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UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

BARRIERS AND FACILITATORS TO THE EFFECTIVE MANAGEMENT OF GESTATIONAL DIABETES MELLITUS FOR HISPANIC WOMEN

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of
Masters of Science

Paula F. Clark

College of Natural and Health Sciences
School of Nursing
Family Nurse Practitioner Program

May 2013

This Thesis by: Paula F. Clark

Entitled: *Barriers and Facilitators to the Effective Management of Gestational Diabetes Mellitus in Hispanic Women*

has been approved as meeting the requirement for the Degree of Master of Science in the College of Natural and Health Sciences in the School of Nursing, Family Nurse Practitioner Program

Accepted by the Thesis Committee:

Melissa Henry, Ph.D., FNP, RN, Research Advisor

Karen Hessler, Ph.D., FNP-C, RN, Committee Member

Accepted by the Graduate School

Linda L. Black, Ed.D., LPC
Acting Dean of the Graduate School and International Admissions

ABSTRACT

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Gestational diabetes mellitus (GDM) is an abnormal or unfavorable condition in pregnancy, as well as a life event, that puts a woman and her biological children at an elevated risk for developing a number of negative fetal, neonatal, and maternal outcomes, including the future development type 2 diabetes in both mother and baby. These complications are associated with elevated maternal blood glucose. Diet and exercise alone are often sufficient to control blood glucose and effectively avoid negative outcomes. Yet research has determined that barely 50% of women with gestational diabetes are able to adhere to prudent dietary and exercise GDM recommendations. Hispanic women comprise an ethnic group that is at an elevated risk for developing gestational diabetes. There is a dearth of literature addressing the reasons why Hispanic women struggle to follow GDM guidelines. The purpose of this study was to explore the barriers and facilitators to effectively managing gestational diabetes in everyday life for Hispanic women in an effort to inform the medical community of possible enhancements or changes necessary to GDM recommendations targeted to Hispanic women.

Hispanic women with a first time diagnosis of gestational diabetes were interviewed and allowed to share their own perceptions of their experiences managing GDM. Their actual lived experiences comprise the findings to this study. Common

barriers were: resignation, limited self-efficacy, and lack of understanding gestational diabetes consequences. Three subcategories were discussed which provided insight to the feelings of limited self-efficacy, namely: family, home and job demands, lack of partner support, and difficulty executing GDM dietary and exercise guidelines. Facilitators commonly reported were: understanding GDM risk factors, observations of consequences to type 2 diabetes, support from mother, and dietary education.

Through understanding the lived experiences of Hispanic women in managing gestational diabetes, the medical community will be better prepared to assist them by producing and offering specific and culturally appropriate guidelines. The hope is that these recommendations will result in greater adherence to GDM management guidelines, a reduction in GDM complications and a reduction in the future development of type 2 diabetes in Hispanic mothers and their babies.

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CHAPTER I

INTRODUCTION

Diabetes mellitus is a devastating chronic metabolic disease associated with high levels of blood glucose resulting from defects in insulin production in the pancreas, characteristic of type 1 diabetes, or defects in insulin action in body cells, characteristic of type 2 diabetes (Centers for Disease Control and Prevention (CDC), 2011). Often present in isolation, both abnormal conditions may be present at the same time. Generally speaking, diabetes can be explained as a disorder in glucose metabolism or utilization; glucose is the main fuel source for the body (National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK), 2012).

Most people are familiar with type 1 diabetes and type 2 diabetes but there are several other types of diabetes or abnormal pancreatic syndromes such as: gestational diabetes mellitus (GDM or gestational diabetes), latent autoimmune diabetes in adults, genetic defects of the pancreas, diseases that damage the pancreas, such as pancreatitis, genetic defects caused by insulin action, and diabetes caused by medications or chemicals (NIDDK, 2012). Each of these disease categories represent segments of the population living with the long term struggle of managing a diabetic condition, a substandard quality of life, and the unrelenting possibility of serious complications from diabetes that includes early death. According to the American Diabetes Association (ADA, 2012) even when diabetes is closely and adequately managed, deterioration will eventually develop,

vascular damage will irreversibly result and chronicity will be the fate of those afflicted with it.

According to the *American Diabetes Association* the prevalence of gestational diabetes in the United States is estimated at approximately 7% of all pregnancies, which is more than 200,000 cases annually (ADA, 2012). The rate of gestational diabetes has been increasing since the 1990's and concurrently follows the rise of type 2 diabetes along with increasing prevalence in pre-pregnancy obesity, older female maternity patients and sedentary lifestyle in the general population (ADA, 2012).

The developing fetus is normally protected from low glucose levels by two well-understood biological adaptive mechanisms of pregnancy; decreased pancreatic insulin secretion and increased insulin resistance in the body cells of the mother. Both maintain early gestational energy demands necessary for normal organogenesis and fetal growth and development during gestation. During pregnancy beta cells of the pancreas undergo a diminished response to insulin secretion. Less insulin to manage serum glucose allows for increased available energy to the developing fetus as maternal glucose crosses the placenta (Singh & Rastogi, 2008). Body cells of the mother become less responsive to insulin or insulin resistant. Once again, this slight increase in insulin resistance produces another avenue to ensure adequate energy to the developing fetus (Singh & Rastogi, 2008). These two characteristics, reduced insulin secretion and increased insulin resistance, initially provide a healthy start to pregnancy but may cascade out of beneficial ranges provoking the development of gestational diabetes in women who are already at risk (Singh & Rastogi, 2008). Type 2 diabetes is an ominous future event that requires determination and diligence on the part of the mother to avoid once GDM develops in

pregnancy. Such diligence and focus is worth the effort, given the known and yet unknown dire complications and consequences to health if gestational diabetes is not adequately controlled and healthy effective lifestyle behaviors adopted by the mother (NIDDK, 2012).

According to the American Diabetes Association (2012) women at high risk for developing gestational diabetes are obese (BMI above 30), have had GDM in a previous pregnancy, have glucosuria, have a positive family history of type 2 diabetes, or are from one of the following ethnicities: Hispanic, African, Native American, Native Alaskan, South or East Asian, Pacific Island or indigenous Australian ancestry.

Complications of Gestational Diabetes Mellitus

Gestational diabetes mellitus is an abnormal or unfavorable condition in pregnancy, as well as a life event, that puts a woman and her biological children at elevated risk for developing a number of negative fetal, neonatal, and maternal outcomes, including the future development type 2 diabetes. (Clausen, et.al, 2008; Kim, Newton, & Knopp, 2002). Gestational diabetes usually resolves after the birth of the baby, however, mothers who develop GDM in pregnancy experience a 40-60% chance of developing type 2 diabetes within five to ten years postpartum (NIDDK, 2012). England, et. al (2009) provide evidence that the risk of developing type 2 diabetes after having gestational diabetes is similar to that seen in individuals with glucose levels in the prediabetic range, which is one of the strongest predictors for the development of type 2 diabetes (ADA, 2012). Additionally, recent studies by Clausen et. al (2008) have demonstrated that offspring of women with gestational diabetes and fetuses that develop in a hyperglycemic intrauterine environment have double the risk of developing type 2

diabetes compared to offspring born to women that have a genetic predisposition to the development of type 2 diabetes alone.

Gestational diabetes has been linked to maternal, fetal and infant complications, including fetal anomalies, infant macrosomia, shoulder dystocia, neonatal brachial plexus damage, neonatal clavicle fracture, neonatal hypoglycemia, neonatal respiratory distress, and increased rates of cesarean section births (Kim, et. al, 2010). These findings are supported by findings from Savre, Hansen, & Molsted-Pedersen (2001) that GDM puts the mother and baby at risk for a host of complications that can be serious, these include: macrosomia, pre-eclampsia, shoulder dystocia, neonatal seizures, neonatal hypoglycemia, and respiratory problems at birth.

Krakowiak et. al (2012) conducted a seven year population-based case-control investigation that included approximately one thousand children between ages two and five. The team examined diabetes, hypertension and obesity during pregnancy and concluded that these conditions in pregnancy are later associated with an increased incidence of autism spectrum disorder, developmental delays, or other neurodevelopmental disorders in the offspring of these afflicted mothers compared to children whose mothers did not have one of these abnormal conditions during pregnancy.

Treatment for Gestational Diabetes Mellitus

Women with gestational diabetes who do not adequately control blood glucose during pregnancy can experience serious short-term and long-term consequences for themselves and their babies (ADA, 2012). Women with untreated GDM experienced a 59% increase in measurable adverse outcomes compared to an 18% increase in women

with treated GDM (Langer, Yogev, Most & Xenakis, 2005). Normalizing blood glucose in the presence of GDM effectively reduces the incidence of negative outcomes.

Gestational diabetes management is centered on four interventions: self-monitoring of blood glucose, medical nutrition therapy (MNT), exercise, and insulin therapy (ADA, 2012).

Dietary changes and regular exercise are often sufficient to keep blood sugar under control (ADA, 2008; NIDDK, 2012). If not, insulin therapy is the first-line pharmacological recommended method for improved control of maternal blood glucose (ADA, 2012). This is an issue for gravid females with GDM who are overweight or obese before pregnancy because the addition of insulin promotes the tendency to store maternal fat. Likewise, metformin and glyburide, considered to be safe, are oral agents regularly used and have not been proven teratogenic yet their acceptance remains guarded with need for additional long-range studies (Singh & Rastogi, 2008).

Helping women with gestational diabetes understand what they can do to effectively manage GDM during and after pregnancy to prevent the development of type 2 diabetes is a necessary component of excellent prenatal care. Although women with gestational diabetes may fully understand what is recommended to effectively control blood glucose and manage GDM, what ultimately matters is their ability to follow dietary and exercise recommendations. Dietary and lifestyle changes can be difficult enough in the short term, so to expect women to comfortably embrace behavioral changes for a lifetime in only a few short months during pregnancy is extremely optimistic and probably not very realistic.

Balas-Nakash, Rodríguez-Cano, Muñoz-Marique, Vásquez-Peña, & Peirchart-Perera (2010) conducted a study regarding the adherence to medical nutrition therapy or dietary guidelines of pregnant Mexican women with prior diagnosis of diabetes compared to women with newly developed GDM. In the end, optimal glycemic control was observed in only 50% of the women in both groups. To improve the outcome of adherence to medical nutrition therapy, the researchers suggest combining different measurement methods and to include social and psychological factors that affect behavioral change yet they did not take the study further to inquire of these women what components in their everyday lives prohibited them from more fully adhering to the suggested gestational diabetes MNT.

Stafne, et. al (2012), a group of Norwegian researchers, randomly assigned 885 pregnant women, all in week eighteen or twenty-two of pregnancy, to either a supervised exercise group program or to continue their usual prenatal care. The supervised group exercised as a group once a week and were given an at home exercise program to do twice a week. At the end of the study no difference was observed in either group on the effect of GDM rates. However, Dr. Rita W. Driggers, an obstetrician and director of the maternal-fetal medicine fellowship program at Washington Hospital Center in Washington, D.C. and not affiliated with the study, provided some illumination to these results noting that only fifty-five percent of the women in the supervised exercise group were consistent with the study instructions and reported failed compliance to the routine they were prescribed. Once again the researchers did not conduct further analysis of the reasons for lack of compliance.

A study by Doran & Davis (2010) that included 72 predominately well-educated, Caucasian women demonstrated that all women diagnosed with gestational diabetes were unable to maintain the recommended exercise guidelines to manage their condition, reporting lack of child care, time constraints, and feeling “unwell” as barriers to adherence and family support, enjoyment of activity and a desire to prevent health problems as facilitators. No such study was found among Hispanic women in the United States; a population with one of the highest risks for the development of GDM and later type 2 diabetes (NIDDK, 2012).

Understanding the barriers and facilitators in the Hispanic population is significant to Colorado; the Hispanic population grows annually. According to the US Census Bureau (2010) the population of Colorado was reported to be five million. Of those individuals, 20.7 % identified themselves as Hispanic; compared to 16.3 % of the United States population. Colorado has a large stake in developing and refining effective health strategies for the Hispanic population. Diabetes is arguably the most important health issue and comorbid condition facing the Hispanic population.

Why women fail to follow GDM diet and exercise guidelines during pregnancy is a topic with few answers. There is a virtual dearth of research done on this topic. Through an increased understanding of the barriers and facilitators perceived by women during their pregnancies to follow the dietary and exercise recommendations to manage gestational diabetes, the health care community is better prepared to help these patients manage their condition during this time period and potentially decrease their risk and the risks to their biological children of the many devastating short- and long-term complications associated with this disorder.

Statement of the Problem

Diabetes has become a global endemic condition, affecting the health of millions of people, older and younger adults as well as children, of all nationalities, races and cultures (World Health Organization (WHO), 2012). One of the known risk factors for developing type 2 diabetes in adulthood is the development of gestational diabetes in pregnancy (ADA, 2012). Recent research has unveiled the impact to the children of mothers with gestational diabetes (NIDDK, 2012). These children are at an elevated risk of developing type 2 diabetes throughout their lifetime (England et al., 2009). These children also carry the potential to pass onto their children that same risk (Clausen et al., 2008). Evidence supports the notion to treat all mothers diagnosed with gestational diabetes with specific diet and exercise guidelines (along with insulin therapy when diet and exercise fail to fully manage GDM) (NIDDK, 2012). These guidelines have been shown to decrease the risk to both mother and her baby for developing adverse perinatal complications and the future risk of developing type 2 diabetes (Singh & Rastogi, 2008). While these guidelines are beneficial to these patients, it has become clear that many women are unable to adhere to the diet and exercise regimens prescribed by their providers but we lack a clear understanding of the barriers and facilitators for women to successfully adhere to these recommended guidelines. Of particular importance is the ability of Hispanic women to follow these guidelines, as the rate of GDM among these particular women is higher than in the general population (ADA, 2012). This study asked Hispanic women with a first time diagnosis of gestational diabetes to describe the factors that either hinder or facilitate their ability to apply medical nutrition therapy and exercise interventions during their pregnancies in an effort to provide health care providers with

information that is necessary to better assist women be successful with these programs and guidelines.

Research Question

To better understand the experiences of women diagnosed with gestational diabetes managing their condition, a qualitative description study was proposed. Because there is so little research done in this area, especially within the Hispanic culture, and because this population is at a significant risk for the development of GDM, this study focused on the experiences of Hispanic women with gestational diabetes.

The following research question was posed, focusing on the factors that both enhance and hinder a Hispanic woman's ability to manage gestational diabetes with diet and exercise.

Q1 What are the facilitators and barriers that enhance or impair Hispanic women's ability to follow current gestational diabetes guidelines for diet and exercise in every day life as perceived by Hispanic women who are experiencing gestational diabetes for the first time in their current pregnancy?

Significance to Nursing

According to statistics from NIDDK (2012), 25.8 million people have diabetes; which represents 8.3% of the United States population. Approximately 18.8 million people have a diagnosis while 7.0 million do not yet have a diagnosis. An estimated 79 million Americans over twenty years of age have prediabetes, a condition that greatly increases the risk of developing type 2 diabetes. Gestational diabetes affects 200,000 women in pregnancy each year and a diagnosis of GDM puts woman in the same risk category as prediabetes.

Diabetes is the leading cause of kidney failure, nontraumatic lower-limb amputations and new cases of blindness among adults in the United States. Diabetes is a major cause of heart disease and stroke and is the seventh leading cause of death in the United States. Diabetes affects roughly one third of the population of the United States and is the most influential comorbid complication facing millions of Americans (NIDDK, 2012).

Due to the increased risk of developing type 2 diabetes in women who have experienced GDM in pregnancy, as well the offspring of these women, is it vitally important that health care providers understand the barriers and facilitators to following GDM guidelines as perceived by women with gestational diabetes. Through understanding these barriers and facilitators health care providers will be in a better position to assist women with GDM or with a history of GDM be more successful in following treatment recommendations. Health care providers will also be in a better position to restructure current programs and guidelines to be better suited for these women and thus increase patient compliance in pregnancy to effectively reduce the incidence of fetal and maternal complications in pregnancy, strengthen healthy diet and exercise practices during and after pregnancy, and decrease the development of type 2 diabetes in this population and their offspring over all.

Any and all effective steps to reduce the incidence of fetal and maternal complications related to gestational diabetes or the development of type 2 diabetes is significant to healthcare, and in particular, the world of nursing. Nurses are at the forefront of disease prevention and health promotion and one of the major contributions the discipline makes to the overall outcomes of health is through the prevention of

chronic disease. This study will increase the understanding of how Hispanic women are best able to manage gestational diabetes to prevent type 2 diabetes in the future and will help the health care community to assist these patients manage their manage illness and prevent future complications for both mother and baby.

Theoretical Framework

Rosemary Rizzo Parse's *Humanbecoming Theory* (HBT) contributes to the methods employed in this study to uncover the barriers and facilitators to the effective management of gestational diabetes as perceived by women who have experienced gestational diabetes in pregnancy. The *Humanbecoming Theory* guides nurses in their practice to focus on quality of life as it is described and experienced by the individuals providing voice to the lived experience. The theory focuses on quality of life from each person's own perspective as the goal of nursing practice. It presents an alternative to both the conventional bio-medical approach and the bio-psycho-social-spiritual approach of other nursing theories. (Parse, 1999).

Parse's *Humanbecoming Theory* gives a voice to this Hispanic patient population in order to address the perceived barriers and facilitators for effective management of gestational diabetes. Understanding a Hispanic woman's lived experience of gestational diabetes in pregnancy can provide insight to health care professionals regarding the barriers as well as the facilitators of effective management of gestational diabetes. Through understanding these barriers and facilitators, current GDM guidelines and education can be enhanced to deliver the knowledge, support and motivation necessary for a Hispanic woman and increase the likelihood to follow diet and exercise guidelines

thus reinforcing her personal chance of decreasing the incidence of future development of type 2 diabetes in herself and her child.

According to Rosemary Parse (1999) the concept of *humanbecoming* is a process through which all individuals pass. In her opinion, people change and are changed through their personal interpretations of life situations and that humans are "always with the world of things, ideas, language, unfolding events, and cherished traditions". Humans are always choosing. Persons decide what is important in their lives. They decide how to approach situations and what projects and people to pay attention to. Day-to-day living represents people choosing and acting on their value priorities, and value priorities shift as life unfolds (Mitchell, 2010).

Mitchell (2010) explains that research guided by the *humanbecoming theory* explores universal lived experiences with people as they live them in day-to-day life. Parse postulates that there are universal human experiences and persons experience what was, what is and what will be all at once. Ultimately, this theory explores lived experiences as people live them. In gathering and conducting research, the nurse researcher using the Parse method, invites persons to speak about a particular universal experience.

The *Humanbecoming Theory*, in nursing practice, is considered to be a transformative approach to all levels of nursing and to the patient (International Consortium of Parse Scholars, 2012). This theory differs from the traditional nursing process in that is does not seek to fix problems or intervene unless the patient values and chooses to activate an intervention. When employing the *Humanbecoming Theory* a nurse is able to see the patient's perspective. This allows the nurse to "be with" the patient and

guide them toward healthful outcomes at the patient's pace without pressure to perform until the patient personally assumes responsibility for self. Parse suggests the relationship between nurse and patient cocreates changing health patterns. (Parse, 1999).

As a research method, the *Humanbecoming Theory* enhances understanding of human lived experiences in health, quality of life, and patient's self-perception as well as self-efficacy. By this intimate understanding of individual persons who happen to be patients as well, new nursing knowledge emerges about universal lived experiences that may contribute to health and quality of life (Parse, 1999).

This study sought Hispanic women to inquire about their lived experiences of managing gestational diabetes. Through this focused, individualized and thorough exploration of patient's lived experiences it was expected to uncover previously unknown knowledge that would serve as a catalyst to improve and strengthen or even change current GDM guidelines. The women's words would reveal knowledge that would serve as a template for accurate scrutiny of current guidelines and shed much needed light on how to proceed forward in terms of appropriate care of these and future patients to reduce perinatal complications and the progression to type 2 diabetes after experiencing gestational diabetes in pregnancy.

Summary

Gestational diabetes occurs in at least 200,000 pregnancies annually and the incidence has been increasing yearly since the 1990's in the United States (ADA, 2012). Decreased insulin secretion and increased insulin resistance naturally occurs in pregnancy to allow for adequate energy stores for the developing fetus. (Singh & Rastogi, 2008). Any woman with increased risk factors for the development of gestational diabetes is left

vulnerable. Hispanic women are part of an ethnic group that carries an elevated risk. It is desirable to avert the development of GDM to prevent maternal and neonatal complications however; the threat to maternal and infant well-being does not end once the pregnancy is completed. Mother and child remain at an elevated risk for the development of type 2 diabetes for life; a proposition that is overwhelming and life altering if indeed type 2 diabetes does develop (Clausen et. al, 2008).

Dietary and exercise recommendations are generally sufficient to control and even avoid GDM but historically Hispanic women have had difficulty following these guidelines known to provide protection from the development of gestational diabetes. As the medical community becomes more in sync with the reality of the everyday experience of Hispanic women with GDM, they will be in a better position to provide effective and more culturally targeted recommendations to improve the health of Hispanic women and their children.

CHAPTER II

REVIEW OF LITERATURE

The World Health Organization (2012) estimates that more than 346 million people worldwide have diabetes and this number is likely to more than double by the year 2030 without effective intervention. Diabetes requires daily commitment to prescribed lifestyle guidelines and practices in order to effectively manage blood glucose and avoid further decline or complication (WHO, 2012). The prescribed regimen for effective management is a costly endeavor, which explains in part why almost 80% of diabetes deaths occur in low- and middle-income countries (WHO, 2012).

As recently as January 2011 the CDC reported that approximately 26 million Americans have diabetes and it is estimated that 79 million adults in the United States have prediabetes, a condition known to raise the risk of developing type 2 diabetes, heart disease and stroke. According the National Diabetes Fact Sheet (CDC, 2011) about 27% of those with diabetes, 7 million Americans, are unaware they have the disease.

As reported by the WHO (2012), type 1diabetes occurs equally between males and females and is more common in whites than in non-whites and most often develops in childhood. Interestingly, type 1 diabetes is rare in African, American Indian, and Asian populations; whereas, type 2 diabetes is more common in older populations, in African Americans, in American Indians, and in Asians. Non-modifiable risk factors for the development of diabetes include: age, the ethnicities mentioned above, and family history

of diabetes. Modifiable risk factors include: overweight and obesity, age, sedentary lifestyle, and gestational diabetes.

The development and diagnosis of diabetes is accelerating each year worldwide. In 2010, an estimated 1.9 million Americans were newly diagnosed with diabetes (CDC, 2011). According to Schwarz, Schwarz, Schuppenies, Bornstein, & Schulze (2007) the drastic increase in the incidence of type 2 diabetes worldwide can be attributed to distinct changes in human behavior and lifestyle patterns during the last century that are known to result in metabolic syndrome, a characteristic triad of conditions; hypertension, hyperlipidemia, hyperglycemia. Schwarz, Schwarz, Schuppenies, Bornstein, & Schulze (2007) reported that a phenomenon known as parallel globalization has had a significant impact on our environment as well as our daily habits. These changes have lead to a grand escalation of obesity and diabetes. An increase in the incidence of diabetes has caused a reduction in quality of life and shortened life span with an ever-increasing financial cost to society at large.

Diabetes is the seventh leading cause of death in the United States due to serious complications such as heart attacks, strokes, high blood pressure, kidney failure, blindness, long-term and recurrent infections and amputations of the feet and legs due to impaired circulation to peripheral tissues of upper and lower extremities (CDC, 2011). According to the National Institute of Diabetes and Digestive and Kidney Disease (NIDDK, 2012), diabetes is likely underreported as the under lying cause of death on death certificates. It is difficult to project an accurate estimate of the impact on our national health system. Undoubtedly the financial impact of this disease is critically important to our nation. Those who study this impact modestly estimate the cost of

diabetes to be approximately $174 billion annually, including $116 billion in direct medical expenses from diabetes care such as hospitalizations, medical care, and treatment supplies (NIDDK, 2012). As staggering as these numbers are, they cannot adequately illustrate the reality of the burden of diabetes. The price of human suffering is impossible to measure or compensate over a lifetime.

Gestational Diabetes Mellitus

According to the *American Diabetes Association* the prevalence of GDM in the United States is estimated at approximately 7% of all pregnancies, which is more than 200,000 cases annually (ADA, 2012). Although the vast majority of health professionals agree that poorly controlled gestational diabetes is linked to negative fetal, neonatal and maternal outcomes, the definition of gestational diabetes itself has become a source of disagreement in the medical community. Kim et. al (2010) define GDM "as glucose intolerance leading to hyperglycemia with onset or first recognition during pregnancy". While Kim et. al (2011) provide a similar definition of GDM stating " gestational diabetes is defined as carbohydrate intolerance of variable severity with onset or first recognition during pregnancy". Yet Nolan (2011) postulates:

> With the rapidly increasing prevalence of type 2 diabetes in women of childbearing age, undiagnosed type 2 diabetes in pregnancy is much more common. For this reason, it is time to review the generally accepted definition of gestational diabetes and categorize pre-existing overt diabetes recognized for the first time in pregnancy as such rather than gestational diabetes.

All three definitions contain the basic premise that GDM is not a normal or favorable condition in pregnancy. The development of diabetes at any stage of life is unfavorable and carries with it potential and significant long-term risks (ADA, 2012).

A diagnosis of GDM is confirmed through the results of blood samples performed between twenty-four and twenty-eight weeks of pregnancy (ADA, 2012). The rate of gestational diabetes has been increasing since the 1990's and concurrently follows a rise of type 2 diabetes along with increasing prevalence in pre-pregnancy obesity, older female maternity patients, and sedentary lifestyle in the general population (ADA, 2012).

Slight insulin resistance in body cells of the mother and decreased insulin secretion from mother's beta cells in the pancreas are two beneficial adaptions of pregnancy to ensure the fetus has adequate energy supplies for growth and development. In the second trimester these two adaptive conditions increase while the growth of the fetus escalates. Hormones associated with this adaption in pregnancy are human placental lactogen, progesterone, cortisol growth hormone and prolactin. Thus, the combination of insulin resistance and diminished beta cell secretion during pregnancy results in gestational diabetes in seven out of one hundred gravid women. (Singh & Rastogi, 2008).

Gestational Diabetes Mellitus Complications

Research by Fagen, King, & Erick (1995) reveals that before the institution of aggressive treatment and management of GDM, a 6.4% perinatal mortality rate was typical in women whose condition was unrecognized or untreated. An area of controversy is to which disease state can more risk be attributed in pregnancy; type 2 diabetes recognized for the first time in pregnancy (Nolan's definition of GDM) or the existence of type 1 diabetes before pregnancy. According to the ADA (2012) because gestational

diabetes typically develops later in pregnancy it does not cause the type of birth defects seen in babies whose mothers have diabetes before pregnancy. Yet, Nolan (2011) provides evidence that the outcomes of type 2 diabetes in pregnancy (usually seen as GDM) are at least as bad, and may even be worse, than those of type 1 diabetes.

Gestational diabetes and type 2 diabetes share many common risk factors, such as, overweight and obesity, defined as a BMI greater than or equal to 25 and 30 respectively, Hispanic, African-American, Native-American, Asian, and Pacific Islander ethnicities, a family history of diabetes, and a sedentary life style (ADA, 2012). The rate of GDM has been increasing since the 1990's and concurrently follows a rise in type 2 diabetes along with an increasing prevalence in pre-pregnancy obesity, older female maternity patients, and sedentary lifestyle in the general population.

Gestational diabetes has been linked to maternal, fetal and infant complications, including fetal anomalies, infant macrosomia, shoulder dystocia, neonatal brachial plexus damage, neonatal clavicle fracture, neonatal hypoglycemia, neonatal respiratory distress, and increased rates of cesarean section births (Kim, et. al, 2010). These findings are supported by findings from Savre, Hansen, & Molsted-Pedersen (2001) that GDM puts the mother and baby at risk for a host of complications that can be serious.

These problems arise most often from macrosomia (or "large" baby) due to hyperinsulinemia in the mother. In mothers with GDM, the pancreas works overtime to produce insulin, but insulin resistance prevents the type of effective management of the mother's blood glucose as seen in a non-gravid female. Yet while maternal insulin does not cross the placenta to the baby, glucose and other nutrients do. When excess maternal glucose crosses the placenta, the fetus' glucose levels elevate, which in turn stimulates

the baby's pancreas to secrete insulin in order to use and store the excess glucose. This excess glucose is stored as fat and results in accelerated fetal growth resulting in macrosomia (Singh & Rastogi, 2008).

The results of a study by the Endocrine Society (2012) study suggests that female babies are at an increased risk of cardiovascular disease and diabetes in adulthood. More than 1,000 seventeen-year-old Australian females were included and had been followed since birth. The purpose of the study was to examine whether birth weight and body fat distribution in early childhood was associated with future health risks namely: obesity, insulin resistance, and high blood pressure. The researchers discovered that teen girls with larger waist circumference, higher levels of insulin and triglycerides and lower levels of HDL cholesterol were heavier from birth than other girls. In males birth weight and body fat distribution seemed to have no impact on these same risk factors. Dr. Rae-Chi Huang of the University of Western Australia in Perth observed that the intrauterine environment influences the future cardiac and metabolic health of the fetus and this was particularly true in female babies. When a female was at an elevated risk for obesity or diabetes as an older teen, she often was an obese baby and as early as twelve months. These findings are of interest due to the increasing obesity rate and increasing incidence of gestational diabetes in western nations. We can likely expect an ongoing increase in overweight female babies as a result without efforts to devise more effective GDM recommendations to bring down the incidence of gestational diabetes.

Kim et.al (2011) reported that women who remain glucose intolerant at six to twelve weeks postpartum have an especially high risk of developing type 2 diabetes

within five years and that elevated HbA1c levels during pregnancy predict postpartum diabetes within five years.

Although Kim, Newton, & Knopp (2002) found that ethnicity may take a back seat to hyperglycemia in pregnancy, Singh & Rastogi (2008) remain firm that ethnicity is not to be overlooked. They suggest that it is important to take into account birth weights of babies in prior pregnancies, maternal prepregnancy weight along with ethnicity as a more reliable method to predict development of GDM, and later, type 2 diabetes.

Singh & Rastogi (2008) cite a study by Krishnaveni et.al (2007) that found the incidence of type 2 diabetes (37% verses 2%) and metabolic syndrome (60% versus 26%) was considerably higher in women with previous GDM compared to non-GDM women.

According to MacNeill, Dodds, Hamilton, Armson, & Vensenhoff (2001) it has been confirmed that women who experience gestational diabetes in one or more pregnancies are at an increased risk for developing type 2 diabetes, up to a 30-70% increased risk. England et. al (2009) provide evidence that indicates a history of GDM is associated with an elevated risk of developing type 2 diabetes comparable in magnitude with that of individuals with glucose levels in the prediabetic range. Given this understanding of gestational diabetes it is sensible to view it in the context of pre-diabetes in hopes of finding better methods of reducing the impact of GDM during pregnancy and in post-partum life.

In addition to the increased risk of type 2 diabetes in the mother, gestational diabetes has the potential to exert its effects on the next generation and the subsequent generations. Research by Clausen et.al (2008) demonstrates that the hyperglycemic intrauterine environment appears to be involved in the pathogenesis of type 2 diabetes

and pre-diabetes in adult offspring of primarily Caucasian women with either diet-treated GDM or type 1 diabetes during pregnancy. They provide evidence to support the theory that a fetus exposed to a hyperglycemic environment is programmed to obesity and metabolic syndrome as well as carrying the risk of future of chronic, long-term disease states and inevitably a greater burden to future generations.

Gestational Diabetes Treatment

The principal goal of gestational diabetes diagnosis is to identify mothers at risk for the development of GDM or who have already developed GDM and to then intervene by providing adequate assistance and information to help mothers protect themselves and their babies from experiencing any one of the complications or negative outcomes mentioned already. At the same time, the most pressing and over riding goal of effective GDM management is to prevent or delay the future development of type 2 diabetes in mother and child (ADA, 2012). Kim, Newton, & Knopp (2002) studied nonwhite women with GDM or GDM history and discovered that blood glucose levels were more predictive of development of type 2 diabetes than ethnicity. Women with the highest glucose levels during pregnancy seemed to have the highest future risk of development of type 2 diabetes.

Gestational diabetes management is centered on four interventions: self-monitoring of blood glucose, medical nutrition therapy (MNT), exercise, and insulin therapy (ADA, 2012).

The Diabetes Prevention Program was a 3-year clinical trial that definitively showed type 2 diabetes could be prevented by losing weight and adopting a healthier lifestyle. The program compared lifestyle changes to the drug metformin for preventing

type 2 diabetes. Although metformin also prevented diabetes, lifestyle changes were far more effective than the drug approach; metformin reduced the rate of diabetes by 31%, whereas lifestyle changes reduced the rate by 58% (NIDDK, 2012). Lifestyle changes represented a 50% increase in effectiveness over drug intervention. Findings by Sathyapalan, Mellor, & Atkin (2010) found that waist circumference and body mass index (BMI) are the strongest anthropometric measures associated with development of type 2 diabetes in women with a history of gestational diabetes. Type 2 diabetes develops in 50-75% of obese women with a history of GDM vs <25% of women with GDM who achieve ideal body weight after delivery.

Ferrara et.al (2011) report similar findings after conducting a randomized control study involving the feasibility of a prenatal/postpartum intervention to modify diet and exercise similar to the Diabetes Prevention Program among women with gestational diabetes. Their study indicates that a lifestyle intervention that starts in pregnancy and continues postpartum may prevent pregnancy weight retention and even help overweight women to achieve a healthier weight, one that can reduce the likelihood of the future development of type 2 diabetes. As indicated in the studies already mentioned, women with gestational diabetes who become proactive with effective GDM management, decrease not only risks to themselves but to their offspring as well.

Schwarz, Schwarz, Schuppenies, Bornstein, & Schulze (2007) include in their report, found in Public Health Reports, findings from recent studies that demonstrate how prevention of type 2 diabetes is possible and how lifestyle interventions addressing diet and exercise reduces the risk of progressing from impaired glucose tolerance to diabetes by 47% to 58%, respectively.

Finally, in a randomized trial England et.al (2009) discovered that a lifestyle intervention that produced a 7% weight loss and an increase in physical activity of 150 minutes per week reduced the incidence of type 2 diabetes by 58%. This type of data is encouraging for the health and long-term well-being of women with a history of gestational diabetes and their infants in those mothers who adhere to a diet and exercise intervention as outlined in the studies reported thus far.

Compliance to Gestational Diabetes Mellitus Guidelines

Balas-Nakash, Rodríguez-Cano, Muñoz-Manrique, Vásquez-Peña, & Perichart-Perrra (2010) conducted a study regarding the adherence to medical nutrition therapy of pregnant Mexican women with prior diagnosis of diabetes compared to women with newly developed GDM. Glycemic control was measured using three different methods; adherence and self-perception were measured with a questionnaire and energy intake adequacy with a twenty-four hour food recall. Glycemic control was determined by capillary glucose self-monitoring. Adequate adherence to MNT, measured with a questionnaire, was found to be only fifty-five percent in both groups. Self-perception, also measured by a questionnaire, was found to be higher in women with known diabetes prior to onset of pregnancy. Energy intake adequacy was higher in the GDM group. In the end, optimal glycemic control was observed in only 50% of the women in both groups. To improve the outcome of adherence to medical nutrition therapy, the researchers suggest combining different measurement methods and to include social and psychological factors that affect behavioral change.

Two important components to a gestational diabetes medical nutrition therapy program that seem to a have significant impact on glycemic outcome are the use or non-

use of a low glycemic diet and by whom medical nutrition therapy is delivered to women with GDM.

Ma et. al (2011) set out to explore the effect of different nutrition therapies on abnormal glucose metabolism during pregnancy and pregnancy outcomes. Eighty-three pregnant women were included in the study; one group received and followed gestational diabetes MNT based on a traditional food exchange guideline and the other group received and followed gestational diabetes MNT based on food exchange serving according to glycemic load index. Blood glucose was much easier to control in the group following the food exchange guideline based on the glycemic load index as compared to the group following a traditional food exchange. Both methods of medical nutrition therapy can improve maternal and neonatal outcomes in pregnant women with abnormal glucose it was reported by the researchers. No follow up study was reportedly done that explored how well these women in the low glycemic load group could carry this lifestyle change into postpartum life or with what degree of success. No report was offered regarding how well the participants felt they were able to adhere to the guidelines presented even though they apparently followed through to some extent. This information would add to the strength of including gestational diabetes dietary guidelines based on low glycemic index to women with GDM.

Registered dieticians from the Diabetes Care and Education and the Women's Health and Reproductive Nutrition dietetic practice groups developed GDM dietary guidelines or MNT. To validate these guidelines, a clinical trial was designed that recruited patients to participate in receiving usual care MNT delivered by registered nurses or diabetic practice group MNT delivered by registered dieticians. Differences in

insulin use and other infant outcomes between treatment groups were evaluated. Data from 215 women involved in diabetic practice groups indicated less insulin use and improved hemoglobin A1-C outcomes compared to the women involved in usual care MNT. A significant positive effect was seen for neonatal birth weight. Use of the guidelines by registered dieticians compared to usual care by registered nurses tended to improve outcomes (Reader, Splett, & Gunderson, 2006). Comparison of follow up interviews with each group would have been helpful to determine what components made the difference for better outcomes in the dietetic practice groups.

Recent findings are reported by Ferrera, et. al (2011) from a piloted prenatal and postpartum intervention to modify diet and physical activity akin to the Diabetes Prevention Program. The intervention compared usual care in the form of handouts and routine advice to individualized guidance. The group that participated in individualized care was more successful in reaching pre-pregnancy weight but no differences were observed in physical activity, particularly in the postpartum period, which is considered to be a crucial time to gauge lifestyle change adherence. They concluded that strategies to help postpartum women overcome barriers to increasing physical activity are needed.

Stafne et. al (2012), a group of Norwegian researchers, randomly assigned 885 pregnant women, all in week eighteen or twenty-two of pregnancy, to either a supervised exercise group program or to continue their usual prenatal care. The supervised group exercised as a group once a week and were given an at home exercise program to do twice a week. At the end of the study no difference was observed in either group on the effect of GDM rates.

However, Dr. Rita W. Driggers, an obstetrician and director of the maternal-fetal medicine fellowship program at Washington Hospital Center in Washington, D.C. and not affiliated with the study, made the observation that exercise is a challenge for pregnant women in the same way it is difficult for the general population to adhere to regular exercise. Only fifty-five percent of the women in the supervised exercise group, in fact, were consistent with the study instructions and they reported failed compliance to the routine they were prescribed.

Also noted by Dr. Stafne, head researcher, is the fact that these women were at low risk for the development of gestational diabetes. He suggests that a study focused on overweight and obese women, known to be at greater risk for the development of GDM, might reveal different results. Nevertheless, a key issue in this study is that pregnant women find it difficult to be compliant with exercise guidelines but, once again, we are not given that type of information from the results of this study alone. More in depth study or inquiry needs to be conducted in all women it appears.

Behavior Change

Heightened influences on the development of gestational diabetes in the presence of commonly identified risk factors are now understood. Lifestyle interventions, such as diet and exercise guidelines, are by and large at the forefront of gestational diabetes care and management. When these interventions fail to effectively manage GDM, insulin therapy is the next line intervention for improved management of blood glucose and maternal/fetal care. Likewise, insulin management and administration becomes another task for mother to incorporate into daily life. As seen in the literature review, changes to

lifestyle are difficult for vast numbers of people. The ability to adapt to new diagnoses and circumstances varies among individuals, not to mention the inevitable influence of culture.

According to Schwarzer (2008) the challenges associated with behavioral change make changing habits difficult, especially daily behavioral habits related to health and personal well being, such as poor dietary habits and/or physical inactivity. The best gauge for change is thought, by many theorists, to reside in an individual's sincere intention to promote change in his/her life. Behavior is at the mercy of intention and it is challenging to thoughtfully anticipate the road blocks ahead. When unexpected circumstances develop, intention, even sincere intention, is tested and often beyond an individual's ability to stay firm to a commitment to change. Intention is more likely to remain strong and affective to behavior when other factors of forethought have been identified, such as self-efficacy and strategic planning. He calls this a bridge over the "intention-behavior gap".

Summary

In an effort to bridge the intention-behavior gap and as mentioned earlier, this study will ask Hispanic women with gestational diabetes to describe the factors that either hinder or facilitate their ability to apply currently recommended interventions during their pregnancies in an effort to provide health care providers with information that is necessary to better help women be successful with these programs and guidelines.

Gestational diabetes is a temporary disorder in pregnant women that can exert a lifelong affect on the mother and her baby (ADA, 2012). Effective guidelines have been created to help women avoid the possible complications for themselves and their babies

but it has been shown in numerous studies that women have difficulty adhering to these guidelines (Balas-Nakash, Rodríguez-Cano, Muñoz-Manrique, Vásquez-Peña, & Perichart-Perrra, 2011; Stafne, 2012; Ma et. al, 2011; & Ferrera et. al, 2011). There is a paucity of information about how Hispanic women with a first-time GDM diagnoses manage their illness and what barriers or facilitators exist in their everyday lives to aid them in this task.

CHAPTER III

METHODOLOGY

Gestational diabetes is the end result of two expected occurrences in pregnancy that have proceeded beyond normal therapeutic efficacy meant to provide adequate nourishment for energy demands of the developing fetus; decreased insulin secretion and increased insulin resistance (Singh & Rastogi, 2008). Although this process is anticipated to ensure the well being of the fetus, there are known risk factors that elevate a woman's risk of developing gestational diabetes (NIDDK, 2012). These known risk factors include the following: a) pre-pregnancy overweight or obesity, defined as BMI greater or equal to 25 and 30, respectively, b) Hispanic, African-American, Native American, Native Alaskan, Asian, Pacific Islander ethnicities, c) a family history of diabetes, d) previous gestational diabetes history, e) previous history of macrosomia, defined at or above 4000 grams, f) older gravid age, defined at or above 35 years of age, g) sedentary lifestyle (ADA, 2012).

Diet and exercise interventions are available to assist maternity patients with gestational diabetes to successfully reduce and even avoid hyperglycemic events during pregnancy, an endeavor that is worth the time and effort to influence the reduction of perinatal complications and reduce or avoid all together the future development of type 2 diabetes in mother and child into adulthood (NIDDK, 2012). Yet as seen in the examples provided in the literature, not all mothers with a current diagnosis or history of

gestational diabetes are able to incorporate and follow these guidelines. It is easy to assume that the individual is at fault in this process yet, an understanding of the daily experience of incorporating these current interventions into daily life from the perspective of the Hispanic patient dealing with gestational diabetes would provide beneficial insight to the feasibility in applying such guidelines.

Design

The purpose of this study was to investigate the facilitators and barriers to managing gestational diabetes during pregnancy. To answer this question, a qualitative descriptive study was conducted to explore the lived experiences of Hispanic women diagnosed with GDM for the first time to better understand what facilitates and what hinders, in their everyday lives, their ability to adopt diet and exercise recommendations into their daily routine.

A qualitative descriptive study gathers and analyzes subjective data from qualified participants in an effort to illuminate previously undiscovered truths about the realities of human lived experiences. The qualitative descriptive study approach is especially useful when a subject or human experience has been poorly defined or conceptualized (Polit & Beck, 2008). Because so little is known about the experience of Hispanic women who are attempting to incorporate these lifestyle changes into their daily lives, this methodological approach is proposed to better understand their experiences from their perspective.

Sampling

A purposive sample of Hispanic women was approached who are receiving prenatal care from a state and/or federally funded community clinic and have a first-time

diagnosis of gestational diabetes, could speak, or read in either Spanish or English, and were at least eighteen years old, may be married or single and may be multiparous. For this study it is estimated that at least five to seven women, which is considered an optimal sample size for a descriptive qualitative study, would be needed to reach data saturation (Polit & Beck, 2008).

The researcher was Spanish-speaking and no interpreter was necessary for the interviews. Any materials provided, such as consent forms, were in Spanish or English according to the participant's preference.

Individuals willing to participate in the interview process were awarded a $50-gift card to equitably compensate their time and resources for active participation in a thirty to forty minute interview.

Procedure

All of the maternity patients at Sunrise Community Health in Greeley, Colorado, or in Loveland, Colorado, at WCDPHE in Greeley, Colorado, and at the Salud Family Health Centers in Greeley, Brighton and Fort Collins, Colorado were provided an invitational flyer (Appendix A) informing them of the study and how to participate. When a potential participant voluntarily called the lead student researcher, the interview date, time and location was then arranged with each individual separately. The location for the interview was mutually agreed upon between the volunteer participant and the lead student researcher either at an off-site public location (away from Sunrise Community Health facilities, WCDPHE or Salud Family Health Centers) or at the participant's home. This arrangement was to ensure strict confidentiality from the staff

and other clients at Sunrise Community Health facilities, Salud Family Health Centers and WCDPHE.

Initially, at the beginning of the interview, the researcher read the consent form (see Appendix B) with the participant and allowed time for questions about the study from the potential participant. After all the questions were answered and the participant agreed to participate, they were asked to sign the consent form. The consent from was read aloud in either English or Spanish depending on the participant's preference. A copy of the consent was given to the participant for their keeping. It was emphasized that participation in the study was voluntary and that they could withdraw at any time. Additionally, the participants were assured that their interview transcript would not be shared with anyone and that short segments of their interview may be used in research reports to illustrate a specific theme that emerges, but their names would not be associated with any publication material.

After the participant provided verbal and written consent, they were asked to complete a short demographic questionnaire (in either English or Spanish depending on the participant's preference, see Appendix C) asking questions about the following characteristics: a) age of participant, b) number of children, c) level of education, d) marital status, e) number of previous pregnancies, f) number of weeks gestation in present pregnancy, and g) length of time since receiving GDM diagnosis. The questions administered on this demographic tool were designed to accurately identify and describe the population sample and to verify that each participant was a valid candidate for this study. The questionnaire was linked to the participant's interview by a non-identifying

code that was used on both the questionnaire and interview transcript. The code was determined by asking the participant to answer the following questions: “What is the first letter of your mother’s surname?” and “What is the day of the month in which you were born?”. Because few participants were anticipated for this study, these questions provided enough variability between participants to link the information while providing confidentiality and anonymity in the participant’s responses.

The researcher then conducted a semi-structured interview (see Appendix D) with study participants with the intent to extract information regarding the lived experience of managing gestational diabetes, namely: what elements in every day life were perceived as barriers to adhering to GDM diet and exercise guidelines and what elements in every day life were perceived as facilitators to following GDM diet and exercise guidelines. The interviews lasted approximately thirty to forty minutes.

Only one interview was conducted to ease the burden on participants that would result if repeated or multiple interviews were used. Undoubtedly these participants had physical limitations in terms of stamina related to a current pregnancy with an abnormal metabolic condition and had other children, had extended family responsibilities or work commitments outside the home. All of these conditions were anticipated to affect the participants’ feasible availability.

In a qualitative study the point at which no new information is obtained and redundancy is achieved is considered *data saturation.* As the scope of the research question broadens, the more participants are needed and multiple interviews may be needed due to the variability of data with large samples sizes (Polit & Beck, 2008).

The researcher has been an interpreter for Hispanic women for approximately ten to twelve years in northern Colorado in medical clinics/settings, in the local school district and at local churches. The researcher has never had difficulty establishing a congenial relationship with Hispanic women in this local area. This was an advantage in ensuring reliable and ample data from participants with only one interview.

Two sample questions for this semi-structured interview were:

1) You recently received a diagnosis of gestational diabetes, what does this condition mean to you and your family?
2) With gestational diabetes you were instructed to make some lifestyle changes, can you tell me what some of those changes are?

Research Validity

Validity is defined as the state or quality of being sound, just and well-founded (Reference, com, 2012). This idea equally applies to qualitative or quantitative research. It is incumbent upon the researcher to think in advance of all the possible variables that could pose a threat to the validity of the inferences of the study. Inferences are conclusions arrived at from some degree of probability. The researcher is expected to develop strategies that rule out the plausibility that something other than the presumed cause can explain the observed relationship among the variables (Polit & Beck, 2008).

To demonstrate the validity and rigor of the data derived from a qualitative study, standards for the trustworthiness of qualitative research that parallel the standards of reliability and validity of quantitative research were developed (Lincoln & Guba, 1985). Lincoln & Guba (1985) propose four criteria for establishing the important aspect of trustworthiness in a qualitative study: credibility, dependability, confirmability, and transferability. In these four criteria are found the elements of internal and external validity referred to in quantitative research.

Threats to Credibility

Credibility refers to the degree of confidence in the truth of the data and the interpretations of the data by the researcher. To this end, Lincoln & Guba (1985) identify two concepts that qualitative researchers must keep in mind when conducting research; first, the research must be done in a manner that enhances believability of the findings, and second, steps and activities must be demonstrated that provide credibility to external readers.

In this particular study steps were taken to ensure that participants' experiences were represented in a comprehensive and believable way. This was accomplished by using a audio tape recording of each interview in order to capture participants' own words and allowing all experiences to form the data from which common themes can more fully and naturally emerge. Additionally, the researcher kept a journal throughout the data collection and analysis phases of the study to ensure that her perceptions and experiences were kept separate and not influential to the representation of the participant's experiences.

Threats to Dependability

Dependability refers to the stability or reliability of data over time and in similar if not exact conditions. Lincoln & Guba (1985) frame this criteria point as the dependability question, which is: Would the findings of an inquiry be repeated if it were replicated with the same (or similar) participants in the same (or similar) context? Indeed, they argue that credibility cannot be assured in the absence of dependability.

To ensure dependability, the researcher kept detailed notes throughout the data collection and analysis phases of the study to ensure that all decisions and perceptions

about the process were clear and reproducible. This included keeping a detailed log about the decisions made for coding and identification of themes within the data as well as all processes employed for data collection, organization and retrieval.

As each participant was interviewed, dependability was demonstrated in this study because the same participants were allowed to review their comments regarding the lived experience of managing GDM and the researcher asked for clarification on any comment from each participant.

Threats to Confirmability

Lincoln & Guba (1985) refer to confirmability as the potential for congruence between two or more independent people about the data's accuracy, relevance or meaning. Beyond that, confirmability is about establishing the accurate interpretation of the information shared by participants. It is necessary to demonstrate that the data reported is not the ideas, values or biases of the researcher or inquirer.

In this study, the student researcher conducting the interviews of Hispanic women who currently have a diagnosis of GDM, was a Spanish speaker but was not a native Spanish speaker. As such, during the interview if there were any words or meanings that the researcher does not understand, she asked for clarification of the information provided. The researcher also took notes throughout the interviews (in addition to the audio recording) that were reviewed with the participant before the end of the interview to confirm and clarify their comments regarding the live experience of managing GDM.

Threats to Transferability

Transferability is the quality to which the findings can be transferred to or have applicability in other settings or groups (Lincoln & Guba, 1985). This criterion is similar

in scope to the idea of external validity from quantitative research. External validity is the degree to which study results can be generalized to settings or samples other than the one studied (Polit & Beck, 2008).

It was predicted that the data generated by this study would be transferable to other Hispanic women who are attempting to manage diet and exercise recommendations with a diagnosis of gestational diabetes. The results of this study may provide insight into the experiences of Hispanic women who experience other diagnoses that require significant lifestyle modification, but it may not explain the whole story as it is postulated that women experience different physical and psychological barriers during pregnancy than at other times. Additionally, the experiences of Hispanic women may be very different from women of other cultures, and so data may or may not transfer to other women who develop GDM. Understanding the experiences of Hispanic women newly diagnosed with gestational diabetes will be beneficial to health care providers treating women with this disorder and to Hispanic women who may identify with the experiences that are shared by women in this study. These findings may provide incentive or a different perspective for these women who may be encountering similar experiences.

Ethical Considerations and Protection of Human Subjects

On January 3, 2013 approval was granted by the UNC Institutional Review Board to proceed forward with this study and a letter (see Appendix E) was sent to the student researcher informing her of this approval. On February 27, 2013 an extension to the original approval was granted when permission was requested to include two additional facilities and an additional approval letter (see Appendix E) was sent to the student researcher.

Ethical considerations had been considered for regarding the execution of this study in the following areas: a) confidentiality, b) anonymity, c) coercion, and d) location.

Confidentiality was safeguarded through several means. No identifying information was obtained on the participants' demographic questionnaire and only a unique code that was generated by the participant and used by the researcher to organize and link demographics and interview data. Additionally, the individuals at the agencies that issued the invitational flyer to recruit participants did not know who was participating in the study because the participants were invited to contact the researcher independently. The interviews were conducted in a public setting, apart from where the participant received prenatal services and was determined by the participant and the student researcher or at the participant's place of residence. Finally, all files were kept secure and accessible to only the primary investigator and student researcher.

During the consent procedure for the study, the participants were assured that their identity would not be linked to their personal story in any way due to a uniquely coded identifier and that all material would eventually be de-identified. Absolutely no names, birthdates or any other type of recognizable identifier would be linked to the interview data and participants would be informed, reassured and guaranteed of this before the interview begins.

No type of coercion was anticipated, as the researcher did not personally recruit participants; rather, participants were invited to participate in this study via a flyer given to potential participants by facility staff personal during routine prenatal appointments.

Participants, who were interested in participating, could voluntarily contact the student researcher to volunteer and sign up for this opportunity.

Before the interview began, an explanation was provided to each participant regarding the participant's physical and emotional comfort during the interview process. It was explained that if at any time the participant became emotionally or physically uncomfortable or experiences any anxiety, said participant was completely free to terminate the interview, without further explanation or reason, and exit the location to either return home or to take a break before resuming the interview.

Summary

Polit & Beck (2008, p. 199) remark:

> The world is complex, and many variables are interrelated in complicated ways. When studying a particular problem within the positivist paradigm, it is difficult to examine this complexity directly; researchers must usually analyze a couple of relationships at a time and put pieces together like a jigsaw puzzle. *That is why even modest studies can make contributions to knowledge* (p. 199).

This researcher echoes this idea. The question posed from which this research study has been developed is to better understand the experiences of women diagnosed with gestational diabetes in managing their condition and a qualitative description study is proposed. Because there are so many risks to baby and mother in the presence of GDM, so little research done in this area, especially within the Hispanic culture, and

because this population is at a significant risk for the development of GDM, this study focused on the experiences of Hispanic women with gestational diabetes.

CHAPTER IV

ANALYSIS

Two qualified individuals volunteered to participate in this research study. Although the sample size was smaller than anticipated, valuable information surfaced from these women who willingly and freely shared their experiences dealing with gestational diabetes for the first time in a pregnancy. Each woman spoke of her individual circumstances and experiences. Although there were some items unique to each woman, similar themes emerged illustrating some of the barriers and facilitators to effectively managing gestational diabetes in Hispanic women.

The first participant, participant A, was an overweight, thirty-six year-old Hispanic woman living in northern Colorado and has a first-time diagnosis of GDM. At the time of the interview, she was in her twentieth week of gestation. She had four living children and this pregnancy would result in her fifth child. Her diagnosis of gestational diabetes had been made just a few weeks earlier than when the interview actually took place. She had been considered borderline GDM in her last pregnancy thus, she was provided with a glucose tolerance test early in her current pregnancy. The routine screening time in pregnancy for GDM is between 24-28 weeks gestation. This participant's four children were from the relationship with her former spouse. Her current partner was the biological father of the child she was carrying. By choice, she was unemployed, in a committed relationship with her current partner, was the principal care

giver of her children and home, shared limited custody with her former spouse, did not plan to go back to work after the birth of her baby, and had a high school education.

The second participant, participant B, was a small, normal weight, twenty-four year old Hispanic woman living in northern Colorado and had a first-time diagnosis of gestational diabetes. At the time of the interview, she was in her twentieth-sixth week of gestation. She had two living children and this pregnancy would result in her third child. Because she was borderline GDM in her last pregnancy she was provided with a glucose tolerance test at 11 weeks gestation and was diagnosed at that time with GDM. Her two living children were from a former partner and her current pregnancy was from the relationship with her current partner. She was employed full-time, had a GED transcript, was responsible for the majority of the housework and child care, did not have shared custody with former partner, and planned to return to work after her baby was born.

Barriers

After reviewing the transcripts from these two participants, similar ideas emerged. Analysis revealed common reported barriers to successful and effective long-term management of gestational diabetes that involved the following categories: a) resignation, b) limited self-efficacy, and c) lack of understanding of the consequences of gestational diabetes.

Resignation

The most revealing piece of information to emerge from these interviews was the feelings of resignation on the part of each woman toward the diagnosis of gestational diabetes. Interestingly, that attitude also extended to the development of type 2 diabetes. Both participants reported GDM history in their own biological mothers and in other

family members, along with an immediate and extended family history of type 2 diabetes. Each spoke of friends, co-workers and other acquaintances with GDM presently or in the past. Gestational diabetes and type 2 diabetes touched them in their everyday lives in a very personal way. According to the CDC (2011) the risk of developing type 2 diabetes in the Hispanic population is 66% higher compared to non-Hispanic white adults and 87% higher for Mexican-Americans. Especially noteworthy is that according to the ADA (2012) pregnant Mexican-American women are at least 3 times more likely to develop GDM that non-Hispanic white Americans. Gestational diabetes is nothing short of endemic to the Hispanic population in a similar manner that the common cold is ever present to the human family at large. Participant B was unnerved as she explained the development and diagnosis of GDM saying,

> "I expected it now or later because a lot in my family have it....are diabetic. So I have been around it my whole life, so it was expected….

Participant A is 14 years older than participant B and her maturity was evident. She knows her history and looks ahead to a lifelong battle against the development as a result of having gestational diabetes acknowledging that,

> "I think its in our genetics too but I try, you know….."

Each one related negative outcomes and grave complications observed in their own family members with a sense of helplessness. It became apparent that these women observe gestational diabetes and type 2 diabetes as endemic conditions of the Hispanic population and unfortunately with a sense of resignation. This may provide some explanation to the limited self-efficacy expressed by each participant.

Limited Self-efficacy

Author Kendra Cherry (2103) summarizes Bandura's Social Learning Theory and defines self-efficacy as the belief in one's capabilities to organize and execute the courses of action to manage prospective situations. He refers to the belief in self as a gauge of how individuals think, behave and feel. According to his theory, people with weak self-efficacy believe that difficult tasks and situations are beyond their capabilities and that they quickly lose confidence in personal abilities.

Each woman was able to name obstacles in daily life that made GDM difficult to manage amplifying the belief or perception in limited self-efficacy. Each described the daily task of managing gestational diabetes as "hard" many times. Those obstacles could be summed up in three subcategories: 1) family, home and job demands, 2) lack of partner support, and 3) difficulty executing GDM dietary and exercise guidelines in everyday life.

Family, Home and Job Demands. Shortly into each interview it became apparent that one of the major obstacles was the demands of home and family. These demands often take absolute center stage in a woman's life making self-sacrifice the only imagined alternative. Participant A explained her dilemma saying,

> "Its hard to raise kids and that is when you don't take care of yourself. We don't take care of ourselves because of a job or kids or bills or other things that cause stress……I have changed now in my life because I used to do more exercise, its not that I don't want to but it has to do with my kids. It's just caring for the kids, my schedule. I had to leave my job. I worked for six months and I didn't have the support from my partner, you know, picking up the kids, making sure they eat right. I worked eight hours, and I would not take care of myself and then I arrived home, tired, and hurried. I would just go by McDonald's to kill hunger. If one eats at home and has time to cook, you can eat better. This is the problem with Hispanics……the routine we have, does not help and without help from your partner its hard."

Participant B was succinct in her response to the daily demands of family and the demands were similar but she also works full-time. Her job was another obstacle that limited her self-efficacy to manage GDM. When she came home from work, she then had other work to do such as childcare and housework. There was very little or no time for exercise or meal preparation. Nor was there much energy left when the childcare and housework finished for the day. The day of her interview was a Saturday, a day off from her full-time job. While we talked she sat and folded clothes. She was on medical bed rest for the weekend yet she was up dressed and walking up and down the stairs of her basement apartment. She noted the following about her family demands,

> (*interviewer: How do you keep from being overwhelmed?):*
>
> "I don't! It's harder because I have two other children and its hard……I chase them around a lot."

The demands of her job were not physically demanding. She had a sit down job. But the work environment did not allow for appropriate management of blood sugars. She explained,

> "I think the hardest thing is checking your sugar. That's why I don't do it more, I forget. I have my little thing. I carry my machine with me everywhere but I always forget. Like I'm supposed to check it one hour before lunch but I don't know when I am going to be able to get off the phone……."
>
> *(interviewer: So your job gets in the way?):*
>
> "A little, yea. I think its usually not too bad (blood sugar) but I can't arrange my time to take it. I never know how long I will be on the phone. I could get a call right before lunch and not go to lunch and not get off the phone for an hour. We can't get off the phone until we are completely done with the call."

Lack of Partner Support. Lack of partner support was another barrier to self-efficacy reported as standing in the way of effective GDM management by each

participant. Lack of support from partner was an especially challenging obstacle for participant A. She seemed to feel alone as she referred to this journey and her partner's lack of support. She related her feelings about the task of caring for self and the aloneness she is experiencing. She had difficulty imagining herself as capable and it is evident in her words,

> "It is a burden to me to know I have to the responsibility to care for myself and for my baby now…….my partner doesn't really get involved in that. He doesn't get involved in it [gestational diabetes] really. I just take care of it. He doesn't really understand it….what it is…..what is hard for a Latino woman is when you don't have the support of your husband or partner…….what is helpful to the Hispanic people…..is to have an orientation with my partner and my kids, the whole family, so they know who important it is (GDM)."

She spoke directly to the need for direct support as a way to experience greater success in managing dietary issues,

> "So its hard when you have that disease because if you don't have nobody's support its harder on you or its like you need somebody there to support saying, "Let's do some changes….".

Difficulty Executing Dietary and Exercise Gestational Diabetes Mellitus Guidelines. Each woman was asked about the lifestyle changes they were asked to incorporate to effectively manage gestational diabetes. The dietary education recommended a diet comprised of vegetables, fruits, lean meats and proteins, low-fat or non-fat dairy products, and the elimination of sugary drinks. This type of diet was not typical for either woman. Each one expressed difficulty in adhering to these recommendations. Each woman reported her greatest source of GDM dietary guidance was from her own mother. Participant A had met with a dietician in conjunction with a few prenatal visits but participant B had never met with a dietician. She received all her dietary instruction from her mother exclusively.

Participant B was accustomed to eating fast food and drinking soda daily. Her two favorite food items: soda and white potatoes, consumed daily, were not on the list of recommended food items and this had been a complete change for her. She continued to drink soda and described her struggle stating,

> "I know how I eat and I would have to change how I eat and that worried me. Like I ate a lot of junk food, fast food, like a lot of Mexican food isn't healthy. Well, it can be but not very often. But I knew I would have to cut out the pop, that kind of stuff and I knew it was gonna be hard…..when I found out I was pregnant I started drinking the little cans of pop. If I drink pop its Sprite, not caffeinated…..Sprite is supposed to be better for you. The food is the hardest. They told me not to have too many tortillas and potatoes. That's hard! I used to eat potatoes every morning so that was really hard. I have potatoes with everything. It is hard."

Participant A had a better understanding of GDM dietary guidelines but putting them into daily practice was difficult. She described her efforts saying,

> "It's hard to make a healthy meal for my kids with vegetables. I know vegetables are healthy for my kids but it takes a lot of time to prepare vegetables….the food is very expensive and that makes it harder."

She understood the message about including vegetables but at the same time she was not fully convinced of the soundness of GDM dietary guidelines. She was concerned that if she followed GDM guidelines more closely that she was given "the baby might not get sufficient food".

When asked what type of things the medical community could do to be more beneficial to Hispanic women with gestational diabetes, participant A offered the following,

> "But if you guys would ask what is helpful to the Hispanic people, its like teach us how to cook. To have an orientation with my partner and my kids, so they know how important it is (GDM). Include the family a little more."

Neither woman was performing any type of exercise on a regular basis. An understanding of why it was important was not well understood nor what actually comprised exercise activities appropriate for a woman with gestational diabetes.

Participant B reported the following as exercise in her day when asked if she did any type of regular exercise,

> "Well not right now but I work so I walk from the parking lot to the building. I am sitting all day but for my break I have to walk to the break room and the building is pretty big and I have to walk up the stairs……..I have two children…..that's my exercise too. I chase them around a lot."

As mentioned earlier participant A felt her family schedule did not allow time for self-care and that included regular exercise. She explained it saying,

> "I used to do more exercise, its not that I don't want to but it has to do with my kids. Its just caring for the kids, my schedule."

During a prenatal visit she was told that exercise was important but was not clear as to why it was important telling the interviewer:

> "They said I could walk, its very important because I think the blood sugar helps the exercise as well. They said not to gain too much weight because I think you gain more weight if you're diabetic."

Lack of Understanding of the Consequences of Gestational Diabetes Mellitus

When each woman was asked about the type of consequences they or their babies might encounter due to gestational diabetes, they both talked about large for gestational age babies. No other consequences were mentioned such as: birth defects, shoulder dystocia leading to clavicle fracture or brachial plexus damage, hypoglycemia in the neonatal, respiratory problems in neonatal, and greater risk of the development of type 2 diabetes in mother in the future.

However, participant A reported she had been told at prenatal visit that her baby would carry an elevated risk of developing type 2 diabetes and that surprised her. But when she first found out she had gestational diabetes she explained her reaction and said,

> "I got kinda scared because I know there are a lot of consequences with the baby, risks, like it could affect it, how big it could grow and how it is not going to be able to develop inside, like his or her organs…….babies don't develop like they need because they don't have that much space in the uterus. I thought having a big baby was a good thing. "

Participant B had a very limited understanding of any consequences related to gestational diabetes and only could think of the following,

> "The main thing I have heard is that the baby can get bigger but I don't know if that will happen."

Facilitators

The participants reported four facilitators in everyday life that assisted them in managing gestational diabetes. Common reported facilitators to successful and effective long-term management of GDM involve the following: a) understanding of GDM risk factors, b) observation and testimonials of consequences of type 2 diabetes, c) support from mother, and d) dietary education. The last two facilitators were weak facilitators with limited usefulness.

Understanding of Gestational Diabetes Mellitus Risk Factors

According to the ADA (2012) gestational diabetes and type 2 diabetes share many common risk factors, such as, overweight and obesity, defined as a BMI greater than or equal to 25 and 30 respectively, Hispanic, African-American, Native-American, Asian, and Pacific Islander ethnicities, a family history of diabetes, and a sedentary life style. As was mentioned already, according to the CDC (2011) the risk of developing T2DM in the

Hispanic population is 66% higher compared to non-Hispanic white adults and 87% higher for Mexican-Americans. Especially noteworthy is that according to the ADA (2012) pregnant Mexican-American women are at least 3 times more likely to develop GDM that non-Hispanic white Americans. Each woman reported an understanding of her elevated risk of developing GDM by virtue of maternal family history of GDM, Hispanic ethnicity, and family history of type 2 diabetes.

Participant A was aware of risk associated with her ethnicity from type 2 diabetes and gestational diabetes saying,

> "I think it's in our genetics too, but I try, you know?" adding, "I think if Hispanic women are better educated there will be less of a risk for these problems and for the family problems as well."

Participant B knew about her elevated risk of developing gestational diabetes and even type 2 diabetes noted,

> "I expected it now or later because a lot in my family has it [type 2 diabetes]…are diabetic."

She observed her mother battle GDM adding,

> "I was expecting medicine because my mom has to take medicine with my little brother. I was 16 when she had my brother and I remember her taking medicine."

Observation of Consequences of Type 2 Diabetes Mellitus

Each woman acknowledged her elevated risk of developing gestational diabetes but that knowledge did not appear to be a driving influence to the adherence to GDM guidelines. The actual diagnosis of GDM was not reported to engender much personal action to manage GDM or in other words, diagnosis of gestational diabetes was not the catalyst that evoked any of the self-care toward effective management of gestational diabetes that either woman reported. What seemed to make an impression that lead to

action was first hand observation of the negative effects of mismanaged type 2 diabetes in close family members. Each woman was quick to extrapolate or correlate these negative experiences with type 2 diabetes in other family members to her current condition and thereby her and/or her baby's future.

When participant A was asked about her reaction to receiving a GDM diagnosis she quickly began relating her mother's experience with type 2 diabetes saying, "I see that she has been through a lot. She is always tired, um, she is now going to take insulin."

She recounted an experience her grandmother had that left a lasting impression on her,

> "I am scared because my grandma died of that. Before she died she had cataracts and they damaged her eyes so she got blind. I guess she tried to cut one of her nails or somebody did and it kinda cut her little skin and she got an infection up he arm and then she lost part of her arm. So I know it is a very dangerous illness or disease for Hispanic people, even for a pregnant woman."

Participant A felt sad as she witnessed her mother and grandmother suffering the effects of poorly controlled type 2 diabetes. The images of her mother and grandmother's physical suffering from type 2 diabetes seemed to serve as daily reminder to her of what her own future might be. She told me her goal was to,

> "…have my baby, exercise….watch what I eat, change my lifestyle a little. I have made changes not just for me but for my kids too because they are overweight."

Participant B watched her own grandfather suffer many advanced health problems related to the poor management of type 2 diabetes. As she talked about her grandfather, it was evident that she was frustrated with him because it was upsetting to see his suffering. She explained what she saw and what she felt her grandfather should be doing,

> "….like my grandpa does not take care of himself at all, he doesn't take his medicine or check his blood sugars. He used to be so active but now his legs are messed up, his blood pressure is bad. It affects everything!"

Support from Mother

Both women stated that their biggest support in managing gestational diabetes is their mother. Partner involvement was lacking, either from a lack of understanding or some other reason, for each woman. Participant A spoke of a mutually supportive relationship, sharing recipes, and helping each other keep on track noting,

> "She tells me how she feels now and she helps me try to remember to care for myself. She supports me and I support her. I talk to my mom everyday… we share recipes."

Such a daily support was important to participant A. She mentioned the lack of support from her partner many times as a hindrance to gestational diabetes management. Her mother played a key part in helping her by offering morale and encouragement daily.

Participant B also had a supportive relationship with her mother, who lives close by, and looked to her mother for advice noting,

> "…she is the one who met with a dietician and she kinda helps me with it."

Dietary Education

Each woman talked about the need to make some diet changes in order to manage GDM well and as a way to minimize complications to baby. Neither woman knew of the elevated risk to mom of developing type 2 diabetes in the future from having gestational diabetes presently. Both were concerned about their baby yet were unclear of the problems that could potentially occur with the baby. Nevertheless, each one reported some effort to follow GDM guidelines, as they understood those recommendations.

Participant A reported meeting with a dietician saying,

> "They told me certain foods but watch what I eat, they gave me a little chart, that showed you what kinds of foods to include in my eating, like if you eat fruit then eat beef too, drink low fat milk or non fat milk, avoid sweet drinks, only drink them once in a while or just drink water. When I drink juice I put in half juice and half water of if I drink pop I just get the zero calorie because that's what they told us we need to do."

She listed the changes she had tried to make after a meeting with the dietician and what she had been able to put into practice noting,

> "In the morning I get up and I have some cereal or some fruit…I don't eat as much as I did before. I eat until I am satisfied, not full, not as much as before. I control how much I eat now. If I am hungry, I drink a glass of water or have some fruit or if I am really hungry I have something that will fill me up a little more until the next meal. I eat more grains. I eat more wheat bread instead of white bread. So there are a lot of changes I have made."

It seemed as though she listened well at her appointment with the dietician and she was feeling some degree of success as a result. She spoke about these changes in a manner to indicate she had gained understanding of the importance of continuing with these recommendations even after pregnancy stating,

> "My goal now is when I have my baby, do exercise, take all my kids and watch what I eat, change my lifestyle a little even…..take care of myself and my kids."

Participant B also had experienced some success with following the GDM dietary guidelines, especially when talking about her soda consumption saying,

> "…when I found out I was pregnant I started drinking the little cans of pop….I try to cut down that way and feel I am still having a pop but its half of what I might have been drinking before. I try not to eat lot of candy or as much candy."

Before her diagnosis of GDM, participant B had never read a food label or paid attention to the amount of carbohydrates in soda but now she was looking and reported,

> "I was surprised when I looked at the Sprite……there's not that big of a difference in all the pops (regarding sugar)."

Family gatherings can be difficult due to all the special foods that are high in carbohydrates. Participant B reported a strategy that she was using as a way to keep her GDM in control,

> "I still eat what I want but I try to balance it out so I can have a little of everything and not just eat junk……its all just balance. Its okay to do it sometimes but not every day. You might think, "I did good yesterday so I can pig out today". No you can't do that. If its been a while I can have something extra but not a lot."

In summary, Hispanic women in this study reported barriers to effective GDM management as: resignation, limited self-efficacy, and difficulty executing recommended dietary and exercise guidelines. Facilitators were recorded as: understanding the consequences of gestational diabetes, observation of the consequences of type 2 diabetes, support from mother and dietary education. The discussion regarding barriers was a more involved and lengthy discussion than facilitators in the interviews with the volunteer participants of this study. Barriers seemed to stand out more in their minds than the facilitators in everyday life during the ongoing management of GDM. Discussions regarding facilitators were less detailed and were not reported as strong influences but were positive nonetheless.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The medical community is already aware that the energy demands from a growing and developing fetus are supplied in response to the hormonal messages of pregnancy and the physiologic adjustments necessary for a healthy pregnancy must include protection for the fetus from a hypoglycemic environment (ADA, 2008). This is accomplished as the beta cells of the mother's pancreas undergo a diminished response to insulin secretion. In addition, her body cells become less responsive to insulin or insulin resistant. These two mechanisms ensure adequate energy supplies for the growing and developing fetus and initially provide a healthfully robust start to pregnancy (Singh & Rastogi, 2008). However, women already at risk for developing GDM are rendered even more vulnerable to its development than women with no or low risk factors as a result of the natural physiologic hyperglycemic state of pregnancy.

Dietary changes and exercise are often sufficient to keep blood sugar under control. Evidence supports the notion to treat all mothers diagnosed with GDM with specific diet and exercise guidelines (NIDDK, 2012). These guidelines have been shown to decrease the risk to both mother and baby for developing adverse potential complications due to gestational diabetes and the future risk of developing type 2 diabetes (Singh & Rastogi, 2008).

According to Balas-Nakash, Rodríguez-Cano, Muñoz-Manrique, Vásquez-Peña & Perichart-Perera (2010) 50% of Hispanic women report non-adherence to recommended dietary guidelines. These researchers did not take their study further to inquire of these women what components in their everyday lives prohibited them from fully adhering to GDM recommendations.

The same dismal results, about 50% adherence, to GDM exercise guidelines were reported by Stafne, et. al (2012) and Doran & Davis (2010). These studies were conducted on non-Hispanic women. No such study was found among Hispanic women in the United States; a population with one of the highest risks for the development of gestational diabetes and later type 2 diabetes (NIDDK, 2011). It is likely that the results would be parallel and is a potential area of further study. Without doubt further studies could be very informative and helpful for medical providers of Hispanic women as well as an avenue to provide the insight necessary to strengthen and enhance GDM guidelines in a culturally sensitive and specific manner for the benefit of Hispanic women with gestational diabetes.

Due to the short-term complications of gestational diabetes to mother and baby, life-long risk of development of type 2 diabetes and the affect on future generations, (Clausen, et.al, 2008) the barriers and facilitators to comply with GDM dietary and exercise guidelines in Hispanic women was the focus of this study. There is a virtual dearth of research done on this topic. New information emerged relative to the subject of this study that is specific to the Hispanic culture and lived experience of the Hispanic woman managing recommended GDM dietary and exercise guidelines.

The data gathered in this study regarding barriers to effective management of gestational diabetes support some of the published literature although such literature is scarce. Recently, Carolan, Gill & Steele (2012) conducted a similar study on socially deprived (immigrants of mixed ethnicities) women to ferret out what inhibited their participants to self-management of GDM. The findings from that study uncovered five areas related to inhibition of self-management in their sample population: 1) time pressures, 2) physical constraints, 3) social constraints, 4) limited comprehension of requirements, and 5) insulin as easier option.

Both the Hispanic women and mixed ethnic immigrant women reported that the demands of family, home, and employment left them with little, and usually, no time for self-care to effectively manage gestational diabetes. The traditional role of caregiver was likely adopted by all of these women in daily life in both groups; it was exclusively so in the Hispanic group. Both Hispanic participants reported how “hard” managing gestational diabetes was to accomplish when family, home and job demands took up the majority of their day, time and mental focus.

Lack of partner support was a barrier born from a partner’s lack of awareness and understanding of gestational diabetes for the Hispanic women yet immigrant women reported partner support as a facilitator. The reasons for these completely differing views of partner support was not well understood but is a potential area for new study and information gathering.

Hispanic women in this study felt lack of partner support was a barrier to their well-being and self-management of GDM. One participant from the Hispanic group made a thoughtful recommendation to include all of the family in gestational diabetes

management education and how such an intervention would be a new and fresh approach to improve effective management of gestational diabetes in Hispanic women. This might be an intervention that could potentially improve the success rate of effective GDM management in Hispanic women.

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Difficulty executing the recommended GDM dietary and exercise guidelines was problematic for the women in this study and a parallel complaint was made in the study from Carolan, Gill& Steele (2012) whose participants reported as limited comprehension of requirements and a view that insulin was an easier option to daily adherence to what feels like complicated guidelines. Neither the participants in our study or the study by Carolan et. al (2012) had complete success with implementing GDM self-management recommendations and struggled with keeping all the details of gestational diabetes management in check to varying extents on a daily basis.

The complexity of life demands posed a great threat to Hispanic women in managing gestational diabetes but the same could be said of all families in all ethnicities here in the United States. Life is busy and family life demands require an enormous amount of emotional and physical care time, most often for the mother of a family. The immigrant group from the Carolan (2012) study characterized this barrier as time pressures and referred to it as an inhibition to self-management. This seems a commonly lived experience to many groups in our society, perceived lack of time for appropriate self-care and this is highlighted in this study as one more issue leading to limited self-efficacy for Hispanic women.

New information derived from this study was revealed as a sense of resignation to the development of gestational diabetes and eventually type 2 diabetes. The feeling of resignation was embedded in each participant as a result of the high incidence of familial GDM and type 2 diabetes. It was as if gestational diabetes and type 2 diabetes had become an expected or endemic condition rather than an abnormal event. This view of resignation seemed to directly lead to limited self-efficacy in managing GDM and

encompassed the following subcategories: family, home and job demands, lack of partner support, and difficulty executing dietary and exercise guidelines.

Author Kendra Cherry (2103) explains that Bandura describes self-efficacy to be the belief in one's capabilities to organize and execute the courses of action to manage prospective situations. According to his theory, people with weak self-efficacy believe that difficult tasks and situations are beyond their capabilities and that they quickly lose confidence in personal abilities. Self-confidence in controlling their future via effective GDM management was an idea that eluded Hispanic women in this study.

The study that involved socially deprived individuals or immigrants (Carolan, et. al, 2012) is the only study found to be similar in subject and design to this study and although some of the barriers are alike, none of the facilitators were transferable from one to the other.

Among the Hispanic women who participated in our study common facilitators were found to be: a) understanding of GDM risk factors, b) observation of the consequences of type 2 diabetes, c) support from mother, and d) dietary education.

The only known GDM risk factor reported from Hispanic women was a large for gestational age baby. One woman thought that if the baby grew too large there would not be enough space in the uterus to accommodate baby's normal growth and the baby's organs would not be able to properly develop. She was under the impression that a big baby was a good thing until the dietician at the prenatal clinic told her otherwise. Neither Hispanic participant understood what could potentially be the complications from a large for gestational baby but they both knew it was something to avoid. This was the basis for

dietary control in both women. Each one had a degree of success in dietary management as a result of this new knowledge.

Of greater influence to dietary success was a related corollary; the observation of the negative consequences of poorly controlled type 2 diabetes in close family members. Due to the strong family type 2 diabetes history of the Hispanic women, each one had been informed of her elevated risk of developing type 2 diabetes in the future. Each woman related this influence, the observation of troublesome complications to type 2 diabetes, as a reason to strive for better management of GDM. This is quite different from the immigrant women in the study by Carolan, Gill & Steele (2012) who reported thinking of the baby as a facilitator of action to adherence to GDM recommendations.

Each mother of both Hispanic women also had a history of gestational diabetes and had since developed type 2 diabetes in later adulthood. Only one of the participants had received dietary advice from a dietician. But both women reported their mothers as their greatest support in pregnancy with GDM and as the source for most all of the dietary advice and instruction they received. A supporting relationship from mother was a positive help to each woman. Some of the dietary advice from their mothers was correct but both mothers had developed type 2 diabetes but it remains to be determined if their dietary instruction was as beneficial as each woman felt it was for them. In this study, it was a facilitator.

Recommendations for Change in Clinical Practice

After a close review of the findings of this study, information was compiled that could potentially lead to a change in clinical practice. At the heart of these changes in clinical practice is the concept of turning each of the barriers into facilitators according to

the perceptions of these women. In other words, what did they tell us they are lacking? How can health care providers effectively respond to the thoughtful reports of their lived experiences? Three findings, in particular, came to the surface and include, an increase clinical education, helping patient to identify an individual in her life that will act as the principal support person and include the whole family in the clinical education associated with GDM guidelines and lifestyle interventions. These recommended changes to clinical practice have the potential to empower the Hispanic woman in strengthening her self-efficacy in managing gestational diabetes. Greater self-efficacy has the potential of reducing not only poor outcomes associated with gestational diabetes but to impact her future and her baby's future in thwarting the development of type 2 diabetes.

Study Limitations

The sample size was not optimal for the best assessment of the research question due to time restrictions associated with this study. Only two Hispanic women volunteered to participate in this study yet approximately 100 flyers were distributed to potential participants. This lack of participation may strengthen one of the major findings of this study: resignation on the part of the Hispanic woman to gestational diabetes due to its endemic presence in the Hispanic population leading, in part, to feelings of limited self-efficacy of the effective management of gestational diabetes.

Only one interview was conducted for each woman. Perhaps after some time to think between the initial interview and a second or third interview, more ideas and information might have come to mind and shared by the participants.

Each participant could have been provided with a list of the interview questions before hand to allow for pre-processing in an effort to extract as much information as possible with just one interview.

These interviews may have yielded more information if conducted in a group where the ideas of another often sparks a recollection of a similar experience or feeling to provide clarification or amplification of a concept.

Finally, each person is unique so it stands to reason that not all Hispanic women would answer these questions exactly the same. More participants could uncover more precisely where the commonality of voice of the lived experience of managing in the Hispanic woman is found.

Recommendations for Future Research

Some of the recommendations for future research include: further exploring the concept of how the endemic nature of gestational diabetes and type 2 diabetes influence a Hispanic woman in her daily diligence to manage GDM, further evaluation of the reasons that only 50% of Hispanic women adhere to GDM dietary and exercise guidelines, an assessment of how Hispanic women understand the role exercise plays in managing GDM, research into the role a Hispanic male partner can play in affecting the success of effective GDM management and an assessment of the knowledge base of the Hispanic male regarding gestational diabetes.

The experiences of Hispanic women may be very different from women of other cultures, and so data may or may not transfer to other women who develop gestational diabetes. Understanding the experiences of Hispanic women newly diagnosed with gesta will be beneficial to health care providers treating women with this disorder and to

Hispanic women who may identify with the experiences that are shared by women in this study. These findings may provide incentive or a different perspective for these women who may be encountering similar experiences.

Summary

Through understanding the lived experiences of Hispanic women in managing gestational diabetes, the medical community will be better prepared to assist them by producing and offering specific and culturally appropriate guidelines. The hope is these that recommendations will result in greater adherence to gestational diabetes management guidelines, a reduction in gestational diabetes complications and a reduction in the future development of type 2 diabetes in Hispanic mothers and their babies.

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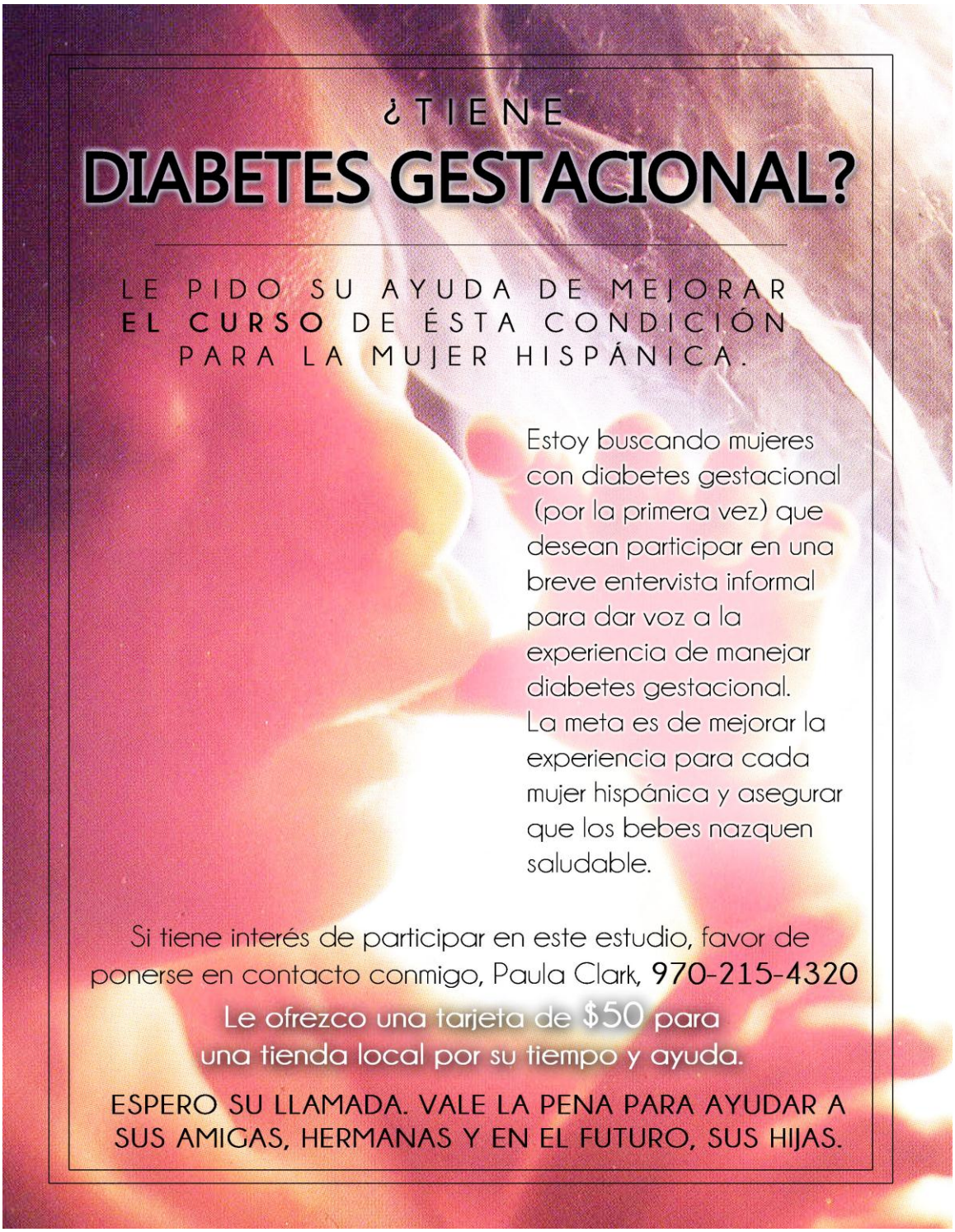
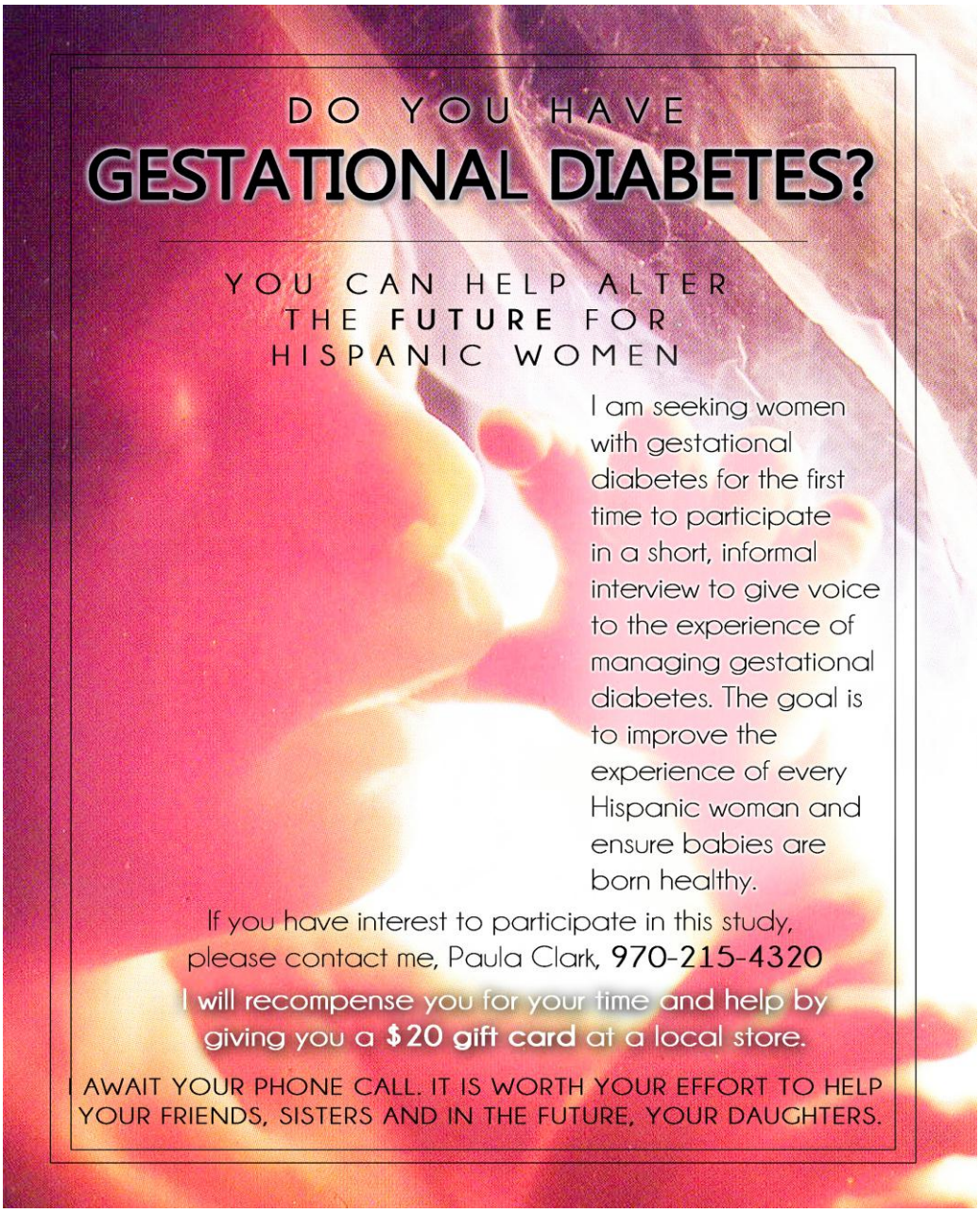
APPENDIX A

RECURUITMENT FLYER- SPANISH VERSION



RECURUITMENT FLYER- ENGLISH VERSION



APPENDIX B

FORMULARIO DE CONSENTIMIENTO PARA PARITICIPANTES HUMANOS EN INVESTAGACIÓN FORMAL

Título del Proyecto:	Barreras y Facilitadores al Manejo Eficáz al Diabetes Gestacional Mellitus paras las Mujeres Hispánicas
Investigadora Principal:	Paula Clark, BSN, RN, UNC School of Nursing
Número de teléfono:	(970) 215-4320
Consejera Facultad:	Melissa Henry, Ph.D., FNP, RN
Número de teléfono:	(970) 352-1735

Me llamo Paula Clark. Soy enfermera y una estudiante postgrado en la Universidad de Northern Colorado. Deseo entender mejor tal como las mujeres hispánicas piensan de su abilidad de manejar la diabetes durante el embarazo. Le invita a usted a participar en este trabajo porque usted tiene la diabetes durante su embrazo actual y usted es una mujer hispánica. Espero que la información que me comparta ser de ayuda a otros profesionales de la salud a proveer mejor cuidado prenatal a mujeres hispánicas con la diabetes en el embarazo.

En una entrevista informal le pido diez preguntas sencilllas sobre el tener la diabetes en el embarazo y las guias le dan para manejar le diabetes en el embarazo. Le pido que le resulta facíl cumplir y que le resulta difícil cumplir en su vida diaria y el porque. No hay riesgos previsibles a usted para participar en este trabajo y le recompensará por su tiempo y esfuerzo por medio de una targeta a una tienda local que vale $20. Su identidad será protegida igual que sus repuestas. Nos junatmos en la oficina de Healthy Beginnings en un cuarto privado o en su propia casa. Usted podrá escoger dondequiera que juntemos. Su nombre no estará puesto en ningun formulario para la entrevista. Durante la entrevista tomaré notas y grabaré las repuestas. Ningun otra persona verá ni escuchará sus repuestas menos la consejera facultad y ella no conocerá su identidad.

En cualquier momento usted tiene el derecho de terminar la entervista por cualquier razón y salir de la entrevista o regresar en otra ocasión. Si estamos en su casa y usted quiere terminar la entrevista, saldré du su casa en seguida y su decision será totalmente respetada.

Gracias por su participación en esta entrevista. Sus pensamientos e ideas puede ser de gran aydua a muchas mujeres hispánicas de tener embrazos más sanas y tener niños más saludables en el futuro.

_____

La firma de participante Fecha

_____

La firma de la investigadora Fecha

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH- ENGLISH VERSION

Project Title: Barriers and Facilitators to the Effective Management of Gestational Diabetes Mellitus for Hispanic Women

Lead Investigator: Paula Clark, BSN, RN, School of Nursing
Phone number: (970) 215-4320

Faculty Advisor: Melissa Henry, Ph.D., FNP, RN
(970) 352-1735

My name is Paula Clark. I am a nurse and a graduate student at the University of Northern Colorado. I want to understand how Hispanic women feel about their ability to manage diabetes during pregnancy. You have been invited to participate in this study because you have diabetes during your current pregnancy and you are Hispanic. I hope the information you share will help me and other health professionals provide better prenatal care for Hispanic women with diabetes during pregnancy.

In an informal interview I will ask you ten simple questions about having diabetes in pregnancy and the recommendations or guidelines given to you to manage diabetes in pregnancy. You will be asked to tell me what you feel is easy to do and what is difficult to do in your daily life and why you feel that way. There are no foreseeable risks to you to participate in this study and you will be compensated for your time and effort with a $20 gift card to a local store. Your identity will be secret as well as your responses. We will meet at the Healthy Beginnings office for the interview in a private room or in your own home. You will determine which location suits you better. Your name will not appear on any forms for this interview. I will make notes during the interview and I will record your responses. No one else will be able to see or hear your answers except my faculty advisor but she will not know your identity.

At any time during the interview you may stop for whatever reason and leave the interview or return at a later date or time. If you stop the interview in your home setting I will leave without delay and your decision will be respected in either case.

Thank you so much for your willingness to participate in this interview. Your thoughts and ideas may prove to help hundreds of Hispanic women to have healthier pregnancies and babies in the future.

Paula Clark, BSN, RN

_____

Participant's signature Date

_____

Investigator's signature Date

APPENDIX C

DEMOGRAPHIC TOOL- SPANISH VERSION

Me gustaría hacerle algunas preguntas para conocerle mejor y de informarme de su embarazo. A fin de asegurarse que sus respuestas se mantendrán en confidencia, me gustaría crear una etiqueta identificativa que no usa su nombre. Así se puede identificarle a usted de las otras mujeres quienes participarán en este trabajo.

Etiqueta Identificativa Uníca

1) ¿Cuál es la primera letra del apellido de su madre?
2) ¿Qué día del mes nació?

Demográfico Identificaivo Uníco

3) ¿Cuantos años tiene usted?

   _____

4) ¿Cuantos niños tiene usted?

   _____

5) ¿Cuantas veces se ha embarazada?

   _____

6) ¿Cuantas semanas tiene en su embarazo hoy?

   _____

DEMOGRAPHIC TOOL- ENGLISH VERSION

I would like to ask you a few more questions that will tell me more about you and your pregnancy. To make sure your answers are held in confidence, I would like to create a special way to identify your information without actually using your name. This is to identify you from the other women who will be participating in the study.

Unique Identifier

1) What is the first letter of surname?
2) What is the day of the month in which you were born?

Demographic Identifier

3) How old are you?

   _____

4) How many children do you have?

   _____

5) How many times have you been pregnant?

   _____

6) How many weeks pregnant are you today?

   _____

APPENDIX D

INTERVIEW GUIDE-SPANISH VERSION

1) Hace un poco supo que tiene diabetes gestational. (en el embarazo). ¿Que le significa a usted a su familia?
2) Al saber que tiene diabetes gestacional, le enseñó hacer algunos cambios en su regimen diario, me puede explicar cuales son?
3) Favor de compartir conmigo sus experiencias en manejarse con estas enseñanzas o sugerencias.
4) ¿Cuales son las cosas en su vida diaria que le resultan difíciles en cumplir de las surgencias que le han dado?
5) ¿Cuales son las cosas en su vida diaria que le resultan fáciles en cumplir de las surgencias que le han dado?
6) Hay algunas cosas específicas que le resultan más difíciles en cumplir a causa de su cultura?
7) Hay algunas cosas específicas que le resultan más fáciles en cumplir a causa de su cultura?

¿Hay algo más que quiere compartir conmigo de se experiencia con la diabetes gestational?

INTERVIEW GUIDE-ENGLISH VERSION

1) You recently found out that you have gestational diabetes, what does this mean to you and your family?
2) With gestational diabetes you were advised to make some lifestyle changes, can you tell me what some of those changes are?
3) Tell me about your experiences managing these new diet and exercise recommendations.
4) What everyday things get in the way of incorporating these recommendations into your daily life?
5) What things in your every day life help you incorporate these recommendations into your daily life?
6) Are there any specific things that make it difficult to incorporate these recommendations based on your culture or heritage?
7) Are there any specific things that make it easier to incorporate these recommendations based on your culture or heritage?
8) Is there anything else you would like to share about your experience with gestational diabetes?

APPENDIX E

IRB APPROVAL LETTERS

UNIVERSITY of
NORTHERN COLORADO

Institutional Review Board

DATE:	February 27, 2013
TO:	Paula Clark
FROM:	University of Northern Colorado (UNCO) IRB
PROJECT TITLE:	[387821-3] Barriers and Facilitators to the Effective Management of Gestational Diabetes Mellitus for Hispanic Women
SUBMISSION TYPE:	Amendment/Modification
ACTION:	APPROVAL/VERIFICATION OF EXEMPT STATUS
DECISION DATE:	February 26, 2013

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

Hello and thank you for the clear explanation of the changes to your approved IRB application. Your modifications are approved and I hope that this additional location of participant recruitment yields a larger sample.

Take care,

Megan

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

UNIVERSITY of
NORTHERN COLORADO

Institutional Review Board

DATE:	January 3, 2013
TO:	Paula Clark
FROM:	University of Northern Colorado (UNCO) IRB
PROJECT TITLE:	[387821-2] Barriers and Facilitators to the Effective Management of Gestational Diabetes Mellitus for Hispanic Women
SUBMISSION TYPE:	Amendment/Modification
ACTION:	VERIFICATION OF EXEMPT STATUS
DECISION DATE:	December 28, 2012

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB verifies that this project is EXEMPT according to federal IRB regulations.

Paula and Melissa - Thank you for very clear and thorough revisions and provision of the additional information requested in the first review of your IRB application.

All of my requests have been satisfied and your application is now verified/approved exempt.

Please be sure to use all revised protocols and documents (e.g., consent form) developed in the review process during your data collection. Don't hesitate to contact me if you have any IRB-related questions or concerns. Best wishes with your research!

Sincerely, Dr. Megan Stellino

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.