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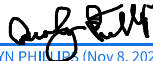
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Gestational Diabetes**

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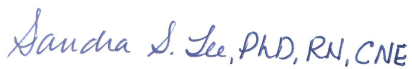


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**A Naturalistic Inquiry of the Experiences of Women Diagnosed with
Gestational Diabetes**

by

Diana Mandia, BSN, RNC-OB

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Dedication

This work is dedicated to my parents,

Yolanda Figueroa (1950-2010) and Ignacio Figueroa (1932-2009).

You have always been there for me, whether in life or in memory. Thank you for your unconditional love, believing in me, nurturing my passion for learning, and inspiring me to never give up.

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I could not have reached this goal without the support, guidance, and encouragement of many people in my life over the past five years. First, my dissertation committee: this dissertation would not have been possible without your steadfast support, guidance, and feedback. I would like to express my deepest gratitude to Dr. Carolyn Phillips for having been my rock throughout my time at the University of Texas Medical Branch. Her wisdom, expertise, and insight these past five years have made a world of difference in my life, and I am sure the lives of many other graduate students. Dr. Phillips, you are one of a kind and I have learned so much from you. I am also extremely grateful to Dr. Adrian Juarez for his time and willingness to step in as dissertation chair. Dr. Juarez, you are kind beyond words. I would also like to thank and acknowledge each of the women who shared their experiences of gestational diabetes, as their voices shaped this study.

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Abstract

**A NATURALISTIC INQUIRY OF THE EXPERIENCES OF WOMEN DIAGNOSED
WITH GESTATIONAL DIABETES**

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Diana Mandia, PhD

The University of Texas Medical Branch, 2023

Supervisor: Adrian Juarez, PhD, RN

Gestational diabetes, hyperglycemia that develops in pregnant women with no prior history of diabetes, affects 2% to 10% of all pregnancies in the United States (Centers for Disease Control and Prevention [CDC], 2022). About 50% of women with GDM go on to develop T2DM, and babies of women diagnosed with GDM also are at increased risk of developing T2DM later in life (CDC, 2022). Effective management of GDM requires women to change their health behaviors related to diet, exercise, and medication adherence. Although some studies have examined the experiences of women who have been diagnosed with GDM in other parts of the world, there is a need for research that explores the experiences of women with GDM living in the United States. The current study utilized Naturalistic Inquiry [NI] (Erlandson et al., 1993; Lincoln & Guba, 1985) to explore and describe the experiences of women diagnosed with gestational diabetes [GDM] in a previous pregnancy and were living in the United States. Data collection took place in the form of one-on-one interviews via Zoom Video Conference with women diagnosed with GDM in a previous pregnancy currently living in the United States.

Study data consisted of interview data and participants' demographic data. Interview data was analyzed using Erlandson et al.'s (1993) interpretation of Lincoln and Guba's (1985) approach to inductive data analysis. Data analysis revealed three major categories: 1) *Finding Out About the Gestational Diabetes Diagnosis*, 2) *Mastering GDM*, and 3) *Life After GDM*. The implications of the study's findings pertain to nurses and other healthcare providers who help care for pregnant women diagnosed with GDM. Women with GDM need more information about GDM risk factors, how to incorporate GDM recommendations into their daily lives, mental health resources, and whether having had GDM posed long-term risks for themselves and their children.

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List of Abbreviations

CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare and Medicaid Services
GDM	Gestational Diabetes Mellitus
GNSA	Graduate Nursing Student Academy
HAPO	Hyperglycemia and Adverse Pregnancy Outcomes
HCP	Healthcare Provider
IRB	Institutional Review Board
MC	Member Checking
NI	Naturalistic Inquiry
OB/GYN	Obstetrician/ Gynecologist
PP	Potential Participant
T2DM	Type 2 Diabetes Mellitus
UTMB	University of Texas Medical Branch

Chapter 1 Introduction

INTRODUCTION

The following dissertation presents the results of a Naturalistic Inquiry [NI] (Erlandson et al., 1993; Lincoln & Guba, 1985) study that was conducted to explore and describe the experiences of women who had been diagnosed with gestational diabetes [GDM] in a previous pregnancy. Chapter One will present the study problem, research question, aims of the study, significance of the study, and an overview of the study design and methodology. Chapter One will conclude with an outline of a plan for the remaining chapters.

STUDY PROBLEM

Gestational diabetes [GDM] is defined as hyperglycemia that develops in pregnant women with no prior history of diabetes (Centers for Disease Control and Prevention [CDC], 2022), and poses short- and long-term risks for both mother and baby. GDM-associated risks include fetal macrosomia and shoulder dystocia at delivery (Kc et al., 2015), neonatal hypoglycemia (CDC, 2022), and maternal pre-eclampsia (Lowe et al., 2012; Phaloprakarn & Tangjitgamol, 2009). Furthermore, GDM increases both mother and baby's long-term risk of developing Type 2 Diabetes Mellitus [T2DM] later in life (CDC, 2022).

Effective management of GDM requires sustained changes in health behaviors related to diet, exercise, and medication adherence. Women diagnosed with GDM are expected to change the food they eat and the way they eat, as well as find time to incorporate exercise and blood glucose monitoring. Adhering to a diabetic diet to control blood glucose levels can prevent complications at delivery and mitigate the long-term risk of T2DM for both mother and baby. However, according to research conducted in Canada and Australia, women who had been diagnosed with GDM needed education about lifestyle interventions tailored to their individual

preferences (Sabag et al., 2023), and were less likely to follow dietary and lifestyle recommendations that contradicted their social and cultural norms (Bandyopadhyay et al., 2011; Neufield, 2011).

Although some studies have examined the experiences of women who have been diagnosed with GDM in other parts of the world such as Denmark (Toxvig et al., 2022), Taiwan (Su et al., 2022), England (Parsons et al., 2018), Australia (Bandyopadhyay et al., 2011; Carolan et al., 2012; Oxlad et al., 2023; Sabag et al., 2023), New Zealand (Martis et al., 2018), Canada (Hui et al., 2014a; Neufield, 2011), and Sweden (Hjelm et al., 2018; Persson et al., 2010), only three studies have been identified that directly address the experiences of women with GDM living in the United States (Abraham & Wilk, 2014; Carolan-Olah et al., 2017; Stotz et al., 2019). There is a need for research that explores the experiences of women with GDM living in the United States. Women's experiences of GDM may contribute to a deeper understanding of what women need to successfully manage their GDM and help in the development of future educational interventions.

RESEARCH QUESTION AND AIMS OF THE STUDY

The aims of this study were to explore and describe: (1) women's perceptions of being diagnosed with GDM, (2) information women received about managing GDM, and (3) factors that impacted GDM management. Naturalistic Inquiry [NI] (Erlandson et al., 1993; Lincoln & Guba, 1985) was utilized to answer the research question: What are the experiences of women diagnosed with gestational diabetes?

DEFINITION OF HEALTHCARE PROVIDER

The Centers for Medicare and Medicaid Services [CMS] (2023) defines a healthcare provider as a place or person who is trained and licensed to give health care. Examples of healthcare providers include doctors, nurses, and hospitals (CMS, 2023). The term *healthcare provider*, as it is used in this dissertation, refers to doctors, certified nurse midwives, and registered nurses.

SIGNIFICANCE OF THE STUDY

The prevalence of GDM has been increasing along with rising rates of maternal obesity (Zhou et al., 2022) and affects 2% to 10% of all pregnancies in the United States (CDC, 2022). Half of women with GDM develop T2DM within a decade after delivery, and babies of women diagnosed with GDM are at increased risk of developing T2DM later in life (CDC, 2022). Most of the research studies that have been identified, and focused on women's experiences of GDM, were conducted in countries other than the United States. Research studies were found to address factors impacting GDM management, how beliefs influence the health behaviors of women diagnosed with GDM, the psychological aspects of living with GDM, and women's experiences with nutritional management of GDM. There is a need for research that explores the experiences of women with GDM living in the United States.

The current study explored and described the GDM experience of women living in the United States. The findings of this research study are significant because they will contribute to a greater understanding of what women need to successfully manage their GDM. Findings from this study will add to the larger body of knowledge about GDM by detailing women's perceptions about having been diagnosed with GDM, describing information women received

about GDM management and identifying factors that influenced women's ability to manage their condition.

OVERVIEW OF THE STUDY DESIGN AND METHODOLOGY

All procedures used in the study were approved by the University of Texas Medical Branch [UTMB] Institutional Review Board [IRB]. Women with a self-reported history of GDM were recruited for the study and asked to participate in one-on-one semi-structured interviews with the researcher via Zoom Video Conferencing. A total of ten women participated in the study. Study data consisted of participant demographic information and interviews, in addition to the researcher's notes and observations.

The study utilized Naturalistic Inquiry [NI] to explore and describe women's experiences of GDM (Erlandson et al., 1993; Lincoln & Guba, 1985). The emergent design of NI allowed for data collection and analysis procedures to evolve over the course of the study in response to what was learned as the study progressed.

DATA COLLECTION AND ANALYSIS

Data analysis as an interactive process is a defining characteristic of a Naturalistic Inquiry [NI] (Erlandson et al., 1993), and began with the first interaction between the researcher and participant. Analysis of the study data utilized two methods. Non-parametric descriptive statistics and measures of central tendency were used to analyze demographic data. Interview data was analyzed using Erlandson et al.'s (1993) interpretation of Lincoln and Guba's (1985) approach to inductive data analysis, which consists of unitizing data, emergent category designation, and negative case analysis (Erlandson et al., 1993). Analysis of the data revealed three major categories: 1) *Finding Out About the Gestational Diabetes Diagnosis*, 2) *Mastering GDM*, and 3) *Life After GDM*.

SUMMARY OF INTRODUCTION

Chapter One has introduced the current study beginning with a description of the study problem. Chapter One presented the research question and aim of the study and addressed the study's significance. Chapter One provided an overview of the study design, and methodology used to explore and describe the experiences of women diagnosed with GDM.

PLAN FOR REMAINING CHAPTERS

Chapter Two will present a review of literature on research related to GDM and the experiences of women diagnosed with GDM. Chapter Three will describe how Naturalistic Inquiry (Erlandson et al., 1993; Lincoln & Guba, 1985) was utilized to explore the experiences of women diagnosed with GDM. Chapter Four will present participant demographics, and findings of the study. Chapter Five will outline the study's strengths and limitations, implications for future research, and offer a discussion of the study's findings.

Chapter 2 Review of Literature

INTRODUCTION

Chapter Two reviews the literature associated with gestational diabetes [GDM] and women's experiences of GDM. The Chapter will begin with an overview of GDM and GDM management. The Chapter will discuss studies related to nutritional management of GDM and women's experiences of nutritional management, factors that impact GDM management, the psychological aspects of living with GDM, and the experiences of women diagnosed with GDM in the United States. The Chapter will address gaps found in the literature, provide a rationale for this study, and conclude with a plan for the remaining chapters.

OVERVIEW OF GESTATIONAL DIABETES

The Centers for Disease Control and Prevention [CDC] (2022) define GDM as hyperglycemia in pregnancy that develops in women with no prior history of diabetes. GDM is thought to be brought on by metabolic changes and insulin resistance during pregnancy resulting in third trimester hyperglycemia (Moncrieff, 2018). The U.S. Preventative Services recommends all women be screened for GDM between twenty-four- and twenty-eight weeks of pregnancy (Moyer, 2014).

Risk Factors and Complications

GDM risk factors include advanced maternal age, obesity, a family history of diabetes, and polycystic ovarian syndrome (Cleveland Clinic, 2023). Complications related to gestational diabetes have been attributed to maternal hyperglycemia. Uncontrolled maternal hyperglycemia results in higher amounts of blood glucose passing through the placenta and into fetal circulation. The fetus stores the extra glucose as body fat, which leads to fetal macrosomia, increasing the baby's risk of shoulder dystocia, clavicle fracture, brachial plexus injury, and admission to the

neonatal intensive care unit (Kc et al. 2015). Babies of women diagnosed with gestational diabetes are also at risk for hypoglycemia, hypocalcemia, hyperbilirubinemia, respiratory distress, obesity, and the development of Type 2 Diabetes [T2DM] later in life (CDC, 2022).

GDM increases the woman's risk of caesarean delivery, post-partum hemorrhage (Kc et al., 2015), development of T2DM later in life (CDC, 2022), and pre-eclampsia (Lowe et al, 2012). The Hyperglycemia and Adverse Pregnancy Outcomes [HAPO] study by Lowe et al. (2012) found pre-eclampsia and blood glucose levels to be positively associated. Additionally, Phaloprakarn and Tangjitgamol (2009) identified poor glycemic control as another factor contributing to the occurrence of pre-eclampsia. Therefore, adequate control of maternal blood glucose in GDM is necessary to prevent complications at delivery, as well as reducing the long-term risk of T2DM for both mother and baby.

Gestational Diabetes Management

Once diagnosed, management of GDM consists of nutritional therapy, blood glucose monitoring, exercise, oral medication, or insulin. The primary goal of GDM management is to reduce the risk of macrosomia and other GDM-related pregnancy complications (Durnwald, 2023a). An estimated 70% to 85% of GDM cases can be managed by diet and exercise alone (Kelley et al., 2015), although, the extent to which women require medication to control their blood glucose largely depends on how well they can achieve normoglycemia based on diet and exercise (Harrison et al., 2020). According to an American College of Obstetricians and Gynecologists (2018) clinical practice update, there is no conclusive evidence for a specific blood glucose threshold value at which medication should be started to treat hyperglycemia in women with GDM. Harrison et al. (2020) conducted a retrospective chart review of women with GDM who needed medication to control their blood glucose. Their study aimed to compare two

different thresholds for starting medication. The researchers concluded that starting women with GDM on medication when 20%-39% of their blood glucose values were above goal ($>95\text{mg/dL}$ fasting, $>140\text{mg/dL}$ 1-hour after meals, $>120\text{mg/dL}$ at 2-hours after meals), when compared to 40%, was associated with improved neonatal outcomes. Thus, current practice guidelines outlined by Durnwald (2023b) recommend starting medication when more than thirty percent of the woman's fasting, or postprandial blood glucose levels exceed target values in a given week.

NUTRITIONAL MANAGEMENT OF GESTATIONAL DIABETES

The American Diabetes Association (2023) and current practice guidelines from Durnwald (2023b) stipulate that women with GDM should receive nutritional counseling from a registered dietitian whenever possible. The American College of Obstetricians and Gynecologists (2018) recommends that in settings where a registered dietitian is not readily available, clinicians should provide dietary advice. Historically, dietary advice has focused on carbohydrate restriction because of its reduction on postprandial hyperglycemia and excess fetal growth (Jovanovic-Peterson & Peterson, 1990). However, the specific diet that achieves optimal outcomes for both mother and baby remains unclear (Durnwald, 2023b). A systematic review by Han et al. (2017) compared evidence from nineteen randomized controlled trials to assess the impact of dietary advice given to women with GDM on health outcomes such as gestational hypertension, caesarean section, delivery of large-for-gestational age babies, and type 2 diabetes. The review included studies that compared glycemic index diets, calorie restriction, low versus high carbohydrate diets, low versus high unsaturated fat diets, high fiber diets, and soy protein enriched diets. The authors found no clear differences between the types of diet on the number of women who experienced gestational hypertension, delivered large-for-gestational age babies, or type 2 diabetes. The authors concluded that since few studies had compared the same

interventions and consisted of small sample sizes, clear evidence is not yet available from randomized trials on what type of dietary advice should guide practice for nutritional management of GDM (Han et al., 2017).

Women's Experiences with Nutritional Management of GDM

Studies related to women's experiences with nutritional management of GDM have reinforced the assertion that eating practices are culturally influenced and not taken into consideration by recommended dietary guidelines. Oxlad et al. (2023) conducted focus groups and semi-structured interviews as part of their qualitative study to investigate women's perspectives and experiences regarding cultural influences on GDM management. Their research sample consisted of 33 postpartum women from culturally and linguistically diversified backgrounds who had been diagnosed with GDM in the previous 12 months and resided in Australia. The researchers noted that families who placed a high value on eating and nutrition during pregnancy, and whose cultural foods were carbohydrate-heavy, perceived the diet modifications required for GDM management as depriving the baby. Oxlad et al. concluded that GDM education lacks cultural awareness and sensitivity because it does not take cultural beliefs, language, and eating practices into account. Bandyopadhyay et al. (2011) explored the experiences of 17 South Asian women living in Australia following a GDM diagnosis. Women who participated in the study described difficulty adhering to the GDM diet because it restricted elements in their traditional diet and no effort was made to individualize GDM dietary recommendations to consider cultural dietary practices. Neufield (2011) reported the most common topics brought up by Aboriginal women with GDM living in Winnipeg Canada during semi-structured interviews were food and eating practices. More specifically, how they adapted their food preferences to comply with dietary recommendations. Neufield (2011) suggests that

diet-controlled management of GDM may lead to an unhealthy focus and relationship with food among women who have trouble adhering to a diabetic diet.

The extent to which women change their diet and exercise routines following a GDM diagnosis has been a topic of research in the United States. Hinkle et al. (2021) conducted a post hoc analysis utilizing data from the Eunice Kennedy Shriver National Institute of Child Health and Human Development Fetal Growth- Singletons (2009-2013) study to assess whether and to what extent 72 pregnant women receiving usual prenatal care in the United States changed their diet and exercise after being diagnosed with GDM. Findings indicate that study participants with GDM made modest dietary improvements and maintained their pre-diagnosis exercise routine into their third trimester of pregnancy.

FACTORS THAT IMPACT GESTATIONAL DIABETES MANAGEMENT

Some researchers have explored factors impacting the management of GDM. Martis et al. (2018) conducted a qualitative descriptive study of 60 women from two hospitals in New Zealand to identify enablers and barriers of glycemic control. Martis et al. found that peer support, social support, and ease of access to care enabled management of GDM, while lack of health information in the woman's first language, lack of continuity of care, and perceived judgement were barriers. Carolan et al. (2012) utilized an interpretive phenomenological approach to explore factors that inhibit or facilitate GDM self-management among a group of 15 pregnant women with GDM from a socially deprived area in Australia. Researchers found that time pressures, physical and social constraints as well as limited comprehension of management requirements inhibited GDM self-management, while thinking about the well-being of the baby and psychological support from their partners were facilitators. Toxvig et al. (2022) used a phenomenological approach to study the lived experience of 14 pregnant women diagnosed with

GDM at a university hospital in Denmark. Researchers found that women's individual needs were not being met due to a lack of information, which in turn contributed to their feeling less in control of what they ate. Miazgowski et al. (2018) utilized the Multidimensional Health Locus of Control Scale, the State Trait Anxiety Inventory, and questionnaires they developed to evaluate the associations between health locus of control, anxiety, and glycemic control from the time of GDM diagnosis to delivery in a group of 165 Polish women. Findings revealed an association between a woman's belief that health is out of her control and poorer glycemic outcomes. Healthcare provider beliefs can influence the health behaviors of women diagnosed with GDM. Hjelm et al. (2018) conducted a qualitative prospective exploratory study of nine women with GDM who were born in Africa but living in Sweden. The goal of the study was to explore the development of beliefs about health, illness, and health care during and after pregnancy of women who developed GDM. Women who participated in the study were reported to view GDM as a transient condition. Researchers concluded that health care provider beliefs concerning the seriousness of GDM influenced women's beliefs and their health-related behavior.

Online health information is a factor that has been found to impact GDM management. Edwards et al. (2021) explored the views and experiences of 10 women in the United Kingdom who utilized their smartphones to access information for GDM management and prevention. Study findings revealed that participants utilized social media for peer support, and the women often valued information found online over information provided by health care professionals. Participants in the Edwards et al. (2021) study reported health care providers offered few online health resources. Sabag et al. (2023) used a cross-sectional survey consisting of multiple choice and free text questions to explore supports and barriers to women's participation in the lifestyle

interventions needed to manage GDM. The study sampled was comprised of 564 women living in Australia. Participants of the Sabag et al. (2023) study reported managing their GDM through low carbohydrate diets and insulin, but felt they were not meeting exercise recommendations due to a lack of time. The study participants identified an online format to deliver information facilitated their ability to manage their GDM. Sabag et al. (2023) concluded that recommendations around lifestyle interventions should be tailored to the individual and take existing barriers into account.

PSYCHOLOGICAL ASPECTS OF LIVING WITH GDM

Various studies have highlighted the psychological aspects of living with gestational diabetes, focusing on the processes of adapting to the diagnosis, and the impact of GDM management on the psychological wellbeing of women diagnosed with the condition. Persson et al. (2010) utilized a grounded theory approach to study a group of ten pregnant women living with GDM in Sweden. The study found that the experience of living with GDM can be understood as a process of “stun to gradual balance” (Persson et al., 2010, p. 456). The study findings elucidated participants’ struggle to balance the challenge of coping with their GDM diagnosis and adhering to a diabetic diet. An exploratory mixed methods study by Hui et al. (2014a) revealed the occurrence of unhealthy coping strategies among a group of 30 women with GDM living in Winnipeg Canada. Participants who received insulin therapy reported higher levels of perceived stress and anxiety when compared to participants who were able to control GDM with dietary management alone.

The psychological impact of women with GDM having to change their health behaviors out of concern for their babies has also been mentioned by some researchers. Parsons et al. (2018) studied the experiences of GDM and GDM care in a group of 50 women living in the UK.

Women who participated in the study reported a sense of alienation in a paternalistic health care environment where healthcare providers made decisions focusing on the baby's health without considering the woman's personal autonomy. The researchers concluded that healthcare providers who do not consider the woman's autonomy could impact long-term psychological health of women who have been diagnosed with GDM. Su et al. (2022) used a qualitative descriptive approach to describe the GDM self-management experience of 22 pregnant women living in Taiwan. Researchers found women did not expect the diagnosis and were worried about the adverse impact GDM would have on their health and that of their babies. Participants in the study described changing their health behaviors, but also acknowledged the psychological burden of doing so. In their discussion, Su et al. described eating as an important element of Chinese culture and stated that for some of their study participants, dietary control of GDM was synonymous with social deprivation that left women feeling isolated from their community.

EXPERIENCES OF WOMEN DIAGNOSED WITH GDM IN THE UNITED STATES

Three studies were identified that explored the experiences of women with GDM in the United States. Stotz et al. (2019) interviewed five American Indian and Alaska Native American women with T2DM or a history of GDM to understand their perspectives on diabetes and pregnancy, behaviors to reduce diabetes risk, and content for a preconception counseling program. Study findings identified lack of GDM knowledge and lack of family oriented GDM education that included aspects of traditional Native American culture as barriers to management. A phenomenological study conducted by Abraham and Wilk (2014) explored the lived experiences of 10 women with GDM in rural Western New York communities. Study findings revealed that women did not understand GDM at the time of diagnosis nor after giving birth. Additionally, women who participated in the study reported that health care providers did

not communicate the actual risk of developing T2DM in the future, or the need for postpartum glucose testing. Carolan-Olah et al. (2017) utilized interpretive phenomenology to analyze the experiences of Hispanic women from Mexico who were living in the United States. Carolan-Olah et al. (2017) described the women's experiences of adapting to GDM as overcoming distress and fear, realizing the dietary and lifestyle changes involved in GDM management, learning to manage GDM, and being compliant despite limited understanding. Carolan-Olah et al. (2017) found that study participants unanimously reported a willingness to follow doctors' orders for the sake of their baby despite never gaining a full understanding of GDM.

SUMMARY AND IDENTIFIED GAPS IN THE LITERATURE

Gestational diabetes is hyperglycemia that develops in pregnant women with no prior history of diabetes and increases the long-term risk of T2DM for both mother and baby (CDC, 2022). GDM that is not well-controlled has been associated with fetal macrosomia which can lead to complications at delivery for both mother and baby (Kc et al., 2015; Lowe et al, 2012; Phaloprakarn & Tangjitgamol, 2009). GDM is usually diagnosed near the end of the second or beginning of the third trimester of pregnancy (Moyer, 2014) and women must immediately implement the lifestyle changes necessary to control their blood glucose. GDM management involves diet changes, exercise, and medication. Although nutritional management is the main strategy for blood glucose control, conclusive evidence on what type of dietary advice is best to guide practice is not yet available (Han et al., 2017).

Studies that have addressed women's experiences of nutritional GDM management have largely highlighted the difficulties of adhering to a diabetic diet when key elements of the woman's traditional diet or preferred foods are restricted (Bandyopadhyay et al., 2011; Neufield, 2011; Oxlad et al., 2023). Social support and ease of access to care (Martis et al., 2018), concern for

the baby's well-being, and psychological support from partners (Carolan et al., 2012) have been identified as factors enabling successful management of GDM; while perceived judgement and a lack of information from healthcare providers (Martis et al., 2018; Toxvig et al., 2022), lack of family-oriented GDM education (Stotz et al., 2019), lack of continuity of care, time pressures, physical and social constraints, as well as limited comprehension of GDM management requirements (Abraham & Wilk, 2014; Carolan et al., 2012) have been identified as barriers. Other factors identified in the literature that have been found to influence the health behaviors of women with GDM and their success in controlling their blood glucose include healthcare providers' beliefs about the seriousness of GDM (Hjelm et al., 2018), and whether women believed they were in control of their own health (Miazgowski et al., 2018). Studies have explored the psychological processes involved in adapting to GDM (Carolan-Olah et al., 2017; Persson et al., 2010), as well as the psychological burden caused by feelings of isolation and alienation when diagnosed with GDM (Parsons et al., 2018; Su et al., 2022). While research has highlighted the pervasiveness of online health information as a facilitating factor for GDM management, there remains a need for GDM education to take individual preferences into account (Edwards et al., 2021; Sabag et al., 2023).

Several studies have been identified that explored the experiences of women with GDM, but many of them were conducted in countries other than the United States. These include studies conducted in Denmark (Toxvig et al., 2022), Taiwan (Su et al., 2022), England (Edwards et al., 2021; Parsons et al., 2018), Australia (Bandyopadhyay et al., 2011; Carolan et al., 2012; Oxlad et al., 2023; Sabag et al., 2023), New Zealand (Martis et al., 2018), Canada (Hui et al., 2014a; Neufield, 2011), and Sweden (Hjelm et al., 2018; Persson et al., 2010). Few studies have addressed the experiences of women with GDM in the United States (Abraham & Wilk,

2014; Carolan-Olah et al., 2017; Stotz et al., 2019). Moreover, the three studies identified that were conducted with women living in the United States who experienced GDM focused on immigrant women, a small number of Native American women, and women in rural areas of Western New York. Studies conducted in the United States utilized phenomenology (Abraham & Wilk, 2014; Carolan-Olah et al., 2017), or grounded theory (Stotz et al., 2019) to examine women's experiences of GDM.

There is a need for studies that explore and describe women's experiences of gestational diabetes in the United States utilizing a Naturalistic Inquiry approach. Insights gained from women's GDM experiences may contribute to a more comprehensive understanding of what is needed for successful GDM management, and potentially inform the development of future educational interventions. The goal of the study is to explore women's experiences of GDM utilizing a Naturalistic Inquiry approach (Erlandson et al., 1993; Lincoln & Guba, 1985). The research question that will guide this study is, "What are the experiences of women diagnosed with GDM?"

SUMMARY OF LITERATURE REVIEW

Chapter Two has presented a review of the literature regarding gestational diabetes and women's experiences of gestational diabetes. The Chapter began with an overview of GDM and what GDM management entails. The Chapter explored the literature related to women's experiences of nutritional management, factors that have been found to impact GDM management, the psychological aspects of living with GDM, and the experiences of women diagnosed with GDM in the United States. The Chapter concluded by addressing the gaps found in the literature and provided a rationale for this study.

PLAN FOR REMAINING CHAPTERS

Chapter Three will describe how Naturalistic Inquiry (Erlandson et al., 1993; Lincoln & Guba, 1985) was utilized to explore and describe the experiences of women diagnosed with GDM. Chapter Four will present the findings of the study. Chapter Five will present a discussion of the study findings in relation to the existing literature, assess implications of the study, address the study's strengths and limitations, and provide suggestions for potential future research.

Chapter 3 Methods

INTRODUCTION

Chapter Three will present the research design and methodology utilized to explore and describe the experiences of women diagnosed with gestational diabetes [GDM]. The study used a Naturalistic Inquiry [NI] approach (Erlandson et al., 1993; Lincoln & Guba, 1985), and was guided by the research question: What are the experiences of women diagnosed with GDM? Chapter Three begins with a restatement of the research question, study aims, and a description of NI that includes the rationale for use of NI to conduct the study. Chapter Three will continue with an overview of participant recruitment and sampling strategies, data collection, data management, and data analysis procedures. The Chapter will describe how scientific rigor was established, and what procedures were followed to protect human subjects. Chapter Three will conclude with a summary of the methods used to conduct the study and a plan for the remaining chapters.

RESEARCH QUESTION AND AIMS

The research question that guided the study was: What are the experiences of women diagnosed with GDM? There were three aims to the study. The first was to explore and describe women's perceptions of being diagnosed with GDM. The second aim was to explore and describe the information women received about managing GDM. The third aim was to explore and describe factors that impacted GDM management.

NATURALISTIC INQUIRY

The research study was conducted using Naturalistic Inquiry [NI] which was first developed by Lincoln & Guba (1985) and further expanded upon by Erlandson et al. (1993). A defining characteristic of NI is that the meaning of reality is determined by its context (Lincoln

& Guba, 1985). Additionally, NI posits that realities are “multiple, constructed, and holistic” (Lincoln & Guba, 1985, p. 37). Thus, an assumption of NI is that individuals operate within unique realities of their own constructions. Once begun, the design of an NI study continues to emerge. The emergent design of NI allows for data collection and analysis procedures to evolve over the course of the study in response to what is learned as the study progresses (Erlandson et al., 1993).

The researcher is considered the primary instrument in NI. The researcher’s focus in an NI study includes the discovery of shared constructs to generate new knowledge by describing and understanding how people perceive their own experiences, or realities (Erlandson et al., 1993; Lincoln & Guba, 1985). The all-encompassing aim of the study was to explore and describe the experiences of women diagnosed with GDM. NI was an appropriate approach for this research study because the individual women had unique norms, beliefs, and life circumstances that impacted their experiences of GDM management.

METHODOLOGY

The following section discusses the utilization of Naturalistic Inquiry to explore and describe the experiences of women diagnosed with GDM. Participant recruitment and sampling strategy, inclusion and exclusion criteria, study setting, data collection and management procedures, data analysis strategies, rigor, and protection of human subjects will be addressed.

Participant Recruitment and Sampling Strategies

The University of Texas Medical Branch [UTMB] Institutional Review Board [IRB] approved all study procedures. Please see Appendix A for UTMB IRB Materials that include the study’s initial approval and approvals of addenda to the original study protocol.

The research study utilized purposeful and snowball sampling. A purposeful sample is one in which recruitment seeks participants who have experienced the phenomenon of interest (Palinkas et al., 2015). Participants were selected based on their experience of GDM. Snowball sampling took place in the form of the researcher asking her peer and professional network, and study participants, to share study recruitment information with friends, acquaintances, or family members who may be eligible to participate in the study. Snowball sampling is useful when the population of interest is rare, hard to reach, and involves the study of a sensitive subject (Portney & Watkins, 2015). Gestational diabetes is not the most common diagnosis, and discussing GDM can be a sensitive topic; thus, the use of snowball sampling was justified.

PARTICIPANT INCLUSION CRITERIA

Women were eligible to participate in the study if they:

1. were 18 years of age or older,
2. resided in the United States,
3. were diagnosed with GDM in a previous pregnancy,
4. were not pregnant at the time of recruitment and data collection,
5. were able to read and write in English, and
6. had access to a computer or smartphone with, or capable of downloading, the virtual synchronous audio-visual platform known as Zoom Video Conferencing.

PARTICIPANT EXCLUSION CRITERIA

No participants were excluded based on race or ethnicity. Women were not included in the study if they:

1. were younger than 18 years of age,

2. were not residing in the United States,
3. were not diagnosed with GDM in a previous pregnancy,
4. were pregnant at the time of recruitment and data collection,
5. were not fluent in English,
6. had been diagnosed with pre-existing Type 1 or Type 2 Diabetes Mellitus, or
7. were unwilling to participate in data collection sessions.

UTMB's IRB approved the study to enroll up to 25 research participants. Recruitment, data collection, and data analysis were ongoing until data saturation and redundancy occurred. Data saturation means that new data yields no new information, and no new themes are identified (Bowen, 2008). Data saturation is indicated by redundancy, or replication, of information (Bowen, 2008). Data analysis revealed some saturation of the data by the eighth participant. Two additional participants were recruited. Data from the ninth and tenth participants was compared to data from the first eight participants, and it was determined that saturation had been achieved with a total of ten participants. Participant demographic characteristics are outlined in Chapter Four.

Multiple strategies were used to recruit participants. Potential participants [PP] were recruited utilizing peer networking, ResearchMatch.org, and the flyer shown in Appendix B. The recruitment flyer provided information about the study, inclusion criteria, and invited interested potential participants to contact the researcher by email. The recruitment flyer was posted to two websites: healthfulchat.org, and the Graduate Nursing Student Academy [GNSA] Community Discussion Board located on connect.aacnnursing.org.

The first recruitment strategy was to recruit from the researcher's peer network. The researcher shared the recruitment flyer with peers who had either personally experienced GDM

or knew someone who had experienced GDM in a previous pregnancy. Individuals in the peer network agreed to share the recruitment flyer and invite other individuals interested in participating to email the researcher for more information about the study.

The UTMB IRB had approved the researcher to post the recruitment flyer to *community.whattoexpect.com* and *pinkstork.com/blogs/blog*. *Community.whattoexpect.com* is a conglomeration of online community groups with parenting and pregnancy message boards. However, the researcher was unable to obtain permission, and did not post the recruitment flyer to *community.whattoexpect.com*. Pink Stork is a health and wellness brand based in the United States that markets to pregnant and postpartum women, and publishes articles and blogs about fertility, pregnancy, postpartum, and breastfeeding. The UTMB IRB had approved the researcher to post the recruitment flyer as a blog post on *pinkstork.com/blogs/blog*. *Pinkstork.com/blogs/blog* would not allow the researcher to share the recruitment flyer as a blog post, so the recruitment flyer was not posted to *pinkstork.com/blogs/blog*.

The next recruitment strategy involved posting the recruitment flyer to *healthfulchat.org*. *Healthfulchat.org*, is a live chatroom website based in the United States for individuals seeking diabetes and pregnancy peer support. Since the recruitment flyer could not be posted as an attachment or image, text information from the recruitment flyer was posted in a new chat thread labeled “Diagnosed with gestational diabetes? Researcher seeking postpartum women willing to share their experiences of gestational diabetes” (Appendix C). Posting to *healthfulchat.org* yielded no participants. Consequently, the researcher sought UTMB IRB approval to modify the recruitment strategy and expand inclusion criteria to include women who had been diagnosed with GDM in any previous pregnancy.

Once the UTMB IRB approved the researcher's modification of the recruitment procedures, the researcher posted the recruitment flyer to the Graduate Nursing Student Academy Community Discussion Board, located on connect.aacnnursing.org (Appendix D). The GNSA Discussion Board engages graduate nursing students from across the United States; topics of discussion within the community board include peer networking, professional development, and research recruitment. The researcher posted the recruitment flyer as an attachment in a new chat thread labeled "Study Invitation: Looking for participants willing to share their experiences of gestational diabetes." Posting to the GNSA Community Discussion Board required registration to GNSA by creating a username and password. Other than creation of an online account, the GNSA Community Discussion Board did not have restrictions related to posting research invitations.

The last UTMB IRB approved recruitment strategy for the study was ResearchMatch.org. ResearchMatch.org is "a national health volunteer registry that was created by several academic institutions and supported by the U.S. National Institutes of Health as part of the Clinical Translational Science Award (CTSA) program. ResearchMatch has a large population of volunteers who have consented to be contacted by researchers about health studies for which they may be eligible" (ResearchMatch, 2023). ResearchMatch.org is free for researchers at participating institutions. The University of Texas Medical Branch is a participating institution. ResearchMatch.org's Researcher Acknowledgement Form for UTMB appears in Appendix E. ResearchMatch.org required the researcher to request recruitment access via verification of a current IRB-approved research protocol that included use of ResearchMatch.org. Once the researcher obtained approval for recruitment access on ResearchMatch.org (Appendix F), the researcher entered a volunteer contact message (Appendix G) that comprised of information

from the UTMB IRB-approved recruitment flyer but excluded the researcher’s contact information per ResearchMatch.org guidelines (ResearchMatch, 2023). The researcher applied the demographic, health condition, and exclusion filters outlined in Table 3.1 to reflect the study’s inclusion and exclusion criteria.

Table 3.1

ResearchMatch.org Recruitment Search Filters

Demographic Filters		Health Condition Filters
Included	Age: 18-100	Gestational Diabetes
	Sex Assigned at Birth: Female	
Excluded		Type 1 Diabetes Mellitus
		Type 2 Diabetes Mellitus
		Pregnant

The researcher’s contact message (Appendix G) was emailed to 245 potential volunteer matches by ResearchMatch.org. ResearchMatch.org volunteers had the option to respond ‘yes,’ ‘no,’ or not reply to the email. ResearchMatch.org provided the contact information of volunteers who replied ‘yes,’ and authorized release of their contact information to the researcher’s dashboard. Of the 245 potential volunteer matches who were emailed the researcher’s contact message by ResearchMatch.org, 18 clicked ‘yes’ and allowed release of their contact information to the researcher’s dashboard.

Table 3.2 summarizes participant recruitment for the study. A total of twenty-three women responded to the invitation to participate in the study: Eighteen registered ResearchMatch.org volunteers agreed to be contacted about the study, peer networking yielded two potential participants, and posting to the GNSA Discussion Board yielded an additional

three. The researcher contacted potential participants via email, thanking them for their interest in the study and requested a telephone meeting to discuss the study. During the telephone meeting, the researcher described what participating in the study entailed, answered any questions potential participants had about the study, and confirmed whether potential participants met inclusion criteria. Before ending the telephone meeting, if the potential participant [PP] remained interested in the study and met inclusion criteria, the researcher and PP agreed on a date and time for data collection. Thirteen women were not included in the study: ten of the thirteen had agreed to be contacted about the study via ResearchMatch.org, but did not respond to the researcher's request to schedule a telephone appointment to discuss what participation entailed, and verify inclusion criteria; one of the thirteen agreed to participate and met inclusion criteria, but could not be reached to schedule an interview after initial contact; one potential participant agreed to participate, met inclusion criteria, was scheduled for an interview, but failed to attend the data collection session for unknown reasons; one potential participant agreed to participate, met inclusion criteria, was scheduled for an interview, but contacted the researcher to cancel the scheduled data collection session. Ten women were included in the study: five were recruited via ResearchMatch.org, two through peer networking, and three from the GNSA Discussion Board.

Table 3.2*Participant Recruitment*

	ResearchMatch.org	Peer Network	GNSA Discussion Board
23 Responded to Study Invitation	18	2	3
13 Not Included	10 Did not schedule telephone appointments.		
	1 Did not schedule data collection session.		
	1 No showed for scheduled data collection session		
	1 Canceled data collection session		
10 Included	5	2	3

SETTING

The University of Texas Medical Institutional Review Board approved the use of a virtual synchronous audio-visual platform as the setting for data collection. The setting for data collection was Zoom Video Conference with end-to-end encryption enabled. Potential participants were asked to participate in the video conference from a location of their choice that was free from interruptions and offered privacy. The researcher conducted data collection from her private home work space.

DATA COLLECTION

The researcher emailed each potential participant [PP] a copy of the “Fast Facts” sheet (Appendix H) and Zoom meeting link after the telephone appointment but prior to the scheduled data collection session. Data collection sessions took place via Zoom Video Conference. The researcher began data collection sessions by greeting the potential participant and asking whether she had additional questions about the study. Once the researcher answered the potential participant’s questions and verified that she remained interested in being a part of the study, the researcher obtained oral consent by reading the oral consent narrative in Appendix I. The oral consent narrative ended with the researcher asking the PP the following question: “Do you consent to participate in the study on the experiences of women diagnosed with gestational diabetes and you affirm that the purpose, procedures, risks and benefits of participating in the study have been explained to you?”

Once the PP consented to participate in the study, the researcher began recording the video conference. The researcher asked the participant to restate her willingness to participate for recording purposes by asking the following question a second time: “Do you consent to participate in the study on the experiences of women diagnosed with gestational diabetes and you affirm that the purpose, procedures, risks and benefits of participating in the study have been explained to you, and all your questions or concerns have been answered to your satisfaction?” Since the participant and researcher were the only individuals present at the time oral consent was obtained, no other individual was available to witness the consent process. The participant was reminded that she had the right to decline discussing topics she did not feel comfortable addressing, terminate the interview, or withdraw from the study at any time. Data collection began with obtaining demographic data using the Demographic Questionnaire in Appendix J.

The researcher read the items listed in Appendix J, and participant responses were video recorded and transcribed. Demographic data included the participant's age, level of education, ethnicity, family structure, pregnancy/ delivery history, and household income.

The interview began after demographic data was obtained and was guided by semi-structured open-ended questions (Appendix K). Erlandson et al. (1993) advise Naturalistic Inquiry researchers to allow questions to emerge over the course of each interview, and the study overall, to allow participants to share their experiences free from researcher bias. The researcher added questions and changed the order in which questions were asked in response to what was learned as the study progressed (Appendix L). The interview began with the grand tour question, "What is your experience with gestational diabetes?" Prompts were asked according to the information that emerged in participant responses. None of the initial data collection sessions lasted more than 90 minutes. Data collection sessions ranged between 13 minutes and 66 minutes and lasted an average of 25 minutes. Prior to ending the data collection session, the researcher asked the participant whether she would like to share anything else that had not been discussed already. The researcher asked permission to contact the participant for additional information if a follow up interview was needed for clarification, or for member checking. The researcher invited the participant to email the researcher with additional input she may have had about the topic.

During data collection, the researcher recorded field notes that included observations of the participant's non-verbal behavior such as facial expression, changes to tone of voice, visible crying, and other non-verbal cues. After the participant logged off the video conference, but before the recording was terminated and forwarded for transcription, the researcher recorded her field notes. The researcher's field notes added depth to the recorded transcript of the data

collection session; assisted in corroborating the accuracy of transcribed data collection sessions and aided in data analysis. As part of the transcribed data, the field notes became part of the study's audit trail. The researcher also recorded her ongoing reflections, ideas, and thoughts about changes related to study procedures in a reflexive journal. The reflexive journal is also part of the study's audit trail. Data collection sessions ranged from 13 to 66 minutes and lasted an average of 25 minutes. None of the ten participants contacted the researcher after their initial data collection session with concerns or to provide additional information. Once clear categories were identified, the researcher contacted original study participants as described under the credibility section below to invite them to take part in member checking sessions. Five of the ten participants took part in member checking sessions. Member checking sessions lasted an average of 10.6 minutes and ranged from 6 minutes to 19 minutes.

DATA MANAGEMENT STRATEGIES

Data collection sessions were locally recorded on the researcher's encrypted laptop computer using the Zoom Video Conferencing platform. Back-up recording took place utilizing a video camera with microphone. The researcher created individual meeting identification codes and passwords for each participant to ensure privacy and confidentiality. The researcher enabled Zoom's waiting room, and end-to-end encryption features to ensure a secure video connection and prevent outside users from entering the Zoom meeting. End-to-end encryption generates encryption keys on Zoom user computers and not on Zoom's servers (Zoom Video Communications, Inc., 2023).

Once data collection ended and participants logged off Zoom Video Conferencing, the researcher uploaded the audio-only file of the recorded data collection session to Otter.ai™ for transcription. Otter.ai's™ confidentiality statement appears in Appendix M. Otter.ai™ is an

online artificial intelligence transcription service with the capability to integrate with the Zoom Video Conferencing platform. Otter.ai™ uploaded the completed transcription to the researcher's Otter.ai™ account. The researcher downloaded the transcript, reviewed it for accuracy by listening to the original recording while simultaneously reading the transcript, and corrected transcribing errors. The researcher then listened to the original recording a second time, while simultaneously reviewing her field notes, and inserted the field notes into the relevant sections of the transcript. The researcher saved a copy of the transcript in an encrypted password protected laptop computer that, when not in use, was stored in a locked cabinet located in the researcher's private home work space.

The researcher made a second copy of the transcript and de-identified the transcript by substituting a code for the participant's name and removing or masking any information that could link the transcript to the participant. The second, de-identified copy of the transcript was used for data analysis. The codebook containing the names of study participants and their assigned code was stored in the same encrypted password protected laptop computer as the first copy of the transcript. The second, de-identified hard copies of transcripts, the researcher's journals, and all other materials related to data analysis and writing up of study reports and documents were stored in a separate locked cabinet located in the researcher's private home work space. Once all study reports have been completed, all materials related to the study will be destroyed.

DATA ANALYSIS

Data analysis utilized two methods. Non-parametric descriptive statistics and measures of central tendency were used to analyze demographic data. Interview data was analyzed using Erlandson et al.'s (1993) interpretation of Lincoln and Guba's (1985) approach to inductive data

analysis. According to Lincoln and Guba (1985), inductive data analysis is preferred in Naturalistic Inquiry because it is more likely to: (1) identify multiple realities; (2) make researcher-participant interactions explicit, recognizable, and accountable; (3) fully describe the setting in which interactions occur thus making transferability to other settings easier; and (4) make values be an “explicit part of the analytic structure” (p. 40). Data analysis, as an interactive process, is a defining characteristic of a Naturalistic Inquiry (Erlandson et al., 1993), and began with the first interaction between the researcher and participant. According to Erlandson et al. (1993), data analysis is ongoing throughout the study and occurs concurrently with data collection.

Elements of Inductive Data Analysis

The three components of NI inductive data analysis are *unitizing data*, *emergent category designation*, and *negative case analysis* (Erlandson et al., 1993). Erlandson et al. define a unit of data as the smallest piece of information that can stand alone and is aimed at understanding some aspect of the topic under study. The first element of data analysis, *unitizing data*, involved breaking the data into small pieces of information that represented single concepts or ideas related to the phenomenon of interest.

The second element of data analysis, *emergent category designation*, involves “taking all units of data and sorting them into categories with the understanding that the construction that emerges will be one of many possible constructions of reality” (Erlandson et al., 1993, p. 118). Erlandson et al. (1993) describe the process of emergent category designation as:

- Read the first unit of data and set it aside as the first entry of the first category.

- Read the second unit of data. If the second unit of data is similar to the first unit, combine both units into one category. If the second unit of data is not similar to the first, then designate a new category.
- Repeat until all units have been assigned categories. Units that do not fit into a category or justify the creation of a new category should be placed in a miscellaneous pile to be reviewed later.
- Develop titles or descriptive sentences to distinguish categories from each other.
- Start the process over again.

Units of data were initially coded and categorized into related themes. As the study progressed, categories and sub-categories were allowed to naturally emerge from the data and the researcher's own understanding of the data. Units of data that were noted to be linked were grouped into sub-categories. Sub-categories that were observed to be related were organized into categories. Table 3.3 summarizes the progression of unitized data into initial themes, sub-categories, and categories.

Table 3.3*Initial Data Themes and Categories*

Initial Data Themes	Preliminary Outline of Categories and Sub-Categories
I. Reaction to the GDM Diagnosis a. Family Reaction II. Diet Pre-GDM Diagnosis Perceptions related to: a. Health and Pregnancy b. Diet III. Negative Feelings a. Failure b. Guilt IV. Reconciling or coming to terms with the GDM Diagnosis V. GDM Management a. Primary Concern b. Management Modalities c. Information Received d. Educational Gaps e. Helpful Resources VI. GDM Self-Management a. Facilitators b. Barriers VII. Reflections of the GDM Experiences VIII. Wanting Reassurance IX. Perceptions of Future Diabetes Risk	I. Perceptions Concerning Health and Pregnancy Pre-GDM Diagnosis II. Reaction to the GDM Diagnosis a. Initial Participant Reaction to the First (or only) GDM Diagnosis b. Participant Reaction to Subsequent GDM Diagnoses c. Family's Initial Reactions to the GDM Diagnosis d. Negative Feelings related to being diagnosed with GDM i. Failure ii. Guilt iii. Disappointment iv. Stress v. Frustration vi. Stigmatization III. Mastery a. Acceptance of GDM i. Overcoming the initial stress ii. Reframing GDM to focus on the positive b. Gaining an Understanding of GDM Management i. Perceptions/ Understanding how to manage GDM ii. Main Worry during GDM Management iii. Information 1. When Information Received 2. What Information Received 3. Information needed but not received 4. Search for Information 5. Information about Future Diabetes Risk iv. Figuring Out How to Successfully Manage GDM v. Perceptions of Family Adjustments to Diet Changes c. Facilitators of GDM Management i. Self-Motivation ii. Obtaining Support 1. Social Support 2. Helpful Resources 3. Needing Reassurance 4. Sources of Encouragement iii. Technology d. Barriers to Mastery of GDM Management i. Self ii. Lack of Support iii. Difficulty Incorporating Lifestyle Modifications iv. Lack of Information/ Conflicting Information e. Succeeding in GDM Management IV. Life After GDM a. Reflections of the GDM Experience b. GDM as a Catalyst for Permanent Change c. Concern for Future of Self and Baby

Table 3.4 presents the final category outline to be presented in Chapter Four.

Table 3.4

Final Category Outline

1. Finding Out About the Gestational Diabetes Diagnosis
a. How Participants Learned About the GDM Diagnosis
b. Reaction to the GDM Diagnosis
i. Initial Participant Reactions
1. Participant Reflections of Health and Pregnancy
2. GDM as a Stressor
ii. Participant Reactions to Subsequent GDM Diagnoses
2. Mastering GDM
a. Accepting the GDM Diagnosis
i. Overcoming the Initial Stress of the Diagnosis through Passage of Time and Taking Action
ii. Reframing GDM to Focus on the Positive
iii. Wondering what led the GDM Diagnosis
b. Gaining an Understanding of GDM Management
i. Information
1. When Information Received
2. What Information Received
3. Information Needed but not Received
4. Search for Information
c. Incorporating GDM Management into Daily Life
i. Fears and Concerns During GDM Management
1. Health and well-being of mother/ baby
2. Stigmatization
3. Mental Health
ii. Challenges to Incorporating Lifestyle Modifications Required for GDM-Self Management
1. Time Constraints
2. Limited Ability to Exercise
3. Stress of Diet Changes
4. Lack of Support
5. Financial Burden of GDM
iii. Factors that Helped with GDM Management
1. Taking Control
2. Obtaining Support
a. Social Support
i. Sources of Encouragement
ii. Needing Reassurance
b. Perceptions of Family Adjustment to GDM Diet Changes
3. Helpful Resources
a. Technology
b. Financial Resources
d. Measuring success of GDM Management
3. Life After GDM
a. Information Received about Future Diabetes Risk
b. Concern for Future of Self and Baby
c. GDM as a Catalyst for Permanent Change
d. Reflections of the GDM Experience

The third element of data analysis, *negative case analysis*, involved considering alternative interpretations of the data and was undertaken as discussions and review of data with the researcher's dissertation committee supervisor. Considering alternative interpretations revised, broadened, and confirmed patterns that emerged from the data. No contradictory data was noted, and this was confirmed by five of the ten participants during member checking.

TRUSTWORTHINESS

Trustworthiness, or rigor, in qualitative research is comparable to establishing validity and reliability in quantitative research. The study utilized the trustworthiness criteria described by Lincoln & Guba (1985) which are credibility, transferability, dependability, and confirmability. The sections below explain each criterion and describe how they were implemented in the study.

Credibility

Credibility refers to being confident that the study findings are truthful. Techniques for establishing credibility that were utilized in the study include member checks and negative case analysis. Member checks gave participants an opportunity to provide feedback on the study's preliminary results and were undertaken as follow-up data collection sessions lasting no more than 30 minutes. Once clear categories were identified, the researcher emailed original study participants, reminding them that they had given permission to participate in the study, and asked whether they would be willing to schedule a follow-up data collection session to review and discuss the preliminary study findings (the member checking sessions). During the member checking sessions, the researcher allowed participants to reflect on the categories presented to ensure that their experiences had been interpreted accurately and to add additional thoughts or

comments. Five of the ten participants took part in member checking sessions and confirmed the findings accurately captured their GDM experiences.

Negative case analysis enhances credibility by considering alternative interpretations of the data and occurred as described under Elements of Inductive Data Analysis (Erlandson et al., 1993). Negative case analysis was undertaken as discussions and review of data with the researcher's dissertation committee supervisor. No contradictory data was noted, and no negative cases were identified; this was confirmed by five of the ten study participants during their member checking sessions.

Transferability

Transferability refers to the extent to which findings can be applied in other settings, situations, and people (Lincoln & Guba, 1985). Transferability was achieved through thick description of participants' experiences. By thoroughly describing the perceptions and experiences of women with a history of GDM, the researcher created a "data base" (Lincoln & Guba, 1985, p. 316) on which readers of the study can make judgements on the transferability of the findings.

Dependability

Dependability refers to a study's consistency (Erlandson et al., 1993). Erlandson et al. (1993) state that a study must provide evidence its findings could be replicated if it were conducted with similar participants in the same context. Dependability of a qualitative study is communicated through a dependability audit in which the researcher provides an audit trail (Erlandson et al., 1993, p. 34). The researcher of this study created an audit trail, described in detail in the following section, which provided documentation and a running account of study processes.

Confirmability

Confirmability is the extent to which findings are shaped by participant responses and not researcher bias (Lincoln & Guba, 1985). Confirmability in the study was established by peer debriefing and by maintaining an audit trail of all study materials. The peer debriefer, the researcher's dissertation supervisor, reviewed all aspects of the study and data analysis processes, along with all conclusions, interpretations, and written reports to determine whether they were supported by the data itself and not influenced by researcher bias or preconceptions. The audit trail consisted of the study proposal, all forms of data collection materials, interview transcripts, reflexive journals, and notes.

HUMAN SUBJECTS

All study procedures were reviewed and approved by the University of Texas Medical Branch Institutional Review Board (UTMB IRB). The study posed minimal risk to human participants. Risks associated with participation in the study included loss of confidentiality, emotional distress, or fatigue. Prior to beginning the first data collection session, the researcher used the verbal consent narrative included in Appendix I to inform potential participants of their rights and review risks of participation. The researcher reviewed steps taken to ensure information remained confidential, informed potential participants of their right to not discuss topics that made them uncomfortable, and their right to stop the data collection session at any time.

It is possible that some experiences of GDM may have been unpleasant for participants; therefore, the researcher observed participants for signs of fatigue or distress during data collection sessions. The risk of fatigue during data collection was mitigated by limiting the initial data collection session to less than 90 minutes and follow-up sessions to 30 minutes. The researcher checked periodically with the participant during data collection sessions by asking

questions such as, “Are you okay to continue?” If the participant verbalized feeling uncomfortable or became visibly distressed, the researcher asked the participant if she was willing to continue and offered a break in the data collection session. The researcher asked the participant if she would like to end the data collection session entirely and resume at a later date or time. The researcher reminded the participant of her right to end the data collection session at any time. If the participant chose to end the interview, the researcher provided an email address where the participant could either schedule a subsequent data collection session or withdraw from the study. Contact information for the National Alliance on Mental Illness was provided in the Fast Fact Sheet (Appendix H) in the event participants needed resources for mental health support.

Confidentiality of the study data and materials was be protected as described in detail in the Data Management section above. Transcribed interviews were de-identified by substituting a code for the participant’s name and removing or masking any information that could link the transcript to the participant. Study materials were stored in an encrypted password-protected laptop computer that was secured in a locked cabinet located in the researcher’s private home workspace. Hard copies of de-identified transcripts, the researcher’s journals, and all other materials related to data analysis and writing up of study reports were stored in a separate locked cabinet located in the researcher’s private home workspace. All materials related to the study will be destroyed once all reports have been completed.

SUMMARY OF METHODS

Chapter Three has presented the research question guiding the study, the study’s aim, a description of NI; the method utilized in this study. Chapter Three discussed participant recruitment and sampling strategies, and provided a detailed description of the data collection,

data management, and data analysis procedures employed in the study. Chapter Three concluded with a description of how scientific rigor was established and steps taken to ensure the protection of human subjects.

PLAN FOR REMAINING CHAPTERS

Chapter Four will present the study's findings concerning the experiences of women diagnosed with GDM in a previous pregnancy. Chapter Five, the final chapter, will be a discussion of the study findings. Chapter Five will also assess implications of the study, address strengths and limitations, and provide suggestions for potential future research.

Chapter 4 Findings

INTRODUCTION

Chapter Four presents the findings of this Naturalistic Inquiry (Erlandson et al., 1993; Lincoln & Guba, 1985) study which explored and described the experiences of women who were diagnosed with gestational diabetes [GDM]. The Chapter will begin with participant demographics and continue with a presentation of the findings. Chapter Four will continue with a summary of the findings and end with the plan for the remaining chapter.

STUDY PARTICIPANTS

Ten women with a history of GDM participated in the study. Table 4.1 provides an overview of participant demographics. The participants' ages ranged from 25 to 52 years (Mean = 40.2, Median = 38.5, Mode = 38). Two participants identified as Hispanic, one as Asian, and seven identified as Caucasian. All participants resided in the United States at the time they experienced the GDM pregnancy and during data collection. None reported being pregnant at the time of data collection. Eight participants reported English as their primary language and two reported English as their second language. All data collection sessions were conducted in English, and all participants were fluent in English. Two of the ten participants were high school graduates, five had a master's degree, and three had a bachelor's degree. Four participants were not employed outside the home during their GDM pregnancies, while six participants worked between 32 and 60 hours per week (Mean = 42.1, Median = 40, Mode = 40).

Table 4.1*Participant Demographics*

Age (Years)	Ethnicity	Living in the US	Pregnant at Data Collection	English as Primary Language	Highest Level of Education Completed	Worked while Pregnant. (Hours per week)
36	Hispanic	Yes	No	Yes	Master's	36
34	Hispanic	Yes	No	Yes	Bachelor's	60
43	Asian	Yes	No	No	Master's	40
38	Caucasian	Yes	No	No	Bachelor's	40
25	Caucasian	Yes	No	Yes	High School	No
38	Caucasian	Yes	No	Yes	Master's	32
51	Caucasian	Yes	No	Yes	High School	No
52	Caucasian	Yes	No	Yes	Master's	No
46	Caucasian	Yes	No	Yes	Bachelor's	No
39	Caucasian	Yes	No	Yes	Master's	45

Note. Participant numbers are not provided to protect privacy and confidentiality. None of the participants was African American.

Table 4.2 provides an overview of the study participants' self-reported obstetric history and family structure at the time of their GDM pregnancies. Seven of the ten participants were diagnosed with GDM once, while two participants were diagnosed with GDM twice; one had experienced three pregnancies in which she was diagnosed with GDM. All participants were living with their husbands during their GDM pregnancies. Seven of the ten had at least one child in the household, and one participant reported an extended relative living in the household at the

time of her GDM pregnancies. The participants' median annual family income at the time of their GDM pregnancies was \$85, 000 per year (Range \$28k – \$400k; Average = \$134.5k).

Table 4.2

Participants' Obstetric History and Family Structure related to Gestational Diabetes

Number of Pregnancies	Number of Deliveries	Number of Pregnancies with GDM	Household Members during GDM Pregnancy	Annual Family Income
2	2	2	Husband and child	95k
1	1	1	Husband	400k
2	1	1	Husband	130k
2	2	1	Husband and child	350k
2	2	2	Husband and children	28k
4	3	1	Husband and child	75k
4	4	3	Husband, children, and extended family member	55k
3	3	1	Husband	30k
5	3	1	Husband and children	32k
2	2	1	Husband and child	150k

Note. Participant numbers are not provided to protect privacy and confidentiality.

PRESENTATION OF THE FINDINGS

The purpose of the study was to explore and describe the experiences of women who had been diagnosed with gestational diabetes. Presentation of the findings utilizes quotations from the study participants to illustrate important points. Participant quotations are cited with the participant's unique identifier (ex. P1), and the line of text where the quotation can be found in the interview transcript is indicated by "L" followed by the line number(s) (ex. L 25-27). In

some instances, quotations are presented without unique participant identifiers to preserve the privacy of participants. Quotes that originated from member checking data collection sessions are cited with the participant's unique identifier followed by the abbreviation "MC" (ex. P1MC), and the line number(s) where the quotation is found in the member checking transcript.

Analysis of the data revealed three major categories: 1) *Finding Out About the Gestational Diabetes Diagnosis*, 2) *Mastering GDM*, and 3) *Life After GDM*. Presentation of the findings will begin with the first category, *Finding Out About the Gestational Diabetes Diagnosis*.

I. FINDING OUT ABOUT THE GESTATIONAL DIABETES DIAGNOSIS

The interview section of the initial data collection sessions began with the grand tour question, "What was your experience with gestational diabetes?" Some participants responded to the grand tour question by talking about how they had found out about their gestational diabetes [GDM] diagnosis. Three participants learned over the phone. One participant stated, "We diagnosed it with a regular glucose tolerance . . . They [the doctor's office] just called and said you've got gestational diabetes" (P8, L 139, 146-147). When asked what happened when she first learned about the GDM diagnosis, a second participant reported, "I got a call from one of the offices, it was the doctor's office" (P4, L 120-121). Similarly, a third participant noted, "I learned [about the diagnosis] over the phone" (P6, L 123).

Two participants talked about learning they had GDM when they went through the process of glucose tolerance testing. One participant thought having eaten prior to the test contributed to her being diagnosed with GDM:

I take the test that you take . . . where you drink the orange soda tasting stuff. And they're like, 'Well, you failed it and you got to come back.' And I was like, 'Well, I've never

failed that test.’ And I thought it was because, I was ravenous hungry the first time and I had eaten something. I told them and they’re like, ‘You’ll be okay.’ And it ended up being positive. So, they wanted to take another one, which I didn’t eat (P9, L 122-127).

A second participant stated:

I did the test for gestational diabetes, the initial test, and they said that I needed to come back and do the glucose test where I needed to drink the glucose liquid and have my blood sugar checked. After that, they diagnosed me with gestational diabetes based on the results of that information (P10, L 134-137).

Reaction to the GDM Diagnosis

All but one of the participants had been taken unaware by the diagnosis of gestational diabetes [GDM]. They reacted to being told they had GDM for the first time with confusion, surprise, shock, and denial. “It was kind of a shock” (P9, L 144). “Oh, I was so confused . . . It felt also like maybe it was a bit exaggerated” (P4, L 133, 139).

The diagnosis caused the participants to reflect on their perceptions of their health and the pregnancy prior to the diagnosis. A participant whose first pregnancy had been uncomplicated, was confused and surprised when she was told she had GDM with the second pregnancy, “I had no idea what I had done wrong . . . this [was my] second pregnancy, I felt like I [had already] experienced what a pregnancy is like” (P4, 133-134).

A participant noted, “The test [came back] sugary so I was surprised. I thought for sure I would pass the test . . . I thought for sure I do not have diabetes . . . So, I think shocked was my first reaction” (P3, L 47-48, 51-52). Another woman had been surprised but not entirely shocked by her GDM diagnosis: “It was kind of unreal . . . I didn’t really believe it because my sugar had always been the other direction . . . it was not a shock because they’d always said if you’re

hypoglycemic, there's a chance" (P8, L 155-157). A third participant feared the risks GDM posed for her baby:

I felt very scared with that diagnosis . . . I just felt really scared and really upset at my body because it felt like I had done something wrong, and I'm worried what it would mean for my baby . . . if it would harm my baby in some way or would be a bad thing" (P10, L 137, 165-167).

Three participants reported the GDM diagnosis made the experience of their pregnancies more stressful. One stated, "Getting a gestational diabetes diagnosis. Um, it just made the pregnancy a little more stressful when in reality, I [had been] extremely chill about the second baby" (P4, L 166-168). A second participant who had suspected she might be diagnosed with GDM reported:

I was very upset and mostly just stressed out, I think that I was really upset that I had one more stressor . . . [but] I kind of expected I might have it . . . I started the pregnancy at kind of a high weight and so I was worried that I may have already had some prediabetes that was not detected prior, so I thought I thought maybe my blood sugar and eating had not been great prior to pregnancy (P6, L 132-144).

A third participant, who had been on bedrest because of other pregnancy complications, said the GDM diagnosis was an additional stressor for both herself and her family:

So that was emotional and stuff. And I think a lot of that had to do with the fact that I was on bedrest, and that my husband was trying to take care of me and go to [school] and work three jobs. So it was, it was a difficult time (P7, L 196-198).

The same participant realized the GDM diagnosis meant she was at risk for future health problems: "It was very emotional for me because I knew that that was going to affect my risk

[for developing Type 2 Diabetes in the future] even more” (P7, L 177). The timing of the GDM diagnosis was another factor that compounded the stress of being diagnosed with GDM, as indicated by one participant who noted that until she had received the GDM diagnosis, her pregnancy had been uncomplicated:

It was definitely distressing being diagnosed with the condition . . . the timing of the diagnosis as well was sort of distressing. It was towards the end of the pregnancy . . . So far it had been a healthy pregnancy . . . So, this was a little bit scary (P2, L 118-132).

The three participants who had experienced GDM with previous pregnancies described how they had reacted to the first GDM diagnosis and to subsequent GDM diagnoses. Two of the participants said their reaction to the initial GDM diagnosis had included surprise, shock, and denial. One participant noted, “The first one, it was kind of a surprise. I wasn’t really expecting it . . . I was in denial. I thought the test was wrong” (P1, L 102, 117). She said being diagnosed with GDM for the first time had led her to change her perception of health because she realized that her diet prior to the diagnosis had been unhealthy. “Um . . . before, finding out that I had gestational diabetes, me thinking we ate healthy compared to what actually healthy is, two different things” (P1, L 210-211). Another stated, “I didn’t want to believe it at first . . . I know that diabetes isn’t good, but I mean at that point, what am I going to do? . . . So, it was a shock” (P7, L 205, 372-374). During member checking, she added, “It was very scary and disappointing” (P7MC, L 36-37). A third said she had been traumatized by her first GDM diagnosis: “The first time was really traumatic. I had a breakdown . . . the threat of the big baby and your baby could die. And like all of this stuff was really heavy and freaked me out” (P5, L 140, 212-213). Nevertheless, she had expected to be diagnosed with GDM with her second pregnancy: “The second time, I was pretty sure I was gonna get diagnosed with it anyway. . . [I

was] disappointed, definitely disappointed, and a lot of dread, because . . . it's going to be months of dealing with it” (P5, L 142-143, 151-152).

Participants’ reactions to subsequent GDM diagnoses also included frustration, and disappointment:

Then with the second pregnancy, I didn’t have an opportunity to actually do the glucose check. They just assumed I was going to be or have gestational diabetes because of the first one [GDM diagnosis] . . . The second pregnancy, when they told me that they weren't going to check, they were just going to assume . . . It was a little frustrating (P1, L 106-108, 131-132).

A participant who had experienced GDM during multiple pregnancies said that the subsequent diagnoses were challenging because they added to her expectations that she would develop Type 2 Diabetes in the future. “Then, you know that with the fourth one, that it [diabetes] wasn't going away, and, you know, so that was, that's still a challenge” (P7, L 187-188).

Summary: Finding Out About the Gestational Diabetes Diagnosis

Participants recalled finding out about their GDM diagnosis from their healthcare providers, and by telephone. The diagnosis of GDM took most of the participants by surprise. They also reacted with denial, confusion, shock, frustration, disappointment, and identified the GDM diagnosis as a stressor. The diagnosis caused the participants to step back and reflect on their perceptions of their health, their pregnancies, and whether they had had a healthy lifestyle prior to their GDM diagnosis. The GDM diagnosis made women re-evaluate their perception of health by revealing that their lifestyle prior to being diagnosed with GDM may have been unhealthy.

II. MASTERING GESTATIONAL DIABETES

Each of the participants had to go through some sort of process of moving from their initial emotional reactions and coming to terms with their gestational diabetes diagnosis. They then had to quickly integrate the requirements of their GDM into their lives in a manner that was conducive to their daily routine and worked to effectively control their blood glucose: they had to master their GDM. Participants' process of mastering GDM consisted of four distinct but iterative and interactive components that will be presented separately. The first component involved acceptance of the GDM diagnosis; the second component was having to gain an understanding of the requirements of managing their GDM; the third consisted of incorporating the requirements of GDM management into daily life; the fourth and last component related to how the participants measured their success in GDM management.

Accepting the GDM Diagnosis

The women who participated in the study moved past the initial shock, denial, frustration, stress, and disappointment of finding out they had been diagnosed with GDM to acknowledging the reality of GDM. Participants shared a wide variety of experiences when coming to terms with their GDM diagnosis. Various ways participants came to accept the diagnosis included taking action to establish new eating habits, the passage of time, and reframing GDM to focus on positive aspects of the experience. Six of the ten participants discussed how they accepted the diagnosis of GDM; some also pondered what had led to their development of GDM. For one participant, acceptance of the GDM diagnosis came over time as she actively managed her GDM. She viewed GDM as transitory and found that taking action to incorporate the requirements of GDM management into her daily life helped her come to terms with the diagnosis:

Once I got over that initial stress, it was not too bad . . . Once I got into the habit of things that I could eat, it was okay . . . It's only a short period of time so we'll get through it . . . Once I got through the first couple of days and calmed down . . . I think it was just time probably (P6, L 113-116, 293-294, 302-303).

Reframing GDM to focus on positive aspects of the experience also helped four participants accept their diagnosis. A participant wondered how she came to be diagnosed with GDM and accepted her diagnosis by focusing on the positive aspect of having gotten pregnant in the first place. She compared GDM to her difficult pregnancy journey and viewed her GDM diagnosis as an opportunity to become more health conscious for the sake of her baby:

I like to eat bacon and high fat things, but I do not like anything sugar. I drink my coffee without sugar. I do not like to have sweet things. I don't really do dessert except sometimes vanilla ice cream a little bit . . . My pregnancy was a nightmare. It was my third IVF . . . so compared to everything all the other nightmares I went through . . . [A] needle [in] my finger it wasn't it wasn't great, but it was not my priority . . . [it] was not the biggest scare . . . I think it helped me [become] more conscious or paying more attention about my weight. You know, I did not gain a bunch of weight . . . so I think it's okay [because] it's all for the good . . . for my health with a baby" (P3, L 48-51, 81-85, 115-118).

A second participant felt guilty that a lack of exercise and stress could have contributed to her being diagnosed with GDM. She said she viewed herself as part of a larger community of women who also had been diagnosed with GDM and assured herself that not feeling in complete control of the situation was okay:

I felt very guilty . . . I thought that the gestational diabetes was all my fault because I wasn't getting exercise, I was working a lot, and feeling quite stressed because of work. I thought it [GDM] was my fault . . . There's not a lot you can do and still just try to control it. But don't freak out. Just don't freak out. It's fine. We're not the first people in the world to have gestational diabetes (P4, L 168-171, 333-335).

A third participant reframed her experience with GDM as an opportunity to bond with family members who had diabetes. She commented, "It was also to some extent insightful because I got to sort of learn a little bit more about other people in my family with diabetes that I had so far not really been aware of" (P2, L 132-134). The fourth participant said she felt having been diagnosed with GDM was her fault, "[GDM is] just like this constantly disappointing thing because you feel like it's your fault" (P5, L 131-132). Nevertheless, she reframed the need to take insulin as doing something natural because the exogenous insulin was augmenting a substance her body needed:

If you have to do insulin, it's okay. It's a natural thing that the body produces. You can't have too much insulin. If they want to increase it, let them increase it, you'd rather have the good numbers, your body makes it anyway (P5, L 358-360).

A participant feared being diagnosed with GDM meant she would have to give up the labor and delivery experience she desired. She had to acknowledge GDM, and faced coming to terms with her new reality that did not meet her desired expectations of a natural and unmedicated delivery experience:

I had the type of delivery and pregnancy experience that I wanted in mind and that [GDM] was not part of the experience . . . I had a natural labor with my first child . . . it was unmedicated and [I] wanted that same experience of spontaneous labor with no

medication or no medical intervention [but] I was scheduled for an induction before my due date [for the pregnancy in which she experienced GDM] (P10, L 138-146).

Accepting the GDM diagnosis was the first part of the participants' journey toward mastering their GDM. While coming to terms with their diagnosis, participants also wondered how they came to be diagnosed with GDM. Time and new habits helped the participants overcome the initial fear and stress of being diagnosed with GDM. Participants also reframed their view of GDM to focus on positive aspects of the experience. Acceptance of the GDM diagnosis, or reconciling the presence of GDM, allowed participants to adjust to their new situation of living with GDM.

Gaining an Understanding of GDM Management

The second component of mastering GDM involved participants gaining an understanding of what they needed to do to manage their GDM. Each of the participants had to gain an understanding of their healthcare provider's recommendations related to diet and lifestyle changes, the need for and how to monitor their blood glucose, medications and specialist referrals, and how to incorporate GDM management requirements into their daily lives based on the information they received from their healthcare providers.

Information

Participants identified information about glycemic control, diet, and exercise as integral to learning how to manage GDM. All of the participants reflected on when, how, and to what extent they received information about GDM management after learning of their diagnosis. Receiving the diagnosis of GDM meant the study participants had to take in the fact that they had the condition with all its risks to their fetuses and themselves but had to begin making changes in their lives immediately. Therefore, the timeliness in which participants received

information from their healthcare providers was consequential in their ability to implement the lifestyle changes necessary for adequate blood glucose control.

When Information Received. Five participants discussed when they received information about GDM management. Two of the five were given information immediately following their diagnosis, while three experienced a delay in receiving pertinent information on how to manage their GDM. One participant described herself as diligent as she immediately integrated the lifestyle changes necessary to control her blood glucose:

I immediately received information about how to start monitoring my glucose levels . . . and general management of the condition . . . I received information, as well as session[s] with dieticians . . . I'm a very methodical person so I incorporated it [the information into daily life] straight away (P2, L 129-130, 140, 149).

During member checking she clarified, "I felt like I had very limited information upon initial diagnosis, but then I did receive medical support as in access to a nutritionist" (P2MC, L 50-51). Thus, the timeliness of information received impacted how quickly she could act to manage her GDM. A second participant recalled being told by her healthcare providers to set up virtual appointments with a nutritional counselor and diabetes specialist to receive information about diet changes and monitoring her blood glucose. She was able to immediately implement the lifestyle changes necessary to manage her GDM:

I got a call from one of the offices . . . an office that was associated with [my] doctor's office that focused on these kinds of issues [diabetes] . . . I remember needing to set up some appointments, virtual appointments [with the diabetes specialist], for them to coach me on what I needed to do to start monitoring my blood sugar after each meal . . . I was getting all this information from someone who was a nutritional counselor . . . I received

the information after I was diagnosed . . . I made changes immediately [after meeting with the nutritionist] and only ate what I was told I need to eat (P4, L 120-126, 183, 195-196).

A third participant did not receive information from her obstetrician at the time of her GDM diagnosis. She had to wait one week to see a dietician and obtain supplies to monitor her blood glucose. During the intervening week, she took it upon herself to decrease her carbohydrate intake: “[I] just tried to eat less carbs in general until I was able to get the appointment with the dietitian. I think it was within a week, so it wasn’t very long and get all the supplies and things” (P6, L 230-231). A fourth participant had been on bedrest due to pregnancy complications unrelated to GDM. She said she felt overwhelmed receiving information about GDM management the same day she was diagnosed:

Early in the pregnancy they [OB] had me do the three-hour glucose thing and . . . that very day they had me learning how to give myself insulin shots. So that was emotional and stuff. And I think a lot of that had to do with the fact that I was on bedrest . . . Well, the first one [GDM diagnosis] was like, ‘you have to do this now’ . . . They were on it right away, showing me how to give insulin and showing my husband how to take care of my insulin . . . I was having gestational counseling the day that they found out I had diabetes . . . trying to give me a lot of education really quickly and then going home and trying to stick to their pamphlet (P7, L 194-197, 417-421).

Conversely, a fifth participant had a difficult time retaining what little information her OB provided during the visit when she received her diagnosis. She then experienced a multiple week delay in obtaining a blood glucose monitor and information about dietary recommendations from a nutritionist. She ultimately required insulin to manage her GDM:

I don't believe I received a whole lot [of information from the OB]. I went to the nutritionist and that was the only person that I really saw besides the OB . . . I don't remember anything from the OB telling me [about] what it's [GDM] going to cause, if it gets this far out of control, it's [GDM] going to do this . . . it [the information] didn't stick with me . . . I think it was probably about two or three weeks before they [the OB] made an appointment for me to see the nutritionist . . . when I got my blood sugar monitor was when I saw the nutritionist and she explained all of that . . . We went over a diet and things like food suggestions and an eating plan . . . We did that for about a month . . . before they did another test to see what was going on. They looked at my blood sugars. All that show[ed] kind of high and that's when they decided to put me on insulin (P9, L 173-174, 195-199, 278-288).

Getting information quickly influenced participants' understanding of GDM to begin managing the condition. It was also important for participants to receive information when they were emotionally ready. A delay in receiving information prevented participants from taking immediate action. On the other hand, participants who had received information immediately after being diagnosed felt overwhelmed and unable to retain important information. Given that all but one of the participants had not expected to be diagnosed with GDM, it is understandable that they also felt overwhelmed when being given a lot of complex information shortly after receiving such an unexpected life altering diagnosis.

What Information Received. Seven participants talked about what information they received from their healthcare providers related to management of their GDM. They had received information concerning diet, exercise, guidelines for meal preparation, risks GDM

posed for participants and their babies, medications and how to take them, and how to monitor their blood glucose.

One participant had been given information about diet, exercise, and the risks GDM posed for both her and her baby: “I received information around ideal diet and exercise schedules, about the risks for myself [and] for the baby during pregnancy, and post pregnancy” (P2, L 141-143). In addition to receiving information about what foods to eat, a second participant received information about how to prepare her meals, and count carbohydrates. She was also informed about the increased risk of her and her baby developing diabetes later in life:

I had guidelines for meal preparation or what my meals should be . . . the amount of certain things like carbohydrates especially, and the risks for me developing diabetes later in life as well as the risks that the baby would have, or this predisposition, to certain health conditions and still birth (P4, L 184-188).

A third participant had received handouts outlining the amount of carbohydrates specific foods contained from the dietician. The dietician also reviewed how to count carbohydrates, and how to use a glucometer:

So, I had some extra appointments that I had to go to with the dietician to learn about diabetes and how to count carbs . . . They [the dieticians] gave us some handouts on how many carbs are in each thing [food item] . . . what number [of carbs] we should try to stick with for different meals, how to test our blood sugar, and try to eat carbs with protein . . . They told us to check it when we woke up fasting and then check it, I think, two hours after every meal, and showed us how to use the little machine (P6, L 124-125, 185-188, 196-197).

A fourth participant who was referred to a dietician to learn about diet changes needed with GDM felt well-informed about the necessary lifestyle changes for GDM management. She was also given anticipatory guidance by her healthcare provider on what to expect during labor and delivery:

There was a referral to a dietician to go learn about eating with gestational diabetes and managing it. There were conversations with the [healthcare provider] around gestational diabetes and the possible outcomes of having gestational diabetes; that there could be an induction, there could be C section, there could be medication that's needed. I felt pretty well-informed about the lifestyle changes [and] the possible outcomes . . . I received a diary to track my food and to track my blood sugars, things like that (P10, L 225-229, 231-232).

When asked whether she remembered what information she received about managing GDM, a fifth participant recalled not having received much information other than being instructed to monitor her blood sugar:

I don't know that I received any except for just watch your sugars, because it's been long enough ago that I don't think they [healthcare providers] really worried about it a whole lot. They just went 'and this is positive, watch your sugars' and then we just went on (P8, L 210-213).

Two participants who had experienced GDM during multiple pregnancies discussed information they received from their healthcare providers after each diagnosis. A participant who had been diagnosed with GDM twice said she was given handouts with suggestions on caloric intake, carbohydrate limits, and how to schedule her meals. However, she felt that her

healthcare providers did not take the time explain the information to her to ensure she understood what she was given:

They gave me the same packet both times [sighs]. It was basically a packet of paper that said based on your calories, or based on your weight, you need to eat this many calories in a day, and we're going to split it up between each meal and snack. So, this is how much you should have with each meal. And this is how much you should have with each snack. And here are two pages of suggestions of things that fit into those carb limits . . . they really push that you could have a really big baby . . . the first time they didn't really explain anything to me, they were just like, 'Here, take my Metformin here, take insulin.' And, you know, that's it (P5, L 201-205, 207-208, 245-247).

Another participant, who had been diagnosed with GDM more than once, recalled what had shaped her initial understanding of GDM, and how the information she received from healthcare providers varied after each diagnosis. She said:

I was more educated in further pregnancies than my first one . . . I remember them [healthcare providers] telling me to stay away from sweets . . . I really didn't have a lot of information about diabetes because I grew up in [city, state]. So, it's in the sticks and the only thing I knew about diabetes was that some older relatives had sugar. That doesn't really explain diabetes at all (P7MC, L 40, 101-104).

Following her initial GDM diagnosis, she received education about insulin administration. Despite having received a pamphlet about what foods to eat, she did not feel she had been well-informed because providers did not take the time to explain the diet. At the time of a subsequent GDM diagnosis, the participant was referred to a dietitian. She thought the dietitian took the time to give her a more complete explanation of the required dietary changes:

Well with each one it was different you know with number [initial GDM diagnosis], they [healthcare providers] had to show me how to give insulin, they had to show me how to measure the insulin, how much insulin to give, how to check my blood sugar's. That was all new to me. I hadn't done any of that before. So, they had to show me all of that and how to keep track of it. They did give me a pamphlet on what foods were good. I didn't really feel like I had enough information with number [initial GDM diagnosis]. You know, I felt like they gave me, you know, this little booklet where to keep my blood sugars and they gave me a pamphlet and told me what kind of foods to eat and how to balance that a little bit, but I didn't really feel very informed with that situation. When I had number [subsequent GDM diagnosis] I felt I had similar situation you know . . . I know with number [subsequent GDM diagnosis] I met with a diabetic dietitian, and she actually explained things better to me. I really felt like I was blessed to have that. I hadn't really had that with the other[s] and I wish to I had (P7, L 302-316).

What information and the extent to which healthcare providers took the time to explain the information varied. While four participants felt well-informed about how to manage their GDM, three others thought healthcare providers did not take time to ensure information was well understood. Participants wanted their healthcare providers to explain the information and help them understand how to apply the information to their real-world situations rather than simply being handed an informational pamphlet.

Information Needed but Not Received. All of the women who participated in the study gave examples of information they felt they had needed to gain an understanding of GDM but had not received from their healthcare providers. Participants needed more information about factors that might have placed them at risk for GDM, and they wanted more guidance on what to

expect after being diagnosed. They needed information and guidance about how to incorporate the lifestyle changes required for management of GDM into their daily lives.

Five of the ten participants would have liked more information about risk factors and causes of GDM. One participant had not been aware that she had a predisposition to developing GDM until after she was diagnosed: “I’m interested in the why. [Race/Ethnicity] people are more likely to [be diagnosed with GDM] . . . is that something in our gene[s]?” (P3, L 171-172). A second participant also realized she was at high-risk of developing GDM but thought her healthcare providers should have informed her of the risk for GDM earlier in her pregnancy:

I would have loved [to] have been to get an earlier warning. I think that there were definitely things in my medical history that suggested I was a high-risk candidate for gestational diabetes . . . So, I think I saw it on that pamphlet, but I never got more direct instructions of, ‘Well, you tick many of the boxes, therefore, you may be more likely to have gestational diabetes.’ And so, I really wish I would have been educated about it early on (P2, L 189-195).

Another participant thought her healthcare providers did not take the time to explain GDM or answer her questions about managing GDM. She wanted to understand why she was diagnosed with GDM, and wanted providers to spend more time answering her questions about expectations and outcomes related to blood glucose control:

I don’t remember a whole lot of education about it [GDM]. I don’t remember understanding what causes it . . . how it is really identified . . . what are some of the other factors like long term effect[s] . . . it was more of, ‘Okay, this is how we’re going to have to handle it and we’ve got to get the sugar under control’ . . . and that was it . . . I don’t remember anything from the OB telling me, ‘You know this is what it’s [GDM] going to

cause . . . if it [GDM] gets this far out of control, it's going to do this.' I don't remember any of that stuff. Not saying they didn't do it. I just I just don't remember that they did it. Didn't stick with me . . . I remember going to the doctor, but they would spend five or ten minutes with you and then just move on. I didn't feel like they took a lot of time with me to explain anything. If you ask a question, they hurried through it . . . I felt pushed through like cattle (P9, L 178-182, 195-198, 256-260).

Her experience suggests that in addition to the providers spending too little time with her at the time of diagnosis, there was no effort on the part of the provider to be sure she had been able to take in and process the information. A fourth participant would have preferred having more information about GDM and the risks to the fetus prior to her being diagnosed. She also wanted more specific information about diet resources:

I also didn't really understand . . . I understood that there were certain risks that were associated with the baby's health . . . I don't have enough education about this topic, prior to getting the diagnosis . . . I also looked up the topic [of GDM], and it just seems like there isn't a very clear understanding on why it [GDM] develops, and it might actually just be an evolutionary advantage. So, the information is quite mixed. It wasn't clear what ways to prevent it [GDM] and whether it's genetic, or just caused by a previous pregnancy with a baby that was pretty big, which was my case. The amount of information that's out there is unclear . . . I could have used a little more background or general information, or at least some more clear resources . . . sources of knowledge [about] what to do and how to keep your calories in check . . . [and] what this [GDM] phenomenon actually is (P4, L 135-140, 343-348, 351-354).

A fifth participant said she had not received adequate information about the risks to her baby, “They [healthcare provider] didn’t really give any information about how the babies are usually bigger . . . and sometimes have glucose problems” (P6, L 274-276).

Three participants needed more information about the medications required to manage GDM, as well as how to incorporate the lifestyle changes into their daily lives. In addition to wanting to know more about what GDM does to the body and what to expect, a participant thought she did not receive enough information to understand the reasons for making important decisions and changes in her life. She did not receive a glucometer to test her blood sugar and was not given detailed information about why limiting carbohydrates was important:

Looking back now they could have done a lot more education . . . What to expect, what it does, how it works. Because [it is the job of healthcare providers] to give them [patients] information. It's the [patient's] job to make decisions. And I didn't have any information to make decisions on . . . How diabetes works? Why it's important that you keep your sugars, how to how to test your sugars I. They never even gave me a meter to test them . . . There was not a whole lot said after the initial diagnosis other than ‘just be careful’ ‘just don't eat too much.’ And they never even went into carbs or sugars to or any anything like that. It was just, ‘watch sugar.’ If you don't know that all of those other things turn straight into sugar, you don't avoid those . . . How to live with it [GDM]. It's not the end of the world. And yet there are some big changes that have to be made. How do you put those [changes] into your lifestyle? How do you change your lifestyle? (P8, L 311, 320-323, 331-332, 345-348, 373-374).

A second participant who had been diagnosed with GDM during previous pregnancies said she had never been referred to a nutritionist. She believed she needed more active guidance and constructive feedback about the foods she ate:

I don't remember receiving a lot of information . . . There was no educational material about 'this is what's healthy, this is what's not healthy, high carbs, low carbs . . . I wish there would have been more education but [shakes head] but [pause] or at least a nutritionist that I would have been referred to . . . I definitely would have liked to at least talk to a nutritionist . . . being able to write down, okay, this is what I eat and having somebody look at it and say, okay, yeah, you are, you're missing your high proteins or nutrient dense foods or anything like that, that would have been helpful, or having um my OB doctors talk to me a little bit more about what to expect (P1, L 161, 163-164, 168-169, 209, 211-214).

Another participant who had also experienced GDM during previous pregnancies recalled needing more education and support on how to administer insulin, "So I guess the first time, I wish I had known about the medication . . . more training on administering insulin. I didn't get anything" (P5, L 250-251, 371-372).

Two participants highlighted a need for more resources and information addressing the psychological well-being of the pregnant person who is experiencing GDM. A participant believed there was not enough dialogue between her healthcare providers and herself about how GDM impacted her mental health:

I think there wasn't enough conversation around the mental health of the pregnant person [experiencing GDM], and how that can be affected and what we can do for those things .

. . I think a referral or a session with a therapist would have been really helpful (P10, L 230-231, 258).

A second participant would have liked guidance on how to make GDM a positive experience and how the condition might affect breastfeeding as well as preventions of type 2 diabetes later in life:

And I never realized until later . . . that people with diabetes have a hard time breastfeeding . . . and I feel like that aspect of diabetes- I didn't know about that. I wish that my doctors or nurses, or even my lactation consultants, had been more informed about that . . . I wish I had known more about carbs to fiber. I feel like I got that education better when I was with the [subsequent GDM] pregnancy. I wish that I had learned about how diabetes and lactation can respond to each other. I wish I had continuing education to help me stay away from diabetes altogether . . . I wish that they had offered more education for me. That they had had people in place that said, 'Oh, you're [a] gestational diabetic, let me help you understand what that means for you, and how you can make this a positive experience' . . . Also meeting with a dietitian on a regular basis would be good. Instead of a one-time deal that I had with the [subsequent GDM] pregnancy (P7, L 146-147, 152-154, 347-351, 368-371, 823-824).

All participants of the study needed more information than they had received from their healthcare providers. They desired more information about what had placed them at risk for developing GDM, preferably before they were diagnosed. They wanted more details about what to expect and how to manage their GDM. Two participants emphasized a lack of information and thus lack of support for mental health issues of the pregnant woman who had GDM. Participants perceived a lack of information around the realities of integrating GDM

management requirements into their daily lives, and many resorted to searching out that information for themselves.

Search for Information. Five participants discussed their search for information about important aspects of integrating GDM management requirements into their daily lives. They needed information such as what foods to eat, counting carbohydrates, how to administer insulin, and breastfeeding. Participants' search for information stemmed from not receiving all the information they discovered they needed to successfully manage their GDM. They searched for information on the internet, through their local health department, and in their local library.

Four of the five participants thought their healthcare providers had not provided enough information about how to modify their diet. One participant (P8) had found a diabetes website where she found diet information. Another participant found a nutritional website that helped her learn how to count carbohydrates:

I learned to count my carbs because there was no educational material about that . . . I did a lot of research on my own, and then I took my spreadsheet back to the provider and he goes, 'Oh, yeah, you're doing fine. Keep doing what you're doing' . . . I found a nutritional website, a dietitian website of healthy carbs versus bad carbs and healthy snacks. So that was very helpful to me (P1, L 162-166, 181-182).

A third participant used the internet to learn more about what foods to eat and located references for research studies that helped her understand how she could advocate for herself and her baby, what to expect in her GDM pregnancy, and breastfeeding after GDM:

I Googled some things like, 'What are good breakfast[s] for gestational diabetes' . . . I looked up a lot of information. I was searching for research studies and everything, so I knew what to expect and how to advocate for [myself] . . . How to make breastfeeding

work and things like that because that [breastfeeding] was really important to me. I found out a lot of that information on my own . . . I was searching for all the information I could on the internet (P6, L 215-216, 276-279, 301-302).

A fourth participant also said she had not received enough information from her healthcare providers about GDM and a diabetic diet. She went to medical journals and the local health department for more information. Despite not understanding medical journal jargon, she persisted searching for answers to her questions about GDM management:

[I] had to do a lot of research on my own . . . because I wanted to know what was going on. I didn't feel I was getting adequate information. So, I'd ask others . . . I even contacted the health department . . . they had some different pamphlets and eating plans . . . the health department helped. I [would] go to the library . . . look at some medical journals and other things. The jargon was a little bit over my head where I didn't quite understand all of it, but I remember going there and looking [to] answer my questions (P9, L 308-311, 324-326, 329-332).

A participant had not received guidance from her healthcare providers or pharmacist about how to administer her insulin. She searched the internet for tips on insulin administration and learned she was better able to control her blood glucose when she alternated injection sites:

I ended up having to do my own research because the pharmacist didn't tell me anything. My doctor didn't tell me anything and I found out that the last pregnancy we [had] been doing it [insulin administration] wrong the whole time . . . There's this thing called mapping; you have to not do it [inject insulin] in the same spot. You have to go along your body, do some in your arms, do some in your stomach, do some in your thighs, move around your body so that you don't get these fatty cell lumps from inserting the

insulin . . . I did all my research and found out all of this stuff about mapping and pinching and not rubbing and don't shake the insulin. You're supposed to roll it between your hands because some of them [insulins] are cloudy, so you have to mix it and don't shake it. All this stuff I found from a simple Google Search. I feel like they should give you that information [because] my numbers were iffy for a while and then I started doing it the correct way and mapping, and that week was the best week I had numbers-wise (P5, L375-379, 382-395).

During member checking, the same participant compared her experience using the internet to search for information in each of her GDM pregnancies:

[Having] . . . all the varied information in your ear can be very stressful, and make you feel like you can't get an actual answer . . . So, with my first pregnancy, all the opposing information was extremely stressful, and I felt like I didn't get the education that I needed. Then my second go round I actually found reliable information, used[d] personal experiences, and found my target group of people to talk with. The second time around was much different, and I did find out I had been doing a lot of things wrong the first time because of not having that information. So, I've had both experiences . . . The information that I got from the comments and stuff on those [mom group Facebook] posts is what really helped me (P5MC, L 66-67, 74-79, 88-90).

Participants turned to other sources of information when their healthcare providers had not provided sufficient information about how to manage their GDM. They had to locate other resources to get answers to important questions about such things as what to expect after being diagnosed, diet, medications, and how to integrate GDM management requirements into their

lives. Women searched for information on their own so they could make well-informed decisions about GDM and better advocate for themselves and their babies.

Incorporating GDM Management into Daily Life

Most participants felt they had not received enough information from their healthcare providers about how to incorporate the changes required for management of their GDM into their lives. Nevertheless, it was necessary that they immediately had to begin to make significant changes in their daily lives to control their blood glucose. They had to make changes revolving around exercise, what foods they ate, and some had to begin taking medication. Participants discussed their fears and concerns that motivated them to take action to manage their GDM, as well as the challenges they experienced. They described what helped them to change their eating habits, get more exercise, monitor their blood glucose levels, and go to more medical appointments to protect their own and their babies' health and well-being.

Fears and Concerns During GDM Management

Five of the participants discussed their fears and concerns about the risks GDM posed to their health and well-being and that of their babies. One participant remarked, "I personally was scared for [my] baby" (P2, L 131). Two participants had concerns related to medications used to control blood glucose. A participant who was taking an oral medication to control her blood glucose worried about its impact on her health: "I was definitely more concerned with my overall wellness because I was on [an oral anti-diabetic medication], and so when I would take my blood sugars, they would sometimes be in the high 60s [or] low 70s. So that was always a concern for me" (P1, L 147-153). Another participant wanted to avoid medication, so she was diligent about adhering to her diabetic diet:

I knew I wanted to try everything, so I did not have to take medicine . . . I got rid of most carbs, my rice, bread. And so, I was basically only eating meat and vegetables and soup for a while until the end of my pregnancy . . . I was never on medication (P3, L 80-81, 32-36, 114).

Two participants thought GDM affected their mental health. One participant worried that she had done something to cause her GDM. She also did not know anyone else who had been diagnosed with GDM, so she experienced depression and isolation following her GDM diagnosis:

It [GDM] led to some depression and like, ‘What have I done? Did I do something to cause this [GDM]? . . . I really don’t remember meeting anyone else who had it [or] talking to anyone . . . I was kind of alone, like ‘Who else has it? Is it just me? Am I just a mutant? What’s going on? (P9, L 144-147, 327-329).

Having access to another person who also had GDM meant that person could serve as a sounding board and reality check and would have helped allay her sense of feeling abnormal, isolated, and at fault.

A second participant said her family was focused primarily on how her eating habits would affect the health and well-being of her unborn baby. She had questioned why her family did not consider her thoughts and feelings about how GDM impacted her, as the mother and pregnant woman, but focused their concern on the fetus:

I think my mental health was probably in a worse place with the [GDM] pregnancy . . . There was a lot of worry [on the part of family members] about if I continued to eat in this way, was this harming my baby . . . Their [my family’s] primary concern was the baby at the time. I think that’s kind of a cultural thing that we do a lot of times; really

focus on the baby's health and what's best for the baby at the sacrifice of the mother.

There were some feelings I had around that there was a lot of concern for the baby. But what about my feelings and my thoughts? Being told just to do things for the baby, that the baby is the most important thing . . . It [was] definitely a pattern of conflict resolution in my family . . . to not talk through things, to not work through things, to not feel our feelings, [and] to just focus on something else. That's definitely the pattern of dealing with difficult things in [my] family (P10, L 204-205, 266-267, 300-305, 317-320).

The family pattern of denial and conflict avoidance, and their focus on the baby, meant the participant was unable to share her sense of feeling disregarded by others as she tried to change her diet and manage her GDM.

Another participant felt stigmatized by her GDM diagnosis. She mentioned that people in her community had a negative reaction toward the changes she was required to make in her diet because they did not understand why she could no longer eat pasta. Despite feeling she was being treated differently, she did not want to make others uncomfortable during mealtimes:

I was worried about the stigma [of] having diabetes . . . It [GDM] made me feel negative . . . the negative [being] people's reaction. We have to treat you differently or we have to do things differently . . . I [didn't] want people to be uncomfortable eating with me . . .

We [were living in a state] where everybody [was] Italian or Dutch, so when you say you don't eat pasta, that's kind of weird (P7, L 181, 387, 663-665, 644-654).

Despite feeling stigmatized by her diagnosis of GDM, she realized she had to care for herself and her unborn baby, which motivated her to adhere to a diabetic diet: "I realized [that] if I want to take care of me and my baby, then I was going to have to do whatever I had to do . . . I'm going to follow the diet that they want" (P7, L 205-207).

While participants primarily were worried about the potential impact GDM-related risks could have on their unborn babies and their own physical health, they also grappled with the effect GDM had on their mental health. Despite feeling guilt, isolation, depression, and stigmatization, the participants were resolved to make the necessary lifestyle changes and do whatever was necessary to control their blood sugar levels and reduce GDM-related risks.

Challenges to Incorporating Lifestyle Modifications Required for GDM-Self Management

Six participants described challenges they faced in changing their diets, integrating exercise, and learning how to monitor their blood glucose. Those challenges included time constraints, the stress of diet changes, conditions that limited their ability to exercise, lack of support, and finances.

Time Constraints. Finding the time to search for information, attend more appointments, exercise, implement diet changes, and check their blood sugar was a challenge for three participants. One noted, “There was only so much I could include in my day” (P4, L 342-343). Another had to cut down on her hours at work so she could go to additional healthcare appointments: “I was missing work . . . The biggest stressor was more appointments and having to check my blood sugar all the time” (P6, L 111 - 113). A participant said having to make the sudden changes to her daily routine was stressful; she had to find time, in her already busy schedule, to exercise and check her blood sugar after meals:

That [changing my daily routine] was very stressful. Mostly the need to walk after each meal to get exercise, which I didn’t really have time for . . . It was also a sudden change because I need[ed] to do all these things to track the glucose level, like pinch [stick] my fingers and get a read after each meal (P4, L 147-152).

A third participant added during member checking: “Trying to make time for exercise and things like that . . . [Time was] scarce and hard to manage” (P2MC, L 65-66).

Limited Ability to Exercise. Two participants were unable to incorporate physical activity into their daily routine due to circumstances beyond their control. One participant, whose GDM pregnancy occurred during the summer, said the excessive heat limited her ability to stay physically active to help manage her GDM:

I was pregnant during the summer, and so it was very difficult to walk around after dinner and walk throughout the day when it was 100 degrees outside. That made gestational diabetes very difficult, and I think contributed to me not being able to control my blood sugars toward the end [of the GDM pregnancy] (P10, L 147-150).

A second participant, who was on bedrest for a condition unrelated to GDM, said she thought not being able to exercise made managing her GDM more difficult:

I’m eating all this food, but not really exercising. I like to exercise . . . and so having diabetes [GDM] and lying around all the time made me feel like a slug . . . And taking my blood sugars regularly. . .the finger sticks. . .and feeling that up and down frustration when you think you're meeting the diet, but just not getting the right blood sugars and reporting them to your doctor and feeling. . . like, ‘I wish I was doing better’ (P7, L 212, 269-271, 236-239).

Stress of Diet Changes. Five participants had found changing their diets to be stressful and difficult. One commented:

It was challenging. I feel like for a lot of women being pregnant is the really good excuse not [to] diet, but [during the GDM pregnancy] I’m actually on a diet . . . So not eating anything I want[ed]; that part [was] really hard (P3MC L 79-82).

Another participant recalled how she had become very stressed around mealtimes due to the uncertainty of whether the diet changes she implemented would successfully control her blood glucose:

If it wasn't a good [glucose] read, [I] then change[d] immediately the ratios of carbohydrates and what I was eating. So, it always felt like I didn't quite know what was working and what was not . . . Sometimes I was walking and keeping everything in check in terms of keeping my meals according to the guidelines, and still the blood sugar was high . . . I had no idea what [was] working . . . I was pretty stressed about it . . . I was always stressed getting a meal, like 'Okay now I'm gonna have to do all these things and not sure if it's gonna pay off . . . I felt like every time I was just failing and I [didn't] know what to do to correct it (P4, L 152-159, 208).

She viewed high blood glucose levels as a failure on her part to control her GDM. She stated, "I had to take insulin shots for a good part of the pregnancy in the third trimester" (P4, L 114). Anticipatory guidance about what to expect when implementing diet changes, and reassurance from healthcare providers that her needing medication for blood glucose control was not indicative of failure could have reduced her stress.

Adhering to the recommended diabetic diet was difficult for another participant because she thought the diet information given to her by her healthcare providers did not take her individual needs into account:

The first time around I followed strict doctor's recommendation for dieting . . . it did not go well . . . I think it changed my body for the worse because [the] diet that they put me on was more food than I could eat, but not the kind of stuff that my body was craving . . . It created this intense sugar craving that didn't go away . . . They [doctors] don't know

what's actually best for you without personalizing it to you, and unfortunately, they don't do that . . . It didn't work for my body . . . It's [the information from the healthcare provider] all conflicting, so it [was] hard to figure out . . . That was the biggest thing I struggled with as they kept having to increase it [insulin] . . . So, I felt like my body was failing me (P5, L 159-163, 176-177, 189-191, 233, 360-361).

Needing more insulin because her diet changes were ineffective caused her a great deal of stress. She required more consistent information and support from her healthcare providers to better decipher what she needed to do to manage her GDM.

The restrictive GDM diet was challenging for a participant who already had a history of struggling with a negative body image: "It was difficult to have to restrict myself. I think especially for people who've dieted before and have been in restrictions, that [GDM diet] can be a very triggering experience that brings up issues around body image and body dysmorphia" (P10, L 180-182).

A participant who had been bedridden during two pregnancies when she also was diagnosed with GDM encountered difficulties eating the food prepared by her mother-in-law:

My mother-in-law had to live with us with my last two pregnancies when I had gestational diabetes . . . She's a sweet tooth person and it was difficult for her that I [would] eat different foods . . . If I said I didn't want dessert that created tension . . . You have to educate your family yourself, and sometimes that creates stressors (P7MC, L 110-115).

Summary: During their GDM pregnancies, half of the participants found changing their diets to be a stressful and difficult experience. Not being able to eat their preferred foods was challenging. Some participants found it difficult to cope with the uncertainty of whether their

efforts to change their diets would have effectively regulated their blood glucose and struggled with needing insulin. Educating family members who were not considerate of their GDM diet needs was also a stressor.

Lack of Support. Two participants perceived a lack of support from family members, friends, or healthcare providers. For example, a participant who had not received adequate information searched out research studies about GDM but found her husband to be unresponsive to her need for someone to discuss her findings: “I talked to my husband about it [GDM] but I’m sure he didn’t really understand or pay attention to what I was talking about” (P6, L 328-329).

A second participant reported a lack of support from family members. She felt rejected by relatives who doubted her GDM diagnosis:

I didn’t really talk about it [GDM] with my relatives . . . Some people in my family would say, ‘Well, I don’t really believe that you’re diabetic’ . . . What do you say to that? That was always discouraging to me (P7, L 189, 637-639).

In addition to feeling discouraged from sharing her struggles dealing with her GDM with her family members, she also had needed more support from her healthcare providers. She said she had wanted referrals to healthcare providers who knew more about GDM and could give her information on how to change her diet:

I just didn’t feel like I had enough support . . . I wish that the doctors, nurses, hospital staff, and the lactation consultants knew more about diet, GDM, and if they didn’t [then] hook me up with somebody who did . . . I felt like I needed more support, and I wasn’t getting [what] I needed (P7, L 353, 361-363).

Not only had the participant encountered resistance from her family, but she also lacked the necessary support from the healthcare system that would have supported her efforts to manage her GDM more effectively. During member checking she added:

I felt like there wasn't any counseling or any kind of mental health support that I really felt with my diabetes. I didn't feel like there was. I feel like they would tell you, "Okay, you've got diabetes, you need to do this," and it was just a kind of cut and dry situation (P7MC, L 80-84).

Financial Burden of GDM. The researcher asked participants to describe their feelings and emotions around the lifestyle changes or changes to their daily routines that were brought about by GDM. One participant described her struggles to pay for blood glucose monitoring supplies: "I didn't particularly like the blood sugar checks . . . that was a little difficult . . . the added costs [of] supplies that weren't covered" (P9, L 159, 163-165).

Summary. Six of the ten study participants encountered challenges incorporating GDM management into their daily lives. They found it difficult to find the time for additional healthcare appointments, to exercise, and to monitor their blood sugars. Implementing the necessary diet changes also required participants take time to research, learn about, and then implement the change. The financial cost of diabetes supplies was a burden for some participants, while others felt they had not received enough emotional support from family members or healthcare providers. While not all of the study participants experienced each of these challenges, some had to deal with several. All of these challenges impaired study participants' ability to control their blood glucose leading them to feel frustrated and isolated as they struggled to manage their GDM.

Factors that Helped with GDM Management

Regardless of the challenges some participants had faced, each of the study participants chose to take control and implement the changes needed to manage GDM. All but one of the participants described how technology, access to financial resources, and obtaining support from their social networks enabled them to implement the lifestyle changes necessary to manage their GDM in a manner that was compatible to their daily lives.

Taking Control. Four participants described actions they took to assert control over their GDM and change their health behaviors. A participant said her personal passion for cooking facilitated her ability to adapt to her diabetic diet:

I love to cook lots of different ethnic foods, and so all of a sudden, those things were less and [there] was more focus on vegetables . . . I just started switching my gears to, “Oh, so I need to find things that I like the taste of; that are exciting and different; that are more focused on meat and vegetables” . . . I love food. I'm a foodie. I didn't know that I would really see Greek flavored yogurt as a dessert, but I do now . . . I love to cook. So, I learned how to make my own Greek yogurt. I like to be challenged. So that would be a challenge for me. Trying to find ways to make things that are new or taste great that fit my diabetic diet [was] really important . . . (P7, L 557-560, 801-807, 826-832).

While changing her outlook on food enabled her to deal with the diet changes more effectively, she also understood that, as a pregnant woman diagnosed with GDM, it was vital for her to articulate her needs to others:

I had to communicate [about] what kinds of foods we [were] staying away from . . . In [social] situations, they want to make you lots of desserts, so I had to nip that off, and just try to give them an outlet for that [in] other ways, like fruit (P7, 224-227).

Another participant said her mindset helped her change her diet to regulate her blood glucose. She also had found a way to exercise that worked for her and her schedule:

I put a lot of effort into maintaining a lower blood sugar. It was a matter of just being very careful with what I ate, as well as doing a lot of post-meal exercise, while not a lot, but trying to maintain a certain level of exercise after each meal (P4, L 109-112).

A third thought her ability to interpret package labels and understand research studies helped her take control of her condition and understand what to eat. She concluded that maintaining simplicity in her diet helped her adhere to her diabetic diet:

I know how to read the packages and read the carbs on there . . . [I learned to] try to find what works . . . Make it simple . . . try to find foods that are easy for you and go with it . . . I was used to looking at research studies and . . . I'm pretty confident in my ability to read them (P6, L 214-215, 292-293, 319-322, 341-342).

A fourth participant, who had been diagnosed with GDM during multiple pregnancies, had learned how to personalize the diabetic diet recommendations she had received from her healthcare providers:

I realized the [in the subsequent GDM pregnancy] that the doctors' recommendations are generalized. They don't know you; they don't know your body . . . I personalized it [the diabetic diet] to me, I listened to what I needed, which was less diversity in the food, more protein, and more of an exercise regimen not more intense, but more frequent and different types . . . It just clicked [and] it worked for me because [I] started listening to my body instead of a generalized assumption based on my weight (P5, L 130-131, 175-176, 191-194).

Her realization that the information she had received from her healthcare providers was not specific for her needs allowed her to assume control and make the necessary lifestyle changes to manage her GDM.

Obtaining Support. Having support from other people was important for some of the participants. Four valued having support from other people with diabetes in helping them learn to manage their own condition. For example, the advice of coworkers who had also been diagnosed with diabetes helped one participant figure out what foods to eat:

I did work with a couple of ladies that were diabetic. So, I was able to bounce different things off of them. They were able to provide information to me on what they ate, versus what they [didn't] recommend, and so I think that was helpful (P1, L 190-193).

A second talked about how two friends helped her. One of her friends shared her cultural background, and another had been diagnosed with GDM and provided assistance in obtaining supplies:

A friend of mine who is [same ethnicity] and was still pregnant . . . and another friend who's our neighbor now. She also [had] gestational diabetes, and I actually borrowed the neighbor's little needle that poke your finger because [mine] ran out . . . Talking to those two ladies who [were] going through the same thing [helped] (P3, L 58-66, 135).

The spouse of a third participant helped her to be consistent in her exercise routine. In addition, her father was a healthcare professional living with diabetes, and helped her avoid having to take insulin:

The other thing that I think made it possible for me to dodge having to do insulin shots was my husband walking with me every evening after dinner . . . that really helped me get my glucose levels to a good point before going to bed, which I think set me off for a

good evening, and therefore a good morning and generally a good routine. My dad who has diabetes type two was instrumental to the good management of the condition for me. He had semi-recently been diagnosed, so he had his own insights from his own journey. He's also a physician. So, his feedback was incredibly helpful from that perspective as well. Having these people around me, both from the medical perspective, as well as the personal perspective, was instrumental to [my] getting a handle on it [GDM] (P2, L 161-162, 164-167, 176-182).

Having people in her support system who had practical knowledge and were supportive helped her maintain the lifestyle changes needed to control her GDM and to avoid worsening of her condition. The advice she received from other people was helpful because their information felt relatable, achievable, and from real people whom she knew and who understood her struggles with GDM.

A fourth participant said that although her family members were supportive, the advice they gave her about deciding what to eat conflicted:

Family who had been through gestational diabetes [gave] two completely different responses . . . My mom had gestational diabetes, and she is very just like, "Do [what] the doctors tell you. I gave up everything. I just ate plain chicken breasts for six months" . . . Then there's my sister, who is super holistic, all natural, had three home births, and was basically, "Screw [what] the doctors tell you. Eat what you want to eat and listen to your body." So, I took a mix of both (P5, L 221-226).

While she was open to taking advice from family members, it was also helpful for her to be a part of a broader community of women dealing with similar challenges:

I'm on a Facebook group for moms, and I found a couple of friends who went through it [GDM] before. It [was] the biggest amount of support . . . I would say that [Facebook group] was probably the most incredible thing for me. Even more so than talking to my family because it's this huge group of women [that] you can just ask anything and get an abundance of responses. They're not all going to be same, but it's enough responses that you can kind of take an average. You can see the same response enough times that it starts to feel like something legit (P5, L 275-278, 285-295).

Social media served as additional support that provided her with information and feedback about GDM and helped her make her own decisions about managing her GDM. The support that was available to her from other women on social media was more on-going and situational. They provided information she may not have received from healthcare providers or family members.

Another participant, who was on bedrest due to issues unrelated to GDM, also found that social media enabled her to interact with other women going through the same struggles with GDM that she experienced:

I joined Sidelines . . . It's a Facebook page that's for moms who are on bed rest during their pregnancies . . . And so we would encourage one another . . . [There were] lots of women on there that were diabetic too. So, they could understand when I said, "[I] can't eat one more turkey [sandwich]!" (P7, L 520-529).

The same participant said members of her community also offered support and helped her adhere to her diabetic diet by bringing her food: "I was on bedrest . . . Other people had to prepare my food and make sure that I had the right food . . . Families from our church brought meals three days a week for us to help" (P7, L 139, 215-216). Because she was on prolonged bedrest due to pregnancy complications, her husband also needed support: "My husband also had support

because my mother-in-law came and lived with us for the last two [GDM] pregnancies during that time for like four to five months” (P7, L 338-340).

Three participants described how support, encouragement, and reassurance enabled them to sustain the health behaviors that helped them manage their GDM. One said: “They [family] were helpful on keeping me on track . . . they would encourage me just to try and eat as healthy as possible and stay as active as possible and just keep doing what I was asked” (P1, L 201-203).

Another participant said that her family’s support helped reduce her stress:

They [family] were so supportive, and they were trying to make me feel less stressed about it [GDM] and think, “This [living with GDM] is all normal. It’s okay. Nothing is gonna happen. It’s gonna be fine and I’m doing the best I can” (P4, L 251-253).

A third participant noted that her family’s consideration of her dietary needs and their encouragement helped reduce her stress and helped her maintain a positive outlook:

So, all the family would help with my diet, and help with encouragement and support . . . Their support helped me to not feel as negative about the [GDM] pregnancy . . . [and] to remain not stressed . . . [by] making sure that I was getting the right things to eat instead of tempting me with things that weren't good for me (P7, L 401-402, 407, 491, 494-495).

Summary: Obtaining Support. Support from other people was a key factor in helping study participants sustain the lifestyle changes necessary to manage their GDM. Reassurance and encouragement from family and friends helped reduce stress. Moreover, participants were able to get information people in their support system that they may not have received from their healthcare providers.

Perceptions of Family Adjustments to Diet Changes. Eating the right foods was a major component of how participants managed their GDM. The necessary diet changes also affected

the entire nuclear family's diet. Six of the participants discussed how changing their own diets had affected their families and how their family members had supported and adjusted to their diet changes. Five participants said their families easily adjusted to, or were not impacted by, their diabetic diet. One believed her role as the primary cook and her family's easygoing attitudes about meals helped: "I was the one that made [the] food and they just kind of went along with it. So, they weren't too affected" (P6, 253-254). A second participant thought her family's indiscriminate eating habits had made it easier for her to change her diet:

They eat whatever I put in front of them. So, they didn't really notice the diet changes.

They're garbage disposals . . . I'm grateful that they'll eat anything . . . that it [my GDM diet] wasn't really a huge adjustment for them (P5, L 308-309, 321-322).

A third said her husband had been amenable to the diet changes. She also believed that overseeing grocery shopping and cooking helped her eat the right foods: "My husband at the time was supportive of those things that needed to change. Since I was responsible for grocery shopping and meals, it was easier for me to make some of those dietary changes" (P10 L 244-246). Despite her husband's not changing his diet, a fourth participant still felt free to eat and do as she wished to manage her condition: "[I] cut rice [out] and I was not stopping him [husband] from having [his] same diet. So, I don't think it [diet changes] affected him a lot. He usually let me do whatever I want to do" (P3, L 126-128).

On the other hand, a fifth participant described how her husband not only changed his diet but also actively facilitated her adherence to her diabetic diet:

My husband helped me . . . I'm a sugar addict . . . if I see it [sugary food], I'll eat it. So, my husband was very supportive in not bringing me candy or sodas or ice cream or anything like that, which was very helpful because if it's out of sight, [it was] out of

mind. So that helped me a lot . . . With my husband, I guess it affected him eating sweets and stuff too because he lost weight. He was just very supportive and going with the flow (P9 L 284, 347-349, 370-372).

She emphasized her husband's agreeable and flexible nature as an indicator that he adjusted well to her diet changes.

In contrast, a participant who had experienced multiple GDM pregnancies and been on bedrest, shared how it was difficult for her family to adjust when her husband became the primary cook:

I think [it was] hard on the rest of the family when you have younger kids, because if they're used to getting sweets all the time, and now dad's doing all the cooking, and mom can't have any sweets. They [kids] were so neglected. So, he [husband] would secretly make desserts and leave them where I could never see them . . . I can say that [the diabetic diet] was very difficult, because that had never been a part of our lifestyle; no sweets, less sweets, more fiber, or more vegetables . . . Me [having] gestational diabetes changed our family's viewpoint about sweets . . . that [GDM] changed our lifestyle . . . we added more fruit, less sweets and more vegetables . . . tried to find flavor in meals and vegetables instead of in pastas (P7, L 334-338, 554-555, 599-600, 613-615).

Her family showed their support by also changing their diets. Although incorporating aspects of the diabetic diet was difficult, she believed her GDM diagnosis had a positive effect because it changed her entire family's lifestyle and perspective about food.

Helpful Resources. The study participants identified resources that had been helpful to them as they adapted to the lifestyle changes necessitated by their GDM. Five of the ten

participants found certain members of their healthcare teams to be helpful. The nutritionist provided valuable information and support to one participant:

The nutritionist from the health system [was helpful] . . . I would have never been able to figure things out on my own . . . it [GDM diet] became a very specific thing [where] a little additional food or difference in ingredients could really set my glucose off to something that was dangerous for the baby and myself . . . and so the nutritionist really held my hand through the process (P2, L 156-161).

A participant, who relocated during her GDM pregnancy, said her new healthcare provider was a great source of information and comfort:

I was in my third trimester when I moved and transferring care was not very hard, but I did get access to this clinic in addition to my OB care clinic that was especially focused on taking care of gestational diabetes patients. So that was their whole expertise. They [gave me] a lot more detailed information, guidelines, guidance, and tests that I needed to do every week . . . What they were basically telling me, which reassured me, was, “Everything that you do is gonna help, but it might not catch up to how fast the gestational diabetes progresses and that's okay. If you need to do more insulin, that's also okay. Everything's fine” . . . So, they gave me a little more reassurance (P4, L 282, 285-288, 294-298).

Two participants who had experienced multiple GDM pregnancies recalled how specialized healthcare providers gave them more detailed information about GDM, including how their medications worked to control blood glucose, and diet. One participant considered the maternal-fetal medicine doctor, to whom she had been referred during a subsequent GDM pregnancy, to be a good resource: “The [subsequent GDM pregnancy] I got referred to maternal

fetal medicine. So that time, maternal fetal medicine actually broke down and explained to me what Metformin does and what the insulin does in the body. That was like super helpful” (P5, L 248-250). The same was true for another participant who was grateful that her high-risk pregnancy specialist took the time to ensure she was well-informed about what to eat:

With [my subsequent GDM pregnancy] I had a high-risk diabetes specialist . . . He helped me to follow a better diet than the other [GDM] pregnancies . . . I feel like the high-risk specialist was very informative and I felt like he really tried very hard to give me extra information (P7, L 136, 363-365, 487-488).

Both participants found specialized healthcare providers who focused on high-risk pregnancies, were knowledgeable about GDM, and were able to dedicate more time to patient education to be more helpful. The diabetes clinic where her healthcare team had referred her was a valuable source of information and support for another participant:

I think I got pretty good care . . . I [had] a good team of OBs, and I was sent to [a] diabetes clinic [where] I met [with] nutrition and we [had] a plan . . . I got enough information . . . There [was] a system of monitoring my numbers and meeting with my doctors and nutritionists [on] a regular basis (P3MC, L 58-63).

Technology. As alluded to above, several participants used various forms of technology in their search for information about diet (P1, P6, P8), insulin administration (P5), and research studies related to their condition (P6). They also found sources of support on social media (P5, P7). Technology helped two participants keep track of trends in their blood glucose and their appointments. One recalled, “I was getting all of the reads of my glucose levels after each meal on an app [smart phone application]” (P4, L 304-305). A second used a digital device to record trends in her blood glucose so she could report them to her provider:

I did a pretty decent job of doing the test [glucose monitoring] every day and recording the number [on a] a digital device. So, I [didn't] have to write it down or anything. I just [did] my numbers and then [brought] that device to my follow up appointment. So, I didn't have to write down all the numbers. So that was pretty manageable. I [also had] a Google calendar [for appointments and reminders] (P3, L 104-107).

Financial Resources. Managing GDM can have an impact on the family budget. Two of the ten participants addressed finances when they discussed things that helped them sustain the lifestyle changes necessary to manage their GDM. One participant reported: “We had the income to buy all of the things [food] that we needed to buy in that situation [of changing diet] or to try different things that worked best” (P10, L 246-248). Another participant said receiving financial support from her social network during her GDM pregnancy reduced some of the burden GDM had imposed on her family:

My husband was trying to take care of me, go to [school], and work three jobs. It was a difficult time . . . I was worried about him. So financial support from our family and from the church . . . Those things help because that would relieve some stress, and when you're stressed out . . . that can just jack up your blood sugar (P7, L 197-198, 470-474).

She also believed the financial support helped to reduce her stress which consequently helped her control her blood her glucose control.

Summary: Factors that Helped with GDM Management. Nine of the ten study participants discussed factors that helped them manage their GDM. Although they did not have all the information, they would have liked so they could fully understand their condition, their own ability to take control and change their health behaviors were key in mastering GDM. The advice, reassurance, and encouragement some participants received from family members and

friends helped reduce their stress and sustain the lifestyle changes necessary to manage their GDM. Social media allowed two participants to connect with other women experiencing similar struggles with GDM and obtain pragmatic advice they had not received from their healthcare providers. Conversely, four participants identified certain members of their healthcare teams as helpful resources because they had taken the time to provide more detailed information about GDM. Financial resources helped two participants buy the food they needed, while digital devices helped several participants keep track of appointments, and monitor, record, and share blood glucose results with healthcare providers.

Measuring Success of GDM Management

Participants dedicated a significant amount of time in their pregnancy to learning about GDM and implementing the lifestyle modifications needed to regulate their blood glucose. They were motivated to make and maintain those changes for the betterment of their own health and that of their fetuses. Some participants used the baby's weight at birth as a way to measure the outcome of their efforts to manage their GDM. Although they monitored their blood glucose daily, three participants believed the weight of their baby at birth was an indicator of how well they had managed their GDM.

A participant who had experienced multiple GDM pregnancies described how her babies' birth weights were a measure of her blood glucose control:

My babies were seven pounds, three ounces, and six pounds 5.9 ounces. Normal slash very late babies . . . Which is not typical of gestational diabetes babies . . . [The babies' birth weights] made me feel very proud of myself, like I did what I needed to do. I managed it well and there was no need to stress. (P5, L 418-419, 428-431).

The weights of her babies at birth validated her efforts to control her blood glucose during her GDM pregnancy.

Another participant used her baby's birth weight to assess how effectively she had handled her GDM. She commented: "Surprisingly, my diabetic baby was the smallest of three, which she shouldn't have been . . . Which makes me think my sugars were not too out of control" (P8, L 372-375). A third participant said she thought she managed her GDM well when she saw her baby was not large-for-gestational age at birth: "I was able to succeed in having a slim baby. He wasn't huge. So, I guess I did something well during that time [GDM pregnancy], which actually helped me internalize this experience better after I had the baby" (P4, L 396-398). Furthermore, seeing how much her baby weighed helped her come to terms with her GDM experience.

Another participant did not use her baby's birth weight to evaluate her GDM management:

My baby's birthweight was on the higher side . . . almost ten pounds. So, I can only assume that that was because of the diabetes, but I did not in any way use that as an assessment of how well or not I managed my diabetes (P2MC, L 77-79).

On the other hand, one participant focused on her blood glucose to measure her success:

My success was they [healthcare providers] made me focus so hard on the numbers . . . In the moment [I] had all the pressure from the doctors . . . My only sense of success came from having glucose readings in the correct area (P5MC, L 112-115).

Her focus was on the immediate day-to-day, meal-to-meal blood glucose instead of her baby's weight.

Summary: Mastering Gestational Diabetes

Participants in the study realized it was necessary for them to take immediate steps to control their GDM. They mastered their GDM through acceptance of their diagnosis, gaining an understanding of their condition, incorporating various aspects of GDM management into their daily lives, and finally, assessing how well they had managed their GDM. Despite their initial shock, denial, frustration, stress, and disappointment upon learning they had been diagnosed with GDM, some participants came to terms with their new reality. Most participants had been given basic information about GDM from their healthcare providers at the time of their diagnosis. Nevertheless, many did not find that information adequate for their needs and left the appointment feeling they had not received enough information around the nuances of how to implement the lifestyle changes necessary to manage their blood glucose. Being diagnosed with GDM meant they immediately had to begin making significant changes around food, exercise, blood glucose monitoring, and in some cases, medications despite not having a comprehensive understanding of GDM and what to expect. Consequently, participants relied on other sources of information, such as the internet, to learn more about what to eat, carbohydrate counting, and how to administer insulin. Participants faced challenges such as the stress of diet changes, finances, and lack of support from family members and healthcare providers. Some felt discouraged and isolated when other people did not understand their struggles with GDM; they also believed their healthcare providers had not spent enough time educating them about GDM. Despite feeling isolated, guilty, depressed, and stigmatized, participants persisted in doing what they needed to manage their blood glucose out of concern for their health and well-being, and that of their babies. They made the conscious choice to assert control over their condition. Factors that helped them manage their GDM included access to financial resources, technology,

and various forms of social support. They sought advice and emotional support from family members, friends, and other women on social media who understood their struggles with GDM. Finally, for three participants, giving birth to babies they considered to be small or of normal weight validated their struggles with GDM had been successful, and helped them come to terms with their experience.

III. LIFE AFTER GESTATIONAL DIABETES

Each of the participants described what information, and the extent of its detail, they had received from healthcare providers regarding their potential future risk of Type 2 Diabetes Mellitus [T2DM]. Realizing that GDM meant they were at higher risk for developing T2DM led some participants to worry about their health and that of their fetuses, further prompting them to make permanent changes in their health behaviors. Participants reflected on their own experiences of GDM, and shared what advice they would offer to other women diagnosed with GDM.

Five participants did not believe they had received enough information about their future diabetes risk. One said: “I don’t think I was really given any [information] other than they did say that it’s more likely [I would] develop Type 2 Diabetes after gestational diabetes. They [healthcare providers] didn’t really give [me] any information” (P6, 273-274). While another participant was made aware of the potential that her GDM could continue and become T2DM, she was not given specific details:

They said it [diabetes] may or may not go away [post pregnancy]. Essentially,” Good luck.” So there really wasn’t a whole of education given at that time . . . I didn’t know it [the lack of education about diabetes risk after GDM] was wrong, or I didn’t know any

better. So, I just accepted that because you don't know what you don't know (P8, L 288-289, 295-296).

She had accepted what her healthcare providers told her without considering her need to be better informed about T2DM. Another participant was told she would be tested for diabetes after having her baby, but that her GDM would likely resolve:

I wasn't given a lot of information . . . I was told that I just needed to take one of those glucose tests [postpartum]. After that, they would assess if I was still going to have a high risk of developing diabetes, and they also told me that right after I gave birth that it's very likely that the gestational diabetes disappears (P4, L 316-317, 319-321).

However, she was not informed of her increased risk of T2DM. A fourth participant had been informed by her healthcare provider that she might develop T2DM, but she wanted more information about what she could do to lower her risk and what she might expect for her baby's health in the future:

I was not given anything that I can remember . . . They didn't really tell me anything. They didn't say, "Hey, you should probably watch out." I mean, just, [said] "You may get type two later." That's all I heard. That's extremely unhelpful . . . What do I need to do? What do I need to do about this baby? Are there any long-term effects with him? I didn't get any of that (P9, L 385-389).

Another participant reported she had not received appropriate information about following up after having had GDM:

My baby was born a year and a half ago and I only found out last month that I had to do an annual glucose test. I did inquire upon my baby's birth about what measures I had to take to ensure that I wasn't at risk and that my baby wasn't at risk . . . I received

substantial contradictory information from [the] pediatrician, my main healthcare provider [and] OBGYN . . . I'm always asking about it because I have [a] history of diabetes in my family . . . I'm always asking . . . "Is there anything that my baby has to do next year?" . . . I do my best to stay up to date with that. I don't know. It's the struggle of navigating this whole thing (P2MC, L 96-99, 111-116).

Conversely, two participants who had experienced multiple GDM pregnancies were well-informed about their future diabetes risk. Although one had been made aware of her increased diabetes risk, she thought her healthcare provider could have been more compassionate when informing her.

Yeah, so that [was] literally throw[n] in my face, "You're gonna have diabetes, you're gonna have diabetes . . . You've had gestational diabetes once, twice, whatever. Now you're gonna have diabetes, just be ready to have diabetes" . . . Like literally all the time, over and over and over again. Not like, "Hey, there's a chance you might have [it]." It's a, "Hey, you're pretty much gonna have it." Which is funny because my A1c always tests fine . . . My OB is all about the warnings and being in your face and making sure you understand the risks and everything. So that just was kind of aggravating, that they couldn't be more gentle about it (P5, L 330-335, 342-344).

During member checking she said:

I feel I was being stressed out . . . they [healthcare providers] don't give enough information . . . mostly because they give you broad info with no specifics, and so you're kind of left wondering, and feeling like you have to just maintain everything . . . They [healthcare providers] put fear in you essentially (P5MC, L 121-122, 135-137).

A participant had been tested for Type 2 Diabetes after experiencing GDM during multiple GDM pregnancies. Although her healthcare providers had informed her that her GDM would likely resolve after her initial GDM pregnancy, having GDM with subsequent pregnancies made her anxious about eventually developing T2DM:

Well, I was told that with [the first GDM pregnancy] that I wouldn't be diabetic after I was done with the pregnancy. I was tested, and I wasn't [diabetic] . . . When we found out we were pregnant [again], they said I was [a] gestational diabetic, [and] then they felt like, this wasn't gonna go away . . . They said I'm going to be diabetic for the rest of my life. I was like, “No, I'm not!” . . . I knew that if I apply diet and exercise, that I can get that under control [but] after the [last] pregnancy, I was still diabetic (P7, L 676-677, 690-697).

She worried her children could also develop diabetes: “I know that any of my kids, because there's a family history of diabetes, could eventually have diabetes” (P7, L 611-613).

After being informed of her future risk, another participant also feared developing T2DM: “[My understanding was that] you couldn't prevent it [GDM] turning into Type 2 [diabetes]. It just happens, which was very scary because I have a lot of family members with Type 2 Diabetes” (P10, L 331-332). She believed that she could not prevent T2DM.

In contrast, having been diagnosed with GDM prompted three participants to continue some of the lifestyle changes they had implemented around diet and exercise to mitigate their risk of developing diabetes later in life. A participant attributed the fact that she had avoided GDM in a subsequent pregnancy to her maintaining a diabetic diet after her GDM pregnancy:

Then [with] the [next] pregnancy [after the GDM pregnancy] they did the one-hour glucose test, and I passed with flying colors. I was way lower, but in the last three years

[after GDM] leading up to [the subsequent] pregnancy, I had been eating very healthy low carb. So, I think my blood sugar was more stable in general. So, I think that probably helped (P6, L 351-354).

Weight loss motivated a participant to continue her diabetic diet after delivering her baby: “I ended up losing a lot of weight. I was really happy with that because I'm overweight. So, I actually, enjoy[ed] the [subsequent GDM pregnancy] and I've kept up that [diabetic] diet” (P5, L 165-167). In the wake of her being diagnosed with GDM during a second pregnancy, a participant and her family chose to maintain a low sugar diet:

I don't make that [many] sweets anymore . . . We exercise together as a family . . . Since [year], we have been [using] less sugar in everything we that we eat . . . Post pregnancy [diet] didn't change for me because I was worried about becoming diabetic (P7, L 604-605, 621, 682-684, 686-687).

Although she did not sustain all of her GDM lifestyle changes, a participant said she maintained a healthy diet after having her baby:

I still think I have a good diet, but I added back [carbohydrates] . . . I don't have diabetes anymore . . . I could use more exercise, but I am happy that I have a healthy baby and I'm healthy right now (P3MC, L 113-114, 117-118).

Summary. Five participants believed they had not received enough information about their future diabetes risk. Despite being informed about postpartum diabetes testing and their GDM resolving after pregnancy, some participants had not been made aware they could develop T2DM later in life. On the other hand, those who had been warned they might develop T2DM believed they had not received enough information about what to expect or how to lower their risk. One participant believed she could have been informed about her diabetes risk in a more

compassionate and supportive manner. As a result of being aware of their future diabetes risk, some participants sustained the lifestyle changes related to diet and exercise that they had adopted during their GDM pregnancy.

Reflections of the Gestational Diabetes Experience

Participants were asked what advice they would offer other women diagnosed with GDM. Seven of the ten participants reflected on their experience and based their advice on the insights they had gained from their personal struggles with GDM. Having learned to cope with being unable to maintain perfect control over her blood glucose, one participant wanted other women to know it is okay to need insulin to treat their GDM: “If the numbers [blood glucose levels] continue to be high after meals, don't worry about it, it's all fine. It's just how GDM works, and you might not be able to catch up with it. Insulin shots are also fine” (P4, L 330-332). As a woman who needed to be reassured that developing GDM was not her fault, another participant said she wanted other women to know the same: “I would tell them that nothing that they did caused this [GDM] to happen. This is not their fault. This [GDM] just happens . . . and they can work through this and get through this [GDM pregnancy]” (P10, L 340-342).

As a result of their experience, two participants said they would encourage other women diagnosed with GDM to become well informed about the condition. One stated: “Do your research . . . Read a book. Talk to people who have been through it [GDM]” (P5, L 355-356). As previously reported, a participant (P9) had wanted more information from her healthcare providers about what to expect for her baby's health and how she might lower her risk of T2DM in the future. She was struck by the lack of support and felt diminished by the lack of information:

[I felt] devalued; that I'm not important. That my health and welfare, and the health and welfare of my baby was not worth the information. I felt rushed out [and] overlooked . . . They [healthcare providers] kind of dismissed me like, "Okay, we've done our job, we're done" . . . I really just felt dismissed . . . and devalued . . . [Do] not be afraid to talk to their doctor, and if they don't understand something, make them [healthcare providers] slow down, and take the time to answer your questions so that you're fully prepared to know what is going on, and what [is] to be expected, and what can happen . . . Not getting the information I needed was the worst part of it [GDM] (P9, L 411-420, 428-430, 455).

Having a clear idea of what to expect after GDM would have made her feel more valued and supported by her healthcare providers. Another emphasized that she felt she had not received sufficient support because she believed none of her healthcare providers had been willing to coordinate long term follow-up after her GDM pregnancy:

Part of me believes that nobody really knows how to handle it . . . There's no ownership at the OB level, there's no ownership at the general health practitioner level, and there's not ownership on it at the pediatrician level . . . That is my main assessment . . . that neither of these three truly own that piece of it [follow-up after GDM] longer term (P2MC, L 116-119, 124-125).

A participant, who learned a lot about what to eat from her nutritionist, said she would advise others recently or newly diagnosed with GDM to consult with a nutritionist:

See a nutritionist . . . they gave [me] a really detailed plan of, "These are good food[s], [and] these are not so good [foods] to manage your sugar level" . . . Also knowing that,

even if you have gestational diabetes, that does not mean that you are going to be diabetic afterwards . . . and it's [the GDM diet] doable (P3, L 148, 150-153).

The key takeaway another participant had from her GDM experience was her ability to effectively adapt to a diabetic diet in a manner that suited her individual needs. Furthermore, she said she would encourage women with GDM to seek the advice of a dietitian who is knowledgeable about diabetes:

It's okay to have a smaller portion. That's one thing I learned. I might want to have this cake, but I've been able to say "Okay, well I can have that cake, but it's a smaller portion" . . . I would encourage someone who has gestational diabetes to ask their doctor specifically to get them diabetic counseling with a dietitian that actually understands diabetes (P7, L 761-763, 792-793).

Based on her experiences changing her perspectives about food, she offered practical guidance and valuable insight into how a woman recently diagnosed with GDM might embrace the diabetic diet:

You can still have joy and enjoy food, but maybe things that you haven't thought that you would enjoy before . . . Trying to find ways to make things that are new or taste great that fit my diabetic diet [was] really important. So, I would encourage someone with gestational diabetes to look for an outlet if they like to eat or cook. But [focus on] things that are healthier [and] have flavor. You can have a lot of flavors without a lot of sugar (P7, L 801-809).

During member checking she added:

If I had had maybe more counseling . . . I wish that with that first diagnosis of gestational diabetes that I'd had better follow-up because then maybe I could have head off getting

pre-diabetic and then diabetic . . . I think if I had more education after the [subsequent] gestational diabetes pregnancies that maybe it could have been better outcomes for me about becoming prediabetic . . . I wish that I'd had counseling about nursing with gestational diabetes . . . I found out that a lot of women who have diabetes or gestational diabetes struggle with nursing, and I always felt like it was my fault . . . I didn't realize there was a correlation between breastfeeding and diabetes (P7MC, L 156-175).

Summary: Life After Gestational Diabetes

The information some participants received regarding what to expect after their GDM pregnancy varied. Four thought they had not received adequate information about their potential future diabetes risk. The other six were told that, while their GDM would probably resolve after pregnancy, it could still put both them and their newborns at an increased risk of developing T2DM later in life. Nevertheless, the study participants desired more information about how to mitigate the risk of T2DM, and believed healthcare providers could have been more compassionate and supportive in giving them that information. Knowing about their future diabetes risk prompted some participants and their families to adopt permanent lifestyle changes around how they ate and exercised. Participants said they would encourage other women with GDM to ensure they are well-informed about the condition, understand that developing GDM was not their fault, and believed it is possible to adjust to a diabetic diet.

SUMMARY OF FINDINGS

The diagnosis of GDM took most of the participants by surprise. They reacted with denial, confusion, shock, frustration, and disappointment. Participants identified the GDM diagnosis as a stressor that made them re-evaluate their perception of the health by revealing that their lifestyle prior to being diagnosed with GDM may have been unhealthy.

Participants mastered their GDM through acceptance of their diagnosis, gaining an understanding of their condition, incorporating various aspects of GDM management into their daily lives, and finally, assessing how well they had managed their GDM. Despite their initial emotional reactions upon learning they had been diagnosed with GDM, participants had to come to terms with their new reality and take immediate action to control their GDM despite some not having a comprehensive understanding of their condition. Most had been given basic information about GDM from their healthcare providers at the time of their diagnosis. Nevertheless, many did not find that information adequate for their needs and said they had not received enough information about how to implement the lifestyle changes necessary to manage their blood glucose. Participants relied on other sources of information, such as the internet, to learn more about what to eat, carbohydrate counting, and how to administer insulin. They faced challenges including the stress of diet changes, finances, and lack of support from family members and healthcare providers. Some felt discouraged and isolated when others did not understand their struggles with GDM, while simultaneously feeling like their healthcare providers had not spent enough time educating them about GDM. Despite the challenges participants made the conscious choice to assert control over their condition and persisted in doing what they needed to manage their blood glucose out of concern for their health and well-being, and that of their babies. Factors that helped them manage their GDM included access to financial resources, technology, and various forms of social support. They sought informational and emotional support from family members, friends, and other women on social media who understood their struggles with GDM. Finally, for three participants, giving birth to babies they considered to be small or of normal weight validated their struggles with GDM had been successful, and helped them come to terms with their experience.

The information some participants received regarding what to expect after their GDM pregnancy varied. Some participants were told their GDM would probably resolve after pregnancy, but having had GDM could put them and their newborns at an increased risk of developing T2DM later in life. Others said they had not received enough information about their potential future diabetes risk. The study participants desired more information about how to mitigate their risk of T2DM, and believed healthcare providers could have been more compassionate and supportive in giving them that information. Knowing about their future diabetes risk prompted some participants and their families to adopt permanent lifestyle changes around how they ate and exercised. Participants said they would encourage other women with GDM to ensure they are well-informed about the condition, understand that developing GDM was not their fault, and to believe that adhering to a diabetic diet is possible.

PLAN FOR REMAINING CHAPTERS

Chapter Five will present a discussion of the study findings in relation to existing research. The chapter will assess implications, and address strengths and limitations of the study. Additionally, the chapter will provide suggestions for potential future research.

Chapter 5 Discussion

INTRODUCTION

The current study utilized Naturalistic Inquiry [NI] (Erlandson et al., 1993; Lincoln & Guba, 1985) to explore and describe the experiences of women diagnosed with gestational diabetes [GDM] in a previous pregnancy who were living in the United States. Chapter Five begins with a statement of the problem and a review of the methodology used to carry out the study. The Chapter will continue with an interpretation of the findings, followed by a comparison of the findings to the extant literature. The Chapter then will address the implications of the study's findings, and address strengths and limitations of the study. Chapter Five will close with recommendations for further research, and conclusions.

STATEMENT OF THE PROBLEM

GDM is defined as hyperglycemia that develops in pregnant women with no prior history of diabetes (Centers for Disease Control and Prevention [CDC], 2022). Babies of women diagnosed with gestational diabetes are at risk for hypoglycemia, hypocalcemia, hyperbilirubinemia, respiratory distress, obesity, and the development of Type 2 Diabetes [T2DM] later in life (CDC, 2022). GDM increases a pregnant woman's risk of caesarean delivery, post-partum hemorrhage (Kc et al., 2015), and development of T2DM later in life (CDC, 2022). Poor glycemic control has been identified as a factor contributing to the occurrence of pre-eclampsia (Lowe et al, 2012; Phaloprakarn & Tangjitgamol, 2009). Adequate control of maternal blood glucose in GDM is important in preventing complications at delivery and reducing the long-term risk of T2DM for both mother and baby.

Effective management of GDM requires sustained changes in the lifestyle of the patient, usually related to diet, exercise, and medications. Women diagnosed with GDM are required to

change their eating habits, as well as find time to incorporate exercise and monitor their blood glucose. Diabetic diet and medication adherence to control blood glucose levels can prevent complications at delivery and mitigate the long-term risk of T2DM for both mother and baby. Research conducted in Canada and Australia with women who had been diagnosed with GDM revealed that the women needed education about how to integrate those lifestyle changes in a way that was tailored to their individual preferences (Sabag et al., 2023); moreover, the women were less likely to adhere to dietary and lifestyle recommendations that contradicted their social and cultural norms (Bandyopadhyay et al., 2011; Neufield, 2011).

Studies have examined the experiences of women who have been diagnosed with GDM in countries including Denmark (Toxvig et al., 2022), Taiwan (Su et al., 2022), England (Edwards et al., 2021; Parsons et al., 2018), Australia (Bandyopadhyay et al., 2011; Carolan et al., 2012; Oxlad et al., 2023; Sabag et al., 2023), New Zealand (Martis et al., 2018), Canada (Hui et al., 2014a; Neufield, 2011), and Sweden (Hjelm et al., 2018; Persson et al., 2010). Nevertheless, few studies have been identified that directly address the experiences of women with GDM who live in the United States (Abraham & Wilk, 2014; Carolan-Olah et al., 2017; Stotz et al., 2019). There is a need for research that explores the experiences of women with GDM living in the United States.

REVIEW OF THE METHODOLOGY

Naturalistic Inquiry [NI] (Erlandson et al., 1993; Lincoln & Guba, 1985) was used to answer the research question: What are the experiences of women diagnosed with gestational diabetes? Lincoln and Guba (1985) say the NI researcher considers realities to be “multiple, constructed, holistic” (p. 37), and determined by their context. Thus, an assumption of NI is that people operate within individual realities of their own construction. The researcher is considered

the primary instrument in NI; the NI researcher's focus includes identifying shared constructs to generate new knowledge by describing and understanding how people perceive their own experiences, or realities (Erlandson et al., 1993; Lincoln & Guba, 1985).

INTERPRETATION OF THE FINDINGS

The research question that guided the study was: What are the experiences of women diagnosed with GDM? The aims of the study were to explore and describe: (1) women's perceptions of being diagnosed with GDM, (2) information women received about managing GDM, and (3) factors that impacted their ability to manage their GDM. Data analysis revealed three major categories: 1) *Finding Out About the Gestational Diabetes Diagnosis*, 2) *Mastering GDM*, and 3) *Life After GDM*.

The diagnosis of GDM took most of the participants of the study by surprise. Whether they had been diagnosed with GDM for the first time or whether they were diagnosed with GDM during subsequent pregnancies made no difference; finding out they had GDM was distressing. They reacted with denial, confusion, shock, frustration, and disappointment. They viewed the GDM diagnosis as a stressor, causing some participants to step back to reflect on their perceptions of their own health, their pregnancies, and wonder whether they had led a healthy lifestyle prior their GDM diagnosis. Most participants had thought they were experiencing a healthy pregnancy, or eating in a manner that would not result in GDM, prior to their diagnosis.

Upon receiving the GDM diagnosis, each of the participants realized it was necessary for them to take immediate steps to control their GDM. Each had to move quickly from their initial emotional reactions to coming to terms with the diagnosis so they could implement strategies to manage their condition: they had to master their GDM. Participants mastered their GDM through acceptance of their diagnosis, gaining an understanding of their condition, incorporating

various aspects of GDM management into their daily lives and assessing how well they had managed their GDM.

Participants' journey to master their GDM involved acceptance of the diagnosis. Acceptance meant the participants had to acknowledge that they had been diagnosed with GDM, and they had to move forward and make substantial life changes immediately in their dietary and exercise routines despite not having time to process their situation mentally. Time and establishing new habits helped some participants overcome their initial fear and stress about being diagnosed with GDM. Other participants came to terms with their new reality by reframing their view of GDM to focus on positive aspects of the experience. While coming to terms with their diagnosis, some participants also wondered how they had come to be diagnosed with GDM, which led to a sense of guilt. Acceptance of the GDM diagnosis, or reconciling with the fact of the GDM diagnosis, allowed participants to adjust to their new situation of living with GDM.

The second component of mastering GDM involved participants gaining an understanding of their healthcare provider's recommendations related to diet and lifestyle changes, the need for and how to monitor their blood glucose, medications, and specialist referrals. Half of the participants discussed the time frame in which they received information from healthcare providers. Two of the five had been given information immediately following their diagnosis, while three said they had gone between one to three weeks from the time they were diagnosed with GDM to the time they received information about diet changes and blood glucose monitoring. The impact of how quickly healthcare providers conveyed information to participants about the necessary steps for managing their GDM was twofold. Getting information promptly was essential for participants to gain an understanding of GDM and begin

to manage it. It also was important for participants to receive information when they were emotionally ready. As most of the study participants were not expecting to be diagnosed with GDM, they felt overwhelmed and were unable to retain important information. What information and the extent to which healthcare providers took the time to explain that information varied among participants of the study. Nevertheless, none of the participants had been completely satisfied with the information their healthcare providers gave them concerning GDM and how to manage it. Even those participants who reported feeling well-informed also said they would have liked to have been made aware of GDM risk factors before their diagnosis. Others had wanted their healthcare providers to take the time to explain the application of dietary information in real-life situations. Consequently, they immediately had to begin making significant changes around food, exercise, blood glucose monitoring, and in some cases, medications, despite not having a comprehensive understanding of GDM and what to expect. While most participants had received basic information about diet and exercise, some felt they received insufficient information about risk factors, how to incorporate the lifestyle changes needed to manage GDM in a manner that was conducive to their routines, and mental health support. As a result, participants relied on other sources of information, such as the internet, to help them implement the lifestyle changes necessary to manage their GDM.

Learning how to incorporate the information they received or sought out into their daily lives took time and practice for the study participants. Factors that helped participants manage their GDM included emotional and informational support from family, friends, and other women on social media who understood their struggles of living with GDM. Some participants faced challenges related to the stress of diet changes, finances, and lack of support from family members and healthcare providers. A lack of support and feeling as if no one else understood

their struggles with GDM led some participants to feeling isolated or stigmatized. The effects of having GDM and their feeling isolated and stigmatized made mental health a concern for two participants who perceived a lack of information, and thus a lack of support, from their providers about mental health resources.

As the participants worked to master their GDM, they all needed some form of feedback to assess the effectiveness of their lifestyle changes. Blood glucose levels and the baby's weight at birth were two measures participants relied on to assess how well they had managed their GDM. Blood glucose levels provided immediate day-to-day, meal-to-meal feedback. However, the focus on blood glucose values caused some participants to feel they had failed, especially those who needed medication to manage their GDM. Some participants viewed their baby's birth weight as an indicator of their efforts longer term. Giving birth to babies they considered to be small or of normal weight helped some participants come to terms with their GDM experience by validating their struggles with GDM had been successful.

An important issue most of the participants discussed was the information they had received about their future diabetes risk. Participants whose healthcare provider had not informed them that they might develop T2DM later in life, and who came upon that information on their own, interpreted this lack of information as an indication that the healthcare system did not value them. On the other hand, those whose providers had warned them of their risk for developing T2DM felt they had not received enough information about how to lower that risk. Study participants wanted their healthcare providers to spend more time educating them about what to expect after their GDM pregnancy.

Based on insights they had gained from their personal struggles from GDM, participants were asked what advice they would offer to other women who have been recently or newly

diagnosed with GDM. Participants' advice to other women centered around providing the encouragement, reassurance, support, and guidance they wished they had received during their GDM pregnancies. Participants said they would want other women to know that receiving a GDM diagnosis is not their fault and stressed that they should not be afraid to ask their healthcare providers questions about GDM. They also said they would encourage women to connect with others who have been through GDM; they also would reassure others that adjusting to a diabetic diet, though difficult, is possible. Study participants said they would encourage women to seek out dietary guidance and support from knowledgeable dietitians or nutritionists.

COMPARISON TO THE EXTANT LITERATURE

Many of the studies that explore the experiences of women with GDM have been conducted with women living in countries other than the United States. These include studies conducted in Denmark (Toxvig et al., 2022), Taiwan (Su et al., 2022), England (Edwards et al., 2021; Parsons et al., 2018), Australia (Bandyopadhyay et al., 2011; Carolan et al., 2012; Oxlad et al., 2023; Sabag et al., 2023), New Zealand (Martis et al., 2018), Canada (Hui et al., 2014a; Hui et al., 2014b; Neufield, 2011), and Sweden (Hjelm et al., 2018; Persson et al., 2010). Only three studies have been identified that address the experiences of women diagnosed with GDM living in the United States (Abraham & Wilk, 2014; Carolan-Olah et al., 2017; Stotz et al., 2019). Studies conducted in the United States utilized either phenomenology (Abraham & Wilk, 2014; Carolan-Olah et al., 2017), or grounded theory (Stotz et al., 2019). The reported study herein used a Naturalistic Inquiry approach (Erlandson et al., 1993; Lincoln & Guba, 1985) to explore and describe the experiences of women who had gestational diabetes and lived in the United States. Findings from the current study add to the larger body of knowledge about GDM by detailing women's perceptions about their early responses to the diagnosis of GDM; when, what,

and from whom the women received information about GDM management and how the women located information they needed; and factors that influenced women's ability to manage their condition.

Most participants of the present study had thought they were experiencing healthy pregnancies prior to learning they had GDM and being told they had GDM was distressing. This finding is similar to those identified in studies conducted by Carolan-Olah et al. (2017) and Persson et al. (2010). Persson et al. (2010) utilized grounded theory to understand the experiences of ten pregnant women diagnosed with GDM living in Sweden. Carolan-Olah et al. (2017) utilized interpretive phenomenology to analyze the experiences of eighteen pregnant Hispanic women from Mexico who had been diagnosed with GDM and who were living in a border region of the United States. Women in Carolan-Olah et al. (2017), Persson et al. (2010), and the present study all reacted with shock and confusion upon learning of their GDM diagnosis. Women in Carolan-Olah et al. (2017) and the present study wondered how they developed GDM. Furthermore, women in the present study questioned whether they had led a healthy lifestyle prior to GDM which, for some, resulted in feelings of guilt; women in the study by Persson et al. (2010) where some women felt responsible for developing GDM and searched for causes of their condition.

Following the shock of their GDM diagnosis, participants in Carolan-Olah et al. (2017), Persson et al. (2010), and the present study all realized they had to move forward and begin immediately to make substantial life changes related to diet. Persson et al. (2010) said women in their study felt they had an increased responsibility to take care of themselves and manage their GDM to protect their baby and give them a healthy start to life. Women in the present were also concerned about the impact GDM could have on their babies.

Each of the participants in the present study had to gain an understanding of their healthcare providers' recommendations about diet and lifestyle changes, blood glucose monitoring and specialist referrals. Despite receiving basic information about what foods to eat, medications, and exercise, many women in the present study found that information inadequate for their individual needs. Similar findings were reported by Toxvig et al. (2022), Abraham and Wilk (2014), and Parsons et al. (2018). Parsons et al. (2018) described the experiences of GDM and GDM care in a group of 50 women living in the United Kingdom; Toxvig et al. (2022) used a phenomenological approach to study the lived experiences of 14 pregnant women diagnosed with GDM at a university hospital in Denmark; and Abraham and Wilk (2014) explored the lived experiences of 10 women with GDM in rural Western New York communities. Like the present study, Toxvig et al. (2022), Abraham and Wilk (2014), and Parsons et al. (2018), reported that women did not believe their healthcare providers considered their personal and cultural preference; nor did healthcare providers spend sufficient time when informing the women of what they needed to do to manage their GDM. Women in Parsons et al. (2018) reported feeling that their healthcare providers lacked an understanding of their cultural dietary needs, while women in the present study felt that their healthcare providers were not taking the time to explain how dietary information could be applied in real-life situations. Moreover, Abraham and Wilk (2014) found a gap between the information and explanations women received from their healthcare providers and the knowledge they needed to manage their GDM. Women in Toxvig et al.'s (2022) study reported feelings of diminished control over their diet due to lack of dietary information.

Half of the women in the present study found changing their diets to be a stressful and difficult experience, in part because they felt the information given to them by their healthcare

providers about what to eat did not take their individual preferences into account. Similar findings have been reported by Hui et al. (2014b) and Oxlad et al. (2023). Hui et al. (2014b) conducted a qualitative descriptive study to describe factors that influenced the food choice decisions of 30 pregnant women diagnosed with GDM for the first time who lived in Winnipeg Canada. Oxlad et al. (2023) investigated the perspectives and experiences of thirty-three postpartum women, living in Australia, who had been diagnosed with GDM in the previous 12 months. Oxlad et al. (2023) noted that families whose cultural dietary practices were carbohydrate-heavy perceived the diet modifications required for GDM management as depriving the baby, which led researchers to conclude that GDM education lacks cultural awareness. Hui et al. (2014b) found that personal preference was a factor that impacted food-choice decision making. Women in Hui et al. (2014b) and the present study sought information from other sources when the dietary information, they had received from healthcare providers did not meet their personal needs.

A lack of information about how to implement the lifestyle modifications necessary to manage GDM and the urgency in which those modifications had to happen meant some women in the present study began making major changes around food, exercise, blood glucose monitoring, and even medications without a comprehensive understanding of GDM. Nevertheless, women in the present study chose to assert control of their situation and searched for the information they needed in sources outside of the healthcare environment. The internet was a useful tool for some women of the current study in their search for information about what foods to eat, counting carbohydrates, and insulin administration. Some used Google searches and social media to find answers to questions that their healthcare providers had not addressed adequately. Similar findings have been reported in studies by Sabag et al. (2023) and Edwards et

al. (2021). Sabag et al. (2023) used a cross-sectional survey to explore barriers and facilitators to GDM management among a sample of 564 women living in Australia. The supports for management of GDM identified by Sabag et al. (2023) included information available in an online format. Two women who participated in the present study also discussed utilizing online social media for informational and peer support in the form of Facebook groups. This finding is somewhat similar to those by Edwards et al. (2021) who explored the views and experiences of 10 women in the United Kingdom who utilized their smartphones to access information for GDM management. Edwards et al. (2021) found that participants utilized social media for peer support; moreover, they valued information they found online over information given to them by health care professionals. Women who utilized social media for peer support in the current study did so because they were looking to connect with other women who understood their struggles with GDM and could help them learn more about managing their condition.

As women in the current study incorporated what they learned into their daily lives, social support played an important role in their ability to manage GDM. These findings align with those of Martis et al. (2018) who identified social support as both a facilitator and barrier to GDM management in their qualitative descriptive study of 60 pregnant women with GDM in New Zealand. Women in both the present study and Martis et al. (2018) sought the support of family and friends who encouraged them to achieve good glycemic control. Furthermore, women in each study also identified health professionals as helpful resources. Some women in the present study thought they had received good support from healthcare providers whose focus was high-risk pregnancies, who were knowledgeable about GDM, and dedicated more time to patient education. Conversely, a lack of social support was also reported as a barrier or challenge to GDM management by women in both Martis et al. (2018) and the present study who

reported feeling hesitant to share their GDM struggles with family members or friends whom they perceived to be unsupportive or unhelpful.

A lack of support and feeling as if no one else understood their struggles with GDM led some of the women in the current study to feel isolated or stigmatized, which further led two participants to concerns about mental health. The psychological impact of GDM is a finding that has also been discussed in studies by Parsons et al. (2018) and Su et al. (2022). Su et al. (2022) used a qualitative descriptive approach to describe the GDM self-management experience of 22 pregnant women living in Taiwan. Whereas Parsons et al. (2018) described women's sense of alienation as originating from the healthcare system's focus on the baby without consideration for the autonomy of the pregnant woman; Su et al. (2022) described dietary control of GDM as synonymous with social deprivation that left some women in their study feeling isolated from their community.

All but one of the women in the present study had relied on blood glucose values as meal-to-meal, day-to-day feedback to assess the effectiveness of their dietary changes. This focus on blood glucose values led some women to perceive their inability to control their blood glucose as a failure on their part, especially if their condition led to the need to use insulin. This finding supports those of an exploratory mixed methods study by Hui et al. (2014a) that examined the stress and anxiety experiences of 30 women with GDM living in Winnipeg Canada; women in that study who received insulin reported higher levels of perceived stress and anxiety when compared to women whose GDM was successfully diet controlled.

Some women in the current study viewed their baby's birth weight as an indicator of their longer-term efforts to manage their GDM. This finding somewhat differed from Persson et al. (2010) who utilized grounded theory to study the experiences of ten pregnant women

diagnosed with GDM living in Sweden and found that the experience of living with GDM can be understood as a process of “stun to gradual balance” (p. 456). Persson et al. (2010) said that as women in their study struggled to balance the challenge of coping with their GDM diagnosis and adhering to a diabetic diet, they were also “waiting for the moment of truth” (p. 459); otherwise known as the birth of their baby, where they would see how GDM affected them and their babies. Persson et al. (2010) reported women in their study felt vulnerable not knowing what to expect at delivery. Conversely, women in the present study had already given birth to their babies, and thus knew the outcome of their GDM pregnancies. Giving birth to babies they considered to be small or of normal weight helped some women in this study come to terms with their GDM experience by validating their struggles with GDM had been successful.

An important issue most of the women in the current study discussed was the information they had received about their future diabetes risk. More specifically, they had wanted their healthcare providers to spend more time educating them about what to expect after their GDM pregnancy and how they might be able to mitigate the risk of developing T2DM later in life. This finding aligns with a finding from Parsons et al. (2018) who also found women in their study wanted follow-up after their GDM pregnancies. Parsons et al. (2018) reported that many of the women in their study received very little postpartum follow-up, whereas women in the present study interpreted a lack of information about T2DM and how to mitigate their risk as evidence that they were not valued by healthcare system.

STUDY IMPLICATIONS

The study participants’ experiences of gestational diabetes were shaped, in part, by the information and support they received from their healthcare providers. The implications of the current study’s findings pertain to nurses and other healthcare providers who help care for

pregnant women diagnosed with GDM. The present study revealed a belief among some women who participated that their healthcare providers had not spent enough time educating them about GDM risk factors and prevention prior to their diagnosis. Healthcare providers should be aware that some patients prefer more anticipatory guidance about GDM risk factors and prevention.

The present study revealed the shock and stress caused by a GDM diagnosis. Healthcare providers and nurses should be aware that the shock of the diagnosis may interfere with women's ability to understand GDM and the ramifications for their pregnancy. Providers, and nurses, should be alert and sensitive to what their patients are experiencing and strive to help women integrate the diagnosis and its implications. Providers also should be aware that overloading patients with information can be counterproductive and produce additional unneeded distress. Providers and nurses need to be sensitive to the woman's emotional state and weigh the mandate to educate women about GDM and strategies they use to impart information against their assessment of the woman's ability and readiness to take in the information. Patients may not retain a lot of complex information shortly after receiving any sort of shocking diagnosis, such as a GDM diagnosis. Therefore, providers and nurses need to use take-home resources, such as pamphlets, and follow-up with the woman to assess her understanding of her situation and the lifestyle changes required of her, as well as to provide support and additional education or intervention.

Another finding of the study highlights the need for GDM education to address individual needs and food preferences, as well as cultural dietary practices that may affect the women's food choices. The women who participated in the study did not believe they received adequate information and support around how to incorporate the recommendations they were given about lifestyle changes into their daily lives. While most of the women received basic information

about diet, exercise, and medication, they also needed more information and support about the day-to-day realities of incorporating GDM management recommendations into their lives. Some women in the study described the information they received as cookie-cutter, and not individualized to meet their needs or unique circumstances. Several experienced stress when the provider's GDM diet recommendations did not consider their individual food preferences, or when providers did not recognize their difficulty coping with the restrictive aspects of the diabetic diet. Women in the study benefited from referrals to diabetes or high-risk pregnancy specialists, registered dietitians, or nutritionists. Every study participant who had been referred to these types of providers believed the providers were able to dedicate more time to patient education about GDM and how to integrate a diabetic diet into one's life. This study highlights the importance of specialty referrals for women with GDM to ensure they have appropriate resources and guidance.

Findings of the present study revealed that women will search for information on their own when the information given to them by their healthcare providers is inadequate. Many women resorted to searching information out for themselves via the internet. Providers and nurses need to know that women who do not get enough information usually will turn to the internet. Therefore, it is imperative that healthcare providers and nurses know what information is available to their patient population via the internet and should help patients identify reputable internet sources containing evidence-based information. Additionally, the fact that many of the women who participated in the study were looking to connect with other women who could relate to their struggles and offer practical advice emphasizes the value of in-person or online support groups for women diagnosed with GDM.

Findings of this study clearly show that women diagnosed with GDM need more support and help from healthcare providers to contextualize and gain perspective; that having been diagnosed with GDM is not a personal failing. Healthcare providers and nurses should be aware that women need help to understand that, while changing diet and exercising positively influences blood glucose, sometimes needing medication is unavoidable and should not be considered failure. In essence, women need more encouragement and reassurance from healthcare providers and nurses as they actively manage their GDM.

Some of the women who participated in the study who recognized the effect GDM had on their mental health perceived a lack of information, and thus support, from their providers about available mental health support and resources. This finding suggests a potential need for healthcare providers and nurses to offer or to identify sources of mental health support for pregnant women with GDM, or at least consider the integration of mental health services into the care of pregnant women experiencing GDM; and potentially, other women experiencing pregnancy complications.

Findings of the present study also revealed inconsistent support and follow-up specific to their future risk of T2DM. Not all women who participated in the study had been made aware of their future diabetes risk by their healthcare providers; those who had been told they may develop T2DM later in life were not well-informed about what they needed to do to lower their diabetes risk. After delivery of the baby, healthcare providers and nurses should consider spending more time educating women about what to expect after their GDM pregnancy and offer guidance on whom to follow-up and at what time frame.

STRENGTHS OF THE STUDY

The study had three strengths. First, the use of video conferencing enabled women from various parts of the United States to participate in the study. Study participants were residing in Arizona, California, Tennessee, Oregon, Ohio, Pennsylvania, Missouri, New Jersey, Colorado, and Utah during their GDM pregnancies and at the time of data collection. Second, the study gave women who had been diagnosed with GDM in a previous pregnancy the opportunity to voice their perceptions about having been diagnosed with GDM, describe the information they received about GDM management and identify factors that influenced their ability to manage their GDM. This study provided women with a history of GDM an opportunity to voice their experiences and insight on what they felt they had needed from their healthcare providers during their GDM pregnancies: in particular that they needed more information relevant to their personal needs, time, and support. Lastly, five of the ten study participants took part in member checking, and confirmed the study's findings, helping to establish credibility of the study's findings.

LIMITATIONS OF THE STUDY

This qualitative study had some limitations. First, like many qualitative studies, the study may be limited by its small sample size; ten women who self-reported having been diagnosed with GDM in a previous pregnancy participated in the study. Nevertheless, data analysis revealed saturation of the study categories by the time eight women had participated and data provided by two additional participants confirmed the findings that were emerging from the study data; moreover, the findings were confirmed by five women who participated in member checking. Another potential limitation of the study was demographic diversity among study participants; most study participants self-identified as Caucasian, two participants self-identified

as Hispanic, and one as Asian. None of the study participants was African American. Lastly, most participants were college educated with a median annual family income of 85K per year.

RECOMMENDATIONS FOR FURTHER RESEARCH

The current study utilized a qualitative, Naturalistic Inquiry (Erlandson et al., 1993; Lincoln & Guba, 1985) approach to explore and describe the experiences of women who had been diagnosed with gestational diabetes in a previous pregnancy. Although the recruitment strategy yielded a group of participants from different geographical locations within the United States, demographic characteristics of the study participants could have been less homogenous. While there was variation in participants' ages and number of pregnancies, most participants were Caucasian and college educated women, all were married; none were African American. Future research could attempt to recruit a more diverse group of participants through networking and personalized strategies rather than exclusively online. Additional research would be needed to explore whether variations in demographic characteristics such as ethnicity, education level, family household structure, and income impact the experiences of women who are dealing with GDM. Another suggestion for further research relates to the mental health support of pregnant women diagnosed with GDM. Two participants of the study talked about how their GDM pregnancies had affected their mental health and brought attention to a lack of information and mental health resources specific to women in their situation. A focus on GDM's impact on maternal mental health in the perinatal period and ways to provide support would be beneficial for future research.

CONCLUSIONS

Gestational diabetes, hyperglycemia that develops in pregnant women with no prior history of diabetes, affects 2% to 10% of all pregnancies in the United States (Centers for

Disease Control and Prevention [CDC], 2022). GDM poses short-term and long-term risks to the wellbeing of the woman and her baby. Effective management of GDM requires women to implement changes in their lifestyles quickly. Women diagnosed with GDM must change their diets, start exercising, and many must begin taking medications to control their blood glucose.

There is a dearth of studies that have examined the experiences of women who have been diagnosed with GDM who live in the United States. This study utilized Naturalistic Inquiry [NI] (Erlandson et al., 1993; Lincoln & Guba, 1985) to explore and describe the experiences of women diagnosed with gestational diabetes [GDM] in a previous pregnancy and were living in the United States. Study findings revealed that women diagnosed with GDM took immediate steps to master their condition; they did so through accepting their diagnosis, gaining an understanding of their condition, incorporating various aspects of GDM management into their daily lives, and assessing how well they had managed their GDM. Factors that helped study participants manage their GDM included emotional and informational support from family, friends, and other women on social media who understood their struggles of living with GDM. They faced challenges related to the stress of diet changes, finances, and lack of support from family members and healthcare providers. A lack of support and feeling as if no one else understood their struggles with GDM led to feelings of isolation or stigmatization. While most women in the study had received basic information about diet and exercise, none were completely satisfied with the information they received from their healthcare providers. The women needed more information about the realities of integrating the necessary lifestyle changes for GDM management in a manner that was conducive to their daily routines. Additionally, they needed information about mental health support, their future risk of T2DM, as well as the potential for long-term risks to their children. Women relied on sources within their community

and the internet to obtain the information they needed but had not received from their healthcare providers.

Women's experience of GDM is shaped by the information and support they receive from healthcare providers. Providers should be aware that women with GDM need more information about GDM risk factors, how to incorporate GDM recommendations into their daily lives, mental health resources, and whether having had GDM posed risks for themselves and their children over their lifetime. Findings of this study show that women diagnosed with GDM needed more support and help from their healthcare providers to contextualize and gain perspective about GDM and how to manage it.

*Appendix A***University of Texas Medical Branch Institutional Review Board Materials**

Institutional Review Board
301 University Blvd.
Galveston, TX 77555-0158
[Submission Page](#)

06-Jun-2022

MEMORANDUM

TO: Diana Mandia
Grad School Biomedical Science GSBS9999

FROM: 
Alexander Duarte, MD
Vice-Chairman, IRB #2

RE: Initial Study Approval

IRB #: IRB # 22-0108

Submission Number: 22-0108.002

TITLE: A Naturalistic Inquiry of the Experiences of Women Diagnosed with Gestational Diabetes

DOCUMENTS: Protocol
Fast Fact Sheet
Interview Guide
Recruitment Flyer
Budget

The UTMB Institutional Review Board (IRB) reviewed the above-referenced research protocol via an expedited review procedure on **03-Jun-2022** in accordance with 45 CFR 46.110(a)-(b)(1). Having met all applicable requirements, the research protocol is approved. The approval for this research protocol begins on **03-Jun-2022**.

Continuing Review for this protocol is not required, as outlined in 45 CFR 46.109. The Principal Investigator is still responsible for:

1. Submitting amendments for protocol changes.

2. Reporting Adverse Events, Protocol Violations, and Unanticipated Problems, as outlined in IRB policies and procedures.
3. Closing the project once it ends, or when personal identifiers are removed from the data/biospecimens, and all codes and keys are destroyed.

The approved number of subjects to be enrolled is 7. The IRB considers a subject to be enrolled once s/he signs a Consent Form. If, additional subjects are needed, you first must obtain permission from the IRB to increase the approved sample size.

Please note: your research study is required to be registered in ClinicalTrials.gov PRIOR to enrolling the first subject if (1) you serve as the sponsor or sponsor-investigator (investigator-initiated) of the study and (2) the study is considered a clinical trial. Failure to register the study in ClinicalTrials.gov may result in an inability to publish study findings, assessment of monetary penalties, and other sanctions.

If you have any questions, please do not hesitate to contact the IRB office via email at IRB@utmb.edu.

This study meets Expedited Review according to Category 5 & 7.



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Institutional Review Board

301 University Blvd.

Galveston, TX 77555-0158

[Submission Page](#)

05-Aug-2022

MEMORANDUM

TO: Diana Mandia
Grad School Biomedical Science GSBS9999

FROM: 
Dwight Wolf, MD
Chairman, IRB

RE: Amendment/Miscellaneous Request Approval

IRB #: IRB # 22-0108

Submission Number: 22-0108.004

TITLE: A Naturalistic Inquiry of the Experiences of Women Diagnosed with Gestational Diabetes

DOCUMENTS: IRB Protocol_Mandia_V3.docx
Updated Fast Fact Sheet
Updated Oral Consent Narrative
Recruitment Flyer_V2.docx
UTMB ResearchMatch.docx

The **Protocol/Consent Form Changes Response** request to the above referenced study has been reviewed via an expedited review procedure on **05-Aug-2022** and approved by the UTMB Institutional Review Board (IRB) in accordance with 45 CFR 46.110(a)-(b)(2).

The approval period for this modified research protocol begins on **05-Aug-2022**. Amendment approvals do not change the approval period of the protocol. Therefore, the expiration date will remain the same as was determined for the protocol at the time of initial or continuing review.

If you have any questions, please do not hesitate to contact the IRB office via email at IRB@utmb.edu.

Description of Changes/Submission

The revised protocol includes the following modifications: 1) Modification in the recruitment process to add ResearchMatch.org as recruitment method and post flyers to three websites; 2) Modification of the eligibility criteria to include 18 years and older, and diagnosed with gestational diabetes in a previous pregnancy; and 3) Update recruitment flyer to reflect changes in the eligibility criteria; revisions to the Fast Fact Sheet and Oral Consent Narrative to update researcher and IRB contact information.



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Institutional Review Board

301 University Blvd.

Galveston, TX 77555-0158

[Submission Page](#)

29-Aug-2022

MEMORANDUM

TO: Diana Mandia
Grad School Biomedical Science GSBS9999


FROM: Alexander Duarte, MD
Vice-Chairman, IRB #2

RE: Amendment/Miscellaneous Request Approval

IRB #: IRB # 22-0108

Submission Number: 22-0108.005

TITLE: A Naturalistic Inquiry of the Experiences of Women Diagnosed with Gestational Diabetes

DOCUMENTS: IRB Protocol_Mandia_V4.docx

The **Protocol/Consent Change** request to the above referenced study has been reviewed via an expedited review procedure on **26-Aug-2022** and approved by the UTMB Institutional Review Board (IRB) in accordance with 45 CFR 46.110(a)-(b)(2).

The approval period for this modified research protocol begins on **26-Aug-2022**. Amendment approvals do not change the approval period of the protocol. Therefore, the expiration date will remain the same as was determined for the protocol at the time of initial or continuing review.

If you have any questions, please do not hesitate to contact the IRB office via email at IRB@utmb.edu.

[Description of Changes/Submission](#)

Approval to increase enrollment from 7 to 25 research participants as data saturation and redundancy may not occur at 7 participants. Qualitative data from a larger sample size may yield new information and generate more themes that can allow for a better understanding of the experiences of women diagnosed with gestational diabetes.

*Appendix B***Recruitment Flyer**

Were you diagnosed with Gestational Diabetes in your last pregnancy?

Would you be interested in participating in a study & sharing your experiences of gestational diabetes?

Who can participate?

Adult women 18 years of age or older residing in the U.S.
Diagnosed with gestational diabetes in a previous pregnancy
Are not currently pregnant
Fluent in English
Smartphone or computer with internet access
Willing to be interviewed via Zoom Video Conference

For more information about the study or to participate

Please email Diana Mandia, BSN, RNC-OB

dimandia@utmb.edu

Diana Mandia is a PhD Candidate at the University of Texas Medical Branch in Galveston, Texas

Appendix C

Healthfulchat.org Post

The screenshot displays the Healthfulchat.org pregnancy chat room interface. On the left, a sidebar promotes "Professional & Affordable Online Counseling" with a "TRY HERE" button. The main chat area shows a list of messages, including a welcome message and a notice about a user named Amanda. A list of 10 users is visible on the right, including Chat-Bot, HFChat, MissFire, Mod-Bot, PurpleMama, dm, Figures-Away, Guest148826, Stephen(Away), and Support(Away). At the bottom, there is a "Pregnancy Chat Room Notes" section with instructions on how to start a private conversation. The browser's address bar shows the URL "healthfulchat.org/pregnancy-chat-room/login.html".

Appendix D

GNSA Discussion Board Post

8/6/22, 12:17 PM

Study Invitation: Looking for participants willing to share their experiences of gestational diabetes | GNSA Community

Contact Us

Code of Conduct

Notification Settings

0

▼

AACNConnect

ENGAGE · DISCUSS · POST · SHARE

Communities / Community Home / Discussion / Topic Thread

GNSA Community

▼ Settings

Community Home

Discussion 1.9K

Resources 32

Events 0

Members 9.8K

Essentials Corner

Back to discussions

Expand all | Collapse all

Study Invitation: Looking for participants willing to share their experiences of gestational diabetes

Following ☐

1. Study Invitation: Looking for participants willing to share their experiences of gestational diabetes 🎵

0

Recommend

https://connect.aacnnursing.org/discussion/study-invitation-looking-for-participants-willing-to-share-their-experiences-of-gestational-diabetes?ReturnUr...

1/3

8/6/22, 12:17 PM

Study Invitation: Looking for participants willing to share their experiences of gestational diabetes | GNSA Community

Diana Mandia

Posted 10 seconds ago |  view attached

Reply



Hello everyone!

My name is Diana Mandia, and I am a Ph.D. Candidate at the University of Texas Medical Branch working on my dissertation research. The purpose of this study is to explore and describe the experiences of women who have been diagnosed with gestational diabetes. I am hoping to connect with women willing to share their experiences of gestational diabetes.

Who can participate? Adult women 18 years of age or older residing in the United States who:

- were diagnosed with gestational diabetes in a previous pregnancy
- are not currently pregnant
- are fluent in English
- have a computer or smartphone with internet access
- are willing to be interviewed via Zoom

For more information about the study, or to participate, please email me at dimandia@utmb.edu

Thank you for your time and consideration.

Sincerely,
Diana Mandia

Diana Mandia
BSN, RNC-OB
Ph.D. Candidate
University of Texas Medical Branch

Attachment(s)



Flyer.docx

177 KB

1 version

Copyright 2017 Connect. All rights reserved.

Appendix E

UTMB ResearchMatch.org Researcher Acknowledgement Form

RAF. Last Updated: 07/15/2020

RESEARCHMATCH.ORG RESEARCHER ACKNOWLEDGMENT FORM

University of Texas Medical Branch

In order to utilize ResearchMatch, also known as the National Recruitment Registry Project, for the purposes of conducting a feasibility analysis or participant recruitment, I have read and acknowledged the following terms:

- I understand that my first point of contact is the Institutional Liaison associated with my university/center for matters related to ResearchMatch.
- In order to recruit potential research participants through ResearchMatch, I understand that I must have an active, approved IRB study throughout the entirety of my recruitment efforts and be either:
 - The Principal Investigator (PI) associated with the identified study; or
 - A recruitment proxy that has been authorized by the PI for recruiting patients as defined in the Institutional Review Board (IRB) approved proposal for the identified study.
- I understand that ResearchMatch reserves the right to deny or disable a study or survey which is not clinical and translational research with health-related outcomes, generates complaints from the volunteer community, or is misaligned with the expectations or intentions of this clinical research tool.
- I understand that the applicable rules, regulations, policies and procedures imposed by my local IRB will be applicable throughout the entire recruitment process.
- I agree that any communications with volunteers via ResearchMatch will utilize content and/or recruitment language, with the removal of direct study contact information, which has been approved by my local IRB.
- I understand that no volunteer contacted through ResearchMatch is obligated to respond to my initial recruitment messages sent through ResearchMatch or participate in any study.
- I agree to treat volunteer's personally-identifiable data obtained from ResearchMatch as confidential information to be used solely for the purposes of recruitment of volunteers into my IRB approved study for which the volunteer has authorized release of their contact information.
- I agree to immediately report any misuse of username & password to access ResearchMatch immediately to my Institutional Liaison.
- I understand that my privileges for utilizing ResearchMatch may be suspended at any time by my Institutional Liaison due to suspected misconduct or failure to abide by terms regarding confidentiality and security of Volunteer Data from ResearchMatch as outlined in the Master Institutional Registry Agreement signed by my institution and this Researcher Acknowledgment Form.
 - I may appeal the deactivation of my account in writing within thirty (30) days to my Institutional Liaison.

Appendix F

Approval for Recruitment Access on ResearchMatch.org

8/6/23, 2:48 PM

ResearchMatch: Action Required - IRB# 22-0108

ResearchMatch <info@researchmatch.org>

Fri 8/12/2022 8:14 AM

To: Mandia, Diana <dimandia@UTMB.EDU>

External Email Warning: Do not click links or open attachments unless you recognize the sender and expect the content. [UTMB Email Phishing Awareness](#)

Congratulations. Your ResearchMatch Institutional Liaison has approved your recruitment access request for IRB Study # **22-0108** titled **A Naturalistic Inquiry of the Experiences of Women Diagnosed with Gestational Diabetes** at the following institution: **University of Texas Medical Branch**.

Before your ResearchMatch account is enabled with recruitment access, you **MUST** accept this access.

By clicking Accept, your username and password that you created upon registering as a researcher in ResearchMatch will be enabled to give you this recruitment access. In other words, you will be able to search the ResearchMatch registry and contact potential study participants that match your study criteria.

[Accept](#) - I wish to recruit study participants through ResearchMatch

If you no longer wish to use ResearchMatch as a recruitment tool, please select the following:

[Deny](#) - I no longer wish or need to use ResearchMatch as a recruitment tool

Please visit www.researchmatch.org for more information or contact info@researchmatch.org should you have any questions or concerns.

If you did not submit this recruitment access request, please click [here](#).

Thank you for your interest in ResearchMatch. It is our hope that this recruitment tool will prove useful to your research endeavors.

Best wishes,
ResearchMatch.org

Appendix G

ResearchMatch.org Volunteer Contact Message



Difficult diseases have met their match.

A research team with University of Texas Medical Branch in Galveston, TX, believes you might be a good match for the following study:

Were you diagnosed with gestational diabetes in your last pregnancy? Would you be interested in participating in a study and sharing your experiences of gestational diabetes?

Who can participate?

Adult women 18 years of age or older residing in the United States who:

- 1. were diagnosed with gestational diabetes in a previous pregnancy**
- 2. are not currently pregnant**
- 3. are fluent in English**
- 4. have a smartphone or computer with internet access**
- 5. are willing to be interviewed via Zoom Video Conference**

If you are interested in this study and having the research team contact you directly, please select the "Yes, I'm interested" link below. By clicking the "Yes, I'm interested" link, your contact information will be released to the research team. If you select the "No, thanks." link or do not respond to this study message, your contact information will not be released to the research team.

Yes, I'm interested!

No, thanks.

Thank you for your interest in ResearchMatch.

ResearchMatch Disclaimer

You are receiving this email message since you have registered in the ResearchMatch registry. Should you wish to edit your profile please click [here](#) to login and update your profile.

ResearchMatch is a free and secure tool that helps match willing volunteers with eligible researchers and their studies at institutions across the country. ResearchMatch is only providing a tool that allows you to be contacted by researchers about their studies. ResearchMatch therefore does not endorse any research, research institution, or study. Any recruitment message that you may receive about a study does not mean that ResearchMatch has reviewed the study or recommends that you consider participating in this study.

If you no longer wish to be part of ResearchMatch, please remove your account by clicking [here](#).

Appendix H

Fast Fact Sheet

IRB#: 22-0108

Study Name: Experiences of Women Diagnosed with Gestational Diabetes

Contact Information:

Principal Investigator: Diana Mandia, BSN, RNC-OB

Cell: 512-914-6063

Study Coordinator: Carolyn Phillips, Ph.D., RN

Office: 409-772-8234

What is the purpose of this research study? The purpose of this study is to learn about the experiences of women diagnosed with gestational diabetes.

What are the Research Procedures? If you agree and are eligible to take part in the study, you will be asked to provide a verbal consent prior to beginning data collection. You will meet with the researcher to talk about the study and for data collection using a virtual synchronous audio-visual platform. The initial data collection session will last no more than 90 minutes. Sometimes additional data collection sessions are necessary to provide more detail or clarification. If additional sessions are necessary, each will take less than 30 minutes of your time. All data collection sessions will be recorded.

What are the Risks and Benefits? Any time information is collected; there is a potential risk for loss of confidentiality. Every effort will be made to keep your information confidential; however, this cannot be guaranteed. Other minor risks of participating in the study are the possibility of emotional distress or fatigue. You may choose not to discuss topics with which you are not comfortable addressing, and you reserve the right to stop the interview at any time. Participation in this study is voluntary. You may not receive any personal benefits from being in this study. We hope the information learned from this study will benefit women with gestational diabetes in the future.

How will my information be protected? Information we learn about you in this study will be handled in a confidential manner. Your name and personal identifiable information will be masked. If we publish the results of the study in a scientific journal or book, we will not identify you.

Who can I contact with questions about this research study? This study has been approved by the UTMB Institutional Review Board (IRB). If you have any complaints, concerns, input or questions regarding your rights as a subject participating in this research study or you would like more information about the protection of human subjects in research, you may contact the IRB Office by email at irb@utmb.edu. For questions about the study, contact Diana Mandia at the number listed above. Before you agree to participate, make sure you have read (or been read) the information provided above; your questions have been answered to your satisfaction; you have been informed that your participation is voluntary, and you have freely decided to participate in this research.

National Alliance on Mental Illness If you are in need of mental health support or resources, the National Alliance on Mental Illness Helpline is available to you Monday–Friday 10 a.m. - 10 p.m. at 1-800-950-NAMI (6264) or via email at info@nami.org

This form is yours to keep.

Appendix I

Participant Code: _____

Date: _____

Start Time: _____ / End Time: _____

**The University of Texas Medical Branch at Galveston
Minimal Risk Oral Consent Narrative**

You are being asked to participate in the study titled “Experiences of Women Diagnosed with Gestational Diabetes” because you are an adult woman who was diagnosed with gestational diabetes in your last pregnancy. I am Diana Mandia, the Principal Investigator for the study.

The purpose of this study is to learn about the experiences of women diagnosed with gestational diabetes. If you are willing to participate in this study, you will be asked to verbally provide consent. All data collection sessions will be recorded and transcribed. The first data collection session with the primary investigator will take place via a virtual synchronous audio-visual platform and would last no more than 90 minutes. Sometimes additional data collection sessions are necessary to provide more detail or clarification. If additional sessions are necessary, each will take less than 30 minutes of your time.

There are minimal risks of participating in this study. Risks include loss of confidentiality, emotional distress, or fatigue. To ensure your information and identity remain private and confidential, I will be assigning a participant ID to replace your name, and any information that could reveal your identity will be masked or removed from the transcription. Participation in this study is voluntary. You may choose not to discuss topics which you are not comfortable addressing, and you reserve the right to stop the interview at any time. You are also able to withdraw from the study at any time. If you choose to withdraw, please notify me via email at dimandia@utmb.edu.

There are no costs or reimbursements associated with participating in this study. We hope the information learned from this study will benefit women with gestational diabetes in the future.

Do you have any additional questions or concerns about participating in this study?

Are you willing to participate in this study?

For recording purposes, please confirm that the consent to participate has been read aloud to you, your questions have been answered, the procedures, risks and benefits of participation have been explained, and that you voluntarily agree to participate in this study exploring the experiences of women diagnosed with gestational diabetes?

[If potential participant responds positively, the researcher will turn on the recording devices, then state:] I have begun recording. “Do you consent to participate in the study on the experiences of women diagnosed with gestational diabetes and you affirm that the purpose, procedures, risks and benefits of participating in the study have been explained to you, and all your questions or concerns have been answered to your satisfaction?”

Appendix J

Participant Code: _____

Date: _____

Start Time: _____ / End Time: _____

Demographic Information Questionnaire

1. Age in years ____
2. Race/Ethnicity ____
3. Where did you live while pregnant? City, State ____
4. With whom did you live while you were pregnant? ____
5. What language do you primarily speak at home? ____
6. Highest level of Education _____
7. Pregnancy History
 - a. Number of pregnancies ____
 - b. Number of deliveries ____
8. Did you have gestational diabetes with other previous pregnancies? _____
 - a. If yes, with which previous pregnancies were you diagnosed with gestational diabetes? _____
9. Did you work while you were pregnant? _____
 - a. If so, what was your occupation? _____
 - b. Hours worked per week _____
10. If you are willing to share the information, what is your annual family income? _____

*Appendix K***Participant Code:** _____**Date:** _____**Start Time:** _____ / **End Time:** _____**Interview Guide****Grand Tour Question**

- ☐ What is your experience with gestational diabetes?

Guiding Questions

- ☐ What happened when you first learned about the diagnosis?
- ☐ What do you feel was different with each pregnancy? (If applicable)
- ☐ What information did you receive about managing gestational diabetes?
- ☐ How did you incorporate the information you received into your everyday life?
- ☐ Tell me about who or what helped you during this time?
 - ☐ If participant brings up family support, consider asking: Who helped? What did they do to help? Why do you feel they helped?
- ☐ Was there any additional information that you would have liked to receive?

Wrap Up

- ☐ Is there anything else you'd like to mention that we haven't covered?
- ☐ May I contact you with further questions if I have questions or need clarification?
- ☐ Here is how you can contact me if you want to add anything to what you have told me today: [Provide Email]

*Appendix L***Participant Code:** _____**Date:** _____**Start Time:** _____ / **End Time:** _____**Revised Interview Guide****Grand Tour Question**

- ☐ What is your experience with gestational diabetes?

Guiding Questions

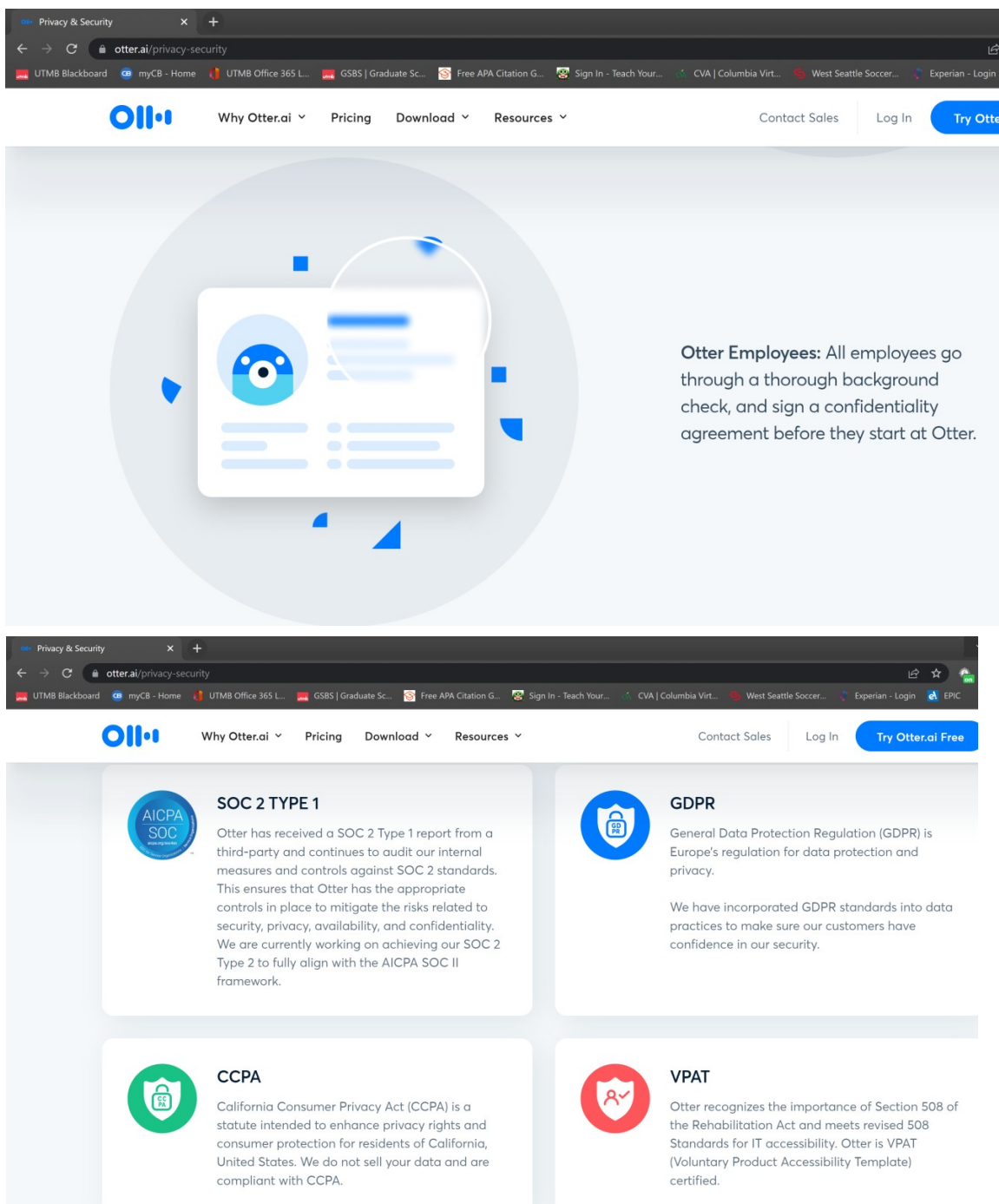
- ☐ What happened when you first learned about the diagnosis?
- ☐ How would you describe your feelings to the GDM diagnosis?
- ☐ How would you describe your feelings and emotions around the lifestyle changes or changes to your daily routine brought about by the GDM diagnosis?
- ☐ What do you feel was different with each pregnancy? (If applicable)
- ☐ What information did you receive about managing gestational diabetes?
- ☐ How did you incorporate the information you received into your everyday life?
- ☐ Was there any additional information that you would have liked to receive?
- ☐ What happened between the time you found out you were diagnosed with GDM and the time you began implementing the dietary and lifestyle changes necessary to manage GDM?
- ☐ Tell me about who or what helped you during that time?
 - ☐ What did they do to help? OR Why do you feel they/that helped?
- ☐ Did you know anyone else with diabetes at the time?
- ☐ How do you feel your family handled or reacted to the changes in your diet and daily routine?
- ☐ How would you describe your feelings around your family's reaction to the GDM diagnosis?
- ☐ What information were you given about what to expect post pregnancy and post gestational diabetes?
 - ☐ How did that make you feel?
- ☐ What advice would you give to someone who's been recently and newly diagnosed with GDM?

Wrap Up

- ☐ Is there anything else you'd like to mention that we haven't covered?
- ☐ May I contact you with further questions if I have questions or need clarification?
- ☐ Here is how you can contact me if you want to add anything to what you have told me today:
[Provide Email]

Appendix M

Otter.ai Confidentiality Statement



Privacy & Security

otter.ai/privacy-security

UTMB Blackboard myCB - Home UTMB Office 365 L... GSBS | Graduate Sc... Free APA Citation G... Sign In - Teach Your... CVA | Columbia Virt... West Seattle Soccer... Experian - Login

Oll Why Otter.ai Pricing Download Resources Contact Sales Log In [Try Otter](#)

Otter Employees: All employees go through a thorough background check, and sign a confidentiality agreement before they start at Otter.

SOC 2 TYPE 1

Otter has received a SOC 2 Type 1 report from a third-party and continues to audit our internal measures and controls against SOC 2 standards. This ensures that Otter has the appropriate controls in place to mitigate the risks related to security, privacy, availability, and confidentiality. We are currently working on achieving our SOC 2 Type 2 to fully align with the AICPA SOC II framework.

GDPR

General Data Protection Regulation (GDPR) is Europe's regulation for data protection and privacy.

We have incorporated GDPR standards into data practices to make sure our customers have confidence in our security.

CCPA

California Consumer Privacy Act (CCPA) is a statute intended to enhance privacy rights and consumer protection for residents of California, United States. We do not sell your data and are compliant with CCPA.

VPAT

Otter recognizes the importance of Section 508 of the Rehabilitation Act and meets revised 508 Standards for IT accessibility. Otter is VPAT (Voluntary Product Accessibility Template) certified.

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Vita

Diana Mandia, BSN, RNC-OB

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EDUCATION

- | | |
|--------------------|---|
| 12/2023 (Expected) | Nursing Ph.D. Student in Candidacy
Graduate School of Nursing
The University of Texas Medical Branch (UTMB), Galveston, TX |
| 2017 | Post-BSN Certificate in Nursing Education
The University of Texas Medical Branch (UTMB), Galveston, TX |
| 2009 | B.S. Nursing
University of Texas at Austin |

CERTIFICATIONS AND LICENSURE

- | | |
|----------------|---|
| 2009 - Present | Registered Nurse
Texas (Single State License)
License Number: 770129
Expires: January 31, 2024 |
| 2012 - Present | Inpatient Obstetric Nursing (RNC-OB)
National Certification Corporation
NCC ID: 104369430
Expires: September 15, 2024 |
| 2012 - Present | Electronic Fetal Monitoring (C-EFM)
NCC ID: 104369430
Expires: June 15, 2024 |
| 2014 - Present | International Board-Certified Lactation Consultant (IBCLC)
IBCLC Number: L-45562
Expires: December 31, 2024 |

DISSERTATION RESEARCH EXPERIENCE

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|----------------|--|
| 2022 – Present | Nursing Ph.D. Student in Candidacy
Graduate School of Nursing
The University of Texas Medical Branch (UTMB), Galveston, TX <ul style="list-style-type: none"> □ Dissertation research conducted under the supervision of Dr. Carolyn Phillips whose expertise includes qualitative methods, grounded theory, maternity nursing, maternal and family adaptation. □ Title: “<i>A Naturalistic Inquiry of the Experiences of Women Diagnosed with Gestational Diabetes.</i>” |
|----------------|--|

- Explored and described the experiences of women diagnosed with Gestational Diabetes in a previous pregnancy who were living in the United States.
- Findings from this study add to the larger body of knowledge about GDM by detailing women's perceptions about having been diagnosed with GDM, describing information women received about GDM management, and identifying factors that influenced women's ability to manage their condition.
- Ultimately, this research may contribute to a more comprehensive understanding of what is needed for successful GDM management, and potentially inform the development of future educational interventions.

TEACHING PRACTICUM EXPERIENCE

Fall 2020

GNRS 5320 Educator: Clinical Practicum

Graduate School of Nursing

The University of Texas Medical Branch, Galveston, TX

- Worked under the preceptorship of Morgan Cangelosi, MSN, RN, FNP-C, CCRN in her clinical/academic practice for Adult Health 2 clinical and lab and Adult Health 3 didactics.
- Served as facilitator for a Virtual Adult Health 3 Clinical Post Conference on running a mock code with undergraduate nursing students.
- Demonstrated Tracheostomy Suction and Care to undergraduate nursing students in Adult Health 2 Skills lab.
- Worked under Dr. Jacquelyn Svoboda to develop and provide a breastfeeding lecture to her Community Clinical group of undergraduate nursing students in an online learning environment.
- Attended the American Academy of Nursing Virtual Polity Conference from October 29 to October 31.

PROFESSIONAL AFFILIATIONS

2023 – Present Member, Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN)

2023 – Present Member, International Lactation Consultant Association (ILCA)

2022 – Present Student Member, Graduate Student Nursing Academy (GNSA)

PROFESSIONAL EXPERIENCE

2021 - 2022

Lactation Consultant, Per Diem, Contractor with Pacify Health, LLC

Remote Position

- Provided lactation support via telephone and video chat on the Pacify App to families throughout the United States.
- Answered patient questions related to establishing and maintaining a milk supply, improving baby's latch, pumping, weaning, medications and breastfeeding, and milk storage.

2019 - 2020

Newborn RN and Lactation Consultant, Full Time with Kaiser Permanente

Float Position between Largo, Kensington, Gaithersburg, and Hyattsville, MD

- Performed comprehensive newborn assessments and lactation support in the clinic setting.
- Assessed the needs of the mother and her newborn in the post-partum period. Coordinated patient care for hospital admissions, specialty referrals, and ancillary support departments based on the assessment from the newborn visit.
- Collaborated with other members of the health care team to identify parent's educational and competency gaps related to breastfeeding and newborn assessment.
- Coordinated the patient receipt of a hospital grade breast pump which is considered DME.
- Offered telephonic assessment and lactation support.
- Taught group prenatal newborn care and lactation classes.

Summer 2019

Lactation Consultant, Per Diem at Reston Hospital Center

Reston, VA

- Assisted new mothers in achieving their own breastfeeding goals in the postpartum setting.
- Developed and assisted in implementing newborn feeding plans when medically indicated and approved by physician.

2018 - 2019

Labor and Delivery Nurse, Per Diem Contractor at Walter Reed

Bethesda, MD

- Managed care of both routine and high-risk antepartum, intrapartum, and postpartum patients in the setting of a 35-bed combined unit.
- Provided preoperative, perioperative, and postoperative care to patients for cesarean sections and tubal ligations.

2015 - 2018

Lactation Consultant, Full Time at Kapi'olani Medical Center

Honolulu, HI

- Responsible for providing patient and staff education regarding the importance of human milk in the setting of a 74-bed level III Neonatal Intensive Care unit.
- Provided guidance to new mothers as they worked to establish a milk supply.
- When infants were stable and old enough to directly breastfeed, provided guidance to mothers on how to position infant at the breast.
- Coordinated shipping of mother's milk from neighbor islands to Oahu.
- Tracked and coordinated shipment of donor breast milk.
- Acted as preceptor in lactation education to novice NICU nurses.
- Communicated effectively and worked collaboratively as part of the multidisciplinary health care team comprised of a hospitalist, neonatologist, nurse, social worker, speech language pathologist, and nurse practitioner.

2013 - 2015

Lactation Consultant, Part Time at Sharp Chula Vista Medical Center

Chula Vista, CA

- Responsible for coordination, planning, and management of patient, family, and staff education related to breastfeeding.
- Assisted new mothers achieve their own goals in breastfeeding.
- Developed and assisted in implementing newborn feeding plans when medically indicated and approved by physician.

- Offered support to mothers via outpatient breastfeeding support groups, by-appointment outpatient lactation consultations, and via telephone.

2010 - 2013

**Labor and Delivery Nurse, Full Time Active Duty, Navy Nurse Corps
Walter Reed National Military Medical Center**

Bethesda, MD

- Managed care of both routine and high-risk antepartum, intrapartum, and postpartum patients in the setting of a 35-bed combined unit.
- Provided preoperative, perioperative, and postoperative care to patients for cesarean sections and tubal ligations.
- Experienced in the area of triage.
- Managed a staff of 8-12 civilian, contract, and military personnel when operating as charge nurse.
- Acted as preceptor to novice nurses, hospital corpsman, LPNs, and LPN students.

2009 - 2010

**Medical-Surgical Nurse, Full Time Active Duty, Navy Nurse Corps
National Naval Medical Center**

Bethesda, MD

- Provided long term post-surgical care to wounded soldiers returning from Operations Iraqi Freedom and Enduring Freedom.
- Managed care of 4 to 5 patients per shift.
- Performed admissions, continuing assessments, medication administration, vital signs, intravenous therapy, and patient education in the inpatient post-surgical hospital setting.
- Consulted with various members of the healthcare team to establish plans of care.
- Managed a staff of 5-10 civilian, contract, and military personnel when operating as charge nurse.
- Precepted novice nurses and hospital corpsman on orientation