

1-1-2017

# Addressing Obstetric Health Care Providers' Nutritional Insight in the Low Socioeconomic Population

Nicole Theresa Marshall  
*Nova Southeastern University*

This document is a product of extensive research conducted at the Nova Southeastern University [College of Nursing](#). For more information on research and degree programs at the NSU College of Nursing, please click [here](#).

Follow this and additional works at: [https://nsuworks.nova.edu/hpd\\_con\\_stuetd](https://nsuworks.nova.edu/hpd_con_stuetd)

Part of the [Nursing Commons](#)

All rights reserved. This publication is intended for use solely by faculty, students, and staff of Nova Southeastern University. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, now known or later developed, including but not limited to photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author or the publisher.

---

## NSUWorks Citation

Nicole Theresa Marshall. 2017. *Addressing Obstetric Health Care Providers' Nutritional Insight in the Low Socioeconomic Population*. Capstone. Nova Southeastern University. Retrieved from NSUWorks, College of Nursing. (52)  
[https://nsuworks.nova.edu/hpd\\_con\\_stuetd/52](https://nsuworks.nova.edu/hpd_con_stuetd/52).

This Capstone is brought to you by the Ron and Kathy Assaf College of Nursing at NSUWorks. It has been accepted for inclusion in Ron and Kathy Assaf College of Nursing Student Theses, Dissertations and Capstones by an authorized administrator of NSUWorks. For more information, please contact [nsuworks@nova.edu](mailto:nsuworks@nova.edu).

ADDRESSING OBSTETRIC HEALTH CARE PROVIDERS' NUTRITIONAL  
INSIGHT IN THE LOW SOCIOECONOMIC POPULATION

Presented in Partial Fulfillment of the  
Requirements for the Degree of  
Doctor of Nursing Practice

Nova Southeastern University  
Health Professions Division  
College of Nursing

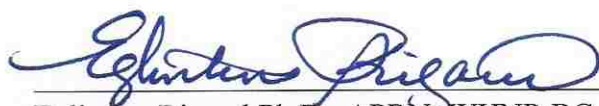
Nicole T. Marshall, MSN, RNC-OB  
August 2017

**NOVA SOUTHEASTERN UNIVERSITY  
HEALTH PROFESSIONS DIVISION  
COLLEGE OF NURSING**

This project, written by, Nicole T. Marshall, under direction of Dr. Eglintine Rigaud, Project Chair, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF NURSING PRACTICE

PROJECT COMMITTEE



Eglintine Rigaud Ph.D., APRN, WHNP-BC  
Chair of Capstone Project Committee

1/8/18  
Date



Kelly Henson-Evertz, DNP, RNC, CTTS  
Project Committee Member

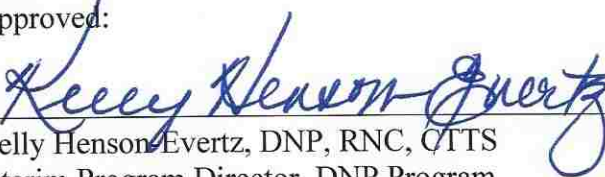

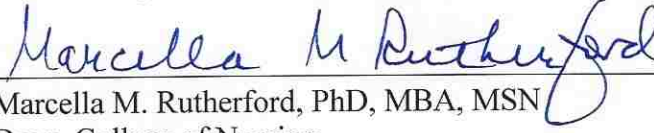
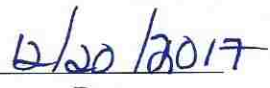
12/18/2017  
Date

**NOVA SOUTHEASTERN UNIVERSITY  
HEALTH PROFESSIONS DIVISION  
COLLEGE OF NURSING**

Certification

We hereby certify that this capstone project, submitted by Nicole T. Marshall, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Nursing Practice degree.

Approved:

|  |  |
|--|--|
| <br>_____<br>Kelly Henson Evertz, DNP, RNC, CTTS<br>Interim Program Director, DNP Program | <br>_____<br>Date |
| <br>_____<br>Marcella M. Rutherford, PhD, MBA, MSN<br>Dean, College of Nursing            | <br>_____<br>Date |

Copyright by 2017 by Nicole T. Marshall, MSN, RNC-OB

All Rights Reserved

## Abstract

**Background:** During a woman's pregnant state, a diet that is adequate in nutrition is critical to the developing fetus, especially in the lower socioeconomic status population. The health care provider is charged with the acute fundamental awareness of this additional factor that can grossly impact pregnancy. Nutritional advice from the health care provider is one of many key points that contribute to the successful outcome of the pregnancy.

**Purpose:** The purpose of this quality improvement project was to develop a standardized, evidence-based practice (EBP) protocol for the management of maternal nutrition, gestational weight gain, and physical activity for provider use at an LSE community clinic.

**Theoretical Framework:** Theory of Planned Behavior

**Methods:** After receiving institutional support for the implementation for the protocol presentation and instruction of the Maternal Nutrition Guideline, pre- and post-surveys were administered to eligible participants. A quantitative descriptive design was used for the project.

**Results:** There were twenty-six respondents for both the pre-and post-survey. The data analysis revealed that two questions revealed the most significant increase between the pre-and post-survey occasions utilizing the Mann-Whitney test and related to physical activity during pregnancy and dietary intake. An independent sample *t*-test was performed to compare the two occasions. There was a tendency for an increase in the total score between the pre-and post-surveys, but the difference did not reach statistical significance, which may be related to sample size ( $t_{24df} = 1.782, p = 0.087$ ).

**Conclusion:** A standardized, evidence-based nutritional guideline is a necessary tool to serve as a consistent resource and empower all health care providers to bring awareness and understanding to facilitate positive outcomes to the obstetric patient population for which they care.

## Acknowledgements

I would first like to thank my Lord and Savior, Jesus Christ because without Him, none of this could be possible. This doctoral work has been an undertaking of profound meaning through major transgressions and challenges, some personal losses of loved ones, some amazing miracles that through God's strength and love for me I was able to persevere. I am also very grateful for others that God has placed in my life for me to be able to complete this project and I hope that I can do them justice in this acknowledgement section.

Dr. Eglintine Rigaud is not just an amazing professor and chair but an incredible person as well. The wealth of knowledge and guidance that she had to offer was invaluable. Her calming demeanor, words of encouragement, with a "You got this, Nicole," in what I thought were "storms" were not only perfect in timing but were displays of her authentic attributes. I am truly blessed to have her as my project chair.

I would also like to thank Dr. Kelly Henson-Evertz, my committee member and my subject matter expert. She gave me that extra push to be perfect, and I will never forget it. Dr. Mary Mites Campbell imparted her wisdom, challenging me to always give and do my best and always challenging me to share my knowledge with the world! Thank you to all of the College of Nursing Faculty and Staff who imparted words of encouragement and assisted me during this course of my life. I could not have done it without you.

To my mentor Sharyn Harrison, MPH, CNM, who believed in me and decided to take me on to help me actualize my dream. I am so grateful to you, Sharyn. I would also like to thank everyone at the community OB/GYN clinic; all of the physicians, midwives, advanced nurse practitioner, registered nurses, medical assistants, and patient financial representatives; special recognition to the manager, Barbara Cole RN and Judith George RN. All of their support was amazing, and I am so grateful for it.

To Marjorie Scarlett, my cohort who ended up becoming one of my dearest friends: I am so thankful that God put us together. You have been such a great friend, and beautiful soul. You always knew that right thing to say when it was needed. Thank you for being there, friend.

Words cannot express how much I would like to thank one of my dearest friends, Michelle Ott, MSN who is also simultaneously on this journey with me. Thank you, Michelle for all the encouragement, for being there listen to me bounce ideas around, for being that pillar of strength and wisdom when it was needed.

My family has always been a central source of support in my life. My mother, Marjorie and my late father Henry, have always been an example of strength, love, strong work ethics, and support of what we did as their children. My father always told me to "get an education because no one can take that away from you." He made sure he was there at all of our performances and graduations, including when my mother and myself



walked across the stage to receive our BSN degrees together. Although my father has passed on, my mother has carried this mantle with grace and strength; when I grew weary, she was right behind me cheering me on. She has always been there to love and support me and I am forever thankful to God for allowing me to be her daughter. We share the same profession and I hope that I can continue to make her proud. My younger sister Jennifer, whom I myself have admired her accomplishments, has always been my cheerleader and I love her for it. My younger twin brothers Bryant and Brandon have always been instrumental through their show of support in everything I do, including this project. My grandmother, Auntie who is the matriarch of our family, has always been in my corner, encouraging me, being my personal cheerleader, and also being a nurse herself - I hope I have made her proud.

To my wonderful children Matthew and Kristen Marshall: everything that I have ever done up until this point has been to set an example for you both to follow; the sky is the limit; no dream is too big; there is nothing in the world that you cannot be. These are not clichés, my children, but the truth. They have known me to be in school all of their lives and have been as amazing as children can be. I love you so very much for being yourselves and so proud to be your mother.

Last but not definitely not least, I would like to humbly acknowledge my husband, Terrence Hightower. In God's infinite wisdom, apart from all of the other challenges I was facing during this time, we got married right in the middle of it! Thank you for being patient and understanding; for holding it down and getting things done so that I could focus, making me laugh at times when I didn't want to, and most of all, thank you for being a great father to Matthew and Kristen and bringing more people in my life to love, namely my stepdaughters Tierra, Arianna, and Taryn. I love you, truly.

All of you contributed to my life in such a big way and will always be a part of my life.

## Table of Contents

|   |       |
|---|-------|
| Title Page .....  | ..... |
| Signature Pages .....   | ..... |
| Copyright .....   | ..... |
| Abstract .....  | v     |
| Acknowledgements .....  | vii   |
| Table of Contents .....                                       | ix    |
| List of Tables .....  | x     |
| List of Figures .....   | xi    |
| Chapter 1: Nature of Project and Problem Identification ..... | 1     |
| Problem Statement .....                                       | 3     |
| Purpose Statement .....                                       | 3     |
| Project Objectives .....                                      | 3     |
| Theoretical Foundation .....                                  | 4     |
| Theory of Planned Behavior .....                              | 4     |
| Importance of Theoretical Application .....                   | 6     |
| Significance of the Project .....                             | 6     |
| Nursing Practice .....  | 7     |
| Health Care Outcomes .....                                    | 7     |
| Health Care Delivery .....                                    | 8     |
| Health Care Policy .....                                      | 8     |
| Summary .....   | 9     |
| Chapter 2: Review of the Literature .....                     | 11    |
| Inadequate Nutritional Intake and Low SES .....               | 12    |
| Culture .....   | 12    |
| Health Care Providers' Perceived Barriers .....               | 13    |
| Maternal Nutrition Standards .....                            | 14    |
| Institute of Medicine and Gestational Weight Gain .....       | 15    |
| Dietary Component .....                                       | 16    |
| Physical Activity During Pregnancy .....                      | 16    |
| Summary .....   | 17    |
| Chapter 3: Methods .....                                      | 18    |
| Project Design .....  | 19    |
| Setting .....   | 19    |
| Inclusion Criteria .....                                      | 20    |
| Exclusion Criteria .....                                      | 20    |
| Ethical Considerations .....                                  | 20    |
| Project Phases/Objectives .....                               | 21    |
| Timeline .....  | 22    |
| Resources/Budget .....  | 23    |
| Outcome Measures .....  | 24    |
| Summary .....   | 26    |
| Chapter 4: Results and Discussion .....                       | 27    |
| Results .....   | 27    |
| Findings of the Project .....                                 | 31    |
| Demographics .....  | 32    |

|   |    |
|---|----|
| Maternal Nutrition Pre- and Post-Survey .....                   | 32 |
| Expected and Unexpected Findings.....                           | 37 |
| Strengths and Limitations .....                                 | 38 |
| Implications for Practice.....                                  | 38 |
| Nursing Practice.....   | 38 |
| Health Care Outcomes.....                                       | 39 |
| Health Care Delivery .....                                      | 39 |
| Health Care Policy .....  | 40 |
| Future Research .....   | 41 |
| Summary.....  | 41 |
| References.....   | 43 |
| Appendix A: NSU IRB Letter and MHS Waiver of Jurisdiction ..... | 46 |
| Appendix B: Letter of Site Approval.....                        | 49 |
| Appendix C: Participant Letter .....                            | 51 |
| Appendix D: Pre-and Post-Survey.....                            | 54 |
| Appendix E: Maternal Nutrition Protocol.....                    | 56 |
| Appendix F: Copyright Permission .....                          | 62 |

List of Tables

Table 1.....22  
Table 2.....34  
Table 3.....37

## List of Figures

|                |    |
|----------------|----|
| Figure 1 ..... | 36 |
| Figure 2 ..... | 59 |

## Chapter 1

### **Nature of the Problem and Problem Identification**

A healthy diet is important for all individuals, from infancy to elderly. During a woman's pregnant state, a diet that is adequate in nutrition is a critical to the developing fetus, especially in the lower socioeconomic status population (Academy of Nutrition and Dietetics, [AND], 2014; Recame, 2013). The quality of diet may determine if the unborn fetus will have birth defects, low-birth-weight (LBW), and even at the very dawn of a new pregnancy—nutrition is necessary for adequate placenta implantation (AND, 2014; Fowles, Stang, Bryant, & Kim, 2012). In the United States, 8.1% of births comprise of LBW infants and babies born with birth defects (one in 33 babies, or 3%) and were the top two leading causes of death of infants in the U.S. in 2006. Both of these causes are highly influenced by healthy behaviors such as adequate nutrition (AND, 2014). The health care provider must demonstrate deep-seated knowledge of these critical elements. It has been acknowledged that the initial nutritional assessment reveals poor dietary quality in the lower socioeconomic status (SES) pregnant patient, offering the health care providers and staff opportunities to modify nutritional behaviors of the pregnant patient to positively affect behaviors and fetal outcomes (Fowles et al., 2011). For the issue of the adequacy of nutrition in pregnancy in this population to be addressed, it needs recognition by the frontline caregivers who come into contact with these patients every day - a problem that is crucial to the care that they provide through recognition and intervention.

Gestational weight gain is very significant to the growing fetus and the overall health of the pregnant woman; being below the desired weight causes risks for small for gestational age babies, and being overweight can lead to fetal macrosomia and the risk of obesity for the child as they grow older (Takamagi & Yamabe, 2013). Obesity in women has increased significantly in women from ages 12 to 44 since 1976; therefore, the Institute of Medicine (IOM) had used the body mass index (BMI) classification as a tool to classify different weight categories (AND, 2014). In 2009, the IOM set new guidelines specific to gestational weight gain according to the BMI, which would best utilize assessing the nutritional status of a patient (Daemers, Wijnen, van Limbeek, Budé, & deVries, 2013).

There is a strong association between the low SES population of pregnant women and the lack of nutrition in pregnancy that may lead to poor outcomes for the fetus and the mother (Legault & Marquis, 2014). The licensed health care staff that is responsible for assessments and patient visits at the community health obstetric clinic have the most interaction with these patients. This fact is empowering to utilize a nutritional screening tool to assess the adequacy of the pregnant woman's diet since the majority of the patients seen there meet the risk due to SES status. While performing an assessment, the health care provider can incorporate nutritional screening questions. This provides an opportunity for the health care professional to stop and educate the patients or refer them to the subject matter expert so that the patients may feel confident in their food choices and empowered that they are contributing to the positive outcome of the health of their unborn child. Throughout the literature, the frontline health care provider is the pivot point between the obstetric patient and nutritional adequacy. Insufficient dietary advice

from the health care provider among the low SES population can suggest several barriers. These obstacles include but are not limited to communication, the learning aptitude of the patient population, and assumptions that the patients may already know what they need to know regarding their nutrition, even if meeting gestational weight gain guidelines (Phelan et al., 2011). Through the actions of this Doctor of Nursing Practice (DNP) project, a standardized, evidence-based nutritional guideline that addresses maternal nutrition used for obstetrical patients will be developed.

### **Problem Statement**

Currently, no standardized guidelines or protocol exist that address maternal nutrition on a consistent basis and is utilized by the obstetric contracted physicians, certified nurse midwives (CNMs), Advanced Practice Registered Nurse (APRNs), and on-staff professional registered nurses (RNs) who impact maternal nutrition counseling and care to the low socioeconomic status (SES) population at a OB/GYN, non-profit community health clinic in South Florida.

### **Purpose Statement**

The purpose of this quality improvement project was to develop a standardized, evidence-based practice (EBP) protocol for the management of maternal nutrition, gestational weight gain, and physical activity for provider use at a LSE community clinic.

### **Project Objectives**

The objectives for this capstone were as follows:

1. Conduct an extensive literature review of maternal nutrition and the role that health care providers engage in with the low SES obstetric population and



- maternal nutrition; review any existing protocol at the non-profit community health clinic in comparison to any evidence-based practice.
2. Established a collaborative relationship with nurse executives, the medical director, Women Infants & Children (WIC) program, and nutrition department to review existing facility protocols.
  3. Conducted an anonymous pre-survey for the contracted physicians, CNMs, APRNs, and staff RNs that assessed the insight and aptitude concerning maternal nutrition.
  4. Developed, presented, and educated the health care providers and staff in the OB/GYN clinic on the Maternal Nutrition Protocol.
  5. Conducted anonymous post-survey after the education of maternal nutrition protocol.
  6. Presented findings to stakeholders for buy-in of protocol as a sustainable facility guideline and policy.

### **Theoretical Foundation**

The theoretical framework selected for this quality improvement project is the Theory of Planned Behavior (TPB), which focuses on human beings' intentions and how they affect their behavioral choices.

#### **Theory of Planned Behavior**

The Theory of Planned Behavior (TPB) presents the idea that people are rational and employ the use of possible decisions while considering the costs of their actions (Ward, 2012). The intent on the behavior is the predictor of actualized behavior put in motion; this behavior is also influenced by certain beliefs, the individual's subjective

norms and perceived behavioral control (Côté, Gagnon, Houme, Abdeljelil, & Gagnon, 2012). TPB can be used to explore perceptions and intentions and is useful in predicting positive changes in human behavior, especially in regards in the health care setting (Jeong & Kim, 2016). For example, Whitaker, Wilcox, Liu, Blair, and Pate (2016) utilized the TPB to gain an understanding of the pregnant patient's perceptions and intentions of weight gain and physical activity. The authors found that there was some consistency in what was "salient beliefs" (Whitaker et al., 2016, p. 50). These same ideas accompanied by perceived barriers are where the researchers recommend that current health behaviors are evaluated and the population addressed so that perceptions can be influenced via early education of nutritional guidelines (Whitaker et al., 2016).

TPB assists in the interpretation of variables that are at the foundation of modifiable behaviors (Côté et al., 2012). Intentions are what lead to behavior according to TPB; however, intentions are also influenced by behavior beliefs. An individual's attitude toward a particular behavior leads to the subjective norm of the individual (Côté et al., 2012). A person's perception of what normal behavior is preceded by their model belief and is displaced on to the standard behavior of the group as well. A form of *peer pressure* or *role modeling* of sorts, influenced by ethics or in this case the conduct of the health care professional has now developed - a perceived level of control of the individual is their self-determination on whether they can perform the behavior is present (Côté et al., 2012).

TPB applicability to this quality improvement project is in regards to its purpose: changing behaviors to overcome barriers to health behaviors. TPB is a behavior modification theory that assists in measuring a behavioral intention: to overcome

perceived obstacles that may prevent the health care provider from delivering adequate nutritional information and care (Phelan et al., 2011). Becoming competent in assessing nutritional adequacy in the lower SES pregnant patient will require an intentional modification in behavior; utilization of the evidence-based protocol will cause a transition into evidence-based practice.

### **Importance of Theoretical Application**

A primary purpose for utilizing theory application in research or projects is to serve as an exemplar for consistent views that address the clinical problem (Lor, Backonja, & Lauver, 2017). The employment of theoretical application expands into all aspects of research from its use in descriptive studies versus experimental studies, to the inclusion in summary discussions. The point of proper theory application is that the flow of evidence becomes more apparent and is integrated into other studies where the same theory is used and duplicated (Lor et al., 2017). The expectation from the interdisciplinary intellectuals is that those involved in research in health care are able to demonstrate how theory guides practice (Lor et al., 2017).

### **Significance of the Project**

This project was designed to develop a standardized, evidence-based protocol when addressing maternal nutrition. Healthy eating is important for all individuals for optimal health. For the obstetrical patient, it is a must and so is physical activity, as much is allowed. There are two patients in obstetrics: the mother and the fetus (who cannot be seen but is no less important). For the fetus to develop properly, optimal nutrition is imperative. Some pregnancies are affected by preexisting diseases and disorders that

profoundly are influenced by diet, which in turn becomes a large part of the patient's plan of care.

### **Nursing Practice**

This project may impact nursing practice with the nurse taking a more active role in the participation of the education of the patient's knowledge base of maternal nutrition and having a keener sense of the nutritional assessment. Nurses are the frontline to the patients in the outpatient clinic setting: they perform their initial intake assessment; they perform antenatal fetal testing; and they have more opportunities to interact and develop relationships with the patients in which that familiarity would make the nurse more astute in recognizing nutritional issues that need addressing. This familiarity would also make the patient more receptive to learning better dietary choices from the nurses.

### **Health Care Outcomes**

This project may affect health care outcomes by improving obstetrical outcomes in the lower SES community. Adequate and even optimal nutrition in pregnancy is key to positive outcomes in pregnancy and thus is crucial in assisting with obstetric patients who have comorbidity disease processes such as diabetes mellitus, gestational hypertension, lupus, anemia, and other disease processes. Obesity is on the rise in the United States, and so are women with increased body mass index (BMI) who are pregnant. This standardized, evidenced-based guideline would serve as a resource to the health care providers in the areas of gestational/ weight gain and BMI, physical activity during pregnancy, and smarter dietary choices. This resource may help to decrease and control comorbidities that are complicated by poor or inadequate nutrition in pregnancy and provide for higher incidences of maternal and fetal positive outcomes within the

population. It is imperative that health care providers address this issue by first educating the population before pregnancy, again when they are pregnant, and after they deliver so that health equilibrium is reestablished and maintained. The length of stay may also be reduced due to fewer complications of anemia or fetal malformations due to inadequate nutrition.

### **Health Care Delivery**

This project may impact health care delivery by enhancing the knowledge base of the health care providers who come into direct contact with the obstetric patient in this project. Enhanced assessment and early intervention, based on the health care providers sound nutritional knowledge, will positively impact care to the mother and developing fetus. This project involved population health and calls for the prevention of malnutrition of the obstetric patient affected by socioeconomic status through the skillful and astute assessment of the health care provider.

### **Health Care Policy**

Health care policy may be impacted throughout the community clinic facility, as this project may lead to policy changes of the health provider team's role in educating the obstetric patients with regards to nutrition. There must be policies in place that allow for the team to continuously utilize their skills while at the same time, acquire up-to-date, evidence-based information, in addition to the utilization of the evidence-based nutritional guideline for maternal nutrition in the low SES population. Since the obstetric clinic is a part of the tertiary care hospital, this may also extend in the form of a larger policy to the obstetrical units (high-risk antenatal, labor and delivery, postpartum). Some patients do not receive any prenatal care and arrive at the hospital. Because the clinic and

hospital are connected, the care must be continuous, as it should be with regards to evidence-based practices and care. Health care policy could also be impacted on a local level as there are also other non-profit health care organizations in the area that have a similar organization of care (primary care clinics that include OB/GYN) that could also adopt similar policies and enact interprofessional teams that address barriers to population health.

### **Summary**

Nutritional intake is paramount for the pregnant mother and the developing fetus in pregnancy; not just for adequate weight gain, but for optimal fetal development and positive outcomes for both mom and baby. There is a well-established association between inadequate nutritional intake and lower socioeconomic status of pregnant women. The caliber of the obstetric patient's diet is imperative to the proper development of the growing fetus while maintaining homeostasis during the pregnancy. It is essential that the health care providers be able to perform all aspects of care including the ability to conduct a proper nutritional assessment. The obstetric population cannot be excluded of this competency skill, as there are unique nutritional requirements during pregnancy. Socioeconomic status and comorbidities complicate and compromise the pregnant patient's nutritional needs. Factors such as these make it imperative that they are provided with the nutritional, educational and resources that they need since they are at the highest risk for not consuming a diet that with all the nutritional requirements. The theory of planned behavior is the theoretical framework that will be used to comprehend and actualize the intentional behavior of surmounting any perceived barriers that the health care provider may have. Identification of the health care providers' insight and aptitude

with regards to maternal nutrition is paramount in the care that is provided to the vulnerable low SES obstetric population. Establishing an evidence-based guideline to address the needs of the obstetric patient will promote nutritional adequacy for pregnant women in the lower socioeconomic status through increased awareness of the health care provider, improve pregnancy outcomes, and positively impact the community.

## Chapter 2

### **Review of the Literature**

Florence Nightingale, the founder of the modern-day nursing practice, long ago established that nutrition was one of the most important aspects of nursing care, as it promoted the condition of optimal health in the holistic care model (DiMaria-Ghalili et al., 2014). It is well established in the literature that adequate nutritional intake is imperative for the obstetrical patient for positive outcomes for the growing fetus and patient (Fowles et al., 2011; Stephens, Payne, Ball, Pencharz, & Elango, 2015). An imbalance of a diet in nutritional quality may lead to consequences such as abnormal placental implantation, low-birth-weight infants, and obesity in the obstetric patient (Fowles et al., 2012; AND, 2014). There is also a direct relationship between the inadequate nutritional intake during pregnancy and lower socioeconomic status (Fowles et al., 2011). This review of the literature will provide an analysis that scrutinizes the relationship above and also, the health care providers' perceived barriers to providing proper nutritional information to their patient population. The review of the literature was conducted through the following search engines: CINAHL, ProQuest, Journals Ovid, and PubMed using keywords and phrases such as *nutrition in pregnancy*, *Institute of Medicine*, *pregnancy*, *obstetrical BMI*, *obstetrics*, *barriers to nutrition*, *pregnancy*, *gestational weight gain*, *nutritional education*, and *nutrition competency*.



### **Inadequate Nutritional Intake and Low SES**

There have been queries into what factors influence the diet of the pregnant woman, whether it be culture, income, emotional status, and/or educational cognizance (Fowles et al., 2011; Fowles et al., 2012). All of these factors affect and influence the obstetrical patient's dietary intake, especially the patient who is affected by low SES. Financial and emotional stress may impact the ability of the low SES obstetrical patient to consume an adequate diet that is sufficient in nutrients. This in turn may result in depression (Fowles et al., 2011).

As stated before, although important throughout the pregnancy, dietary quality is especially important during the first trimester, as this proves to be a crucial point during fetal development (Fowles et al., 2011). Stephens et al. (2014) stated the intake of protein by the obstetric patient is crucial not only for optimal fetal development, but also for the build-up of maternal tissues—i.e. heart, blood, and breast—to sustain the pregnancy in the best environment. The low SES pregnant individual has demonstrated at-risk nutritional behaviors due to the inadequate intake of nutrients and added risky behaviors such as smoking and possible alcohol consumption to cope with their stress of finances (Legault & Marquis, 2014). The consequences of these practices lead to low birth weight infants, gestational diabetes (due to poor quality diet consumption), and in some cases prematurity or postnatal mortality (Legault & Marquis, 2014).

#### **Culture**

Culture is another additive factor that relates to the inadequate dietary intake of the lower SES pregnant woman. Some cultural beliefs are attributed to poor maternal nutrition; compounded by poverty, this puts the mother and unborn fetus at greater risk

(Legault & Marquis, 2014). Religious beliefs have the highest impact—for example, fasting during Ramadan for women of Islamic faith, and not taking prenatal vitamins due to its gelatin content; gelatin is known to be porcine-based, which some religions and cultures do not consume (Legault & Marquis, 2014). African Americans, compared to other cohorts, tend to consume low-nutritionally dense foods with higher calories and are genetically predisposed and unevenly afflicted by obesity (Gennaro, Blesecker, Fantasia, & Nguyen, 2011).

### **Health Care Providers' Perceived Barriers and Maternal Nutrition**

Nutritional advice from the health care provider is one of many key points that contribute to the success of the outcome of the pregnant patient. It is stated in the literature that the pregnant patient may be more receptive to nutritional advice due to changing former bad habits to have a normal healthy infant (Whitaker et al., 2016). Even though the health care provider is highly influential at this moment, there is a sensitivity regarding the importance of obstetric nutrition for the patient and provider. There are misperceptions by both parties on how nutritional advice is conveyed; some providers state that they give nutritional advice at length, and some patients perceive that they do not receive it all (Whitaker et al., 2016). Patient and health care provider sensitivities suggests that there are perceived barriers that influence the exchange of information between them.

One identified health care provider barrier is sensitivity, especially in regards to the patient defined as obese by the Institute of Medicine (IOM) guidelines (Kriebs, 2014). Obesity in pregnancy is more prevalent among non-whites and the lower SES population; which also brings the comorbidities of hypertension, diabetes mellitus, and

cardiovascular disease that also puts the pregnancy at risk (Kriebs, 2014). The health care provider may stray away from this topic because of the perception of offense, especially if the health care provider is not of optimal weight (Kriebs, 2014).

Another barrier identified in the literature is the health care provider's perceived lack of knowledge in order to adequately educate the pregnant patient about nutrition (Kriebs, 2014; Phelan et al., 2011). There are health care providers that admitted they were unfamiliar with the current IOM gestational weight gain guidelines and therefore felt that they would not provide sufficient and useful information (Whitaker et al., 2016). Some health care providers cited that they did not receive adequate training in nutrition for the prenatal care setting, though vital as it is to pregnancy outcomes (Whitaker et al., 2016). Other barriers that health care providers identified included a lack of time, increased difficulty counseling patients due to low income and educational levels due to the patient's lack of resources, and the many different cultures of their patients (Whitaker et al., 2016).

### **Maternal Nutrition Standards for Positive Pregnancy Outcomes**

As previously stated, a healthy diet and lifestyle are an important part of the obstetrical patient's health equilibrium. It is a key part to fetal development and if the pregnant woman also has any comorbidities, a special diet and modified activity may be a prescribed part of her well-being (AND, 2014). The obstetric health care providers actually have an ideal opportunity over most other specialties to educate pregnant patients, because they are more willing to modify or outright change their unhealthy behaviors for their unborn child during the pregnancy and thereafter (Whitaker et al., 2016). Body mass index (BMI), in addition to the nutritional assessment, is an accepted

tool to measure gestational weight gain, in order for the health care provider to act in the best interest for the pregnant patient and unborn baby (Dunlevy, 2015).

### **Institute of Medicine and Gestational Weight Gain**

In 2009, the Institute of Medicine (IOM) provided a revision of its gestational weight gain guidelines that were previously recommended in 1990 (Siega-Riz, Deierlein, & Steube, 2010). Gestational weight gain contributes to comorbidities such as gestational diabetes and hypertension; complications during labor and delivery; and adverse birth outcomes (Duthie, Drew, & Flynn, 2013). One of the main reasons that the IOM made changes to the weight ranges is that it would classify fewer people as underweight and more people as overweight. For example, this would also place more pregnant teenagers in the normal weight range instead of overweight range. This would result in teenagers being encouraged to gain more weight during pregnancy (Siega-Riz et al., 2010). The IOM found insufficient evidence to include race and age into the specifics of weight gain and BMI, and therefore, these factors were left out of the new guidelines (Siega-Riz et al., 2010).

The IOM stresses the importance of establishing the BMI early in the onset of prenatal care. It also recommends health care providers discuss gestational weight gain as a regular part of the visit conversation (Duthie et al., 2013; Siega-Riz et al., 2010). The use of open-ended questions is best when interviewing patients about what they know regarding weight gain. The health care professional must provide consistent information to the pregnant patient and rationales to encourage compliance (Siega et al., 2010).

### **Dietary Component**

The old adage *eating for two* is not only a myth but also a very unhealthy dietary practice for the obstetric patient. In fact, caloric requirements stay the same as a non-pregnant individual until the second and third trimester, where the extra kilocalories are 340 and 452, respectively (Kaiser & Campbell, 2014). The obstetric patient is also more susceptible to foodborne illnesses. They should stay away from certain foods such as raw meat, fish, and unpasteurized milk products that include soft cheeses. If eating hot dogs and deli meats, they should be heated to high temperatures prior to consumption (Widen & Siega-Riz, 2010).

### **Physical Activity During Pregnancy**

The American College of Obstetricians and Gynecologists (ACOG, 2015) acknowledged the importance of physical activity throughout the lifespan and issued a committee opinion regarding physical activity in pregnancy and the postpartum period. Prior to advising the obstetric patient on any physical activity, the health care provider should conduct a thorough assessment and/or medical clearance (ACOG, 2015). Some physical exercises will require modification due to the normal physiological changes in pregnancy; however, if the pregnancy is without complications, aerobic and strength-conditioning exercises are recommended (ACOG, 2015).

The activity level for the healthy obstetric patients includes 150 minutes of moderate intensity aerobic activity that should be spread out through the week (ACOG, 2015). Some of the activities include brisk walking, swimming, stationary cycling, low-impact aerobics, and strength training. If comorbidities are present, these pregnant women will require an individualized program (ACOG, 2015). Prior to commencing with

aerobic exercise, patients are to hydrate and to eat well before engaging in physical activity and to stop immediately if they experience any complications such as vaginal bleeding, regular contractions, leakage of amniotic fluid, and dizziness. Patients should discuss these symptoms with their health care provider as soon as possible (ACOG, 2015).

### **Summary**

The results of this literature review were congruent. Inadequate nutrition in the lower SES obstetric patient is a multifaceted, persistent, problematic situation that needs addressing. Direct relationships were identified, such as the relationship between inadequate intake, financial disparity, and stress. The cultural perspective was explored, as this too affects nutritional intake of the obstetric patients. There are also barriers that impact healthcare providers from discussing maternal nutrition with pregnant patients. Maternal nutrition standards that affect positive pregnancy outcomes, which include gestational weight gain, the obstetric patient's diet, and physical activity, were discussed. There is a gap in the information that the patient receives and the advice that the health care provider offers. Nutrition is a major factor in positive pregnancy outcomes, therefore this project is warranted.

## Chapter 3

### **Methods**

Nutritive quality is an important aspect of the general health in any individual, but especially the obstetric patient (Yalcin, Cihan, Gundogu, & Ocakci, 2013). It is the responsibility of the health care provider to advise the obstetric patient regarding nutrition and their health, as it not only affects the fetus, but the mother as well (Whitaker, 2016). Inadequate nutritional intake in the lower SES obstetric patient has ramifications for both the unborn fetus and the mother. Examples of this for the infant include low birth weight infants, cardiovascular disease later in life, preterm birth, and macrosomia. For the mother, increased body mass index (BMI) and gestational weight gain (GWG) can lead to gestational diabetes, preeclampsia, increased rates of cesarean section, and increased risk of cardiovascular disease (Berti et al., 2016).

According to the Academy of Nutrition and Dietetics (2014), a healthy lifestyle should begin at the preconception stage; however, healthy food choices, physical activity, and avoidance of alcohol will improve the health in the pregnant patient. The IOM revised its 1999 Gestational Weight Gain guidelines in 2009, and it is expected that pregnant women will have difficulty regulating their weight when at the upper limits of this new guideline (Siega-Riz, Deierlein, & Stuebe, 2010). Gestational weight gain must always be emphasized and expressed as an important part of the prenatal care regimen, as it can be an indicator of inadequate dietary intake. Weight loss should not be

encouraged unless ordered or directed by the health care provider, and the patients' perception should be assessed regarding the weight changes they will experience during pregnancy (Siega-Riz et al., 2010). The low SES obstetric patient who has food insecurity issues, depression, and rapid weight loss or weight gain should be addressed immediately, as this can affect pregnancy outcome. Therefore, the purpose of this quality improvement project was to develop a standardized, evidence-based practice (EBP) protocol for the management of maternal nutrition, gestational weight gain, and physical activity for provider use at a LSE community clinic.

### **Project Design**

This quality improvement project utilized a quantitative descriptive design that to analyze health care providers' maternal nutrition insight and aptitude through a pre-and posttest survey.

### **Setting**

The setting for the project was in an obstetric and gynecological (OB/GYN) clinic affiliated with a tertiary hospital in South Florida. Approximately 60% of the pregnant population are in the low-income bracket. The remaining 40% are gynecological patients only. The OB/GYN clinic provides a full array of services, including obstetrical services for indigent and low income-based paying pregnant women and preconception and gynecological services, which include birth control administration. The clinic also has a Healthy Start representative who sees patients as needed. Finally, the clinic staff includes five OB/GYN physicians, one maternal-fetal medicine (MFM) physician, six certified nurse midwives (CNM), one advanced practice registered nurse (APRN), and four



registered nurses (RNs) who would be impacted by the maternal nutritional guideline for the low SES population.

### **Inclusion Criteria**

The inclusion criteria consisted of licensed professionals such as contracted physicians, APRNs, CNMs, and staff RNs who have worked at the clinic for at least 6 months or greater.

### **Exclusion Criteria**

Exclusion criteria for the study consisted of licensed professionals such as contracted physicians, APRNs, CNM, and staff RNs who worked for less than 6 months or did not want to participate.

### **Ethical Considerations**

Approval from the Nova Southeastern University (NSU) Institutional Review Board was obtained (Appendix A). A letter of support was received from The assistant OB/GYN medical director from the contracted physician group (Appendix B) and from the chief nurse executive and director of nursing of the tertiary hospital. A waiver of jurisdiction was also obtained from the health care system for the clinical site. A participant letter (Appendix C) described the project; risks and benefits, and confidentiality. Participation in the project was entirely voluntary and participants had the right to withdrawal at any time. Completion of the online survey signified their consent. The risk of loss of confidentiality was minimized. Data was stored in a password protected file, on a password protected computer that only the investigator had access to.

### **Project Phases/Objectives**

This project was carried out in stages to meet the objectives.

**Objective 1:** Conducted an extensive literature review of maternal nutrition and the role that health care providers engage in in providing the low SES obstetric population nutritional guidance; reviewed any existing protocol at the non-profit community health clinic in comparison to any evidence-based practice.

Evaluated guidelines and protocols using current evidence-based information and professional organization standardized recommendations.

**Objective 2:** Established a collaborative relationship with nurse executives, the medical director, the chief of midwives, clinical site leadership, information technology (IT) department, quality improvement department, and nutrition department to review existing facility protocols.

Formed collaborative relationships with nurse executives, assistant medical director, chief of midwives, clinical site leadership, and IT analyst through regular communication and updates on project progress. Consultation with a registered dietitian and a nutrition counselor from the local Women, Infant, & Children's (WIC) program was conducted as well as with the hospital Diabetic Educator who the health care providers referred their pregnant diabetic patients to for nutrition counseling.

**Objective 3:** Conducted an anonymous pre-survey for the contracted physicians, CNMs, APRNs, and staff RNs to assess their perception, knowledge and aptitude for counseling on maternal nutrition.

After fliers (Appendix D) were posted and inquiries were made, the project was explained to the eligible interested participants and questions were answered. Participants were made aware of the online participation letter (Appendix C). The pre-survey (Appendix E) link was also disseminated to participants.

**Objective 4:** Developed, presented, and educated the health care providers and staff in the OB/GYN clinic on the Maternal Nutrition Protocol.

*A Maternal Nutrition Protocol* and video PowerPoint online education (Appendix F) was developed and made available for healthcare provider access for a two-week period. Face-to-face sessions were also delivered simultaneously during the same two-week period.

**Objective 5:** Conducted an anonymous post-survey (Appendix E) to evaluate understanding of the Maternal Nutrition Protocol.

The eligible participants were provided with the hyperlink to the post-survey and completed it in two weeks.

**Objective 6:** Presented findings with stakeholders such as nurse executive leadership, the medical director, mid-level providers (CNMs and APRNs) to obtain buy-in of the Maternal Nutrition Protocol for possible acceptance as a sustainable facility guideline/policy.

A meeting was conducted with the stakeholders to discuss the outcomes and viability of protocol.

### **Timeline**

Objective one, evaluating the literature and reviewing for any existing protocols in the OB/GYN community clinic, took three weeks. Objective two, which consisted of

establishing proficient collaborative relationships and networking with key interprofessional members to gain insight and review current protocols in practice took four weeks. Objective three was extended three weeks past the original proposed IRB since this step was interrupted by a semester break, resulting in a total of six weeks. Objective four, disseminating the education of the Maternal Nutrition Protocol via online and face-to-face education took two weeks. Objective five, conducting the post survey, was completed in two weeks. Presenting findings with stakeholders such as nurse executive leadership, the medical director, mid-level providers (certified nurse midwives [CNMs] and advanced practice nurses [APRNs]) to obtain buy-in of the Maternal Nutrition Protocol for the OB/GYN clinic took one week. The total length of this project was eighteen weeks.

### **Budget**

The budget for this project was minimal. Costs included printing material, poster board presentation, and tokens of appreciation in the form of food. The total cost amounted to \$498.00, as seen in Table 1.

Table 1

*Project Budget*

| Item              | Purpose                   | Description           | Cost     |
|-------------------|---------------------------|-----------------------|----------|
| Printing Material | Poster board for protocol | 18x24 (1)             | 98.00    |
| Edibles for Staff | Set budget                | Coffee and treats     | 300.00   |
|                   | Luncheon for              | Proposal presentation | 100.00   |
| TOTAL             |                           |                       | \$498.00 |

*Note.* The set budget for coffee and treats included snacks, pastries, fruits, and tea throughout the duration of the project. The poster board was a poster presentation that included the Maternal Nutrition Protocol used during the “Kick-Off Luncheon” presentation.

### **Outcome Measures**

The outcome measures of this project were stated below according to each objective.

**Objective 1:** Conducted an extensive literature review of maternal nutrition and the role that health care providers engage in with the low SES obstetric population and maternal nutrition; review any existing protocol at the non-profit community health clinic in comparison to any evidence-based practice.

The objective was measured through the evaluation of the current guidelines using evidence-based information and professional organization standardized recommendations.

**Objective 2:** Established a collaborative relationship with nurse executives, the medical director, IT department, quality improvement department, and nutrition department to review existing facility protocols.

This objective was measured by the creation of a successful interprofessional team who participated and networked on a professional level.

**Objective 3:** Conducted an anonymous pre-survey for the contracted physicians, CNMs, APRNs, and staff RNs to assess their perception, knowledge and aptitude for counseling on maternal nutrition.

This objective was measured by the successful implementation of the anonymous, online pre-survey that yielded 14 participants.

**Objective 4:** Developed, presented, and educated the health care providers and staff in the OB/GYN clinic on the Maternal Nutrition Protocol.

This outcome was measured by the development of an evidenced-based protocol that addressed maternal nutrition, gestational weight gain, and the obstetrical patients' physical activity according to the Institute of Medicine (IOM), the American Congress of Obstetricians and Gynecologists (ACOG), and the United States Department of Agriculture (USDA).

**Objective 5:** Conducted an anonymous post-survey to evaluate understanding of Maternal Nutrition Protocol.

This objective was measured by the successful implementation of the anonymous, online post-survey that yielded 12 participants.

**Objective 6:** Presented findings with stakeholders such as nurse executive leadership, the medical director, chief of midwives, mid-level providers (certified nurse midwives [CNMs] and advanced practice nurses [APRNs]), clinical site leadership, IT department, quality improvement department, and nutrition department to obtain buy-in and verification of institutional congruency of maternal nutrition guidelines for the OB/GYN clinic.

The objective was measured by the stakeholders agreeing to adopt the Maternal Nutrition Protocol for use, and implementation of the protocol in the nonprofit OB/GYN clinic. Stakeholders added some additional components to the protocol that included a nutrition column in the physician and CNM's flowchart in the electronic health record to document that nutrition was assessed. Incomplete documentation in the nutrition column

would cause a *hard-stop* in the patient's chart. Further it was recommended that the updated IOM gestational weight gain guidelines were posted in every exam room.

### **Summary**

Chapter 3 presented the methodology utilized in this quality improvement DNP project. A descriptive approach was used to best explore the professional staff's insight and aptitude regarding maternal nutrition through a pre-and post-test questionnaire. Approval was received from the NSU IRB; letters of support were received from the Assistant Chief of OB/GYN services at the clinic and the Director of Nursing. All eligible participants only received a participant letter, since the only item that would identify them to the online, anonymous pre-and post-survey would be a signed consent form. The online survey also minimized their risk of loss of confidentiality. The total budget for the DNP project was discussed and displayed in a table format. The outcome measures for each objective were explained, and the timeline for the project was presented.

## Chapter 4

### **Results and Discussion**

Adequate nutrition in pregnancy is a fundamental essence of success for favorable outcomes for the mother and the unborn baby in all populations and demographics. It has been identified in the literature and acknowledged in this report that the LSE population was at the highest risk for inadequate nutrition during pregnancy that can lead to poor outcomes (Recame, 2013; Legault & Marquis, 2014). The health care providers that deliver care to obstetrical patients are at the forefront for influencing outcomes for the pregnant patient and the unborn fetus. Through their astute knowledge and assessment, health care providers have an impact on the obstetric patients entrusted to their care. The utilization of a standardized, evidence-based protocol that addresses management of gestational weight gain, maternal diet, and physical activity during pregnancy invariably will impress upon positive patient outcomes. This chapter will discuss the objectives of this quality improvement project with regard to the evaluation of the project objectives, discussion of the findings, strengths, and limitations, implications for practice, and any future research that could ensue as a result of this study.

### **Results**

This quality improvement project was presented to the Assistant Chief of Obstetrics and Director of Nursing (DON) of the South Florida community OB/GYN clinic and site approval was received on February 27, 2017, and March 5, 2017, respectively. IRB approval was obtained through Nova Southeastern University



March 30, 2017. The health care system that the OB/GYN clinic was affiliated with granted a *Waiver of Jurisdiction* on April 4, 2017. There were five steps and six objectives to complete the project in its totality. The quality improvement project took a total of 18 weeks.

**Objective 1:** Conducted an extensive literature review of maternal nutrition and the role that health care providers engage in with the low SES obstetric population and maternal nutrition; reviewed any existing protocol at the non-profit community health clinic in comparison to any evidence-based practice.

This objective was met through the completion of an extensive literature review utilizing search engines such as CINAHL, ProQuest, Journals Ovid, and PubMed. The employment of keywords and phrases such as *nutrition in pregnancy*, *Institute of Medicine*, *pregnancy*, *obstetrical BMI*, *Obstetrics*, *barriers to nutrition*, *pregnancy*, *gestational weight gain*, *nutritional education*, and *nutrition competency* were utilized. Professional organizations such as the American Nutrition and Dietetics and American Congress of Obstetricians and Gynecologists position statements were reviewed and applied to maternal nutrition and physical activity during pregnancy, because they are the leading authorities on nutrition and obstetric medicine respectively. The IOM published a revision of gestational weight gain guidelines in 2009 that (a) classified fewer women as underweight and more women overweight, (b) placed teenagers in the normal weight category, and (c) removed subgroups such as race and ethnicity as factors. Reputable websites such as the United States Department of Agriculture's (USDA) [ChooseMyPlate.gov](http://ChooseMyPlate.gov) include a subsection for Moms/Moms-to-Be for healthy dietary choices and portions.

There was not at an existing, standardized protocol at the community OB/GYN clinic where the project was implemented. Patients who had a co-morbidity, such as diabetes, were referred to the diabetic educator for an individual consultation. Some of the obstetric patients met criteria (such as financial and certain disorders) for the Women, Infants, and Children program.

**Objective 2:** Established a collaborative relationship with nurse executives, the medical director, IT department, quality improvement department, and nutrition department to review existing facility protocols.

This objective was met by the creation of a successful interprofessional team who participated and networked on the professional level. The members of this team included the Assistant Chief of Obstetrics, the DON, Chief Midwife, Clinic Site Leadership, and the IT Analyst. The Community Health Center WIC Registered Dietitian and Nutritional Educator and the hospital Diabetic Registered Dietitian were also consulted. The interprofessional team communicated on a regular basis through all steps of the project. Constructive feedback was provided and facilitated productive work.

**Objective 3:** Conducted an anonymous pre-survey for the contracted physicians, CNMs, APRNs, and staff RNs to assess their perception, knowledge and aptitude for counseling on maternal nutrition.

This objective was met by utilizing a recruitment flier to mobilize eligible participants for the project. Once the participant letter was explained to the qualified participant, the participant was given the website link to the anonymous pre-survey. This pre-survey was an original tool that was comprised of four demographic questions to determine profession, time at the facility, years of experience, and gender. The rest of

pre-survey included 10 questions, in Likert format and ordinal; centered on evidence-based maternal nutrition regarding gestational weight gain, health care provider perception, and knowledge regarding current IOM maternal nutrition guidelines and their comfort level in providing this knowledge to patients. The survey was set up so that every question had to be answered before proceeding to the next and took on average two minutes to complete. The pre-survey yielded 14 participants.

**Objective 4:** Developed, presented, and educated the health care providers and staff in the OB/GYN clinic on the Maternal Nutrition Protocol.

This objective was met by the development of a standardized, evidenced based protocol, named *Maternal Nutrition Protocol*, that addressed maternal nutrition via choosemyplate.gov (Moms/Moms-to-Be) webpage, gestational weight gain via the IOM 2009 revised guidelines, and ACOG's Committee Opinion on physical activity in pregnancy. This protocol also addressed best practices for health education during pregnancy. Obstetric health care providers have the advantage to impact women's health care choices because they are more amenable to change their behaviors for the sake of their unborn child and to continue this behavior based on the information they receive. An online link was provided to all eligible participants to view a PowerPoint video presentation. Three face-to-face presentations were also provided. Individualized dialogue also occurred for further clarification or discussion of information provided. This objective was completed in 2 weeks.

**Objective 5:** Conducted an anonymous post-survey to evaluate understanding of Maternal Nutrition Protocol.

This objective was met by eligible participants being given the website link to the post-survey after the completion of the protocol education. The post-survey was the same as the pre-survey, and was completed by eligible participants. The post-survey yielded 12 participants.

**Objective 6:** Presented findings with stakeholders such as nurse executive leadership, the medical director, and mid-level providers (CNMs and APRNs), to obtain buy-in of the Maternal Nutrition Protocol for possible acceptance as a sustainable facility guideline/policy.

This objective was met by the Assistant Chief of OB, nursing, and site leadership buy-in to accept the protocol for standard use at the South Florida OB/GYN clinic. The statistical analysis was discussed, as well as changes in behaviors of providers that were observed even before completion of the project. During the interprofessional work with the IT analyst, a hyperlink in the clinic's electronic health record's main toolbar was created to redirect all health care providers in the clinic to the health care system's access to the American Nutrition and Dietetics Client education and diet website, to use as an educational tool for the obstetrical patient. The LSE obstetric patient population that the clinic serves are at higher risk for morbidity in the presence of inadequate nutrition. This objective was completed in 1 week.

### **Findings of the Project**

The following results are the descriptive statistical analysis of the Maternal Nutrition Pre-and Post-survey data of the quality improvement project.

## Demographics

The pre-survey had 14 respondents (four physicians, four CNMs, two APRNs, and four RNs). The post-survey had 12 respondents (three physicians, four CNMs, one APRN, and four RNs). In total, 26 respondents took the surveys. For the demographic portion, Pearson's chi-squared test was used in the mix of profession, experience, and gender to assure there were no large differences in the pre-and post-surveys. Overall, 27% of the respondents were physicians, 31% were certified nurse midwives, 12% were APRNs, and 31% were nurses. The proportion of each profession in the two groups (pre-and post) was not significantly different ( $\chi^2_{3df} = 0.324$ ,  $p = 0.955$ ). Regarding experience, 12% of the respondents had between 66 and 10 years of experience, 19% had between 11 and 15 years of experience, and 69% had 16 or more years of experience. The proportion of experience in the two groups (pre-and post) was not significantly different ( $\chi^2_{2df} = 0.382$ ,  $p = 0.826$ ). In the case of gender, 65% of the respondents were women, 23% were men, and 12% preferred not to disclose their gender. The proportion of genders in the two groups (pre-and post) was not significantly different ( $\chi^2_{2df} = 0.910$ ,  $p = 0.634$ ).

## Maternal Nutrition Pre-and Post-Survey

The Maternal Nutrition Pre-and Post-Survey statistical analysis demonstrated that 10 questions were divided into three quartiles; with p50 representing the median; p25 representing the first quartile, and p75 representing the third quartile. The raw data from the Likert scale were placed in the appropriate quartile according to the occurrence, as shown in Table 2. The mean ( $M$ ) and standard deviation ( $SD$ ) were calculated for each question for both occasions (pre- and post-surveys). The Mann-Whitney test was performed comparing the two medians to see if there was a significant difference

between the two occasions. It was found that there were no significant differences between the pre- and post-survey questions except for two questions: “I feel that moderate exercise is important for patients experiencing an uncomplicated pregnancy” and “I am able to provide patients with some examples of nutritious foods that contain certain vitamins and electrolytes” (see Table 2).

Table 2

*Statistical Analysis of Maternal Nutrition Pre-and Post-Survey*

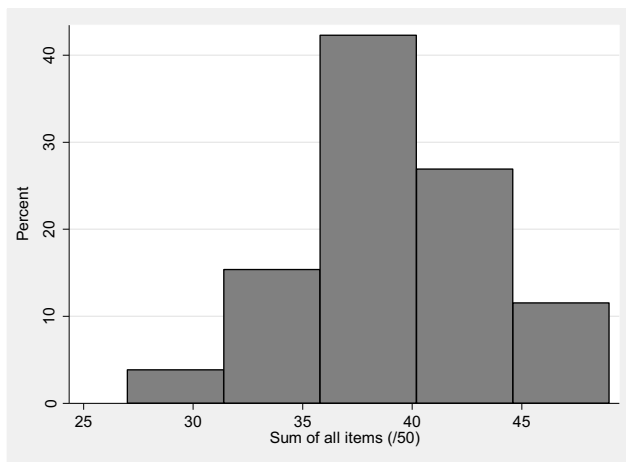
| Question  |          | p25 | p50 | p75 | M        | SD       | z     | p    |
|---|----------|-----|-----|-----|----------|----------|-------|------|
| I use the Institute of Medicine's (IOM) 2009 <i>Weight Gain During Pregnancy: Reexamining the Guidelines</i> for gestational weight gain. | pre: 14  | 3   | 4   | 4   | 3.642857 | .9287827 | 1.248 | .212 |
|   | post: 12 | 4   | 4   | 5   | 3.807692 | 1.020558 |       |      |
| I feel confident in educating my patients about their nutritional needs.  | pre: 14  | 3   | 4   | 4   | 3.714286 | 1.138729 | .668  | .504 |
|   | post: 12 | 4   | 4   | 5   | 3.833333 | 1.403459 |       |      |
| I discuss gestational weight gain in pregnancy with all patients at every visit.  | pre: 14  | 2   | 4   | 4   | 3.357143 | 1.215739 | 1.162 | .245 |
|   | post: 12 | 4   | 4   | 4.5 | 3.833333 | 1.193416 |       |      |
| I discuss increased pregnancy risks with obese patients when discussing maternal nutrition.   | pre: 14  | 4   | 4   | 5   | 4.142857 | .7703289 | .495  | .621 |
|   | post: 12 | 4   | 4   | 5   | 4.333333 | .492366  |       |      |
| I do not feel the need to discuss gestational weight gain if the patient has a normal body mass index.                                    | pre: 14  | 1   | 2   | 2   | 1.928571 | .7300459 | .845  | .398 |
|   | post: 12 | 1   | 2   | 2   | 1.833333 | 1.114641 |       |      |

|   |          |   |     |     |          |           |       |       |
|---|----------|---|-----|-----|----------|-----------|-------|-------|
| I feel that moderate exercise is important for patients experiencing an uncomplicated pregnancy. **                     | pre: 14  | 4 | 4   | 4   | 3.928571 | 0.7300459 | 2.095 | 0.036 |
|   | post: 12 | 4 | 5   | 5   | 4.5      | 0.6741999 |       |       |
| I am uncomfortable educating my obese patients about maternal nutrition.  | pre: 14  | 1 | 2   | 4   | 2.357143 | 1.499084  | 0.136 | 0.892 |
|   | post: 12 | 1 | 2   | 2.5 | 2.166667 | 1.267304  |       |       |
| I am able to provide patients with some examples of nutritious foods that contain certain vitamins and electrolytes. ** | pre: 14  | 4 | 4   | 4   | 3.928571 | 0.9168748 | 2.040 | 0.041 |
|   | post: 12 | 4 | 4.5 | 5   | 4.5      | 0.522233  |       |       |
| I do most of the talking when addressing nutritional deficits/concerns with the patients.                               | pre: 14  | 2 | 3   | 4   | 3.071429 | 0.997249  | 0.934 | 0.350 |
|   | post: 12 | 3 | 3.5 | 4   | 3.416667 | 1.1645    |       |       |
| I know what foods patients should avoid during pregnancy.   | pre: 14  | 4 | 4   | 5   | 4.142857 | 0.7703289 | 0.875 | 0.382 |
|   | post: 12 | 4 | 4   | 5   | 4.416667 | 0.5149287 |       |       |

*Note.* n= 14 participants for pre-survey; 12 participants for post-survey. Total of 26 participants. p25 = first quartile; p50 = median; p75 = third quartile



In order to compute a total score for the 10 questions, two questions were identified to be negatively worded in the pre- and post-survey: “I do not feel the need to discuss gestational weight gain if the patient has a normal body mass index” and “I am uncomfortable educating my obese patients about maternal nutrition” and needed to be recoded inversely (1 = 5, 2 = 4, 3 = 3, 4 = 2, and 5 = 1) and reached a total sum of 50. The scores had a normal distribution as shown in Figure 1. An independent sample *t*-test was performed to compare the two occasions. While there was a tendency for an increase in the total score between the pre- and post-surveys, the difference did not reach statistical significance as displayed in Table 3 ( $t_{24df} = 1.782, p = 0.087$ ).



*Figure 1.* The sum of the Maternal Nutrition Pre-and Post-Survey questions according to quartile.

Table 3

*Sum of the Maternal Nutrition Pre-and Post-Survey Questions*

| Occasion | N  | p50  | p25 | p75  | M        | SD       |
|----------|----|------|-----|------|----------|----------|
| Pre      | 14 | 38.5 | 35  | 40   | 37.64286 | 4.749205 |
| Post     | 12 | 41.5 | 39  | 42.5 | 40.83333 | 4.302924 |
| Total    | 26 | 40   | 36  | 42   | 39.11538 | 4.744065 |

**Expected and Unexpected Findings**

One of the expected findings of the project was that the demographics of the participating health care providers were not significantly different in the pre- and post-survey. Another expected finding was that even if more questions in the survey were found to be statistically significant, the overall pre- and post-survey results would not be statistically significant because of the small sample size. The small sample size was expected since there is a fixed number of physicians, CNMs, APRN, and RNs who work at the community OB/GYN clinic.

An unexpected finding was that there were only two questions from the pre- and post-survey that were deemed statistically significant. This may be attributed to the fact that two questions were negatively worded in the pre- and post-survey. Another unexpected finding was in the demographics of the pre-survey when there were two APRN participants. In the OB/GYN clinic, there is one APRN that is not a CNM; however, in the state of Florida, CNMs are categorized under “advanced registered nurse practitioners,” and that may be why he or she classified themselves in that category. Finally, another unexpected outcome was that the Assistant Chief of OB/GYN at the clinic desired to incorporate the Maternal Nutrition Protocol,

including the IT component incorporated into the EHR toolbar, into the tertiary inpatient setting.

### **Strengths and Limitations**

A considerable strength of this quality improvement project was the heightened awareness of maternal nutrition and the crucial role that health care providers in a low socioeconomic OB/GYN clinic have in this aspect of care. Interprofessional collaboration to develop a standardized, evidence-based protocol to address maternal nutrition was also a strength of this project. The stakeholders at the OB/GYN clinic decided to accept the protocol for standardized use for its health care providers. A limitation of this project was that this was the first time the Maternal Nutrition Pre- and Post-Surveys were used, as they were created specifically for this project. Another limitation was that the pre-survey was completed over a longer period (four weeks more than the post survey). This longer period was because a semester break caused an interruption in the completion of the pre-survey. Another limitation was the two-week time period for the instruction of the protocol was another limitation. The sample size was also a limitation, as there were only 14 participants for the pre-survey and 12 participants for the post-survey.

### **Implications for Practice**

#### **Nursing Practice**

Maternal nutrition in pregnancy is an imperative component to the health of the pregnant woman and her unborn child. The low socioeconomic demographics at this OB/GYN clinic alone puts the obstetric patients at high risk for poor outcomes concerning maternal nutrition. This protocol provided a consistent resource of information that facilitated more confidence in the ability within the nursing staff. Nursing practice was also changed because of the increased

knowledge in the nutritional aspect of the obstetric patient's care, which encouraged more dialogue at different times during prenatal visits, antenatal testing, and discharge. The utilization of the new EHR diet link, as a result from the work of the interprofessional collaborative effort with IT, also created another avenue in which to assist the nurses in providing care through education to their obstetric patients.

### **Health Care Outcomes**

The Maternal Nutrition Pre-and Post-Surveys that were administered to the health care providers assessed their insight of maternal nutrition before and after the instruction of the standardized, evidence-based protocol. The two questions that demonstrated significant increases in the mean between the pre-and post-survey were *“I am able to provide patients with some examples of nutritious foods that contain certain vitamins and electrolytes”* and *“I feel that moderate exercise is important for patients experiencing an uncomplicated pregnancy.”* These two questions were significant because (a) they demonstrated an increase in knowledge after the instruction of the standardized, evidence-based protocol of two important factors, diet and exercise and (b) both questions were avenues for the health care provider to contribute to healthy behavior modification of the obstetric patient and promote and facilitate positive outcomes. The standardized, evidence-based protocol is a resource to the health care providers that can help to contribute to healthy behavior modification of the obstetric patient. the use of the protocol influences the health care provider's own behaviors, which empowers patients to be the change agents for their own care.

### **Health Care Delivery**

This project affected the delivery of health care at the OB/GYN clinic in several ways. It provided a standardized protocol that served as a resource that was evidence-based,

addressing gestational weight gain, maternal nutrition, and physical activity during pregnancy. During the interprofessional collaboration process, an additional resource was created to assist health care providers with additional interventions to provide educational resources for themselves. With the assistance of the IT analyst on the interprofessional team, a direct link to the hospital's intranet access to the American Nutrition and Dietetic resource was created in the EHR toolbar. The link provided specific dietary information for the obstetric patient and for the health care providers at the clinic, and provided ease of use while they educated their patients on the information.

### **Health Care Policy**

When the proposal was presented to the Assistant Chief of OB/GYN at this clinic, site leadership and the Director of Nursing in order to receive site approval, there was already a discussion of the "feasibility" of this protocol actually being implemented as a longstanding policy. Once the standardized, evidence-based protocol was created and the instructions was rolled out, positive feedback was received. At the completion of the project, the stakeholders were presented with the statistical analysis of the pre- and post-survey and the Maternal Nutrition Protocol. The stakeholders decided to accept the Maternal Nutrition Protocol and adopt it for use in its clinic. The Assistant Chief of OB at the clinic shared the current newly adopted practice (the Maternal Nutrition Protocol and IT button in EHR) at the South Florida OB/GYN community clinic with other health care providers in the inpatient hospital setting. Having this implemented as a local policy will affect the outcomes at the OB/GYN community health clinic.

### **Future Research**

This quality improvement project developed a standardized, evidence-based protocol based on gestational weight gain, maternal diet, and physical activity during pregnancy. Ideas for future research include evaluating if implicit bias exists between the health care providers and the obstetric patients they care for. Implicit bias awareness will bring a heightened understanding to an unconscious behavior that could impede the care that is entrusted to the health care provider. The implicit bias measurement could be more focused, such as by targeting obese pregnant patients. A longitudinal study of the utilization of the protocol would also assess if the continued use of the Maternal Nutrition Protocol by health care providers made a difference in patient outcomes, and evaluate if it creates a “Hawthorne effect”. Future research could include evaluating this standardized, evidence-based protocol in private physician practice. This protocol was written to be used in the LSE community OB/GYN clinic to address the health care providers in that setting; however, the form it was written in makes it utilizable for any obstetric population.

### **Summary**

This quality improvement project addressed health care providers’ insight as it relates to maternal nutrition through the development of a standardized, evidence-based protocol. All of the project’s objectives were met. Statistical analysis revealed that through a pre- and post-Maternal Nutrition Survey, only two questions showed an increase in the mean from the pre- and post-survey; however, these issues demonstrated an increase in the health care providers’ knowledge of physical activity and diet. Those two health care provider factors could modify their patient's behavior. Strengths and limitations were discussed. Implications for practice, health care outcomes, health care delivery, and health care policy were also brought to the

forefront. The health care providers at this South Florida OB/GYN community clinic became very aware of how pivotal their role was in maternal nutrition based on their engagement throughout the duration and the conclusion of this project.

## References

- Academy of Nutrition and Dietetics (AND). (2014). Position of the Academy of Nutrition and Dietetics: Nutrition and lifestyle for a healthy pregnancy outcome. *Journal of the Academy of Nutrition and Dietetics*, *114*(7), 1099-1103.
- American College of Obstetricians and Gynecologists. (2015). *Committee Opinion 650: Physical activity and exercise during pregnancy and the postpartum period*. Retrieved from <http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Physical-Activity-and-Exercise-During-Pregnancy-and-the-Postpartum-Period>
- Berti, C., Cetin, I., Agostini, C., Desoye, G., Devlieger, R., Emmett, M., ... Koletzko, B. (2016). Pregnancy and infants' outcome: Nutritional and metabolic implications. *Critical Review in Food Science and Nutrition*, *56*, 82-91.
- Côté, F., Gagnon, J., Houme, P., Abdeljelil, A., & Gagnon, M. (2012). Using the theory of planned behavior to predict nurses' intention to integrate research evidence into clinical decision-making. *Journal of Advanced Nursing*, *68*(10), 2289-2298.
- Daemers, D., Wijnen, H., Limbeek, E., Budé, L., & deVries, R. (2013). Patterns of gestational weight gain in healthy, low-risk pregnant women without comorbidities. *Midwifery*, *29*, 535-541.
- DiMaria-Ghalili, R., Mirtallo, J., Tobin, B., Hark, L., Van Horn, L., & Palmer, C. (2014). Challenges and opportunities for nutrition education and training in the health care profession: Intraprofessional and interprofessional call to action. *American Journal of Clinical Nutrition*, *99*(S), 1184S-1193S
- Dunlevy, F. (2015). Nutritional assessment during pregnancy. *Topics in Clinical Nutrition*, *30*(1), 71-79.
- Duthie, E., Drew, E., & Flynn, K. (2013). Patient-provider communication about gestational weight gain among nulliparous women: A qualitative study of the views of obstetricians and first-time pregnant women. *BMC Pregnancy & Childbirth*, *13*(231), 1-9. doi:10.1186/1471-2393-13-231
- Fowles, E., Bryant, M., Kim, S., Walker, L., Ruiz, R., Timmerman, G., & Brown, A. (2011). Predictors of dietary quality in low-income pregnant women. *Nursing Research*, *60*(5), 286-294.
- Fowles, E., Stang, J., Bryant, M., & Kim, S. (2012). Stress, depression, social support, and eating habits reduce diet quality in the first trimester in low-income women: A pilot study. *Journal of the Academy of Nutrition and Dietetics*, *112*, 1619-1625. doi:10.1016/j.jand.2012.07.002



- Gennaro, S., Blesecker, B., Fantasia, H., & Nguyen, M. (2011). Nutrition profiles of American women in the third trimester. *Maternal Child Nursing, 36*(2), 120-126.
- Jeong, S., & Kim, K. (2016). Influencing factors on hand hygiene behavior of nursing students based on theory of planned behavior: A descriptive survey study. *Nurse Education Today, 36*, 159-164.
- Kaiser, L., & Campbell, C. (2014). Practice paper of the Academy of Nutrition and Dietetics: Nutrition and lifestyle for a healthy pregnancy outcome. *Journal of the Academy of Nutrition and Dietetics, 114*(9), 1447-1459.
- Kriebs, J. (2014). Obesity in pregnancy. *Journal of Perinatal & Neonatal Nursing, 28*(1), 32-40.
- Legault, A., & Marquis, M. (2014). Nutrition information-seeking behavior of low-income pregnant Maghrebien women. *Canadian Journal of Dietary Practice and Research, 75*, 22-28. doi:10.3148/75.1.2014.22
- Lor, M., Backonja, U., & Lauver, D. (2017). How could nurse researchers apply theory to generate knowledge more efficiently? *Journal of Nursing Scholarship, 1-10*. doi:10.1111/jnu.12316
- Phelan, S., Phipps, M., Abrams, B., Darroch, F., Schaffner, A., & Wing, R. (2011). Practitioner advice and gestational weight gain. *Journal of Women's Health, 20*(4), 585-591.
- Recame, M. (2013). The effects of maternal nutrition on fetal psychological development. *International Journal of Childbirth Education, 28*(3), 90-95.
- Siega-Riz, A. M., Deierlein, A., & Stuebe, A. (2010). Implementation of the new Institute of Medicine gestational weight gain guidelines. *Journal of Midwifery & Women's Health, 55*(6), 512-519.
- Stephens, T., Payne, M., Ball, R., Pencharz, P., & Elango, R. (2015). Protein requirements of healthy pregnant women during early and late gestation are higher than current recommendations. *Journal of Nutrition, 145*, 73-78. doi:10.3945/jn.114.198622
- Takamagi, S., & Yamabe, H. (2013). Relationship between body mass index and course of pregnancy in women. *Health, 5*(12), 1976-1982.
- Ward, D. (2012). The application of the theory of planned behavior to infection control research with nursing and midwifery students. *Journal of Clinical Nursing, 22*, 296-298. doi:10.1111/j.1365-2702.2012.04327

Whitaker, K., Wilcox, S., Liu, J., Blair, S., & Pate, R. (2016). Pregnant women's perceptions of weight gain, physical activity, and nutrition using theory of planned behavior constructs. *Journal of Behavioral Medicine, 39*, 41-54.

Yalcin, N., Cihan, A., Gundogdu, H., & Ocakci, A. (2013). Nutrition knowledge level of nurses. *Health Science Journal, 7*(1), 99-108

Appendix A

Nova Southeastern University IRB Approval, MHS Waiver of Jurisdiction, and Clinical  
Site Approval



MEMORANDUM

To: **Nicole Marshall**

From: **Jo Ann Kleier, Ph.D., Ed.D.,  
Center Representative, Institutional Review Board**

Date: **March 30, 2017**

Re: **IRB #: 2017-236; Title, "Addressing Obstetric Healthcare Providers' Nutritional  
Insight In The Low Socioeconomic Population"**

---

I have reviewed the above-referenced research protocol at the center level. Based on the information provided, I have determined that this study is exempt from further IRB review under **45 CFR 46.101(b) ( Exempt Category 1)**. You may proceed with your study as described to the IRB. As principal investigator, you must adhere to the following requirements:

- 1) **CONSENT:** If recruitment procedures include consent forms, they must be obtained in such a manner that they are clearly understood by the subjects and the process affords subjects the opportunity to ask questions, obtain detailed answers from those directly involved in the research, and have sufficient time to consider their participation after they have been provided this information. The subjects must be given a copy of the signed consent document, and a copy must be placed in a secure file separate from de-identified participant information. Record of informed consent must be retained for a minimum of three years from the conclusion of the study.
- 2) **ADVERSE EVENTS/UNANTICIPATED PROBLEMS:** The principal investigator is required to notify the IRB chair and me (954-262-5369 and Jo Ann Kleier, Ph.D., Ed.D., respectively) of any adverse reactions or unanticipated events that may develop as a result of this study. Reactions or events may include, but are not limited to, injury, depression as a result of participation in the study, life-threatening situation, death, or loss of confidentiality/anonymity of subject. Approval may be withdrawn if the problem is serious.
- 3) **AMENDMENTS:** Any changes in the study (e.g., procedures, number or types of subjects, consent forms, investigators, etc.) must be approved by the IRB prior to implementation. Please be advised that changes in a study may require further review depending on the nature of the change. Please contact me with any questions regarding amendments or changes to your study.

The NSU IRB is in compliance with the requirements for the protection of human subjects prescribed in Part 46 of Title 45 of the Code of Federal Regulations (45 CFR 46) revised June 18, 1991.

Cc: Eglintine Rigaud, Ph.D.  
Jo Ann Kleier, Ph.D., Ed.D.



• 3501 Johnson Street • Hollywood, FL 33021 • Phone (954) 265-1857 • Fax (954) 893-6172 •  
• FWA# 00003898 • IRB Registration # 00003075 •

April 04, 2017

Nicole T Marshall, Doctor of Nursing Practice student  
Memorial Regional Hospital  
Labor and Delivery  
3501 Johnson Street  
Hollywood, Florida 33021

RE: WAIVER OF JURISDICTION: MH#2017.023 Addressing Obstetric Healthcare Providers' Nutritional Insight  
In The Low Socioeconomic Population

Dear Ms. Marshall;

We are in receipt of your request to consider a local waiver of jurisdiction to the external IRB, Nova Southeastern IRB, 3301 College Avenue, Fort Lauderdale, Florida for the above-mentioned exempt study. The waiver of IRB jurisdiction is approved for the above study in accordance with local IRB guidelines.

This study will be conducted within the following Memorial Healthcare System location: South Broward Community Health Center Hollywood – OB/GYN clinic.

Sincerely,

A handwritten signature in black ink that reads 'Wayne Riskin'.

Signature applied by Wayne Riskin on 04/06/2017 03:39:23 PM EDT

Wayne G. Riskin, MD, FACP; Chairman  
Memorial Healthcare System Institutional Review Board

Appendix B  
Clinical Site Support

**SITE APPROVAL LETTER**

Nova Southeastern University  
3301 College Avenue  
Fort Lauderdale, FL 33314-7796

**Subject:** Site Approval Letter

To whom it may concern:

This letter acknowledges that I have received and reviewed a request by *Nicole T. Marshall* to conduct a research project entitled "*Addressing Obstetric Healthcare Providers' Nutritional Insight in the Low Socioeconomic Population*" at *South Broward Community Health Services OB/GYN Clinic* and I approve of this research to be conducted at our facility.

When the researcher receives approval for his/her research project from the Nova Southeastern University's Institutional Review Board/NSU IRB, I agree to provide access for the approved research project. If we have any concerns or need additional information, we will contact the Nova Southeastern University's IRB at (954) 262-5369 or [irb@nova.edu](mailto:irb@nova.edu).

Sincerely,

Timothy DeSantis, MD  
Assistant Medical Director  
Obstetrics & Gynecology  
[timothy.desantis@shcr.com](mailto:timothy.desantis@shcr.com)  
954-265-3441

**Memorial Regional Hospital**

---

3501 Johnson Street, 2nd Floor • Hollywood, Florida 33021  
(954) 985-3441 • FAX: (954) 967-2957

Appendix C  
Participant Letter



## Participation Letter

Title of Study: Addressing Obstetric Health Care Providers' Nutritional Insight in the Low Socioeconomic Population

Principal investigator  
Nicole T. Marshall  
12026 SW 31st CT  
Miramar, FL 33025  
(954)336-9497

c/o Applied Research Center  
College of Nursing  
3301 College Ave  
Ft. Lauderdale, FL 33314-7796

Institutional Review Board  
Nova Southeastern University  
Office of Grants and Contracts  
(954) 262-5369/Toll Free: 866-499-0790  
IRB@nsu.nova.edu

Site Information

**Description of Study:** Nicole T. Marshall is a doctoral student at Nova Southeastern University engaged in research for the purpose of satisfying a requirement for a Doctor of Nursing Practice degree. The purpose of this quality improvement project is to develop a standardized evidence-based practice (EBP) protocol for the management of maternal nutrition, gestational weight gain, and physical activity for provider use at a low socioeconomic community clinic.

If you agree to participate, you will be asked to complete an anonymous online pre-and post-surveys. This survey will help assess the baseline of knowledge of the health care providers so that once the Maternal Nutrition Protocol and supplemental education is introduced and disseminated, the writer will be able to appraise the results and compare and contrast the differences. The questionnaire will take approximately fifteen minutes or less to complete. The educational PowerPoint presentation that was previously mentioned will take 10 to 15 minutes to complete and will be available on-line via the internet or may also be completed by attending one (1) of three scheduled face-to face presentations.

**Risks/Benefits to the Participant:** Participation is completely voluntary. There are no direct benefits of this project. One possible risk may be loss of confidentiality. This risk is minimal due to all data being collected will be on a password-protected computer and through an encrypted website. There are no consequences with regards to the completion of this study. To reduce this risk, study materials and documents will be shredded and discarded after three years from the end of the study according to Nova Southeastern University recommendations and computer files will be permanently deleted after three years. If you have any concerns about the risks/benefits of participating in this study, you can contact the investigators and/or the university's human research oversight board (the Institutional Review Board or IRB) at the numbers listed above.

**Cost and Payments to the Participant:** There is no cost for participation in this project. Again, participation is completely voluntary and no payment will be provided.

**Confidentiality:** Information obtained in this project is strictly confidential unless disclosure is required by law. All data will be secured in a secured database and is not identifiable by the Principle Investigator. Your name will not be used in the reporting of information in publications or conference presentations.

**Participant's Right to Withdraw from the Study:** You have the right to refuse to participate in this study and the right to withdraw from the study at any time without penalty.

**I have read this letter and I fully understand the contents of this document and voluntarily consent to participate. All of my questions concerning this research have been answered. If I have any questions in the future about this study they will be answered by the investigator listed above or his/her staff.**

**I understand that the completion of this questionnaire implies my consent to participate in this study.**

Appendix D

Maternal Nutrition Pre-and Post-Survey

## Maternal Nutrition Pre-and Post-Survey

Are you a: Physician  Certified Nurse Midwife

Nurse Practitioner  Registered Nurse

Years in practice?

0-5  6-10  11-15  16 or more

Gender Male  Female  Rather not say

Have you been at the OB/GYN clinic for 6 months or more? Yes  No

1. I use the Institute of Medicine's (IOM) 2009 *Weight Gain During Pregnancy: Reexamining the Guidelines* for gestational weight gain.

Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree

2. I feel confident in educating my patients about their nutritional needs.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree
3. I discuss gestational weight gain in pregnancy with all patients at every visit.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree
4. I discuss increased pregnancy risks with obese patients when discussing maternal nutrition.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree
5. I do not feel the need to discuss gestational weight gain if the patient has a normal body mass index.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree
6. I feel that moderate exercise is important for patients experiencing an uncomplicated pregnancy.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree
7. I am uncomfortable educating my obese patients about maternal nutrition.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree
8. I am able to provide patients with some examples of nutritious foods that contain certain vitamins and electrolytes.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree
9. I do most of the talking when addressing nutritional deficits/concerns with the patients.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree
10. I know what foods patients should avoid during pregnancy.  
Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree

Appendix E  
Maternal Nutrition Protocol

## Maternal Nutrition Protocol

Maternal nutrition though a vital aspect of positive outcomes of pregnancy, is often approached reactively rather than proactively by health care providers (Duthie, Drew, & Flynn, 2013). In most cases, maternal nutrition is discussed at the onset of care, but does not persist throughout the duration of the pregnancy (Duthie et al., 2013). After conducting an extensive literature search, consultation and review with the chief of the OB/GYN Clinic, chief midwife, Women, Infant, and Children registered dietitian, the nutritionist who specializes in Diabetic Education, and nursing leadership – this protocol was developed.

### Institute of Medicine and Gestational Weight Gain

Table 1

Institute of Medicine Recommended Rate of Weight Gain during Pregnancy

| Prepregnancy BMI | BMI+ (kg/m <sup>2</sup> ) | Total Weight Gain<br>(lbs.) (kg) | Rates of Weight<br>Gain* 2nd and 3rd<br>Trimester<br>(lbs./week) (kg) |
|------------------|---------------------------|----------------------------------|---|
| Underweight      | <18.5                     | 28–40 (12.5-18)                  | 1 (0.51)<br>(1–1.3)   |
| Normal weight    | 18.5-24.9                 | 25–35 (11.5-16)                  | 1 (0.42)<br>(0.8–1)   |
| Overweight       | 25.0-29.9                 | 15–25 (7-11.5)                   | 0.6 (0.28)<br>(0.5–0.7)   |
| Obesity          | ≥30.0                     | 11–20 (5-9)                      | 0.5 (0.22)<br>(0.4–0.6)   |

\*(0.5-2 kg or 1.1-4.4lbs weight gain in 1<sup>st</sup> trimester)

Note. Adapted from <http://nap.edu/12584>

The Institute of Medicine (2009) revised the gestational weight gain guidelines to reflect in ranges (see Table 1) as it is impracticable to incorporate all demographics such as race and ethnicity that affect pregnancy outcomes.

- Gestational weight gain above and below the IOM guidelines can cause comorbidities of pregnancies; therefore, it is best practice to abide by these guidelines by establishing the obstetrical patient's BMI at the first prenatal visit and to continue to monitor throughout the pregnancy (Daemers, Wijnen, van Limbeek, Budé, & de Vries, 2013).

### **Best Practice and Consistent Themes**

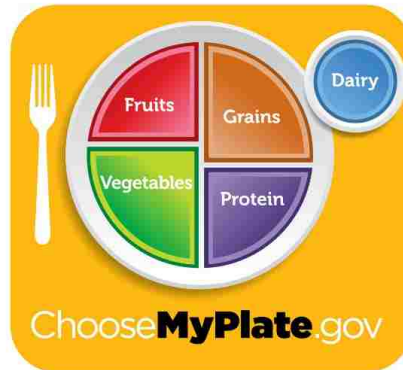
- According to the IOM (2009), the earlier and more frequent maternal nutritional education/intervention occurs, the more effective it is to patients.
- Increased responsiveness of the maternal patient is dependent on much face-to-face advice by the health care provider, including showing them what their targeted weight gain ranges are.
- Consistency is key. Utilizing IOM recommendations as a guideline for gestational weight gain keeps everyone on the same page regarding where each patient should be according to the BMI that is calculated by the electronic medical record.
- Non-modifiable factors once a woman becomes pregnant: low income, history of dieting, overweight or obese patients; modifiable factors: patient knowledge, health care provider's advice (Phelan et al., 2016).

### **Guideline Core**

#### **Specific Nutritional Assessment and Discussion**

- Identify patient's current BMI (current electronic medical record calculates this automatically) to determine appropriate gestational weight gain upon intake and onset of prenatal care.
- Assess psychosocial attitude regarding patient's perception about weight gain during pregnancy employing open-ended techniques.
- Set pregnant patients' weight gain goals according to the individual BMI and document set goals in patients' prenatal record.
- Emphasize small, steady, but healthy dietary changes.
- Refer the patient for a nutritional consult if comorbidities (diabetes, hypertension, heart disease, etc.) or *nutritional risk* present (anemic, twin pregnancy, underweight, preeclampsia, depression) as an outpatient or the Women, Infant, and Children (WIC) program.
- Track the patient's weight and address and discuss their nutritional status on every visit
- Utilize other staff members (i.e., medical assistants) to make sure that the patient has all of the educational materials they need or for further explanations that need follow-up by the health care providers.

## Diet Component



*Figure 2.* Food group portion sizes by Choosemyplate.gov Copyright 2017 by United States Department of Agriculture. Reprinted with permission. See Appendix F.

- Dietary requirements are the same as a non-pregnant individual until second trimester and third trimester, where the extra kilocalories needed are 340 and 452, respectively.
- Advise obstetrical patient to eat small frequent meals and to increase water intake and avoid drinks high in sugar content such as soda.
  - Vegetable examples: carrots, sweet potatoes, squash, spinach, cooked greens (such as kale, collards, turnip greens, and beet greens) and tomatoes (United States Department of Agriculture [USDA], 2017).
  - Fruit: cantaloupe, honeydew melon, bananas, apricots, grapes, strawberries
  - Protein: beans and peas (such as pinto beans, soybeans, white beans, lentils, kidney beans, and chickpeas) pot of beans, nuts, and seeds (such as sunflower seeds, almonds, peanut butter), lean meat, poultry, or fish
  - Grains: rice, bread, pasta
  - Dairy: natural cheeses, low-fat milk, yogurt, and ice cream
- Food safety is paramount in pregnancy since pregnant women are more susceptible to food-borne illness (Widen & Siega-Riz, 2010).
  - Advise obstetrical patient to stay away from consumption of raw meat and fish; wash hands frequently in between handling of raw meats; lunch meats and hot dogs unless reheated to very high temperatures, and unpasteurized milk products such as soft cheeses (feta and brie).
- Refer patient to choosemyplate.gov and select “Adults→Moms/Moms-to-Be” for additional information and resources.

## Physical Activity Information and Recommendations

- The American College of Obstetricians and Gynecologists (ACOG, 2015) supports physical activity during pregnancy unless medically contraindicated, with some modification due to anatomical changes of the obstetric patient (as her center of gravity changes) and necessities of the fetus.



- Regular physical activity facilitates gestational weight gain management and overall physical well-being of the obstetric patient by reducing incidences of gestational diabetes (ACOG, 2015).
- Unless contraindicated, physical activity can be performed up to moderate intensity, up to 150 minutes per week.
  - Advise patient to start slowly and gradually increase duration as tolerated.
  - Types of exercise include swimming, walking, stationary bike, and modified yoga. Activities that should be avoided include a high risk of falling, contact sports, such as horseback riding, skydiving (ACOG, 2015).
- Inform patients to hydrate well and to eat well before engaging in physical activity. Stop immediately if they experience any complications such as vaginal bleeding, regular contractions, leakage of amniotic fluid, dizziness and should discuss with health care provider.
- Contraindications to aerobic exercise may include but are not limited to multiple gestations, preterm contractions, extreme morbid obesity or any other comorbidities and pregnancy complications that the health care provider may deem appropriate (ACOG, 2015).

#### **Considerations for the OB/GYN Clinic**

- Visual resource posters to be displayed in the exam rooms to be used as a point of reference from [ChooseMyPlate.gov](http://ChooseMyPlate.gov)
  - Supplemental educational information may also be downloaded and copied for health care professionals to disseminate to the maternal population.
- Group nutrition counseling by the midlevel providers (CNMs/NPs) for patients that do not meet WIC or nutritional consult (RD) criteria but still have educational needs (Ramussen & Yaktine, 2009).

## References

- American College of Obstetricians and Gynecologists. (2015). *Committee Opinion 650: Physical activity and exercise during pregnancy and the postpartum period*. Retrieved from <http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Physical-Activity-and-Exercise-During-Pregnancy-and-the-Postpartum-Period>
- Daemers, D., Wijnen, H., van Limbeek, E., Budé, L., & de Vries, R. (2013). Patterns of gestational weight gain in healthy, low-risk pregnant women without co-morbidities. *Midwifery, 29*(5), 535-541.
- Duthie, E., Drew, E., & Flynn, K. (2013). Patient-provider communication about gestational weight gain among nulliparous women: a qualitative study of the views of obstetricians and first-time pregnant women. *BMC Pregnancy and Childbirth, 13*(231), 1-9. doi: 10.1186/1471-2393-13-231.
- Phelan, S., Phipps, M., Abrams, B., Darroch, F., Schaffner, A., & Wing, R. (2011). Practitioner advice and gestational weight gain. *Journal of Women's Health, 20*(4), 585-591.
- Ramussen, K., & Yaktine, A. (Eds.). (2009). *Weight gain during pregnancy: Reexamining the guidelines*. Washington, D.C.: The National Academy Press. Retrieved from <http://nap.edu/12584>
- Siege-Riz, A M., Deierlein, A., & Steube, A. (2010). Implementation of the new Institute of Medicine gestational weight gain guidelines. *Journal of Midwifery & Women's Health, 55*(6), 512-519.
- United States Department of Agriculture (USDA). (2017, February). Making healthy choices in each food group. Retrieved from <https://www.choosemyplate.gov/moms-making-healthy-food-choices#>
- Whitaker, K., Wilcox, S., Liu, J., Blair, S., & Pate, R. (2016). Patient and provider perceptions of weight gain, physical activity, and nutritional counseling during pregnancy: A qualitative study. *Women's Health Issues, 26*(1), 116-122.
- Widen, E., & Siega-Riz, A M. (2010). Prenatal nutrition: A practical guide for assessment and counseling. *Journal of Midwifery and Women's Health, 55*(6), 540-549.

Appendix F  
Copyright Permission



## Frequently Asked Questions:



### ChooseMyPlate.gov Permissions for Logos, Icons, Graphics, Website Content, and Website Links

CNPP frequently receives inquiries about MyPlate and USDA logo usage, as well as utilizing and modifying content from ChooseMyPlate.gov. Answers to these questions can be found here. You may consult this document for all permissions-related questions. Permissions to specific requests will not be provided by the USDA or Center for Nutrition Policy and Promotion (CNPP) on an individual basis.

#### Logo, Icons, and Graphics

##### *Am I permitted to use the USDA logo?*

No. Materials developed externally to USDA may not include the USDA logo.

##### *How about adding my logo to a document containing a USDA logo?*

Organizations are not permitted to add a logo to materials or content produced by USDA carrying the USDA logo.

##### *Am I permitted to use the MyPlate icon?*

USDA encourages the use of the MyPlate icon in a variety of applications and settings. However, certain restrictions apply. The image must be used as a whole, including the URL ChooseMyPlate.gov, and must not be altered. A [MyPlate Style Guide](#) demonstrates correct and incorrect uses. Any use may not suggest or imply USDA endorsement of an organization, product, service, or otherwise.

##### *How about using the MyPlate icon on food packaging?*

MyPlate can be used on food packaging to point consumers to [ChooseMyPlate.gov](#) to get more information about what and how much to eat. The MyPlate icon should not be used on food labels in conjunction with what and how much to eat. In addition to the requirements stated above, use on labels/labeling on packaging or at retail sale cannot be misleading. Additional information can be found at ChooseMyPlate.gov in the document, [“Guidance on Use of USDA’s MyPlate and Statements About Amounts of Food Groups Contributed by Foods on Food Product Labels.”](#)

##### *I have a unique need and rationale to alter the image in a specific way. May I have permission to do so?*

No. If you reproduce the MyPlate graphics either electronically or in print, we ask that you use them as originally designed and that they be sourced to the USDA Center for Nutrition Policy and Promotion. With regard to the use of the MyPlate icon in print and other media, guidance is provided in the form of conditions of use and in the MyPlate Style Guide at [ChooseMyPlate.gov](#). If you alter or modify their design you cannot credit, or be associated with, USDA or CNPP. Finally, CNPP will not provide altered images or materials by special request including, but not limited to, other languages, fonts, colors, or highlighting combinations of food groups.

##### *I want to publish the MyPlate graphic in a book and need a written permissions statement.*

You may print the graphic in your publication provided you use the image unaltered and in its entirety per the [MyPlate Style Guide](#). This statement should serve as your written permission.