevention [CDC], 2017). Second, the prevalence of obesity is higher in non-White citizens due to factors such as genetic predisposition, lower socioeconomic status, nutritional habits, and limited engagement in physical activities (Bhupathiraju & Hu, 2016). In many southeastern states, the Black population represents a large segment of the overall population. In Georgia, 32% of all people are Black (Kaiser Family Foundation [KFF], 2016). Finally, the average income in southeastern states is lower than in other parts of the United States (U.S. Census Bureau, 2017).

Gober (2015) reported that approximately half of all pregnant women are overweight or obese. The highest rate of obesity during pregnancy was reported in the

Black population (Gober, 2015). Therefore, Georgia faces this problem in the target population.

The practice environment for this project was a healthcare center for women. These centers provide care and follow women during pregnancy and delivery. The practice environment was characterized by a lack of effective methods for overcoming the problem of obesity, which led to increased adverse outcomes related to maternal obesity in women and children. Therefore, it was crucial to develop and implement a practical approach to addressing the practice problem and decreasing EGWG in Black pregnant women in Georgia. This approach needed to have a low implementation cost. Women with low incomes should be able to obtain high-quality care using CPM. As a group care model, the CPM has a low cost of implementation. Consequently, it was essential to investigate the effectiveness of the CPM as an alternative to the standard care model that was traditionally used before the CPM was implemented.

Significance for Nursing Practice

This DNP project is highly significant to nursing practice. It focuses on the evaluation of the CPM for reducing excessive weight gain during and after pregnancy. This model was developed to help pregnant women maintain BMI and reduce the chances of becoming obese during and after the gestational period. The CPM is a model of nursing care that involves providing education and personalized services to women joined in groups according to their gestational period (Regnaert, 2015). Therefore, the application of the CPM to nursing practice may help to promote improved health outcomes in women.

This project's aim was to evaluate the effectiveness of CPM in reducing obesity during and after pregnancy. After evaluation, it would be possible to recommend the model for implementation on a broader scale or continued use in nursing practice. Consequently, results of the investigation can be applied to nursing daily practice to improve patients' outcomes.

Purpose

Gap in Practice

My aim in conducting this project was to address the shortage of effective medical care for Black pregnant women aimed at decreasing EGWG. A lack of sufficient care models results in a high prevalence of obesity and related adverse health outcomes (Gante et al., 2015). Another significant problem that needs to be addressed is the lack of care models for people with low income. In such a manner, there is an urgent need for the implementation of an appropriate care model that will address the problem of overweight and obesity in pregnant women. The CPM is an efficient and low-cost group care model that can be implemented in healthcare settings. It is considered valid for decreasing weight gain in adolescent populations (Magriples et al., 2015). However, there is limited research on the effectiveness of the CPM in reducing EGWG in adult Black women. This project aimed at addressing this gap in practice by evaluating the CPM in a pregnancy center for women in Georgia.

Practice-Focused Question

The main practice-focused question of this project was the following: Is the CPM effective in reducing EGWG in Black pregnant women? This project focused on

comparison of postpartum weight outcomes in a group of adult Black pregnant women before and after the CPM was implemented in the healthcare setting. The project evaluated the CPM's effectiveness in reducing postpartum weight gains through a comparison of patients' weights before and after CPM implementation.

In such a manner, this project was designed to answer the following practice-focused question: Is the CPM a more effective approach for reducing EGWG in Black pregnant women than standard nursing care? The project question was directly related to nursing practice. To answer the question, a comparison of health outcomes of pregnant women involved in the CPM before and after implementation was conducted. Before implementation of the CPM, the standard care was practiced; therefore, it was possible to examine differences between standard care for pregnant women and care with the CPM. Secondary clinic data on the Black women's weight gain during and after pregnancy were used.

Response to the Gap in Practice

The purpose of this project was to evaluate the effectiveness of the CPM applied by centers of women's health care in decreasing EGWG in the adult Black pregnant women. This project focused on addressing a gap in practice related to the shortage of care models for reducing EGWG. This Doctor of Nursing Practice (DNP) project estimated whether there was a difference in postpartum weight gain in a cross-sectional sample of Black women before and after CPM implementation in the healthcare setting. Therefore, an assessment of the CPM's effectiveness was conducted. The project addressed the gap in practice related to the absence of data about the efficacy of this

model in the Black adult population. Based on the results of the assessment, recommendations for nursing practice at the local site were developed.

Nature of the Doctoral Project

Project Sources of Evidence

The assessment of the CPM's effectiveness was based on the evaluation of pregnancy outcomes in Black women at a clinical setting in the southeastern United States. Women's weight in the second trimester of pregnancy and at the sixth-week postpartum follow-up visit was assessed. The project used secondary data provided by a health center for women in a large metropolitan area in Georgia. The clinic offered grid charts with the results of weight gain in a group of Black adult pregnant women during and after pregnancy. The information obtained from the clinic was deidentified and contained only data about weight changes. Outcomes in the two groups of women who were provided with care before and after CPM implementation in the clinic were compared. In such a manner, the sources of information for the project were secondary clinic data.

A literature review concerning the problem was conducted as well. The literature review included information about excessive weight gain during pregnancy, causes and risk factors for EGWG, adverse effects of EGWG on the health of a mother and her offspring, and possible measures to address this problem, including nursing interventions. In the review, primary and secondary sources were included. As primary sources of evidence, experimental nursing research was used. Information from such studies was reviewed and analyzed. As secondary sources, books and systematic reviews with meta-

analyses were used. Finally, statistical data on the prevalence of obesity in the population, according to race and distribution across the country as well as average level of income, were obtained from official data sources.

Project Method

The evaluation of the project required the use of secondary data sources provided by the clinic. Quantitative methods were used in the study. Weight gain data for the second trimester of pregnancy and during the sixth-week postpartum visit in two groups of Black women were compared. The first group included participants who received standard care before CPM implementation. The second group included participants who were provided with CPM care after its application in practice. For analyzing the data, statistical tools were applied. Independent *t* test was used to compare the average weight gain in the two groups. Statistical analysis of the data was conducted using SPSS software.

Additionally, a literature review on the problem of EGWG, its causes and risk factors, the prevalence of this condition in the target population, and its adverse health outcomes was conducted. For this purpose, primary and secondary scholarly sources (i.e., evidence-based nursing articles and reviews) were used. Finally, based on the project results, recommendations for the nursing practice were developed. The results of the study will be reported at professional nursing conferences. Finally, an article with the study results will be published in a scholarly nursing journal. In such a manner, nurses in the region and all over the United States may become aware of the results of the evaluation. Findings of the analysis address the gap in practice and may help in achieving

the project's purpose, which was to investigate the effectiveness of the CPM as applied by health care centers for women with a view toward decreasing EGWG in adult Black pregnant women.

Significance

Excessive maternal weight can affect the safety of a child during delivery, and weight above healthy-weight guidelines is often associated with detrimental effects on both mother and child, including gestational diabetes and obstetric issues (Stüber et al., 2015). Guidelines for healthy weight gain during pregnancy take into consideration various processes involved as factors affecting obesity in women during pregnancy. The intended outcome of CPM implementation is to help pregnant women receive valuable tips regarding EGWG reduction and health improvement. Clinics using the CPM provide care and useful information on nutritional practices and physical exercises during pregnancy.

Analysis of Significance to Stakeholders

The mission of this DNP project was to evaluate the effectiveness of the CPM in preventing and controlling gestational weight gain. In the case of a positive evaluation, the model may be recommended for implementation in nursing practice.

This project has several stakeholder groups. The primary stakeholders of the project are pregnant women. An evaluation of the CPM can provide evidence-based results for recommendation of the model for further use in practice. The CPM can be a useful care model for addressing EGWG and associated adverse health outcomes

(Regnaert, 2015). In such a manner, women predisposed to overweight and obesity may benefit from the program's implementation.

Second, newborns may also benefit from the model's implementation. It has been demonstrated that overweight and obesity during pregnancy can affect the health of a child because of congenital abnormalities and difficulties in delivery (Benli et al., 2015; Ickes & Sharma, 2013). Therefore, children's health may be affected by CPM implementation. In such a manner, children can be considered as stakeholders of the project.

Finally, healthcare workers and nurses are essential stakeholders of this project. The project may improve knowledge about the effectiveness of the CPM in the reduction of EGWG in Black women. Nurses are healthcare workers who provide care to pregnant women. Therefore, the implementation of the CPM program influences nurses directly as they participate in training about the model's implementation and change their scope of practice.

Contribution to Nursing Practice

The purpose of this DNP project was to evaluate the effectiveness of the CPM in decreasing EGWG in Black pregnant women. The results of the evaluation may significantly contribute to nursing practice. First, the project may improve the level of knowledge about EGWG, health outcomes related to EGWG, and approaches used to address this problem. Second, practical recommendations for nursing practice may be developed based on the project results. In such a manner, the DNP project may contribute to the improvement of nursing practice.

Transferability of Knowledge

The CPM is a new option for prenatal care that involves the provision of antenatal support and education for pregnant women. The model can be applied to addressing not only the problem of the EGWG, but also other health-related issues and decreasing adverse pregnancy outcomes. CPM has been effectively used in managing depressive symptoms, anxiety, and stress (Benediktsson et al., 2013), gestational diabetes (Schellinger et al., 2017), and cardiovascular diseases and pre-eclampsia (Jan Mohamed et al., 2015). In such a manner, it is possible to suppose that results obtained from this evaluation of the CPM can be transferred to other areas of practice related to women's pregnancy outcomes.

Implications for Positive Social Change

Maternal obesity as it relates to adverse health outcomes is a significant problem in the United States, especially in low-income regions. Obesity during pregnancy is associated with gestational diabetes and cardiovascular diseases (Baugh et al., 2016), difficulties in the delivery process (Männistö et al., 2013), development of congenital abnormalities of the fetus (Ickes & Sharma, 2013), and other health-related problems. These problems have economic impacts at the national and individual level. Significant costs are incurred by addressing adverse postpartum outcomes associated with EGWG (Aigbe, 2014). Health-related problems that develop during pregnancy in obese women affect these women and their offspring before and after delivery, and the management of these problems involves significant costs.

Consequently, the implementation of this project may trigger positive social changes. The results obtained from this project may be used for the development of interventions for pregnant women with a view toward addressing EGWG. The CPM can be implemented in the community as an active care model that provides positive outcomes. Because the CPM does not require significant spending, it can be used for people with low income. First, the use of the CPM may lead to a decrease in the prevalence of obesity and overweight in pregnant women. Second, pregnancy outcomes of mothers and babies may be improved. Therefore, the prevalence of obesity-related health problems such as cardiovascular diseases and diabetes may be decreased. Finally, this intervention may improve the health and well-being of the whole community by positively influencing women and their offspring.

Summary

The first section provided an introduction and overview of the research project. The problem was stated, and the relevance of the project to nursing practice was explained. I discussed the purpose of the study, the project-focused question, the nature of the project, and the project's significance for nursing practice with a view toward achieving positive social change. The elaboration of the project continues in Section 2.

Section 2: Background and Context

Introduction

The DNP project focused on the problem of EGWG. Excessive weight gain during pregnancy has been known to cause health complications in both mothers and offspring (Gante et al., 2015). The purpose of the project was to evaluate the effectiveness of the CPM as used at health care centers for women with a view toward decreasing EGWG in Black adult pregnant women. It estimated whether the CPM is a more effective care model for addressing the problem than standard care is; what effects the CPM has on the target population; and whether the benefits of the CPM justify the further allocation of resources. This section covers the theories, models, and concepts related to the topic. The relevance of the project to nursing practice is analyzed here as well, along with the local background and context. Finally, my role as the DPN student in this project is described.

Theories, Models, and Concepts

The research was based on the health belief model. The applied theory was used to guide the research process and develop appropriate interventions (Khorramabad et al., 2015). This model was essential because it provides an inclusive framework for understanding psychosocial influences associated with compliance to health-related behaviors such as following a diet plan recommended during pregnancy. According to this model, patients will accept a healthy behavior if it can result in prevention or avoidance of adverse health conditions. Additionally, the model sets positive expectations for patients to follow; patients' beliefs in the success of the recommended behavior

change creates a more sustainable benefit. All of these rules can be adopted by nurses to encourage women to engage in healthy behaviors, including improvements in nutritional habits and engagement in physical activity (Khorramabad et al., 2015). In such a manner, the model can be used in the development of appropriate educational interventions for women predisposed to excessive weight gain during pregnancy.

The health belief model is commonly used in medical investigations. It may be applied to assess expected susceptibility, severity, benefits, barriers, and self-efficacy in relation to an intervention. This model can explain and predict a variety of health behaviors. It involves the knowledge, attitudes, and beliefs held by patients regarding certain practices (Khorramabad et al., 2015). It is founded on some principles and opinions regarding patients and their different health views, especially concerning ideas for preventing an epidemic, following various recommendations, and taking actions regarding practices to be involved in the entire process. The application of concepts of the health belief model to the project is presented in Table 1.

The selection and appropriate use of theoretical frameworks are essential for the success of healthcare interventions. The health belief model is often chosen for the development of nursing interventions, including educational interventions. It was expected that the use of this model would improve health outcomes in the target population of this project.

Table 1

Concepts of the Health Belief Model in Relation to the Project

Concept	Action related to the project
Perceived susceptibility	Most women during the gestational period are to engage in practices that minimize the chances of developing obesity.
Perceived severity	Problems that occur for the mother in obstetric condition affect both mother and offspring. Obesity is associated with poor nutritional habits and lack of physical activity.
Perceived benefits	Engagement in physical exercises daily and practicing healthy eating habits, especially by mothers and infants, is beneficial.
Perceived barriers	Sharing information and learning experience regarding nutritional practices is crucial. Availability of fruit and fresh vegetables in the clinical setup is to be provided.
Cues to action	Nurses provide information regarding nutritional practices among practitioners who joined the program.
Self-efficacy	Women are educated on matters regarding nutritional intake and the importance of engagement in the daily physical exercises.

Primary Writings

The project was based on the health belief model. The model was developed in the 1950s by scientists engaged in the Public Health Service. Rosenstock (1974), one of the authors of the theory, described its historical background and development.

Rosenstock stated that the theory aimed to explain the healthy behavior of people and establish factors that determined this behavior. The authors of the model tried to design effective measures to prevent a wide range of diseases, including cancer, dental

infections, and polio, and mitigate their impact. Researchers focused on encouraging people to pass screenings for asymptomatic conditions. The authors determined that people would always consider the severity of possible disease and effectiveness of possible preventive measures before applying or rejecting any healthy behavior (Rosenstock, 1974). These concepts created a basis for the development of the health belief model.

The model was appropriate for this project because it is helpful in the development of interventions that focus on patient behavior improvements. For this purpose, patients should understand possible threats of obesity during pregnancy, as well as benefits of behavioral improvements. In such a manner, nursing education as a part of the CPM may be helpful in the improvement of patients' behavior.

Definition of Terms With Multiple Meanings

Overweight person: A person with a body mass index (BMI) of 25-29.9 (American College of Obstetricians and Gynecologists [ACOG], 2016).

Obese person: A person with a BMI of 30 or above (ACOG, 2016).

Excessive gestational weight gain (EGWG): Weight gain during pregnancy that exceeds the recommended level: 28-40 pounds for underweight, 25-35 pounds for normal weight, 15-25 pounds for overweight, and 11-20 pounds for obese women (ACOG, 2016).

Relevance to Nursing Practice

History of the Problem

Excessive gestational weight gain may lead to obesity during and after pregnancy. Obesity is an epidemic that negatively impacts the health and well-being of women around the world (Regnaert, 2015). It is more likely to occur after pregnancy if a mother is obese during pregnancy. The American College of Obstetricians and Gynecologists (ACOG) established criteria for excessive weight gain during pregnancy, with overweight corresponding to a body mass index (BMI) of 25 to 29.9 and obese corresponding to a BMI of 30 or above (ACOG, 2016). It has been reported that approximately half of all pregnant woman are overweight (Lau et al., 2014). Overweight and obesity during pregnancy are common problems in the United States.

Obesity in women during pregnancy is associated with a range of adverse health complications in the future. Obesity poses risks during pregnancy and after birth for both mother and offspring. During pregnancy, obese women have a higher chance of facing congenital anomalies as compared to females with a healthy weight (Ickes & Sharma, 2013). Issues associated with obesity include limb reduction anomalies, cardiovascular anomalies, and spina bifida (Baugh et al., 2016). Obesity can also result in gestational diabetes, pre-eclampsia, and hypertension during pregnancy. Almost a third of all obese pregnant women give birth to overweight babies with a weight of over 4,000g (Arabin & Stupin, 2014). As a rule, obese women have longer pregnancies that may lead to various complications during birth (ACOG, 2016). Because prolonged pregnancies are often induced in clinical settings, obesity may result in unsuccessful inductions (Benli et al.,

2015). Pregnancy complications are also associated with obesity. Most cases of postpartum hemorrhage and some infections such as infection of the urinary tract are more widespread in obese women than in females with normal weight (Mariona, 2016).

Additionally, excessive weight that women gain during pregnancy is likely to be retained even after giving birth, and the weight may bring about other health complications such heart disease and diabetes (Gante et al., 2015). Because this problem affects society significantly, it is crucial to determine the main risk factors for obesity in pregnant women and possible interventions for improving the situation. Thus, the problem is relevant to nursing practice, and studies dedicated to its management are warranted.

Several risk factors contribute to pregnancy-related obesity. This problem occurs more frequently in women who used to be overweight or obese before pregnancy. Black and Hispanic women of low socioeconomic status suffer from obesity during pregnancy more frequently than Caucasian females do. Finally, younger, unmarried, and primiparous women are more likely to be overweight during pregnancy. For women who have more than one child, weight retention during a previous pregnancy is a predictable measurement for EGWG (Holland, Groth, & Kitzman, 2015). Low socioeconomic status is another predictive factor for gestational obesity. It was reported in one study (Gouda & Prusty, 2014) that half of individuals who were currently overweight or obese were characterized by low or middle income. This tendency is common in people who live in urban areas (Gouda & Prusty, 2014). In such a manner, a significant part of the

population, with low socioeconomic status and residence in urban areas, is at elevated risk of developing obesity during pregnancy.

For addressing the problem, various approaches have been used. For instance, Yeo, Crandell, and Jones-Vessey (2016) studied the effectiveness of adequate prenatal care for improving gestational weight gain. Yeo et al. included almost 200,000 participants in their sample. They found that proper prenatal care as recommended by the Institute of Medicine did not decrease risks of EGWG.

Fealy et al. (2017) conducted a literature review to assess the effects of weighing and stand-alone interventions for reducing EGWG. They found no significant improvements in maternal overweight and obesity after these interventions as compared to standard care.

McDonald et al. (2015) focused on the effects of an educational intervention on gestational weight gain. They created a knowledge translation tool that supported the interaction between a pregnant woman and her care provider. Participants received information about EGWG and practical advice. Next, the level of their knowledge was assessed. The study demonstrated significant improvement in the women's awareness of excessive weight gain and its possible threats to their health (McDonald et al., 2015). Therefore, McDonald et al. concluded that the educational intervention positively affected pregnant women. The authors stated that further investigations were needed to estimate the effect of the intervention on gestational weight gain.

Based on the literature reported above, it is possible to state that the problem of EGWG has been researched in several nursing studies. Still, a need remains for more

research on the effect of nursing care on weight-gain processes and the development of useful care models.

Current State of Nursing Practice

Nurses have provided care for pregnant women for many centuries. Nursing care for pregnant women aims to improve pregnancy outcomes, including managing the problem of EGWG. As stated above, nursing studies have not estimated effective nursing interventions for addressing EGWG. In fact, in most healthcare settings, standard prenatal care is applied. No specific official recommendations for decreasing EGWG have been provided (Fealy et al., 2017).

Benediktsson et al. (2013) compared the CPM with the standard care model. The authors estimated that outcomes of CPM are like the outcomes of standard care. The benefit of the CPM is its low cost due to group engagement. Additionally, Magriples et al. (2015) estimated the positive outcomes of the use of the CPM in adolescent and young adult pregnant women. The authors stated that the model's application resulted in a significant decrease in EGWG cases. In such a manner, the CPM can be recommended for use in healthcare centers for low-income women. The model was implemented in healthcare centers in Georgia where this project took place. Consequently, there are no specific recommendations for nursing care concerning the decrease in pregnancy weight gain; therefore, the CPM can be applied instead of traditional obstetric standard care.

Strategies to Address the Gap in Practice

Despite the absence of specific recommendations for addressing the problem of overweight and obesity during pregnancy, nursing interventions have already been

applied. Previous work has focused on creating public awareness through education on the importance of the issue. Nursing educational interventions used to be a practical approach to improving the level of women's knowledge about the threats of EGWG (McDonald et al., 2015). For example, dietary information related to the quality and not the quantity of food was included in the CPM educational program for pregnant women. Second, advice on exercises, as well as explanation of their importance, given that the need to increase physical activity can affect EGWG (Zelek, 2013). Therefore, to address the existing problem, the education of females was applied.

Impact of the Project on Nursing Practice

As stated above, no active intervention for decreasing EGWG cases has been developed and implemented in nursing practice. This project may contribute to increased awareness among nurses of the problem of EGWG and the use of the CPM for addressing this problem. The study of Magriples et al. (2015) provided evidence concerning the effectiveness of the CPM in decreasing EGWG in adolescents and young adults.

This DNP project addressed the existing gap in practice, extended knowledge on the efficacy of CPM use, and provided new evidence of the influence of modern strategies on gestational weight gain in Black adult women.

Local Background and Context

Obesity in pregnant women has a direct impact on the health-related outcomes in both the mother and offspring. It is associated with heart diseases, gestational diabetes, and problems with the baby delivery (Bogaerts et al., 2013). There is a positive relationship between obesity postpartum and pregnancy weight gain. Therefore, the

EGWG might result in obesity and related health problems after the pregnancy. Further studies for addressing the condition are needed.

Next, except for the health-related issue, this condition affects the national economy. It requires significant resources for improving health outcomes for both mothers and children that are caused by obesity in pregnant women. The total amount spent on the treatment of obesity in pregnancy at the national level has already amounted to about \$147 billion and is growing (Biener et al., 2017). It is essential to consider the costs of the intervention as well. The project focuses on helping people with low income. Therefore, the fact that the CPM applied to female care is relatively inexpensive is essential for the successful intervention implementation at the national level (Novick et al., 2013). In such a manner, the use of this care model can be recommended for regions where people of low socioeconomic status live.

Next, race/ethnicity is recognized as a factor contributing to pregnancy outcomes. Pregnancy and childbirth-related mortality are higher in ethnic minority groups in the United States, including Black women (Hicken et al., 2013). Obesity rates are higher among Black women than among White women and may contribute to negative health outcomes. It is essential to understand racial and ethnic differences in health, therefore; this project's aim was to improve obesity-related outcomes related to pregnancy for Black women.

Pregnancy provides pregnant women with an opportunity to adopt and promote healthy eating habits that can be maintained after pregnancy. Consequently, a project dedicated to improvements in nutritional habits and physical activity for pregnant females

might have long-term effects (Benediktsson et al., 2013). Potentially, such a project might improve the health of the community; this fact makes the project meaningful.

Institutional Context

An inappropriate gestational weight gain can significantly affect the health of a pregnant woman and the offspring. During the last years, the percentage of women gaining excess weight during pregnancy has dramatically increased nationwide. The most recent studies reported that 47% of women gained more weight than it was recommended during their pregnancy (Jung, & Choi, 2017). The governmental and private organizations are aware of the impact of this issue, and they are working hard to reduce the incidences as much as possible. The state and federal government units are doing substantively enough to develop and implement policies, which might bring changes to the dietary habits and lifestyle of pregnant women, thus leading to the decrease of the prevalence of obesity and overweight in pregnant females. Federal activities include campaigns, which increase the public awareness, educate women, and provide sufficient care for them (Ostovan, Zibaenezhad, Keshmiri, & Shekarforoush, 2013). In such a manner, it is possible to state that institutions involved in the problem solving are governmental and private medical facilities, educational establishments, and social institutions, which focus on the issue of pregnant women's overweight and obesity.

The CPM was conducted in health care centers located in the state of Georgia. As it was stated above, the problem of maternal obesity was significant for this location. First, the state statistics demonstrated that 30-35% of all people in the state were overweight (CDC, 2017). The prevalence of overweight and obesity in pregnant women

was even higher and reached 50%. Importantly, the highest rate of obesity was reported in the Black women, followed by Hispanic and White females (Bhupathiraju & Hu, 2016). African Americans constitute 32% of the total population in Georgia (KFF, 2016).

Furthermore, the problem of obesity is more urgent for people with low income. In Georgia, the average salary is 5.31% lower than in other parts of the US (U.S. Census Bureau, 2017). Therefore, the problem of maternal obesity is urgent for the state. The problem prevalence determines the need for the detailed investigation and development of effective interventions with the view to addressing it.

The project will be performed in two health care centers for women, which are private facilities in one hospital network. These organizations provide medical care services for females, including prenatal pregnancy following and delivery. Therefore, these facilities were involved in the development and implementation of innovative and efficient pregnancy care model that could decrease EGWG and improve health outcomes.

The State and Federal Contexts

The problem of obesity in pregnant women is urgent in the United States, and it is a part of the common tendency to the increase of overweight and obese people in the population. The number of obese individuals has doubled in the United States in the last 50 years and continued to increase (Hruby & Hu, 2015). EGWG is associated with numerous pregnancy complications. Women may develop gestational diabetes and hypertensive disorders and need a Cesarean section for the successful delivery of the newborn (Gante et al., 2015). In such a manner, the problem affects the whole nation.

Another crucial federal context is the racial inequality in the problem development. Obesity disproportionately affects the Black and Hispanic women. In such a manner, statistics indicate that the highest rates of diabetes in the US are among the Black females followed by Hispanics (Hicken et al., 2013). Additionally, diabetes and hypertension disorder are also more widespread among Blacks. Therefore, EGWG affects the Black population in a more significant way. It causes pregnancy complications and increases the risk of being overweight or obese after the baby delivery (ACOG, 2016). Consistency with the state and federal level statistics of obesity, at the local level over 50 % of the black women seen are obese. Therefore, solutions on the community level are required

It is essential to determine what factors lead to such racial inequality. Biological metabolic differences should be mentioned first (Hicken et al., 2013). Second, behavioral factors such as limited leisure time and physical activity also contribute to the development of obesity in Black women.

Additionally, this population is also susceptible to psychological, cultural, and environmental factors (Agyemang & Powell-Wiley, 2013). Different measures should be developed to focus specifically on addressing different social determinants of the health, as well as encouraging and promoting lifestyle changes. The factors that contribute to the development of overweight and obesity in the target population include the EGWG and postpartum weight retention (Agyemang & Powell-Wiley, 2013). In such a manner, studies of these factors are required.

Several essential risk factors should be named. One of the most important of them is the lower socioeconomic status of the Black population in comparison with the White people. Second, mistaken beliefs are also important. The recent research indicated that women believed in the importance of gaining weight for the infant health. Therefore, the ladies agreed to gain weight provided it would not adversely affect their physical appearance or interfere with their daily lives (Whitaker, Wilcox, Liu, Blair, & Pate, 2016). Apart from the pregnancy-related weight gain, the Black women with obesity experience difficulties caused by the weight cycling (Agyemang & Powell-Wiley, 2013). Another factor of the higher obesity prevalence is the difference in nutrition of the Black population. Research indicates that the Black women in the US have a lower intake of vegetables, fruit, and vegetables, and a higher intake of calories, sodium, and added sugars as compared to women of other ethnic groups (Chan, Stamler, & Elliott, 2015). Finally, the disparity in health behavior exists in women of different ethnic groups. The Black women are less engaged in various physical activities (Li & Wen, 2013). In such a manner, interventions aimed at reducing obesity and related complications should consider all these factors.

It is also important to state that obesity is not equally distributed among states of the country. Some states have a high prevalence of the condition than the others do, and some areas have reported a decline of the disease. Alabama, Arkansas, Louisiana, Mississippi, and West Virginia demonstrated the highest rate of obesity in the general population and pregnant women (CDC, 2017). The rate of obese citizens exceeds 35% of the entire population in these states (CDC, 2017). Georgia, where the DNP project will be

conducted, the state demonstrated a slightly lower level of obesity in the population that is between 30 and 35% (CDC, 2017).

Significant work at the federal and state levels has already been conducted to improve the situation. The federal and state governments encouraged researches on the development of viable solutions (Regnaert, 2015). The current situation could be addressed through early identification. The federal government has also facilitated the legislative environment by developing policies that would help solve the challenge. Finally, educational interventions were designed and implemented with the view to addressing the needs of the better understanding of risk factors of obesity and associated complications (Chriqui, 2013).

The Role of the DNP Student

Professional Attitude Toward the Project

Most women, who are advised to change their lifestyle, especially during pregnancy, find it challenging to apply lifestyle changes. They find it hard to reduce the intake of carbohydrates and fats. These women often will not participate in exercises, even the mild ones that are necessary to keep the body fit. This issue has posed a challenge to practitioners who fight for healthy pregnancy outcomes. As a nurse, I am encouraged to help these women to decrease the level of excessive weight gain and improve their and their babies' health outcomes. I believe that more research is needed to address the stated problem.

Professional Role in the Project

As a nurse practitioner, I was responsible for completing the project. It was my duty to coordinate the entire project process. I developed a schedule for the project and conducted it according to the plan. It will be my responsibility to communicate with other people involved in the project. I will interact with the clinic workers to request and gather the secondary data. I will perform the database search and analyze literature related to the problem. I will write the literature review for the project based on the sources of evidence identified. I will obtain, systematize, and analyze data from the hospital with the help of statistical approaches. I will complete the DNP project and present its result. I will participate in the spread of knowledge, as well. I am going to publish the project results in a scholarly journal and report them at a nursing conference. I will apply for the help of other professionals for the holistic data analysis and in case of any problem.

Motivation for Completing the Project

The passion for education and science is my driver for completing the project. I am interested in the self-development, as well as in the recent achievements in the nursing practice. Sincere passion and interest keep me on track. Furthermore, I have the desire for improvements. The primary task of nurses is to help people. In such a manner, I am interested in the investigation and implementation of measures that might address the existing problem. The issue of obesity affects a significant part of the population, including pregnant women. This condition has adverse effects on the health of children and mothers. Also, considerable costs are required for overcoming the consequences of maternal obesity. As a nurse, I have an ardent desire to improve the situation and help

women to avoid EGWG. I foresee a generation of women that will have fewer incidents of gestational obesity. The deaths and other undesired pregnancy outcomes are to be reduced in the nearest future. Babies with better health will be born; consequently, the health of the whole nation will improve. This project strives to help the society in achieving this goal by providing recommendations and developing effective care intervention strategies.

The study was carried out with the guidance of my chair, committee member, and the University Review Board to ensure that every step in the process is done professionally and in accordance with established guidelines.

Potential Biases

To manage potential bias, the process was developed in a manner to require as little interaction as possible. The self-guiding logs were designed for collecting aggregate data before CCPM and data post CPM weight.

Summary

This section provides details regarding the background of the project. First, it explains the theoretical framework applied to the project performing. It also covers the relevance of the project and the general and specific literature regarding the weight gain during pregnancy. Also, the institutional, state, and federal contexts are explained in detail. Personal attitude and activities are presented. Finally, potential bias and ways for its addressing are described. The further project development, as well as the collection and analysis of evidence, is conducted in section 3.

Section 3: The Collection and Analysis of Evidence

Introduction

Excessive weight gain during pregnancy can result in complications for both mother and offspring. The purpose of this project was to evaluate the effectiveness of the CPM as used in two health care centers for women with a view toward decreasing EGWG in Black adult pregnant women. Maternal obesity during pregnancy has not only health-related adverse outcomes, but also severe economic impact. Despite the significance of the problem, there has been no effective nursing evaluation of the CPM. To perform such an assessment, I used an outcome evaluation method to determine if the CPM is better able to prevent obesity in the mother compared to the previously used standard of care. This project focused on the evaluation of the CPM as implemented in a health center for women. This section describes practice-focused questions and data sources, as well as data analysis and synthesis.

Practice-Focused Question(s)

The Local Problem, Gap in Practice, and Practice-Focused Questions

The current problem focuses on Black women who gain excess weight during the pregnancy. EGWG is associated with adverse health outcomes for mothers and offspring (Bogaerts et al., 2013). One of the possible effective interventions is applying effective care model for pregnant women. The CPM has been considered a promising and innovative strategy for providing care to low-income people (Benediktsson et al., 2013). In this project, I sought to evaluate the effectiveness of the CPM in decreasing EGWG in Black adult pregnant women. The project is especially important for Georgia due to the

high percentage of the Black population with low income in the state. Approximately one-third of the population is Black, and half of all people are overweight or obese (KFF, 2016). In such a manner, the practice-focused question for addressing the existing problem was the following: Is the CPM a more effective approach for reducing EGWG in Black pregnant women than standard prenatal care?

Purpose of the Study

I sought to answer the project-focused question to achieve the goal of the study. The purpose of the project was to evaluate the effectiveness of the CPM as implemented in a health care center for women with a view toward decreasing EGWG cases in Black adult pregnant women. I compared gestational weight gain in two groups of women: a group provided with standard care before the CPM was implemented and a CPM group after implementation. This comparison helped in evaluating the effectiveness of the CPM in decreasing weight gain and estimating its positive or adverse effect on the target population of the Black adult pregnant women. Based on the obtained results, it is possible to draw conclusions on whether the costs needed for the implementation of the CPM are justified by the benefits brought by the program.

Key Operational Definitions

The *CenteringPregnancy Model (CPM)* is a strategy for providing care to pregnant women in a group setup. In groups, women with similar gestational age can discuss problems and particularities of their pregnancies, child delivery, and infant care. Additionally, women in these groups are provided with education and given personalized advice about pregnancy, childbirth, and health outcomes (Regnaert, 2015).

The *standard care model* is a care strategy for pregnant women that presupposes periodic healthcare assessments and consultations with a provider (Benediktsson et al., 2013).

Excessive gestational weight gain (EGWG) is weight gain during pregnancy that is higher than recommended by ACOG and leads to overweight or obesity. According to ACOG (2016), BMI between 25 and 29.9 is overweight, while BMI higher than 30 identifies obesity. During pregnancy, recommended weight gain is 28-40 pounds for initially underweight women, 25-35 pounds for normal weight women, 15-25 pounds for overweight women, and 11-20 pounds for obese women. If weight gain exceeds the recommended values, it can be considered excessive.

Sources of Evidence: Archival and Operational Data

Evidence for the project was provided by the clinic in the form of grid charts. These charts contained secondary data on weight gain in the second trimester of pregnancy, at the final visit before delivery, and in the sixth week after birth for Black women before and after CPM implementation at the healthcare centers for women. The data were collected solely for the project. These data were gathered by clinic healthcare workers as a part of the medical assessment of pregnant women and mothers during follow-up visits. The information was deidentified and presented in the form of grid charts (see Appendix).

The data were relevant to the purpose of the project. The purpose of the study was to evaluate the effectiveness of the CPM in decreasing weight gain in Black pregnant women. To assess the model, it was necessary to compare the weight gain of women in

standard care and CPM groups. The comparison of weight gain in the two groups provided information about the effectiveness of the CPM in addressing the problem of EGWG. These data were appropriate for the evaluation of the CPM, which was the purpose of the current research.

The data were initially collected at the clinic. Assessment of the women's weight occurred in the second trimester of pregnancy and in the sixth week after delivery during the postpartum follow-up visit. Measurements were objective and were made by health care workers who were not engaged in the project. Measurements were continuous. Statistical tests were used for their evaluation.

Some limitations should be mentioned. The first significant limitation of the data was the possible presence of outliers because some women may have had no follow-up visits. Such outliers were excluded from the sample. Therefore, this limitation might not affect the validity of the data because only the average group value was analyzed. Next, only secondary data were used for the analysis. In such a manner, it was not possible to compare the demographic distribution of the two groups. Further, no information about medical conditions that might affect weight gain was provided. This limitation presents a significant threat to data validity. Despite this threat, the information can be considered appropriate for this project. This project provides primary results concerning the effectiveness of the CPM model. In the case of positive changes, further experimental research will be required.

For the project, the informed consent of the head of the information technology department of the maternal health care centers was needed. A request for the permission

was submitted early enough for the organization to have time to evaluate the project and provide consent. Data from the clinic were necessary for achieving the purpose of the project. The data were secondary and based on the weight values recorded by the healthcare centers. Due to the secondary nature of the information, no informed consent from the women was needed. These data were relevant to the project because they included information about specific weight gain during pregnancy and in the sixth week after delivery. No adjustments needed to be made.

Finally, no historical or legal documents were used for the project. For the literature review, statistical data about the level of obesity in the Black population, the percentage of African Americans in the state, and the level of income of the population were used. This information was relevant because it made it possible to justify the purpose of the study, which was the evaluation of the CPM model with a view toward addressing the problem of obesity in Black citizens. This information was obtained from governmental sources; thus, it was reliable and valid.

Additionally, for the literature review, information from primary and secondary medical sources was used. Only scholarly sources have been included in this paper because such sources provide reliable and valid information regarding the studied problem. Experimental research studies constituted primary sources of evidence. Reviews, meta-analysis, and books were used as secondary sources.

Analysis and Synthesis

Data Systems and Procedures

Deidentified data were obtained from clinical records. The data were entered into SPSS for analysis. Using this program, I organized measurements, ran appropriate statistical tests, and built graphs and charts. No other specific software was needed for this project.

Procedure Outline

The project included several stages. First, I searched and analyzed the literature related to the problem. The search for appropriate literature sources was conducted via PubMed and CINAHL databases. Only scholarly articles published during the last 5 years were included in the review. As secondary sources, books and reviews were used. I reviewed the literature on the problem of EGWG and health outcomes for overweight pregnant women and their children. Information about the economic effects of EGWG was included as well. Finally, possible measures for addressing the problem were analyzed. I studied and systematized the obtained data and reviewed proposed interventions. I evaluated sources about the CPM and its use for low-income pregnant women.

Next, I conducted the practical part of the project. As soon as I had Institutional Review Board (IRB) approval, I requested data from the clinic. The information was entered into SPSS, so the analysis of variables obtained for both groups before and after the implementation of the CPM was conducted. I requested data from before the

application of the CPM and after the CPM had been used for 5 months. I compared the data of the two groups with the help of statistical tools.

Next, I analyzed the obtained results. Based on the results, I developed practical recommendations for nurses and providers. The spread of knowledge is an integral part of this project. Therefore, I will participate in conferences to present my project results and publish them.

Data Analysis

Data based on notes of the maternity outcomes were entered in SPSS for analysis. No other specific software was needed. To determine whether there were any improvements in postpartum weight gain, I ran an analysis of variance (ANOVA) to identify differences between the CPM model and the traditional methods of pregnancy care. In addition, I analyzed the normality of the data distribution to determine appropriate tests for effective analysis. While investigating the data, it was necessary to address the problem of outliers. The information from patients that submitted blanks fields will be reported as missing. Such answers were excluded from the calculations. Such cases did not affect the validity and reliability of the results.

Summary

In this section, I described the data-analysis component of the research, including sources of evidence and procedures for data analysis. Critical operational definitions were covered. The collection of the information from participants and its interpretation were clearly restated.

Section 4: Findings and Recommendations

Introduction

Several risk factors contribute to pregnancy-related obesity. This problem occurs more frequently in women who have a history of overweight or obesity before pregnancy (CDC, 2018). Black and Hispanic women of low socioeconomic status suffer from obesity during pregnancy more frequently than White women.

Excessive weight gain during pregnancy can result in complications for both the offspring and mother. The primary purpose of the project was to evaluate the effectiveness of the CPM as used in health care centers for women with a view toward decreasing EGWG in Black adult pregnant women. Maternal obesity during pregnancy has not only health-related adverse outcomes, but also severe economic impact. Despite the significance of the problem, there has been no previous effective nursing evaluation of the CPM. To fill this gap in the literature, I used an outcome evaluation method to determine whether the CPM is better able to prevent obesity in mothers compared to the previously used standard care.

Findings and Implications

The current problem considered several Black women who gain excess weight during the pregnancy. EGWG is associated with adverse health outcomes for mothers and offspring (Bogaerts et al., 2013). To address the problem of excess weight among Black pregnant women, one intervention that has been successful was incorporating a group model of care for pregnant women. The CPM has been considered a promising and innovative strategy for providing care to low-income people (Benediktsson et al., 2013).

In this project, I strove to evaluate the effectiveness of the CPM in decreasing EGWG in Black adult pregnant women. The project is especially important for Georgia due to the high percentage of the Black population with low income in the state. Approximately one-third of the population is Black, and half of all people are overweight or obese (KFF, 2016). The practice-focused question, which aimed at addressing the existing problem, was the following: Is the CPM a more effective approach for reducing EGWG in Black pregnant women than the standard nursing care?

Answering the project-focused question helped to achieve the purpose of the study. The goal of the project was to evaluate the effectiveness of the CPM as implemented in health care centers for women with a view toward decreasing EGWG cases in Black adult pregnant women. Gestational weight gain at postpartum was compared in two groups of women: a group provided with the standard care before the CPM was implemented and a CPM group after implementation. This comparison helped in evaluating the effectiveness of the CPM in decreasing weight gain and estimating its positive or adverse effect on the target population of Black adult pregnant women. Based on the obtained results, it was possible to form a conclusion as to whether the costs of the implementation of the CPM were justified by the benefits brought by the program.

Participants

There was a total sample size of 45, with 29 (64.0%) in the standard care group and 16 (36.0%) in CPM group.

Standard care sample. Most participants reported being married ($n = 11$, 37.9%) or single ($n = 10$, 34.5%); the marital status of the remaining participants was unknown

($n = 8$, 27.6%). As seen in Table 2, the average age was 29.93 ($SD = 5.056$) years old, and the average BMI was 29.14 ($SD = 5.895$). The average second-trimester weight was 173.99 ($SD = 40.693$) pounds, and the average antepartum weight was 195.37 ($SD = 40.379$) pounds. The postpartum weight was an average of 175.46 (37.822) pounds, with a minimum weight of 131.60 pounds and a maximum weight of 270.00 pounds for a weight range of 138.40 pounds.

Table 2

Descriptive Statistics for Standard Care Sample Demographics

Demographic	n	Range	Minimum	Maximum	M	SD
Age	29	21	19	40	29.93	5.056
BMI	29	21.86	19.74	41.60	29.14	5.895
2nd trimester weight	29	171.0	114.0	285.0	173.99	40.693
Antepartum weight	29	167.0	127.0	294.0	195.37	40.379
Postpartum weight	29	138.40	131.60	270.00	175.46	37.822

CPM sample. The marital status reported by the largest number of participants was married ($n = 7$, 44.0%), followed by single ($n = 5$, 32.0%), partner ($n = 2$, 12.0%), and unknown ($n = 2$, 12.0%). As seen in Table 3, the average age was 28.50 ($SD = 4.490$) years, and the average BMI was 27.47 ($SD = 4.788$). The average second trimester weight was 162.84 ($SD = 25.262$) pounds, and the average antepartum weight was 191.84 ($SD = 31.733$) pounds. The postpartum weight was an average of 164.63 (25.511) pounds, with a minimum weight of 116.20 pounds and a maximum weight of 213.00 pounds for a weight range of 96.80 pounds.

Table 3

Descriptive Statistics for CPM Sample Demographics

Demographic	<i>n</i>	Range	Minimum	Maximum	<i>M</i>	<i>SD</i>
Age	16	18	19	37	28.50	4.940
BMI	16	14.10	20.10	34.20	27.47	4.788
2nd trimester weight	16	95.00	111.00	206.00	162.84	25.262
Antepartum weight	16	107.00	133.00	240.00	191.84	31.733
Postpartum weight	16	96.80	116.20	213.00	164.63	25.511

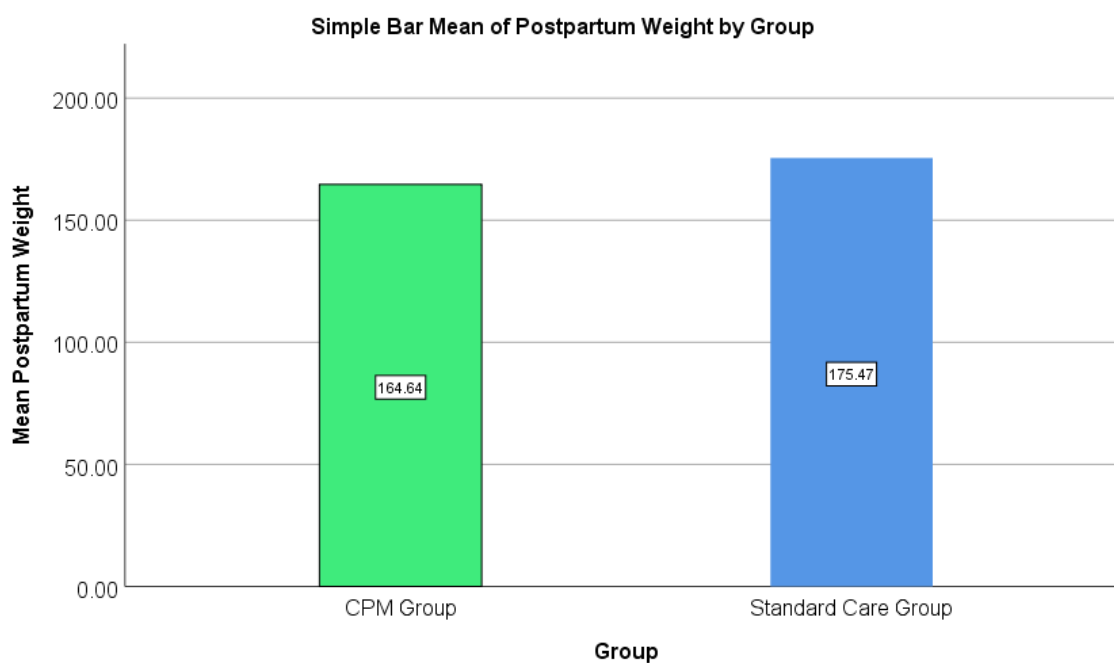
Data Analysis

The clinical question that guided the data analysis was the following: Is the CPM a more effective approach for reducing EGWG in Black pregnant women than standard nursing care? There were two independent groups, and the dependent variable was postpartum weight, so an independent-samples *t* test was used to make the comparison (Sheskin, 2011). The results revealed that there was not a statistically significant mean postpartum weight difference between the CPM group (164.63) and the standard care group (175.46), $t(43) = -1.022$, $p = 0.313$ (Tables 3 and 4). This means that the CPM intervention did not have a statistically significant impact in reducing postpartum weight (Figure 1).

Table 4

Descriptive Statistics on Group Postpartum Weight

Group	<i>n</i>	<i>M</i>	<i>SD</i>
CPM group	16	164.63	25.511
Standard care group	29	175.46	37.822

*Figure 1.* Mean postpartum weights by group.**Recommendations**

The central goal of the project was to evaluate an alternative to routine prenatal care to improve outcomes of pregnancy, prevent various conditions related to EGWG among Black women, and ensure appropriate weight gain according to the guidelines of the Institute of Medicine. The CPM intervention did not have a statistically significant impact in reducing postpartum weight. More research studies on CPM with larger

samples of Black women are necessary. Additionally, obtaining data over a more extended period would likely generate more participation in CPM groups.

Strengths and Limitations of the Project

The main advantage of this project was its target of an at-risk population to identify interventions that may improve pregnancy outcomes. The sample size was one of the main limitations of this project. Another limitation was that many participants, even though physically appearing to be Black, labeled themselves as White or other, and some declined to identify their race as per the options in the electronic medical record (EMR). Some participants did not finish the CPM program because of pregnancy loss, preterm delivery, transfer to another practice, or conflict of their personal schedule with CPM appointments.

Summary

In this section, I comprehensively analyzed the data component of the research and presented the SPSS analysis of the data collected. Results from the project were analyzed and presented to reflect each domain of data collected. Recommendations were provided for future interventions. Limitations encountered with and during the project were addressed.

Section 5: Dissemination Plan

Evaluating an alternative to routine prenatal care that prevents various conditions related to EGWG among Black women and can positively impact outcomes of pregnancy is vital to obstetric providers. The CPM intervention did not have a statistically significant impact in reducing postpartum weight. Findings from this project indicate a need for more research in this area, especially in relation to Black women with higher mortality rates. Obstetric providers at the clinic, managers, and those who influence policies, inclusive of the director and staff, will be invited to a PowerPoint presentation and roundtable discussion. All presentation attendees will also be offered a summary of the project with highlights of the results and a hard copy of the study. This presentation session will take place during a regularly scheduled staff meeting. This information will be used to guide a discussion on the need for more research, as well as issues and concerns that may affect the use of CPM to promote documented change. Presenting the findings regarding the use of the CPM to prevent EGWG to obstetric providers and those who need to be informed is critical. It is vital to foster dialogue and educate staff and other stakeholders about issues that are crucial to health care and health-related matters.

Analysis of Self

My purpose in earning a Doctor of Nursing Practice degree is to acquire the credential and skills needed to bridge a gap in practice. Nursing as a profession is still developing. Those in the DNP role will assimilate individual evidence-based research and clinical evidence in medical care to help improve medical outcomes and formulate possible solutions by integrating more advanced information into care practices.

I hope that I can contribute to improving health care in the nation and can serve as an example to others in the nursing profession. Completing this project has made me reflect profoundly on what it means to be a scholar, a project manager, and a professional. Although ultimately rewarding, the progression presented many challenges. The support of other DNP students and other doctoral-level clinicians who had similar experiences and shared their challenges and successes was very important to me. Deliberations with fellow DNP candidates and doctoral-level clinicians provided me with greater insight into what it means to be patient, maintain focus, and stay disciplined and committed while attempting to accomplish my goals.

As a project manager, I had to take charge to meet deadlines and engage supporters to ensure that the project achieved its required objective. This journey was bittersweet and had both positive and negative impacts. At the onset of this project, I had a high level of drive. However, my passion and pace slowed down significantly, and it became more difficult to stay on task due to lack of progress. In reflection, I am appreciative to have had the opportunity to reach a higher level of education in my nursing career; this experience has reminded me of what is involved in achieving one's goals despite many challenges and potential obstacles. Finally, I have acquired a wealth of knowledge and feel more self-assured in my capability to impact my vocation, organization, and community while becoming an agent of social change. In summary, this undertaking served as both an opportunity to create positive change in the clinical environment and a personal exercise in resilience.

References

- Agyemang, P., & Powell-Wiley, T. M. (2013). Obesity and Black women: Special considerations related to genesis and therapeutic approaches. *Current Cardiovascular Risk Reports*, 7(5), 378–386. doi:10.1007/s12170-013-0328-7
- Aigbe, A. O. (2014). *Providers' perspectives on barriers to care, system constraints and piloting the HIV-modified CenteringPregnancy Model among HIV-positive pregnant women* (Doctoral dissertation). Retrieved from <https://digitalcommons.library.tmc.edu/dissertations/AAI3665069/>
- American College of Obstetricians and Gynecologists. (2016). Obesity and pregnancy. Retrieved from <https://www.acog.org/Patients/FAQs/Obesity-and-Pregnancy>
- Arabin, B., & Stupin, J. H. (2014). Overweight and obesity before, during and after pregnancy: Part 2: Evidence-based risk factors and interventions. *Geburtshilfe und Frauenheilkunde*, 74(7), 646–655. doi:10.1055/s-0034-1368462
- Baugh, N., Harris, D. E., Aboueissa, A.-M., Sarton, C., & Lichter, E. (2016). The impact of maternal obesity and excessive gestational weight gain on maternal and infant outcomes in Maine: Analysis of pregnancy risk assessment monitoring system results from 2000 to 2010. *Journal of Pregnancy*, 2016. doi:10.1155/2016/5871313
- Benediktsson, I., McDonald, S. W., Vekved, M., McNeil, D. A., Dolan, S. M., & Tough, S. C. (2013). Comparing CenteringPregnancy® to standard prenatal care plus prenatal education. *BMC Pregnancy and Childbirth*, 13(1), S5. doi:10.1186/1471-2393-13-S1-S5

- Benli, A. R., Cetin Benli, N., Usta, A. T., Atakul, T., & Koroglu, M. (2015). Effect of maternal age on pregnancy outcome and Cesarean delivery rate. *Journal of Clinical Medicine Research*, 7(2), 97–102. doi:10.14740/jocmr1904w
- Bhupathiraju, S. N., & Hu, F. B. (2016). Epidemiology of obesity and diabetes and their cardiovascular complications. *Circulation Research*, 118(11), 1723–1735. doi:10.1161/CIRCRESAHA.115.306825
- Biener, A., Cawley, J., & Meyerhoefer, C. (2017). The high and rising costs of obesity to the US health care system. *Journal of General Internal Medicine*, 32(1), 6–8. doi:10.1007/s11606-016-3968-8
- Bogaerts, A., Van den Bergh, B. R., Ameye, L., Witters, I., Martens, E., Timmerman, D., & Devlieger, R. (2013). Interpregnancy weight change and risk for adverse perinatal outcome. *Obstetrics & Gynecology*, 122(5), 999-1009. doi:10.1097/AOG.0b013e3182a7f63e
- Centers for Disease Control and Prevention. (2017). Adult obesity prevalence maps. Retrieved from <https://www.cdc.gov/obesity/data/prevalence-maps.html>
- Center for Disease Control and prevention (2018). Pregnancy complication. Retrieved from <https://www.cdc.gov/reproductivehealth/.../pregnancy-complications.html>
- Chan, Q., Stamler, J., & Elliott, P. (2015). Dietary factors and higher blood pressure in African-Americans. *Current Hypertension Reports*, 17(2), 10. doi:10.1007/s11906-014-0517-x
- Chriqui, J. F. (2013). Obesity prevention policies in U.S. states and localities: Lessons from the field. *Current Obesity Reports*, 2(3), 200–210. doi:10.1007/s13679-013-

0063-x

- Fealy, S. M., Taylor, R. M., Foureur, M., Attia, J., Ebert, L., Bisquera, A., & Hure, A. J. (2017). Weighing as a stand-alone intervention does not reduce excessive gestational weight gain compared to routine antenatal care: A systematic review and meta-analysis of randomized controlled trials. *BMC Pregnancy and Childbirth*, *17*. doi:10.1186/s12884-016-1207-2
- Gante, I., Amaral, N., Dores, J., & Almeida, M. (2015). Impact of gestational weight gain on obstetric and neonatal outcomes in obese diabetic women. *BMC Pregnancy and Childbirth*, *15*. doi:10.1186/s12884-015-0692-z
- Gober, M. (2015). *The state of the state of maternal & infant health in Georgia: Where we have been, where we are now, and what we can do*. Retrieved from <https://abuse.publichealth.gsu.edu/files/2015/10/State-of-the-State-Booklet.pdf>
- Gouda, J., & Prusty, R. K. (2014). Overweight and obesity among women by economic stratum in urban India. *Journal of Health, Population, and Nutrition*, *32*(1), 79–88.
- Hicken, M. T., Lee, H., Mezuk, B., Kershaw, K. N., Rafferty, J., & Jackson, J. S. (2013). Racial and ethnic differences in the association between obesity and depression in women. *Journal of Women's Health*, *22*(5), 445–452. doi:10.1089/jwh.2012.4111
- Holland, M. L., Groth, S. W., & Kitzman, H. J. (2015). Gestational weight gain and health outcomes 18 years later in urban Black women. *Maternal and Child Health Journal*, *19*(10), 2261–2271. doi:10.1007/s10995-015-1745-7
- Hruby, A., & Hu, F. B. (2015). The epidemiology of obesity: A big

- picture. *Pharmacoeconomics*, 33(7), 673–689. doi: 10.1007/s40273-014-0243-x
- Ickes, M. J., & Sharma, M. (2013). A systematic review of community-based childhood obesity prevention programs. *Journal of Obesity & Weight Loss Therapy*, 3(188), 1-9. doi:10.4172/2165-7904.1000188.
- Jan Mohamed, R., Montgomery-Fajic, E., Sia, W., Germaine, D., Wilkie, J., Khurana, R., & Nerenberg, K. A. (2015). Cardiovascular risk reduction and weight management at a hospital-based postpartum preeclampsia clinic. *Journal of Obstetrics and Gynecology Canada*, 37(4), 330-337. doi: 10.1016/S1701-2163(15)30283-8
- Jung, Y.-M., & Choi, M.-J. (2017). Nutrient intake according to weight gain during pregnancy, job status, and household income. *Clinical Nutrition Research*, 6(1), 27–37. doi:10.7762/cnr.2017.6.1.27
- Kaiser Family Foundation (KFF). (2016). *Population distribution by race/ethnicity*. Retrieved from <https://www.kff.org/other/state-indicator/distribution-by-raceethnicity/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D>
- Khorramabad, M., Dolatian, M., Hajian, S., Zamanian, M., Taheripanah, R., Sheikhan, Z., ... Seyedi-Moghadam, A. (2015). Effects of education based on health belief model on dietary behaviors of Iranian pregnant women. *Global Journal of Health Science*, 8(2), 230–239. doi:10.5539/gjhs.v8n2p230
- Lau, E. Y., Liu, J., Archer, E., McDonald, S. M., & Liu, J. (2014). Maternal weight gain in pregnancy and risk of obesity among offspring: A systematic review. *Journal*

of Obesity, 2014(524939), 1-16. doi:10.1155/2014/524939

- Li, K., & Wen, M. (2013). Racial and ethnic disparities in leisure-time physical activity in California: Patterns and mechanisms. *Race and Social Problems*, 5(3), 147–156. doi:10.1007/s12552-013-9087-9.
- 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. *American Journal of Obstetrics and Gynecology*, 213(5), 688.e1–688.e9. doi: 10.1016/j.ajog.2015.06.066.
- Männistö, T., Mendola, P., Vääräsmäki, M., Järvelin, M.-R., Hartikainen, A.-L., Pouta, A., & Suvanto, E. (2013). Elevated blood pressure in pregnancy and subsequent chronic disease risk. *Circulation*, 127(6), 681–690.
doi: 10.1161/CIRCULATIONAHA.112.128751.
- Mariona, F. G. (2016). Perspectives in obesity and pregnancy. *Women's Health*, 12(6), 523–532. doi:10.1177/1745505716686101.
- McDonald, S. D., Park, C. K., Pullenayegum, E., Bracken, K., Sword, W., McDonald, H., ... Brouwers, M. (2015). Knowledge translation tool to improve pregnant women's awareness of gestational weight gain goals and risks of gaining outside recommendations: A non-randomized intervention study. *BMC Pregnancy and Childbirth*, 15, 105. doi:10.1186/s12884-015-0534-z.
- Novick, G., Reid, A. E., Lewis, J., Kershaw, T. S., Rising, S. S., & Ickovics, J. R. (2013). Group prenatal care: Model fidelity and outcomes. *American Journal of Obstetrics & Gynecology*, 209(2), 112, e1. doi:10.1016/j.ajog.2013.03.026.

- Ostovan, M. A., Zibaenezhad, M. J., Keshmiri, H., & Shekarforoush, S. (2013). The impact of education on weight loss in overweight and obese adults. *International Cardiovascular Research Journal*, 7(3), 79–82.
- Regnaert, G. N. (2015). *Group prenatal care: Striving for improved infant outcomes around the world (Undergraduate thesis)*. Retrieved from <http://digitalcommons.liberty.edu/honors/521>
- Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs*, 2(4), 328-335. doi:10.1177/109019817400200403
- Schellinger, M. M., Abernathy, M. P., Amerman, B., May, C., Foxlow, L. A., Carter, A. L., ... & Rose, R. S. (2017). Improved outcomes for Hispanic women with gestational diabetes using the Centering Pregnancy© Group Prenatal Care Model. *Maternal and Child Health Journal*, 21(2), 297-305. doi:10.1007/s10995-016-2114-x.
- Sheskin, D. J. (2011). *Handbook of parametric and nonparametric statistical procedures (5th ed.)*. Boca Raton, FL: Chapman & Hall/CRC Press.
- Stüber, T. N., Künzel, E. C., Zollner, U., Rehn, M., Wöckel, A., & Hönig, A. (2015). Prevalence and associated risk factors for obesity during pregnancy over time. *Geburtshilfe Und Frauenheilkunde*, 75(9), 923–928. doi:10.1055/s-0035-1557868.
- U.S. Census Bureau. (2017). *Median household income in the United States*. Retrieved from <https://www.census.gov/library/visualizations/2017/comm/income-map.html>

- Whitaker, K. M., Wilcox, S., Liu, J., Blair, S. N., & Pate, R. R. (2016). Pregnant women's perceptions of weight gain, physical activity, and nutrition using Theory of Planned Behavior constructs. *Journal of Behavioral Medicine, 39*(1), 41–54. doi:10.1007/s10865-015-9672-z.
- Yeo, S., Crandell, J. L., & Jones-Vessey, K. (2016). Adequacy of prenatal care and gestational weight gain. *Journal of Women's Health, 25*(2), 117–123. doi:10.1089/jwh.2015.5468
- Zelek, S. T. (2013). *Prenatal weight gain counseling and gestational weight gain in pre-pregnant normal weight women. (master's thesis)*. Retrieved from <http://hdl.handle.net/1773/23724>

