GRAND CANYONS: AUTHORITATIVE KNOWLEDGE AND PATIENT-PROVIDER CONNECTION

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In 2011, African Americans in Tarrant County, Texas experienced an infant mortality rate of 14.3 per 1,000 live births. The leading cause of infant mortality in Tarrant County is prematurity and maternal nutritional status. Both maternal undernutirtion and overnutrition are known risk factors for premature birth. Improving maternal nutrition, by reducing rates of gestational diabetes and preeclampsia, and by increasing consumption of essential prenatal vitamins and nutrients, is a road to decreasing preterm birth in African Americans. This qualitative study, based on both anthropology and public health theory, of the nutrition behavior of a group of African American expectant mothers and the experience of their health care providers and co-facilitators had a goal to provide a foundation for future development of nutrition behavior research and education for this specific population. The main finding of this study was the substantial gap of lived experience and education between the patients and their providers and co-facilitators, which hinders delivery of care and the patients' acquiescence to nutrition recommendations. The discrepancies between the authoritative knowledge of the providers and the bodily knowledge of expectant mothers were responsible for the ineffectiveness of nutrition recommendations.

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CHAPTER 1

INTRODUCTION

This study characterizes the eating habits of the African-American clientele of the Natural Way Birthing Project- Fort Worth. The Natural Way Birthing Project- Fort Worth[1] serves Tarrant County, located in North Texas, which is home to almost two million people ("State & County QuickFacts," 2015). It is part of a worldwide network of Birthing Projects that aim to benefit communities' overall by improving both maternal health and birth outcomes. The research goal of this thesis is to better understand the program participants' awareness of and attitude towards conventional nutrition recommendations for pregnant women with the expectation that improved understanding would help to find ways to improve maternal nutrition within the existing educational framework of the Birthing Project. Though the Birthing Project does not exclusively serve African American families, African American women were the focus of this research because in Tarrant County. A comparison among ethnic groups reveals that African American women experience the highest infant mortality rate (IMR) ("Infant Mortality Summary, Tarrant County," 2011).

Nutrient dense[2] foods, ideal for a prenatal diet, are increasingly expensive and difficult to access in many urban areas of the U.S. In contrast, energy dense, high-calorie foods are cheap and more easily found in low-income, predominantly African American, urban neighborhoods, and Tarrant County is no exception (Block, Scribner, & DeSalvo, 2004; Lucan, Barg, & Long, 2010a; Powell, Chaloupka, & Bao, 2007) In a county of over 1,817,000 people in 2010, the majority of the African American population lived in urban centers ("Tarrant County, Texas," 2015, "US Census Bureau 2010 Census Interactive Population Map," n.d.).

[1] Throughout the remainder of this thesis I refer to the Natural Way Birthing Project-Fort Worth as simply, "the Birthing Project,"

[2]Energy dense foods are defined as having more than 4 calories per gram of weight ("What is Energy Density?," 2015)

Conventional prenatal nutrition advice and counseling does not take into account how the patient's traditional nutritional knowledge, behaviors, or environment shape their consumption of nutrients and minerals for healthy birth outcomes. Incorporating pre-existing knowledge and resources into culturally relevant nutrition guidance would support the consumption of optimal levels of minerals and nutrients that lead to healthy birth outcomes. Establishing a nutrition education series based on the traditional food knowledge of the African American participants and evidence-based nutrition practices might help to improve birth outcomes, but would also empower participants to take control of their nutrition for themselves and their families. This is why the research that I conducted was important to my client Nikia Lawson, the Volunteer Project Director of the Natural Birthing Project-Fort Worth.

1.1 Infant Mortality as a Public Health Issue

Healthy People 2020, a longstanding program of the U.S. Department of Health and Human Services (DHHS), has established several maternal, infant, and child health objectives for the coming years. One objective of this program is to reduce the rate of infant mortality and to reduce the disparity between the infant mortality rates of ethnic groups in the nation. Infant mortality is defined as the death of a baby before his or her first birthday. The DHHS has set a goal to improve that rate to 6.0 infant deaths out of 1,000 live births by 2020 ("Maternal, Infant, and Child Health: Morbidity and Mortality, Reduce the rate of fetal and infant deaths,"). In 2010, the national infant mortality rate (IMR) was 6.14 per 1,000 live births, which was a 4% decrease since 2009. Among all ethnic groups throughout the country, rates have been decreasing steadily since 2000 but the disparity between ethnic groups paints a picture of health inequality that has social, cultural, and behavioral implications.

According to the Centers for Disease Control and Prevention (CDC), the leading causes of infant mortality in the U.S. are: life-threatening birth defects, preterm birth (the birth of an infant before 27 weeks of gestation), low birth weight, sudden infant death syndrome, maternal health complications during pregnancy, and injury. These causes accounted for 58% of infant deaths in the U.S. in 2011 ("CDC - Preterm Birth-Prematurity," 2014). Despite having the largest Gross Domestic Product and the highest health care expenditure in the world, the U.S. ranks twenty-sixth in IMR among the world's 34 wealthiest nations (CDC-Infant Mortality, 2014). This discrepancy indicates a rift between the luxury of living in the one of the world's wealthiest nation and the health of some of its most vulnerable citizens.

According to an economic analysis of infant mortality in the U.S., the most advantaged groups in the U.S. have IMR similar to countries such as Finland (2.3 per 1,000 births) and Austria (3.9 per 1,000 births). Unlike these two nations, the U.S. experiences a higher IMR after the first 28 days of life (Figure 1). This is due to the nation's advanced neonatal care in hospitals compared to other nations, which offers specialized care but up to the point of hospital discharge (Alice Chen, Emily Oster, & Heidi Williams, 2014). Once American infants arrive home from the hospital, their chance of survival decreases and the gap in post neonatal mortality between the U.S. and countries like Austria and Finland almost doubles (Ingraham, 2014). Statistically, the country's IMR is highest among less-advantaged groups. This inequality indicates that access to health care drives IMR in the U.S.

The most advantaged groups in terms of low IMR across all countries analyzed were found to be mothers who were highly education or employed, married, and white. Unmarried mothers and African American mothers were the most disadvantaged and account for an outsized share of the IMR difference across countries (Chen et al., 2014).

Within the U.S., there is even great variation in IMR among the states and territories (Figure 2). Mississippi, Guam, and Alabama experienced the highest IMR between 2007 and 2009, at 10.0, 9.5, and 9.2 respectively. The variation between states is evident when comparing Mississippi's rate of 10.0, with New Hampshire's rate, which is slightly less than half that at 4.8 (State Health Facts: Infant Mortality Rate (Deaths per 1,000 Live Births), 2014). Such strong variation within and among states suggests that there exists differential access to opportunities within and among states and territories. Despite the high levels of funding directed towards postnatal care, prenatal and neonatal care are neglected since they are dependent on access to health care providers and facilities for all groups regardless of income, education, or race. America's inclination to provide "reactive" (that is, responding to emerging health problems) health care, as opposed to preventive health care, compounds the high IMR faced by the country's most disadvantaged groups.

Although the U.S. has experienced a general decrease in infant mortality since 2005, African American mothers still face national rates that are more than twice that of Hispanic and white mothers. In 2009, African American mothers experienced an IMR of 12.40 per 1,000 births compared to 5.29 for Hispanic mothers and 5.33 for white mothers nationally. While there are a variety of causes behind the large statistical gap, low birth weight stood out as the leading cause of infant mortality among African American mothers in this study. In the same study, the IMR was also considerably higher for unmarried mothers at 8.53, 76% higher than the IMR among married mothers (Mathews & MacDorman, 2013). Since an infant's chance of survival is highly dependent upon a mother's race and marital status, whether or not a mother experiences an infant death might be determined well before she conceives. As Chen, Oster, and Williams made clear, devoting more funding towards access to health care for the most disadvantaged

mothers and infants is the most economically, and socially, minded action to take to reduce the nation's IMR (Chen et al., 2014).

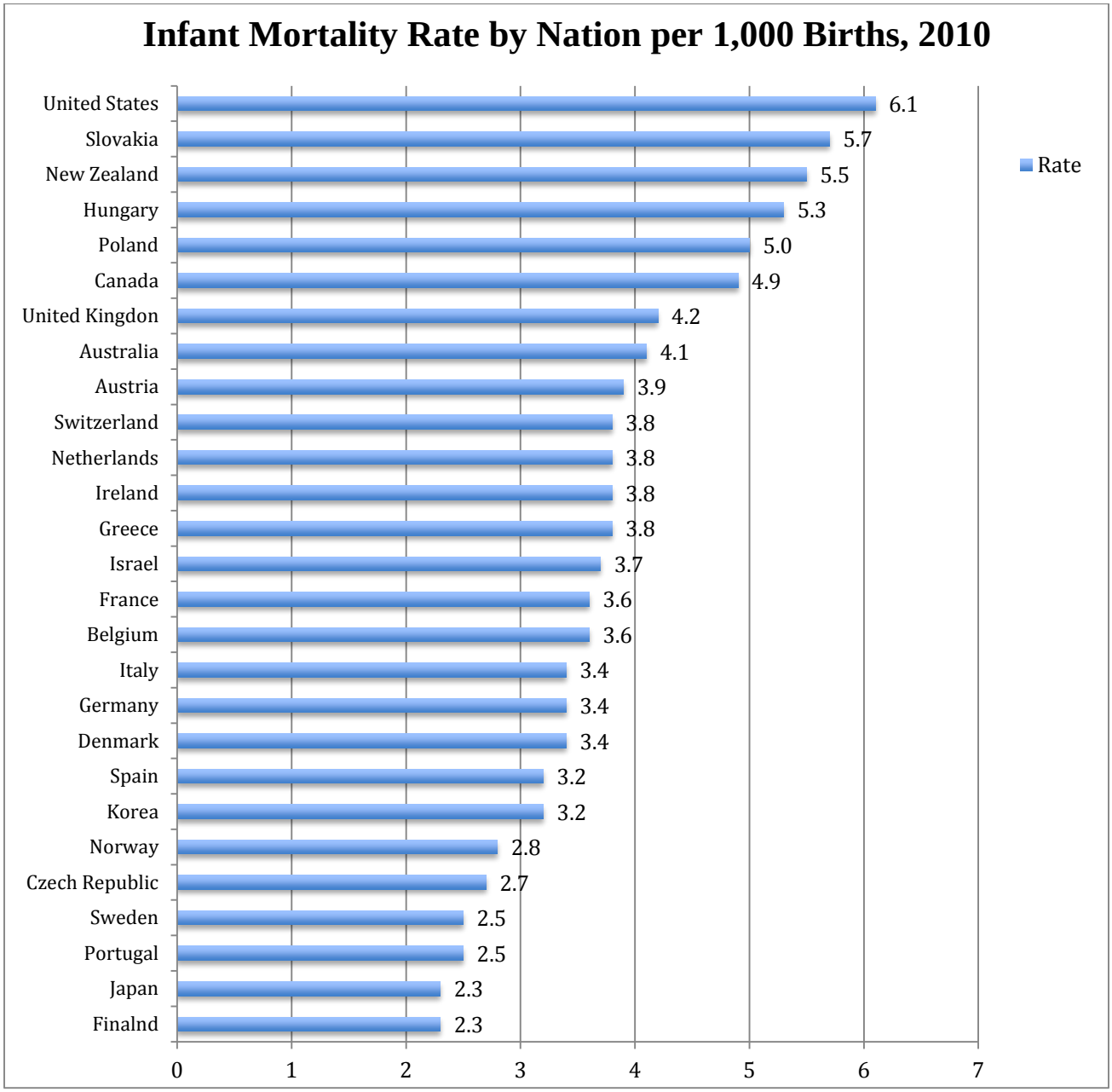

Figure 1.1. Infant Mortality Rate by Nation per 1,000 Births, 2010(Chen et al., 2014)

1.2 Infant Mortality in Texas

The state of Texas ranked 36 among the other states with an IMR of 6.3 deaths per 1,000 overall from 2007 to 2009 (State Health Facts: Infant Mortality Rate (Deaths per 1,000 Live

Births), 2014). However, in 2011, African Americans in Tarrant County have an IMR of 14.3 per 1,000 live births, which is more than twice the rate of infant deaths within the state. Comparable IMRs for white mothers and Hispanic mothers are 5.4 and 7.9 respectively.

The leading cause of infant mortality in Tarrant County is premature or preterm birth. Preterm birth is defined as "a gestational age less than 37 completed weeks, [which] contributes substantially to the incidence of low birth weight and is the leading underlying cause of infant mortality among infants with nonlethal congenital anomalies" (Abu-Saad & Fraser, 2010, p.6). Maternal nutritional status, whether under- or over-nutrition, is a known risk factor for premature birth (Goldenberg, Culhane, Iams, & Romero, 2008; Madan et al., 2010; Rosenberg, Garbers, Lipkind, & Chiasson, 2005).

Additionally, in Tarrant County, African Americans suffer disproportionately from hypertension, diabetes, and obesity compared to Hispanics and whites (Community Health Profile, Tarrant County, 2005-2010, 2012). These health conditions not only put an expectant mother at risk for serious complications, they also put her child at risk for immediate and long-term health complications, such as obesity and type 2 diabetes (Boney, Verma, Tucker, & Vohr, 2005; Rosenberg et al., 2005).

1.3 The Birthing Project - Client Background

The Natural Way Birthing Project- Fort Worth is one of more than 100 Birthing Projects that operate across the country and work under the umbrella of the parent organization, Birthing Project USA, a non-profit organization founded in 1989 in Sacramento, California. The Birthing Project USA is the only national predominantly African American maternal and child health, volunteer support program of its kind. The Birthing Project can best be described as a "Kitchen Table" Birthing Project with no regular source of funding or office facilities. Hard-working

volunteers give their time to mentor pregnant and parenting teens and women. Their purpose is to encourage better birth outcomes by providing practical support to women during pregnancy to one year after the birth of their children. Meeting places for mentoring and other activities differ greatly for each local organization depending on funding, location, and participation.

The Birthing Project-USA seeks to address systemic causes of the overall lack of well-being in Black communities. These causes usually include lack of education, social justice and economic parity- compounded by institutional, political, and personal barriers. Birthing Projects actively engage community residents in three ways: 1) identifying their health and wellness needs; 2) planning, implementing and evaluating services; 3) and working collaboratively with other agencies, organizations, and individuals to deliver necessary care.

The Natural Way Birthing Project- Fort Worth follows in the footsteps of the Birthing Project USA. Its goal is to assist in educating, empowering, and navigating resources for project participants and expectant families in the city of Fort Worth and surrounding Tarrant County to enhance non-medical, practical, communal/social support, and advocacy to help minimize the staggering infant mortality rate in this local area (email to Lawson, April 22, 2014). The Birthing Project aims to bring awareness to and address the fact that Tarrant County has had the highest rate of infant mortality in the state of Texas since 2005 (Infant Mortality Summary, Tarrant County, 2011). After the closing of the Fort Worth-Dallas Birthing project following 12 years in the community, Ms. Lawson decided to bring the organization back to her neighborhood and focus primarily in Fort Worth and the surrounding area. With Lawson's experience as a Doula and counselor, Fort Worth's Birthing Project has started to reach out to women in the John Peter Smith (JPS) hospital system in Tarrant County.

Tarrant County's elevated IMR, and the disparities among the groups most affected, is being addressed through multiple avenues. JPS has adopted a nationally accepted group model of

prenatal care and education. Developed in 1993 by certified nurse midwife (CNM) Sharon Schindler Rising, CenteringPregnancy, or Centering, is based on the feminist perspective of health care delivery and social cognitive theory (Manant & Dodgson, 2011). A model of health care from the feminist perspective asserts that the biomedical model arises from an asymmetrical patriarchal system that restricts a woman's access to health care and pathologizes what are actually normal physiologic processes (Low & Schuiling, 2006). The Centering model also aims to apply certain tenets of the social cognitive theory, such as self-efficacy, attitude, and social support in sessions in which women find that they are expected to be in charge of their pregnancy, delivery, postnatal care, as opposed to health providers having the final say in their care.

Results of studies examining behavioral and health outcomes experienced by Centering participants vary greatly. One study found a statistically significant increase in reported knowledge of pregnancy among Centering participants but not in social support, fetal health locus of control, and sense of participation, as compared to the control group of women who chose to remain in the traditional care setting (Baldwin, 2006). Centering participants in another study reported significantly lower index health behaviors than those in the traditional care control group (Shakespear, Waite, & Gast, 2010). An evaluation of the implementation of Centering at a public health clinic in the Midwest found that group participants reported higher satisfaction with their prenatal care than patients not in the group (Klima, Norr, Vonderheid, & Handler, 2009). A fourth study found a reduction in emergency room visits and lower preterm birth rates among Centering participants (Bell, 2012; Rising, 1998).

According to the Centering model, a mother elects to the join the Centering sessions after her first prenatal clinical visit. If she chooses to join the program sessions they will take the place of her typical prenatal visit. Participants are placed in groups of eight to 12 based on the month

of their due date. Each group session lasts two hours and has a theme of concern during and after pregnancy such as labor, breastfeeding, common aches and pains, emotional wellbeing, domestic abuse, and postnatal contraception.

Each session begins with participants obtaining their own weight and blood pressure measurements and recording them in a journal provided to them at the beginning of the program. They take the journals with them as a health provider, a physician, a CNM, or a nurse practitioner, monitors the fetal heartbeat and measures fundal height in a private section of the room. The same health provider usually facilitates the group discussion in which the women are encouraged to bring up thoughts or concerns about what they are experiencing during their pregnancy. To approach the subject of pregnancy nutrition and exercise, Centering incorporates these topics into the second Centering session and women are encouraged to bring up any thoughts or concerns at anytime during the other sessions. Some facilitators will often invite a nutritionist or dietician into the group as a guest speaker to further discussion of prenatal and maternal nutrition and exercise (Reid, 2007). During session two, participants have two hours in which they are given a basic nutrition lesson and encouraged to ask related questions, all while learning from other's questions and concerns. Each session has between one to three activities that are designed to educate as well as further direct and facilitate discussion. In the case of JPS clinics, medical assistants (MA), who are certified to lead the groups in English as well as Spanish, facilitate the majority of Centering sessions. The facilitated discussion is more conducive to opening honest and frank dialogue that the women might not receive in a clinical setting and it encourages women to have an opinion about their health care.

1.4 Research Questions

The research questions were identified after a thorough literature review. The questions included:

- What did the expectant mothers eat growing up and how are their current nutritional behaviors shaped by tradition?
- What does good nutrition mean to expectant program participants as expectant mothers?
- How does the notion of good nutrition shape their prenatal diet?
- What are the barriers to achieving good prenatal nutrition?
- How can these ideals be optimized to meet their monthly food budgets?
- What resources do expectant program participants have to achieve their prenatal dietary needs?
- Do participants use SNAP or WIC benefits, nonprofit organizations, familial or community support, food pantries, or home gardens?
- If project participants receive WIC or SNAP benefits, do they experience difficulties with utilizing them at the grocery store? If so, what are the difficulties?
- What tools do project participants need to reach their prenatal and postnatal nutrition goals while satisfying recommend daily allowances for certain nutrients?
- What types of education approaches would participant's benefit from?
- What are the best ways to integrate pre-existing nutrition knowledge into a new education program?

1.5 Deliverables

The director of the Birthing Project and I agreed that the optimal deliverable would be a report that detailed my research findings. The client wished to view the results from the perspective of the factors that lead to health inequalities and poor birth outcomes in Tarrant County. These findings will assist the organization in designing and implementing nutrition education for future clients.

CHAPTER 2

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

The following chapter is an overview of the theoretical framework and literature review pertinent to the research project. First, I provide an overview of the field of applied medical anthropology and its contribution to the topics of pregnancy and birth. Second, I place the research of the infant mortality rate (IMR) and nutrition within a public health perspective using the social-ecological model of health behavior. Third, I utilize a food-systems approach to provide context for the project at both global and national levels. Fourth, I provide the anthropological, theoretical perspective of authoritative knowledge to provide a foundation for the analyses of proscribed nutrition behavior in the U.S. I then continue the analysis of the views of nutrition behavior in African American communities. Finally, I apply the theory of authoritative knowledge to the guidelines of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

2.1 Applied Medical Anthropology

In an effort to comprehend the cultural and social factors that shape illness, disease, and treatment, medical anthropology utilizes and expands upon anthropology's core concepts (Singer & Baer, 2007). Medical anthropology acknowledges that medicine and clinical care are not seated purely in biology but are also culturally constructed. The Cartesian legacy has guided biomedical science and medicine for centuries. However, the Cartesian legacy, or the assumption that the mind and the body lead dichotomous trajectories, discounts the social and individual body's role in health and illness (Scheper-Hughes & Lock, 1987). Many argue that even biomedicine is as susceptible to social reforms as any other form of medicine, since illness, disease, and treatment are all culturally constructed concepts.

Applied medical anthropology brings the anthropological framework into clinics, hospitals, and other treatment facilities where it can assist with creating a more integrated understanding of culture and medicine since both are interrelated. Many common health conditions and ailments are defined within the biomedical perspective as syndromes, disorders, and diseases. This process is referred to as medicalization (Starr, 1982). The experience of pregnancy has only recently been framed as a medical matter within the context of biomedicine according to K. K. Barker. The medicalization of pregnancy has turned a normal (though culturally influenced) state of health into a syndrome that calls for a cure and a medical regimen. In a public health effort to improve pregnancy and birth outcomes, the biomedical community's attention turned toward regulating, measuring, and overseeing all aspects of the experience. Before this trend arose, pregnancy and childbirth were not considered significant fields of study in the biomedical realm. By the mid-twentieth century, Barker asserts health care providers acknowledged that careful study of pregnancy and childbirth could significantly reduce maternal and infant mortality. However, integrating the experiences of pregnancy and childbirth into the biomedical rhetoric transformed it into a condition that requires a diagnosis and a cure taking all aspects of the process out of the hands of the expectant mother and her family. The biomedical interventions implemented during the twentieth century revolutionized birth outcomes in the U.S. However, by imbedding the process of birth in biomedical rhetoric, alternative knowledge of pregnancy was denounced as heresy and folk medicine (Barker, 1998). A medical anthropology perspective and methodology can break down barriers between the lived experiences of pregnancy for a mother and the biomedical perspective. Applied anthropologists such as Robbie Davis-Floyd have begun to help women reclaim their power as agents in their pregnancy experience.

Nutrition, especially during pregnancy, has also become medicalized. Biomedicine frames food at the molecular level, completely devoid of any cultural significance. In the face of the rapid increase of chronic conditions, such as obesity, biomedicine views control of nutrition and diet as a means to an end whereas the anthropological perspective also considers the social factors that shape diet and affect health. In this research I investigate nutrition, and the factors that shape it through the perspective of individuals.

2.2 The Social-Ecological Model

The social-ecological model of public health field is usefully employed when examining several layers of health and social disparities that impact Tarrant County's IMR. The model assumes that there are five levels of influence that drive public health behavior. As the origin of the model, the individual sits at the center of sphere of influence because it is the individual's knowledge, attitudes, and beliefs that initially impact public health behavior. The individual, or intrapersonal layer is further impacted by interpersonal factors such as family, peers, and social networks. Interpersonal factors are shaped by larger organizational influences like rules, regulations, policies, and informal structures. Community factors, such as social networks, norms, or standards impact the organizational layer. All of the factors are shaped by overall social structures, policy, and systems, which include local, state, and federal policies that regulate public health behavior (Ziglio, 2002).

Gregson et al. (2001) detail how each sphere of the social ecological model impacts nutrition education. The individual level is most influenced by interventions that aim to change nutritional and diet behavior, knowledge, and beliefs. The individual level is the most frequently targeted level in nutrition education interventions. The interpersonal level, often addressed with social marketing campaigns about nutrition, reflects how one's relationships impact dietary

behavior. Research-based health interventions are most likely to be implemented at the organizational and institutional level. These interventions reach people that otherwise may have been missed. Community-level interventions create a more engaging environment for behavioral change that may not be found in the previous layers. They also widen access to the intervention and incorporate organizational and institutional partnerships that merge resources.

According to Gregson et al., the USDA's food guide is an example of regulating public health by social structures, policy, and systems. The food guide drives the actions of local and state agencies like WIC that deliver nutritional education to the recipients of benefits. The USDA establishes dietary parameters to which all those under its federal-level gaze are expected to adhere. The nutritional guidelines instituted by the USDA drive all of the nutrition education interventions that occur within the previous spheres of influence and impact the state of public health. In this research, I use the social-ecological model to place the participants and the topic of pregnancy nutrition within the context of the interpersonal, institutional, organizational, and public policy layers of the public health topic of infant mortality. From this perspective, infant mortality is not an individual issue but symptomatic of larger problems that are out of the control of the individual. Viewing the research and responses from the participants through the perspective of these layers aids in better understanding the many facets to a larger issue that permeates all of these layers.

2.3 A Food Systems Approach

To understand the health and nutrition disparities in Tarrant County that lead to a disproportionately high rate of preterm births, I will apply the food systems approach in this project. As opposed to scrutinizing the diets of individuals, a food systems approach avoids detrimental victim-blaming by examining the multiple levels of a food system and the health

risks and disparities that individuals and communities face within it. The food systems approach supports the social-ecological model by explaining that the multiple levels of influence on American food production and consumption are affected by factors ranging from the public policy level to the individual level.

Neff et al. (2009) consider food systems to be "comprised of all of the processes involved in getting food from farm to table to disposal, including production, processing, distributing, preparing, marketing, accessing, consuming, and disposing." Health disparities do not begin with the choices of the individual but begin within the numerous sectors of the food system affected by countless social and political factors. The food systems approach recognizes the multiple components that impact the food supply and its quality and the influences that shape them, which are out of the individual's control (Neff et al., 2009, p.283).

According to Neff et al. (2009), food system factors such as policy, access, prices, agricultural practices, and political lobbies contribute to health disparities within the U.S. Disparities in access to nutritive food choice have their origins in a migration of whites to the suburban areas of most large American cities in the 1950s and 1960s with grocery stores following. As a result, mostly low-income and urban neighborhoods are underserved by grocery stores with a full selection of nutrient-rich fruits and vegetables and instead are flooded with an overabundance of corner stores and fast food restaurants that offer mainly over-processed energy-dense foods, full of fats and sugars that offer immediate energy but no beneficial nutrients. (Neff et al., 2009). A growing body of research shows that in various cities across the US there is a higher density of fast food restaurants in low-income and African-American neighborhoods (Block et al., 2004; Morland, Wing, Diez Roux, & Poole, 2002; Powell et al., 2007). The lowered availability of nutrient-rich foods for low-income urban residents becomes a barrier to obtaining essential vitamins and nutrients.

Energy-dense foods, high in fats and sugars with no or few beneficial nutrients, have become cheaper and more accessible throughout the U.S. Beginning in the second half of the twentieth century, American farm policies effectively lowered the price of corn to the point that high fructose corn syrup and other corn sweeteners became cost-effective alternatives to sugar for food producers. These are also six times sweeter than sugar and make up more than 40% of the caloric sweeteners added to foods and beverages in the US. It is no great surprise that high fructose corn syrup and other nutrient-lacking yet "addictive" food substances like sodium and fat have become popular key ingredients in most energy-dense foods found in corner stores and fast food restaurants. Adults in low-income households who experience food insecurity in areas with greater exposure to corner stores and outlets of fast food are at greater risk of consuming a significantly reduced amount of USDA's recommended daily of fruits, vegetables, and antioxidant nutrients, which has many short and long term detrimental health consequences (Olson, 2005).

As a result of changing food policy and dietary behaviors, prevalence of obesity in adults in the US has doubled from 15.0% to 32.2% in the last 30 years. Researchers contend that federal assistance programs contribute to the paradoxical relationship of food insecurity and obesity (Dinour, Bergen, & Yeh, 2007). The "food stamp cycle" is the three-week period during which food stamps and resources are available and beneficiaries overeat to make the most of their benefits. In the fourth week, due to a lack of benefits, the beneficiaries experience a shortage of food and some experience differing degrees of food insecurity. This episodic food insecurity and binge eating experienced by many in the food stamp program, or WIC (since eligibility for food stamps determines edibility for WIC) is associated with such deleterious physiological processes such as increased body fat, a loss in lean muscle mass, and a quicker weight gain when regular eating habits restart (2007, 1985). Not only do food stamp benefits typically not last the average

family the entire month, they also provide for few fruits and vegetables, which on average are more expensive than prepared processed foods (Dinour et al., 2007; Neff et al., 2009).

To fit a month's worth of groceries into a budget provided by food stamps or WIC benefits is a difficult task, especially if one's only option for food stores is a corner store with limited choices, as is often the case for many low-income neighborhoods across the US. The other option for food is to travel to a grocery store in a higher-income neighborhood, but transportation, time, and energy are often scarce resources for those on a limited budget. Families who live and eat within the "food stamp cycle" have little room in their budget for nutrient dense fruits and vegetables and choose energy dense foods that will feed more people for less money for a longer period of time. These energy dense choices are dependable because they have a long shelf life but they are also packed with additives and preservatives. However, an energy dense diet high in fats and sugars is the only option many food-insufficient individuals in the US have, whether it adheres to the USDA's recommended daily allowance of nutrients or not.

Many studies have found that women who are food insecure are at greater risk for obesity than men. One possible explanation is that in most of the households surveyed, women were reported to be the heads of the household and primary caretakers. In 2003, 32.2% of households that reported food insecurity to the USDA reported a female head or no spouse. When faced with a food shortage, mothers are more likely to go without a meal so that their families could eat. This "maternal deprivation" is likely to lead to the physiological adaptations that lead to obesity (Dinour et al., 2007; Drewnowski & Specter, 2004; Townsend, Peerson, Love, Achterberg, & Murphy, 2001).

One objective of this research project was to learn more about the dietary behaviors and patterns of pregnant participants. The analysis of the pregnant participants' access to and

consumption of nutrient dense foods was intended to better characterize their perceptions and experiences of food insecurity and its implications.

2.4 The Production of Authoritative Knowledge in American Nutritional Guidelines

Brigitte Jordan's concept of Authoritative Knowledge was originally developed to frame the notion of coexistent systems of knowledge in communities of obstetric practice. The ways in which these systems of knowledge shape childbirth practices during pregnancy and childbirth reflect a subjective system of power in a community. In this case, the power rests with those who possess the superior knowledge. As a result of hierarchical power systems within a community, some knowledge systems will rise to the top of the hierarchy while others fail to gain recognition. The knowledge systems that rise to the top gain legitimacy and authority, thus becoming the authoritative knowledge. Inherent qualities of efficacy or structural superiority help these knowledge systems gain such authority. Authoritative knowledge does not become authoritative because it is innately correct, but because it has reached a consensus within the community that it fits current needs. It reaches its authoritative status in the community by being constructed as the naturally superior framework. The knowledge systems that fail to gain recognition not only lose authority they also lose legitimacy. Those who espouse them are often seen as deviant and face consequences as a result of practice within the delegitimized knowledge system. The power behind the authoritative knowledge is to constantly question the power and authenticity of competing bodies of knowledge in order to maintain its position in the hierarchy (Jordan, 1997).

In a community of practice, Jordan asserts that authoritative knowledge reproduces itself by way of the participants in the knowledge system establishing specific standards and consequences in certain situations. They stipulate what is actual knowledge, what is available for

discussion, and what is not appropriate to be included within the body of knowledge (Millard & Kingfisher, 1998, p. 451). This system is how authoritative knowledge creates accountability to the authoritative body and the community at large.

According to Starr (Starr, 1982), the American medical community rose to be the authoritative body of knowledge in the early twentieth century and continues its control to this day. There are two necessary mechanisms to create an authoritative body: the unified claim of legitimacy and American's subsequent dependence upon it (10). The first mechanism meant establishing legitimization through processes like standardization, education, and licensing. The second mechanism was accomplished by making the American population dependent upon it with gatekeeping physicians, hospitalization, and insurance (Starr, 1982, p. 20). As biomedicine continued its rise to the top of the power hierarchy, it answered the two questions Star asserts are specific to a body of knowledge accumulating authority: the internal problem of consensus and the external problem of legitimacy (80).

Browner and Press (Browner & Press, 1996) expand on Jordan's notion of authoritative knowledge and biomedicine's hegemonic hold on American health care delivery when they write about women's embodied knowledge and use of alternative sources of knowledge during their pregnancies. The authors define embodied knowledge as, "subjective knowledge derived from woman's perceptions of her body and its natural processes as these change throughout a pregnancy's course" (142). Women's embodied knowledge systems compete with the authoritative biomedical model, but in their study, many women proved to easily negotiate between their bodies of knowledge and the authoritative body of knowledge without much consequence. Despite the biomedical advice they were given, if it did not fit into their pre-existing body of knowledge, the advice was not unquestionably heeded. The women took

advantage of having multiple knowledge systems from which to find their ideal prenatal health care.

In their study of prenatal nutrition, Kingfisher and Millard (Millard & Kingfisher, 1998), investigate multiple ways in which authoritative biomedical knowledge is produced in WIC clinics specializing in maternal, infant, and child health for low-income women. As Browner and Press (Browner & Press, 1996) revealed in their depiction of the competition between biomedical advice and expectant women's embodied knowledge, the same holds true regarding embodied knowledge about nutrition during pregnancy. Kingfisher and Millard write that nurses and nutritionists who oversaw the clinics produced the authoritative knowledge through routinization of clinic interactions and exclusion of information from medical interviews that helped them retrieve the medical information they saw as necessary from their patients.

The authors examined the topic of lactose intolerance among WIC patients to understand how authoritative knowledge was produced in clinic interactions between practitioners and patients. In the U.S., lactose intolerance is prevalent in about 15% of whites, but as high as 75% of African Americans and 55% of Mexican Americans (Millard & Kingfisher, 1998, p. 451). Many of the women that the authors interviewed described symptoms of lactose intolerance but also struggled with the fact that they have been told by health care providers that milk was a necessary part of their diet, despite the physical discomfort and health problems it caused them. Some adhered to their embodied knowledge of milk to avoid physical discomfort but some integrated biomedical guidance with their embodied knowledge only to continue their physical discomfort. The nutritionists and nurses who ran the clinics pitted their authoritative knowledge against the embodied knowledge of the patients who were also mothers. By routinizing clinic interactions with 'yes' or 'no' questions, leaving little room for the patient to offer her opinions about nutritional guidelines, not letting the patient ask too many questions outside of the

interview questions, and scheduling short clinic visits the clinic staff helped tip the balance of power in their favor and produced the authoritative body of knowledge. Although the mothers may have seen their knowledge as authoritative, it was devalued during the interactions with health care providers and they would often reinterpret their bodily knowledge within the boundaries of biomedicine (Millard & Kingfisher, 1998, p. 463).

As participants of the WIC programs, the women in this study were required to consume a certain amount of vitamin D specifically through dairy products to improve prenatal outcomes. As America's knowledge of nutrition continues to expand, health care providers are learning more about vitamin D originating from sources other than dairy. Since consuming milk is still considered the cultural bastion of good health in American mainstream society, many of the women in the clinic struggled with making it a part of their daily diet.

2.5 USDA Nutritional Guidelines and African-American Diet

The quality of a pregnant woman's diet, especially in the first trimester, not only has profound effects on the birth outcomes, but also on the child's outlook for the development of chronic diseases in the future. Maternal, infant, and child health care providers and educators have always looked towards the USDA's Food Guide Pyramid for guidance when prescribing nutritional advice to their patients, despite the fact that it is not specifically formulated for these particular groups, which need more servings of specific nutrients than others. The newest American nutrition guidelines come in the form of the USDA's MyPlate, released in 2010. The design of MyPlate abandoned the pyramid shape of previous decades and optioned for a visually simplified plate of four sections that stresses a balanced meal of fruits, vegetables, grains, proteins, and dairy (Wansink & Kranz, 2013). The introduction of Myplate intended to make

easier the enforcement of more current nutritional information over a wide and diverse population.

There is a known relationship between race/ethnicity and income levels in the US (Dubay & Lebrun, 2012; Fischer, 2003; Starfield et al., 1991). This relationship influences one's ability to adhere to the recommended nutritional guidelines (Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012; Zhang & Wang, 2012). Low-income African Americans have the lowest Healthy Eating Index (USDA defined measure of diet quality) scores in addition to the highest prevalence of obesity in the country due mostly to the economic, political, and social barriers to more nutrient-rich choices (Lynch & Holmes, 2011:157). Several qualitative studies have examined traditional food choices among low-income African Americans to better understand the connection between diet and the significant health disparities in this particular community (James, 2004; Lucan, Barg, & Long, 2010b; Lynch, Holmes, Keim, & Koneman, 2012).

Nutrition, diet, and food in the African American communities of the U.S. are limited areas of research in American anthropology. Dirks and Duran (2001) report that, as the result of geographic and economic limitation at the beginning of the twentieth century, low-income African Americans in southern states historically had restrictive core diets. This core diet became one of tradition and ceremony when families started migrating north in search of better economic opportunities. Jerome (1980) explored the dietary transition that occurred when African Americans migrated from the southern states to the northern U.S. and how the newly available spectrum of food affected their diets and traditions. Liburd (2003) employed an anthropological perspective to investigate the prevalence of type 2 diabetes in African American women in correlation with food as a tradition and eating as ritual.

The topic of chronic disease, such as obesity, heart disease, diabetes, and hypertension, all major risk factors for preterm birth, are large public health concerns and are the foundation of

a larger body of research in the public health field. In order for a public health intervention at the individual or community levels to be affective it must take into consideration the cultural context food and nutrition of the African American community in the US where that intervention will take place. To understand this cultural context, anthropologists must continue working to better understand to help improve the future of the nutrition outcomes. In this project I show the cultural context of food for expectant African American mothers in Tarrant County to provide a basis for a more effective nutrition intervention.

2.6 Production of Authoritative Knowledge within WIC

First released in 1980, the "Dietary Guidelines for All Americans" (DGA) serves as the basis for all federal food and nutrition education, standards, and assistance programs. It is also used as the public health and clinical guide for any discussion about nutrition throughout the country. The USDA and the Department of Health and Human Services (HHS) jointly release an edition every five years and the results go on to serve as the foundation for subsequent policies made by the USDA (U.S. Department of Agriculture). A Dietary Guidelines Advisory Committee (DGAC) made up of prominent experts is appointed to review the latest science and data. They are expected to establish the standards of nutrition that will guide the country's nutrition and health policy, research, and communication until the next edition is released (ASH 2013).

The four major themes of the 2010 DGAC Report included reducing the burden of the growing incidence and prevalence of obesity in the overall American population; increasing the intake of fruits, vegetables, wholes grains, legumes, nuts, seeds, and low fat dairy and meats; reducing the intake of added sugars, salts, and refined grains; and meeting the "2008 Physical Activity Guidelines for Americans" ("Questions and Answers on the 2010 Dietary Guidelines for

Americans,"). The 2010 DGA released three accessible messages for the consuming public: concentrate on portion control; increase fruits, vegetable, and whole grains as well as switch to milk with a lower fat content; and reduce intake of sodium and sugary drinks ("Dietary Guidelines 2010, Selected Messages for Consumers," 2011).

WIC is an assistance program administered by the USDA's Food and Nutrition Service in all 50 states, the District of Columbia, Guam, the U.S. Virgin Islands, American Samoa, the Common Wealth of Puerto Rico, and 33 Tribal Organizations. The organization operates by providing funds to 88 state agencies for supplemental foods, nutrition services, and administration. The intent of the organization is "to improve the health of women, infants, and children up to the age of five who are at nutritional risk, by providing nutritious foods to supplement diets, nutrition education, and referrals to health care and other social services" (Oliveira, Racine, Olmsted, & Ghelfi, 2002). Program participants receive three benefits: a supplemental food package, nutrition education, and referrals to health care and social services. The services offered by WIC, including the food assistance, are meant to be supplemental and to help fill any gaps in resources for families who have children or are expecting children. However, many WIC participants depend heavily on the benefits provided them by the program and other federal assistance programs. In 2010, nearly two-thirds of WIC participants lived below the federal poverty level and over two-thirds depended on additional benefits from Medicaid, Supplemental Assistance Nutrition Program (SNAP), or Temporary Assistance for Needy Families (TANF) (Matinez-Schiferl, 2012).

According to the USDA, foods with cultural appeal, commercial availability, ease in preparation, and administrative feasibility meet the requirements to be included in the food package (Oliveira et al., 2002) Items from mainstream American brands that contain high amounts of artificial preservatives, salt, and sugar usually meet the needs of the food package

requirements. Although these items meet the requirements of the USDA, they do not meet the needs of the all WIC participants.

Since the establishment of WIC in 1972, the demographics of the participant population throughout the country have drastically changed and continue to shift (Oliveira et al., 2002). From 2000 to 2010, the proportion of Hispanic WIC participants grew from 35.3 % to 41.9%. In the same span of time, the proportion of white WIC participants declined from 37.4% to 31.8% and 21.9% to 20.1% for black participants (Matinez-Schiferl, 2012). The program's quickly changing demographics signify a transformation in basic beliefs held by individuals in the WIC population. Notions about nutrition and what constitutes healthful and unhealthy qualities cannot be assumed to adhere to mainstream biomedical knowledge in an ever-changing population. Faced with a transforming population, it is difficult for the program to capture a solid definition of optimal nutrition for participants in prenatal, maternal, breastfeeding, and childhood stages.

The nutritional guidelines for WIC were changed in 1980 to catch up with evolving health research and the growing WIC population. However, the guidelines remained unaltered for another 27 years until the USDA revised the regulations governing the food packages in 2007 to align with the 2005 DGA and current infant feeding practice guidelines of the American Academy of Pediatrics. The USDA asserts that the most recent changes made to the guidelines were intended to be more in sync with ethnic dietary needs (US Department of Agriculture). The food packages and the nutrition education programs are two specific ways the WIC program and the USDA produces authoritative knowledge at the organizational level, in addition to clinical interactions at the individual level. Depending on whether a participant is a pregnant woman, a breast-feeding woman, a breastfed or bottle-fed infant, or a child five or under, the items they receive in their food package differ (Texas Department of State Health Services, 2012). These recommendations are based on the DGA and the nation's public health goals to

improve the health of women, infants, and children through nutrition. Breastfeeding mothers receive incentives, usually in the form of a greater variety and quantity of foods for the infant and mother, to continue the desired health behavior beyond the infant's first year (Missouri Department of Health & Senior Living).

Nutrition education is a necessary factor in the program for participants to receive all of their potential benefits. Nutritionists and nurses educate participants according to the DGA, which are rigid and inflexible and leave no room for the client to utilize her body of knowledge. As in Kingfisher's and Millard's examples of routinization during clinical interactions, authoritative knowledge is produced during routinization of nutritional education sessions. Within this research, I investigate how participants framed their embodied knowledge alongside the dialog of an authoritative knowledge of pregnancy and nutrition.

As noted above, the process of legitimation of authoritative knowledge also requires dependency of the community upon the authority. Through enforcement of nationally instituted nutrition guidelines, WIC and the USDA produce authoritative knowledge that affects the maternal, infant, and child health of its participants.

This chapter provided a theoretical foundation for the research. In it, I also situated the research within a thorough literature review of research pertaining to prenatal nutrition and birth outcomes. In the next chapter (chapter 3) I will provide the methodology that drove data collection and analyses for the research.

CHAPTER 3

METHODOLOGY

3.1 Data Collection

For this research, data collection consisted of participant observation within the context of Centering and other educational sessions and semi-structured interviews with pregnant African American women, JPS health care providers, and co-facilitators. According to Russell H. Bernard, participant observation is a "strategic method" for data collection in qualitative and quantitative research. Through participant observation, the researcher is immersed within a new culture, and as a result of the new context, develops the tools to collect and analyze data. I conducted participant observation within Centering sessions and other relevant seminars and classes that reached out to this specific population of expectant mothers (Bernard, 2006). The providers and co-facilitators treated me as participant throughout my time spent as a participant observer, which made it easier to get to know them and the patients. The conversations with the participants were more comfortable and productive after many hours of participation spent alongside them. I also recorded and analyzed all of essential information from these observations, both quantitative and qualitative.

Semi-structured interviewing was the optimal method to collect as much data as possible during the research. I was not going to get more than one chance to speak with the participants and it was necessary that I cover a list of topics so an extended discussion in which the participants could express personal beliefs and experiences was an ideal method for gathering data (Bernard, 2006). Semi-structured interviews allowed the participant to speak in depth about their experiences with pregnancy and dietary behaviors. It also gave me opportunities to probe with more direct, open-ended questions. Often, it was necessary for me to probe many of the

participants with questions to gather more details about their thoughts in about the topics when the answers lacked depth or context.

As stated above, all interviews were recorded on a voice recorder, which was made clear to the interview participants. Participants were encouraged to choose a comfortable place to conduct the interview. All of the interviews, except for one, took place at a JPS clinic or the site of the Famer's Market. One interview took place the expectant mother's place of employment during her lunch break, which she indicated was an ideal time and place. Before the interview began, each participant signed an informed consent form approved by the UNT IRB.

3.2 Recruitment

According to Bernard, "participant observation involves going out and staying out, learning a new language…and experiencing the lives of the people you are studying as much as you can" (Bernard, 2006). During my research, participant observation allowed me to send a considerable amount of time in the presence of women I would normally have a difficult time contacting. I became more comfortable with many of the research participants and they were given a chance to become better acquainted and relaxed with me. A higher level of comfort among participants and researcher allowed for a more genuine and informative dialogue about nutrition and pregnancy, a sometimes-sensitive topic.

I began the preliminary investigation by observing some of the client's birthing education events. In addition, I went to a meeting of the Tarrant County Birth Network, to the 2014 Big Latch On at the Fort Worth Botanic Garden, to the Tarrant Area Food Bank Farmer's Market Nutrition Program, and to gestational diabetes education classes at JPS. Eventually, the Centering Sessions proved to be the best places to observe because of the large number of

expectant mothers, the amount of time spent in each session, and the number of women who were potential participants for the client's organization.

Using a script and a flier pre-approved by the UNT Institutional Review Board, I made contact with women who were African American and pregnant using facilities and services within Tarrant County which would constitute future points of recruitment for the Birthing Project, mainly the Centering sessions at two JPS clinics and the Farmer's Market Nutrition Program sites at 5 WIC clinics throughout the county. My target number of interviews was 25, which included interviews with health care providers, Centering session facilitators and participants, and potential participants of the Birthing Project, as agreed on by Ms. Lawson. This was a substantial number of interviews to acquire an understanding of the dietary behaviors experienced by pregnant African American women of Tarrant County and the perceptions of diet, nutrition, and birth outcomes as viewed by the women's providers and care givers.

As an incentive, I offered a $10 gift card to Wal-Mart to all interview participants. The Ms. Lawson believed that this was a suitable amount of money as an incentive but she also felt that the women I spoke with would find this to be an appropriate amount of money to make a necessary one-time purchase for themselves or their family, such as diapers, produce, or other baby products.

3.3 Data Analysis

All of the interviews were recorded on a voice recorder and imported into Inqscribe 2 where they were transcribed. The transcribed interviews were then imported into QSR International NVivo 10 to be coded and analyzed with codes developed before, during, and after the research. Many of the codes were inspired by and derived from the project's research questions, which were developed after an extended literature review. The codes were words or

phrases that represented overriding ideas that relevant to the project. As the research progressed, it became clear that new codes needed to be incorporated and some existing needed to be altered to reflect the resulting data. The final data was coded according to topic and analyzed individually and as a group through the use of queries. Queries were used to determine the commonly mentioned foods, perspectives of healthful foods, and utilization of services. The queries were most useful for extracting the quantitative data from the interviews, such as ages of participants, years in practice for the providers and co-facilitators. The quantitative data collected through queries was then analyzed in Microsoft Excel 2011 and represented in figures and tables.

3.4 Study Limitations

The first study limitation was the use of a convenience sample. Though the best option for the study's time frame, the use of a convenience sample meant I missed contacting many other women who were potential participants for the client organization.

The second study limitation was race. As someone who is not African American, I was limited by my cultural understanding and experiences compared to most of the participants. If the research sought only to evaluate participants based on attributes such as physical or health traits, income, education level, or gender, qualities that are specific, measureable, or diagnosable, my position as a white woman would not have mattered. However, this was qualitative research and participants were recruited based on a very fluid and multidimensional characteristic that is a social construct with physical repercussions. My final results might have differed if race had not been a determining factor in recruitment.

A third limitation was the sensitivity of some of the research the topics. Weight, diet, and pregnancy are sensitive topics in the U.S. It was necessary that these questions were breached

respectfully in order not to make participants feel uncomfortable and unlikely to continue with the project.

Attendance of the Centering sessions was the fourth limitation to the study. Though attendance overall is major obstacle in implementing the Centering program at all of the JPS locations where it has been established, for this study in particular, it prohibited the recruitment of participants. I made contact with a woman before the session started and then, depending on whether she agreed to speak with me, we would speak in the clinic's atrium directly after the session. Occasionally, a woman would ask to participate after the following session. Since sessions were once every two weeks, it sometimes took up to four weeks to interview a woman after initially making contact, if she returned for the subsequent sessions. Attendance to the sessions varied greatly between groups and was not a reliable factor.

Finally, this research only skims the surface of the dietary habits of the women because many of them were apprehensive about divulging their full nutritional profile to a stranger, especially in a clinical setting. This was evident in the brevity of many of the interviews and the short answers many women provided to the open-ended questions. This was a limitation because the research is based on everything the pregnant participants reported to me; therefore the results may or may not be totally accurate. The difference in factors such as race, income, and education created an acquiescence bias throughout the research (Bernard, 2006). No matter how much I worked to create a comfortable conversation for the participants speak openly and without hesitation, the bias still affected the results.

I also found this bias in my interviews with many of the health care providers and co-facilitators. They responded in ways that mirrored my research questions and many of their answers sounded scripted and pre-rehearsed. This limitation can compromise the whole research project but it also revealed that the knowledge many participants held about prenatal nutrition

was in line with modern recommendations and the state of nutrition and birth outcomes in the U.S. The expectant mothers who participated in the research never appeared to lack knowledge about current nutritional guidelines. In fact, they appeared to have an uncritical acceptance of the authoritative knowledge of the providers and co-facilitators.

3.5 Participant Breakdown

Table 3.1

Breakdown of Participants

Participants	
Doula/Site Sponsor	1
LD	1
OB-GYN	1
CNM	1
Community Care Partner/Centering Director	1
MA	4
Expectant Mothers	17
Total Interviews	*26*

Overall, 26 interviews were conducted – 17 pregnant African American women who lived in Tarrant County, one JPS certified nurse midwife (CNM), four JPS MAs (who all facilitated Centering sessions), one JPS obstetric and gynecologic physician (OB-GYN), one JPS licensed dietician (LD), the Community Care Partner and Centering Director at one JPS location, and the Ms. Lawson, who is also a practicing licensed doula (figure 2). Ages of the pregnant women interviewed ranged from 18 to 38 and the median age was 28.

Most of the expectant women (n = 17) were born and raised in the Tarrant County area. This means that since they grew up using the services investigated, they have a shared understanding of resources, like transportation, health care, and grocery stores, available in the county. In addition, any future prenatal nutritional guides created for the women of the county

would have an extensive base with common knowledge of local dietary habits. The five remaining women were from Louisiana, Panama, Nigeria, and Ghana. They provided a glimpse into the traditional diets from other regions in the US and internationally that were entering Tarrant County as a result of immigration.

CHAPTER 4

RESULTS

In this chapter I provide the results of the questions I asked about food choices and practices in a series of tables detailing the answers the participants gave me. In the next chapter (chapter 5), I will go into a more in depth interpretation of the material reported here.

4.1 Overall Foods Mentioned

Table 4.1 lists the 54 most frequently mentioned meals and foods in the order of frequency mentioned throughout the interviews with all of the participants. The frequency at which these foods were mentioned indicates their popularity among the participants. These are foods with which all of the participants were highly familiar and comfortable, due to their frequent occurrence throughout all of the interviews. These foods, mentioned by the expectant mothers, the health care providers, and the co-facilitators serve as a basis of a common understanding of nutrition and health in this community.

Fruit as a general category was the most mentioned food item among the participants. There was very little overlap of the specific types of fruits mentioned. In my interviews with the pregnant participants, it was generally recognized that fruits are ideal sources of vitamins, yet very few women were specific about the types of fruits they consumed most. Apples, oranges, peaches, bananas, blueberries, strawberries, and watermelon were the most mentioned specific fruits. These fruits are high in nutrients like potassium, vitamin A, and vitamin C. According to the USDA, these are five of the seven most consumed fruits in the U.S. along with grapes and strawberries (“Bananas and Apples Remain American’s Favorite Fresh Fruits,” 2012).

Table 4.1.

Overall Foods Mentioned

1) Fruits (general)	19) Turkey	37) Banana
2) Vegetables (general)	20) Sandwiches	38) Pasta
3) Chicken	21) Bacon	39) Strawberry
4) Milk	22) Carrots	40) Tilapia
5) Cheese	23) Spinach	41) Blueberries
6) Beans	24) Apples	42) Chili
7) Eggs	25) Sausage	43) Juice
8) Bread	26) Hamburger	44) Watermelon
9) Corn	27) Grains	45) Tortillas
10) Juice	28) Seafood	46) Tacos
11) Pork	29) Oranges	47) Tea
12) Broccoli	30) Steak	48) Ceviche
13) Salad	31) Yogurt	59) Lettuce
14) Pizza	32) Cabbage	50) Macaroni
15) Rice	33) Catfish	51) Meatloaf
16) Chips	34) Pancakes	52) Noodles
17) Fries	35) Peaches	53) Tomatoes
18) Potatoes	36) Spaghetti	54) Biscuits

Vegetables in general were the second most mentioned food type during the research. Specific types of vegetables were more frequently mentioned than fruits, but most of the participants used *vegetables* as general category, inferring that there was little delineation between types in their recall process. The most mentioned vegetable was corn, which has slight nutritional value compared to the other vegetables mentioned, but appeared to be a staple in the diets of many of the participants. Corn delivers potassium, vitamin A, and folate. The second, third, and fourth most mentioned vegetables were broccoli, carrots, and spinach, which have considerable nutritional value. Raw broccoli has high levels of calcium, vitamin C, potassium, and folate. Raw carrots provide vitamin A, potassium, beta-carotene, vitamin K, and folate, and raw spinach contains high amounts of calcium, potassium, vitamin C, vitamin A, and vitamin K (National Nutrient Database for Standard Reference, Release 27,). Green and orange vegetables

are optimal choices for a prenatal diet due to their high content of nutrients necessary for healthy fetal development.

Chicken was the third most popular food item and was mentioned throughout the course of the research. Since 1976, beef consumption has declined in the U.S. and in 2010 chicken became the most available and most consumed meat in the country. Many believe the widespread growth in consumption is due to the efficiency in the poultry industry and the popularity of health-conscious concerns about consumption of fats, saturated fats, and cholesterol, which are generally found at higher levels in beef and pork (Bentley, 2012). Each part of the chicken and the method of preparation affect the amounts of fat, saturated fat, and cholesterol. Not many women specified the part of the chicken they most often consumed, but most differentiated between the styles of preparation. They noted that they preferred baked or roasted chicken, which are generally accepted as healthier ways to prepare poultry. They acknowledged that fried chicken, though a favorite meal, was the least nutritious style to prepare chicken and they avoided it.

Milk was the fourth most frequently mentioned food item throughout the research. Milk is featured predominately in the WIC guidelines for both women and children but it is also touted as providing many essential vitamins and nutrients. The milk supplied by WIC for pregnant and a breastfeeding woman, mainly 1 % reduced fat and skim milk, is supplemented with vitamins A and D and contains high levels of potassium and folate. Milk supplemented with vitamins is encouraged as a convenient way to obtain nutrients necessary for healthy fetal development.

4.2 Traditional Meals and Foods

One goal of this research project was to understand what foods were foundational to the diets of the expectant mothers, how those ideas were developed, and how they might change.

Learning more about the participants' notions of traditional foods would shed light on why their adult diets are shaped as they are and what they might be inclined to eat. For this research, I defined traditional foods as items the participants recalled eating as children, items they customarily eat at celebrations or gatherings, and items they felt were different from the typical daily meal. There was a wide variety in the items listed when asked about the traditional meals and foods participants ate and enjoyed most growing up. The largest variety was in the number of meats that the women reported, as well as the styles of preparation such as frying, baking, roasting, and grilling. Energy dense convenience foods like pizza, hamburgers, French fries, frozen meals, and breakfast cereals were frequently mentioned. Three women reported consumption of fish and seafood, which speaks either to the expense of purchasing fish, the lack of access to fresh fish, or the distaste for fish.

There was overlap in the mention of southern-style foods like corn bread, grits, and beans. Preparing foods with pork fat and the inclusion of inexpensive cuts of meat high in saturated fats and cholesterol defined a portion of the African American diet beginning after the Civil War (Dirks & Duran, 2001). These traditional meals and their methods of preparation have become cornerstone foods to which many of the expectant mothers could relate. Specific cuts of meat mentioned by the participants included pork butt (pork shoulder), and pork neck bone. These two cuts of meat are higher in saturated fat, calories, and sodium, which probably make them so satisfying and popular. Some women included fried catfish as a favorite traditional meal. Though a lean protein, many indicated that they preferred it fried, which detracts from its nutritive value.

There was little variety in fruits, vegetables, and grains mentioned during the interview process. Only one participant listed specific fruits (peaches, apples, bananas, and oranges) that were traditionally included in her family's meals. Other women recounted eating fruit but made

this clear by simply designating *fruits* as a general category, as indicated above. Vegetables were not as often turned into a general category but were frequently listed individually. Vegetables listed included greens, carrots, corn, cabbage, green beans, and yams.

Carbohydrates like potatoes and rice were as frequently mentioned. A woman in her third trimester of pregnancy requires about 135 grams of carbohydrates a day, whereas a non-pregnant woman needs about 100 grams a day (Dietary Reference Intakes, p.292). Carbohydrates are necessary for an optimal diet but must be supplemented with other nutrients to be most nutritious (National Nutrient Database for Standard Reference, Release 27). Table 4.2 lists all of the traditional meals and foods that were listed by participants in alphabetical order.

Table 4.2

Traditional Meals and Foods Listed by Participants

1. Apples
2. Bananas
3. Beans
4. Beef
5. Black-Eyed Peas
6. Broccoli
7. Broccoli and Cheese Casserole
8. Cabbage
9. Candied Yams
10. Carrots
11. Catfish
12. Cauliflower
13. Chicken
14. Corn
15. Cornbread
16. Cornflakes
17. Crawfish
18. Creamed Corn
19. Fish
20. French Fries
21. Fried Chicken
22. Fried Meats
23. Fried Pork Chops
24. Fruits
25. Goat
26. Grains
27. Greens
28. Green Beans
29. Grits
30. Ground Beef
31. Hamburgers
32. Hamburger Helper
33. Hotdogs
34. Jambalaya
35. Junk Food
36. Mashed Potatoes
37. Meat
38. Loaf
39. Nachos
40. Neck Bone Stew
41. Oranges
42. Peaches
43. Pizza
44. Pork
45. Pork Butt
46. Poultry
47. Raisin Bran
48. Rice
49. Roast
50. Salisbury Steak
51. Soul Food
52. Soup
53. Spaghetti
54. Steak
55. Stew
56. Tacos
57. Turkey
58. Vegetables
59. Watermelon

4.3 Favorite Meals

When asked about their favorite meals, participants provided varied answers with some overlap. Fried foods and foods with cheese as a major ingredient were commonly mentioned. Pizza, macaroni and cheese, fried chicken, and French fries were very popular choices among the pregnant participants. These foods are energy dense and high in sodium and sugar, however they are also highly satisfying and convenient. Table 4.3 demonstrates the favorite foods and meals mentioned by participants.

Table 4.3

Participants' Favorite Meals

1. Macaroni and Cheese
2. Cheesecake
3. Salisbury Steak
4. Meatloaf
5. Roast
6. Wendy's
7. Fried Foods
8. Friend Chicken
9. Seafood
10. Broccoli
11. Pizza
12. Frosted Flakes
13. Chicken Divine
14. Spaghetti
15. Lasagna
16. Tacos
17. Eggs
18. Bacon
19. Pancakes
20. Toast
21. Beans
22. Rice
23. Steak
24. Potatoes
25. Chicken Salad
26. Grilled Chicken
27. Soul Food
28. Greens
29. Corn
30. Mashed Potatoes
31. Green Beans
32. Sweet Potatoes
33. French Fries
34. Casserole

4.4 Healthy Meals

Table 4.4 lists meals and foods participants said to be healthy choices. These healthy choices vary from the participants' ideas of a traditional diet. There is much less meat present in the women's healthy choices. If meat was mentioned it was specifically lean types and cuts of meat like turkey, chicken breasts, and fish. Baking, roasting, and grilling preparations styles were mentioned frequently compared to frying, which the women identified as an unhealthy preparation method. The women also mentioned more vegetables and fruits, especially green and orange vegetables, which were not present in the discussion about traditional foods. Finally, the

women mentioned far fewer carbohydrates when speaking about healthy foods compared to when they spoke about traditional foods. Dishes like macaroni and cheese, cornbread, French fries, and spaghetti were not mentioned.

Table 4.4

Healthy Meals Listed by Participants

1. Apples
2. Baked Chicken
3. Bell Peppers
4. Broccoli
5. Calcium
6. Carrots
7. Cheese
8. Collard Greens
9. Corn
10. Cornbread
11. Eggs
12. Fiber
13. Greens
14. Grilled Chicken
15. Juice
16. Lean Meats
17. Milk
18. Nectarines
19. Oranges
20. Peaches
21. Protein
22. Radishes
23. Rice
24. Roasted Chicken
25. Spinach
26. Toast
27. Turkey
28. Veal
29. Baked Pork Chop
30. Mashed Potatoes
31. Fish

4.5 Breakfast

Table 4.5 includes all of the breakfast items mentioned by participants. There was little variation in the types of food women reported eating for breakfast when asked what a typical morning meal looked like for them. Eggs, bacon, sausage, and some type of breakfast bread made up the majority of breakfast foods and items listed among the participants. Nine women preferred some kind hot or cold cereals. Breakfast cereals vary greatly in their contents and amounts of added sugars, vitamins, and nutrients. Report of consumption of fruits for breakfast was scarce. One woman listed bananas as a component to her breakfast and another woman asserted *fruits* was breakfast for her.

Breakfast breads such as toast, pancakes, waffles, and biscuits vary in their nutritional values, fat contents, and carbohydrate amounts, but mostly offer some calcium, folate, and vitamin A. Five women listed one or two of these items as a component in their breakfast. Eggs, mentioned by seven women as an important breakfast item, deliver high amounts of vitamin A,

vitamin D, folate, and calcium. Most of these food items provide some nutrients for an energy-filled breakfast.

Table 4.5

Breakfast Items Listed by Participants

1. Cereal
2. Oatmeal
3. Eggs
4. Bacon
5. Sausage
6. Biscuits
7. Pancakes
8. Toast
9. Omelets
10. Frosted Flakes
11. Hot Cereal
12. Pork Chops
13. Waffles
14. Fruits
15. Milk
16. Bread
17. Bananas

Bacon is a traditional factor in the American breakfast, however it is high in calories and fat and offers few grams of protein. Sausage, also high in calories and fat, contains more grams of protein than bacon. Six women explicitly mentioned sausage or bacon, and sometimes both, as a major part of their breakfast.

4.6 Lunch

Table 4.6 lists all of the food items listed by participants in regards to questions regarding the composition of their lunch. Most women said that they ate lunch every day.

Table 4.6

Lunch Items Listed by Participants

1. Beans
2. Cheese
3. Chicken
4. Chicken Nuggets
5. Chili Dogs
6. Chips
7. Corn
8. Corn Dogs
9. Drumlets
10. Egg Rolls
11. French Fries
12. Fruits
13. Grains
14. Ham
15. Hamburgers
16. Hot Dogs
17. Hummus
18. Juice
19. Meat
20. Pizza
21. Rice
22. Sandwich
23. Soda
24. Subway
25. Tamales
26. Tea
27. Turkey
28. Vegetables

4.7 Dinner

Table 4.7 lists all of the food items and meals in alphabetical order mentioned by the participants in answer to questions about what a typical dinner looks like in their household. Some form of meat, mainly beef, chicken, or pork, was a predominant dinner entrée among the participants. Seven women mentioned one or more types of meat. *Meat* was also used as a general category by five women to encompass a variety of dinner meals, much like the categories of *fruits* or *vegetables*.

Table 4.7

Dinner Items Listed by Participants

1. Baked Chicken
2. Baked Pork Chops
3. Beans
4. Casseroles
5. Catfish
6. Chicken
7. Fruit
8. Hamburger Helper
9. Juice
10. Macaroni and Cheese
11. Meat
12. Pork
13. Potatoes
14. Ribs
15. Rice
16. Salads
17. Shrimp
18. Spaghetti
19. Tuna Salad
20. Vegetables

4.8 Grocery Store Choice

Six women reported the most common location to buy groceries was Wal-Mart both in the past and with their own families. Value stores as indicated by the participants such as Save-A-Lot, Sack N Save, and Albertson's were the second most frequently mentioned locations. Several women mentioned stores that had gone out of business such as a specific Sack N Save, Super 1 Foods, and King Savers. Two women recalled shopping for groceries at local farmer's markets and butchers with their mothers. This is something they did not do with their current families because they did not live near a farmer's market or a functioning butcher.

All of the grocery stores mentioned are full service stores with a full produce, meat, and dairy selection. Many studies have shown a link between a decreased risk of obesity and

cardiovascular disease and the accessibility of full service grocery stores (Cummins & Macintyre, 2006; Inagami, Cohen, Finch, & Asch, 2006; Morland et al., 2002). The experience participants traditionally had shopping for food at locations with a wide variety of nutrient dense foods has protective factors against chronic disease.

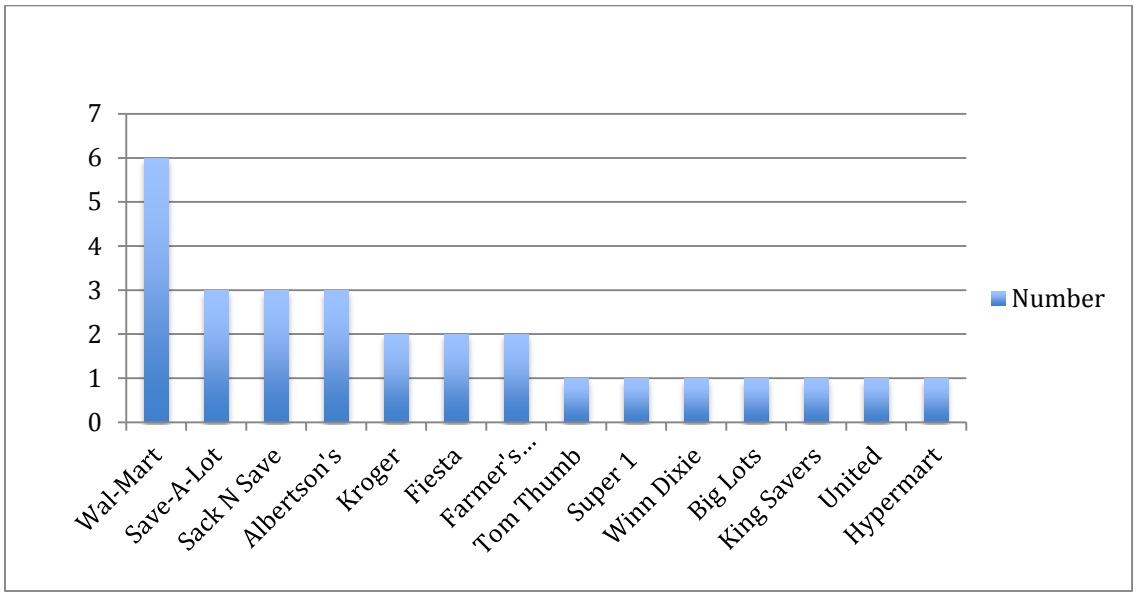

*Figure 4.1.*Grocery stores traditionally visited.

4.9 Access to Food

None of the women reported a lack of access to healthful prenatal nutrition. A majority of the women interviewed reported receiving both WIC and SNAP benefits. The benefits helped substantially with purchasing food for their families, though some of those interviewed reported difficulty using WIC benefits at the grocery store. Eleven women (84%) reported using WIC and SNAP benefits with ease. Many of women expressed that WIC benefits greatly supported their monthly food needs.

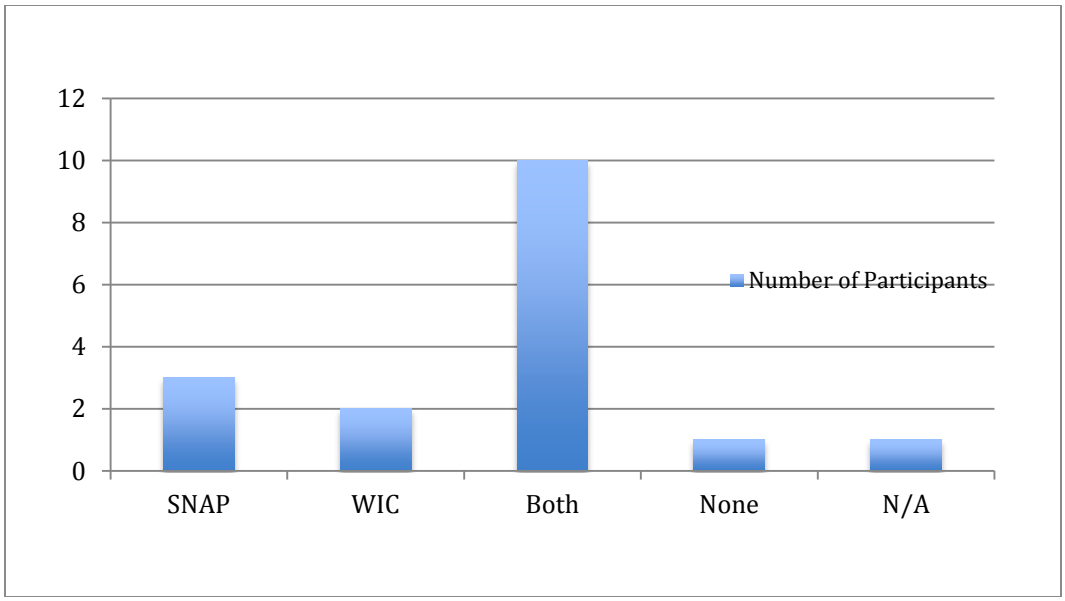

Figure 4.2. Participants receiving government food assistance.

4.10 Vitamins and Nutrients

Another aim of the research was to better understand how much participants understood about the recommended necessary vitamins and nutrients for pregnancy. Although not explored in-depth in this research, obstetrics patients are often provided with prenatal and other vitamins but many women may not be aware of their properties or what foods are the best places to find them. Table 4.8 lists in alphabetical order how the participants responded when they were asked about vitamins and other nutrients. I asked participants what they believed to be the most important vitamins and nutrients for pregnancy and their favorite places to find them. Many women listed specific vitamins and minerals, specific foods that they knew were nutritive, and some women listed both foods and minerals.

The specific vitamins and minerals listed included fiber, folate, calcium, iron, vitamin A, vitamin B, vitamin C, vitamin D, protein, niacin, and beta-carotene, which are all necessary for healthy fetal development. Two women reported that prenatal vitamins were the best place to obtain important vitamins and minerals for pregnancy.

This chapter summarized the specific responses to questions I asked about food habits, at least those responses that could be easily organized into tables. The following chapter comprehensively addresses the anthropological question of the interpretation of the data presented here.

Table 4.8

Vitamins and Nutrients Listed by Participants

1. Antioxidants
2. Baked Chicken
3. Baked Potato
4. Beans
5. Beta Carotene
6. Cabbage
7. Calcium
8. Chicken
9. Eggs
10. Fiber
11. Folic Acid
12. Fruit
13. Grapes
14. Green Beans
15. Iron
16. Lemons
17. Lentils
18. Limes
19. Meat
20. Milk
21. Nectarines
22. Niacin
23. Oranges
24. Peanut Butter
25. Potassium
26. Prenatal Vitamins
27. Salads
28. Spinach
29. Star Fruits
30. Turkey
31. Vegetables
32. Vitamin A
33. Vitamin B
34. Vitamin C
35. Vitamin D
36. Wheat

CHAPTER 5

INTERPRETATION OF DATA

In this chapter I interpret the data I collected about nutrition from the expectant mothers, the providers, and the co-facilitators. Figure 5.1, My Pregnancy Plate, was created by Oregon Health and Science University and is based on the USDA's MyPlate nutritional guide. "My Pregnancy Plate" serves as a reference for the dietary recommendations the pregnant participants received from the providers, co-facilitators, and WIC.

Figure 5.1. My Pregnancy Plate.

5.1 Definitions of Nutrition

From a public health perspective, nutrition can be concretely defined based on the consumption of the necessary nutrients and minerals for overall physical health. According to WHO, “poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity” (Nutrition, 2014). Nutritional interventions that aim to change diet behavior are contained within these parameters, which are robust and measurable. However, definitions of optimal nutrition, child growth and development, and maternal health are relative to one’s physical and social environment. In order to design a successful nutrition intervention, the foundation must be shaped around a mother’s perception of health and the cultural norms regarding pregnancy, childbirth, and infant health (Pelto, 1987). To gain meaningful knowledge of nutritional norms and expectations from participants, it was important that I not direct them to define health and healthy foods within the scientific parameters that already shape the pre-existing rhetoric.

The pre-existing rhetoric the women often adhered to was based on the Authoritative Knowledge of established institutions that direct and determine medical knowledge of nutrition for the nation. When women were asked what vitamins and minerals they believed were necessary for them to consume during their pregnancy, most gave examples of foods like dairy, fruits, and vegetables. It has become a collective understanding that fruits and vegetables are the healthiest foods, regardless of the specific type. But many women were not able to identify what exactly about the fruits and vegetables made them the healthiest options. Women who were able to identify specific necessary vitamins and minerals for a healthy pregnancy mentioned vitamins B and D, calcium, and iron, of which they need to consume more. Very few women mentioned some of the most important nutrients for pregnancy like folate, vitamin B6, and fiber. The education of the necessary nutrients for pregnancy is not clearly in reach for the participants.

Prenatal vitamins are the most obvious and easily accessible source of vital nutrients but only a handful of women mentioned this source during the interviews.

Most of the women indicated that their dietary options were affected by WIC, such as increased opportunities to consume milk and produce. Yet, the guidelines restrict types and amounts of milk and produce. Some women made this clear when they spoke about using their benefits at the grocery store. Most of the pregnant women did not have difficulty using the benefits at the cash register but they found that they had to choose unfamiliar items or the guidelines were unclear at times. Although purchasing items like produce and dairy is encouraged among WIC participants, some of the expectant mothers stressed how it was necessary for them to keep in mind that their benefits only covered specific variations and preparation styles of these foods. One participant expressed bewilderment when she recounted how her benefits did not cover pre-sliced pineapple. She discovered this at the cash register and thus decided to go without.

5.2 Food Choices

Some foods were mentioned much more frequently than others among the expectant mothers. Fruits, more so than vegetables, was one category that lacked specificity. As mentioned above, *fruits* was mentioned often as a general category and due to this it appears there is a lack of variety in the fruits that are consumed by the participants. A lack in variety of fruits, and vegetables, can lead to vitamin and nutrient deficiencies that can affect their individual health and the uterine development of their babies (Fowles & Gabrielson, 2005).

One food item mentioned with great frequency was meat, mostly chicken. A chicken breast has considerably fewer calories and saturated fat than pork or beef, as well as a significant amount of protein, but the quality of nutrients is dependent upon the style of preparation. Since

pregnant participants reported that they mostly consumed baked or roasted chicken, these styles of preparation appear to be the dominating trend over fried or grilled. Meats such as steak and meat loaf were less frequently mentioned but are also very energy dense. Due to the frequency mentioned, it was clear that a variety of meats was a preferred food among pregnant participants.

There was very little variety in grains and vegetables among the answers. Rice was the only grain listed in addition to pasta dishes like lasagna and spaghetti, which are generally a wheat product. Several different forms potatoes and beans were frequently mentioned, which are both nutritionally dense depending on preparation. Some of the other vegetables mentioned include green beans, corn, and sweet potatoes. While green beans and sweet potatoes are rich in potassium, vitamin A, and vitamin C, corn lacks many enriching nutrients and vitamins and is comparably higher in calories than more nutritive vegetables.

Southern-style meals were also popular items. Foods such as ribs, catfish, macaroni and cheese, and French fries were frequently mentioned. They are filling and comforting foods, but as explained above, offer few micronutrients necessary for optimal birth outcomes.

5.3 Nutrition Knowledge

One aim of this research was to fully understand the definition of a healthy meal for an expectant mother from the perspective of the pregnant participants. Overwhelmingly, the participants reported that the majority of a diet should consist of an abundance of *fruits and vegetables*. As explained above, many of the participants used the categorical terms *fruits* and *vegetables* to infer that several different types of each were incorporated into their diets. According to WIC and the USDA and "My Pregnancy Plate," a pregnant woman's diet should include a majority of fresh vegetables, equal amounts of whole grains, legumes, starchy vegetables and lean protein, with a smaller portion of fresh fruits. Whereas the pregnant

participants' knowledge was mostly in line with the current dietary recommendations, most reported consuming a lesser variety of fruits, vegetables, and meats.

According to the Institute of Medicine, pregnant women need more protein than non-pregnant women after 24 weeks gestation. The second trimester requires an additional 6.3 grams of protein a day and the third trimester requires an additional 10.6 grams a day, up from the recommended 46 grams a day for non-pregnant women (Institute of Medicine (IOM) of the Natonal Academies, 2005). Most of the pregnant participants included protein as a necessary component of their diet. Among the participants, protein usually took the form of chicken breast, which is a lean source. One woman stated she consciously tried to eat more protein but did not have a preferred source, "…beans, some wheat things, healthy things, like trying milk or just bread something I can get some protein in." Some foods are higher in protein than others and most Americans receive protein from many types of meat, which are also high in fat, saturated fat, and cholesterol.

Pregnant women need much more protein than non-pregnant women for healthy fetal development and many of the participants understood that it was important for them to eat lean meat for the protein and not the fat. One woman's idea of a healthy prenatal meal included lean meat, green vegetables and fruit in any form:

> Lean meat, a lean piece of meat. One that don't have a lot of fat on it. Lots of vegetables. Green vegetables. At least one green vegetable and one starch, and something for dessert. Either some kind of fruit or something with fruit in it, like maybe apple pie, or peach cobbler, or whatever. Some fruit in there. Something that you probably won't have to add a lot of sugar too.

Some type of fruit for dessert is a great way to add to one's vitamin intake but fruit in a cobbler or pie negates the added vitamins due to the high amount of added sugar. Another woman talked about her feelings regarding the idea of eating healthy and the difficulty that it actually entailed:

> You're supposed to eat a lot of salads and fruits and stuff. I've done that, but sometimes I don't eat a bunch of junk, I have, but I don't eat junk like that because since I've been pregnant it doesn't balance well. You don't feel good. It feels like it's a total emptiness. I have to think about the fact that there's somebody else inside of me and this child, she doesn't like junk food. I've noticed that she doesn't like fried chicken either. She likes roasted or baked chicken. That's what she likes. She like fresh fruits and vegetables, and that's what I supply her with. If I want something extra, on my own time, I eat something else, but I do what I can to eat fresh fruits and vegetables unless I just want something else like French fries or something else. Basically since I've been pregnant I haven't ate no chocolate, which I love to eat, no coffee.

When asked her idea of a healthy meal, one woman insisted that it involved not eating out at restaurants but preparing food at home. Several women hinted to this during the research. Though it is more convenient and often more satisfying to eat at a restaurant, they insisted that preparing a complete meal at home would provide them with more vitamins and nutrients and would be lower in calories.

The most popular way for expectant mothers to supplement their diets with necessary vitamins and nutrients is with prenatal vitamins. Prenatal vitamins contain most a of pregnant woman's necessary amounts of certain nutrients but they do not contain things like protein or fiber, which should be sourced from food for optimal absorption in the body. Pregnant women specifically require higher amount of vitamin B6, folate, and iron (Institute of Medicine (IOM) of the Natonal Academies, 2005). The vegetables listed by the participants, as optimal sources of vital nutrients, are all high in recommended vitamins and minerals and are ideal additions to a prenatal diet. This demonstrates again that the knowledge held by the participants regarding prenatal nutritional health corresponded to national recommendations.

Despite the knowledge many participants displayed of specific necessary vitamins and minerals during pregnancy, no one mentioned the importance of Omega-3 fatty acids for an expectant mother. Fatty acids are essential nutrients for vital physiologic functions and healthy fetal development. Omega-3 and Omega-6 fatty acids cannot be synthesized by the body but must be ingested from food or supplements. According to Coletta, Bell, and Roman, "Omega-3

and Omega-6 fatty acids are polyunsaturated fatty acids…required for normal growth and maturation of many organ systems, most importantly the brain and eye" (Coletta, Bell, & Roman, 2010). Developing fetuses require high levels of Omega fatty acids, especially DHA, for improved neurodevelopment in utero and into childhood. In 2004, the Food and Drug Association established a recommended daily intake of 200mg a day of DHA for pregnant women. The optimal source of omega fatty acids is seafood, which contains high levels of mercury, and which can also be very harmful to a developing fetus. Despite the difficulty in finding natural sources of omega fatty acids appropriate for consumption during pregnancy, high levels are required for optimal birth outcomes. Table 5.1 lists of the dietary reference intake for energy from the USDA. Most of the nutrients were mentioned among the expectant mothers, however carbohydrates, magnesium, and zinc were not mentioned. Carbohydrates have been maligned in American society, yet they are readily available. It is often neglected that our bodies still require them for optimal health. Higher levels of magnesium and zinc are necessary for healthy bone, muscle, and blood maintenance during pregnancy.

Table 5.1

Recommended Daily Nutrients for Pregnancy

Recommended Nutrients	Levels for Non-Pregnant Women 19-50	Levels for Pregnant Women 19-50
B6	100mg/day	100mg/day
Calcium	1,000mg/day	1,000mg/day
Carbohydrates	130g/day	175g/day
Fiber	2.5mg/day	28mg/day
Folate	1,000mg/day	1,000mg/day
Iron	18mg/day	29mg/day
Magnesium	320mg/day	360mg/day
Niacin	35mg/day	35mg/day
Protein	46g/day	71g/day
Zinc	8mg/day	50mg/day

Source: Institute of Medicine, 2005.

One research goal was to find out how many participants would be receptive to an opportunity to learn more about prenatal nutrition, cooking, and meal planning. The majority of the expectant mothers said they would be interested in learning more about prenatal nutrition. One woman responded, “yeah, because you can never know enough.” This answer was representative of the sentiment held by most of the participants. Nutrition science, especially maternal and infant nutrition science, is constantly evolving and the discussion around it has become very popular. This was reflected in the thoughts of most of the women who felt it was important to have at least some understanding of prenatal nutrition.

The participants gave varying responses when asked what, in particular, they would want to learn from a prenatal nutrition class. The answers included learning how to eat more organically, new recipes, menu planning, and ways to improve the health of the baby though nutrition. All of the answers were focused on the health of their families and not necessarily themselves. This fact helps put in focus the importance of prenatal nutrition for the children of the participants.

All but one woman reported that they would be interested in learning new cooking skills and recipes if given a chance. This woman reported she felt very confident in her skills and recipes. Very few women reported not knowing how or not liking to cook. Many of the participants were already the main cooks for their families or they had a strong background in cooking and meal preparation from parents or grandparents, but they were still open to improving their cooking skills. One woman explained how she learned to cook from her grandmother and mother and desired to provide her children with a similar experience:

> I would like to cook more because my grandma, my mom cooked a lot, and some of the things that they taught me...I experimented with different types of meat and stuff like that. When I was growing up, we had a wide variety. We always had food. We always liked trying new things, different kinds of vegetables, stuff like that. Now, I use that same thing with my kids. A lot of things just carried over.

Since most of the participants are individually responsible for meal planning and preparation in their households, they would have the opportunity to impact the nutrition of their household members with new skills and recipes.

5.4 Food Access

None of the women reported a perceived lack of access to healthful prenatal nutrition. One woman cited the overabundance of convenience and fast food outlets as a challenge to eating healthier food. When asked how many times per week she ate a perceived healthy meal she replied, “in all honesty, maybe once or twice a week. Other times it's really hard. Especially when your house is surrounded with nothing but fast food. Every corner you turn there's fast food. And then all in one area and it's pretty hard to try to eat healthy.” She found motivation to eat more nutritive foods while pregnant challenging due to the temptation of easy access to fast food, but also because she disliked to cook and relied on others in her household to prepare meals. As explained above, the excess of fast food restaurants in neighborhoods like hers is a national trend and not rare in disadvantaged neighborhoods.

Another source of access to groceries for the expectant mothers was through participation in WIC and SNAP food assistance programs. As reported, most expectant mothers received both WIC and SNAP benefits. The benefits helped substantially with purchasing food for their families. One woman explained how participation in both programs assisted the purchase of groceries for the month, “In WIC I get all my nutrients like I get fruit, I get my juices, I get milk, eggs, peanut butter and beans so it helps a lot and then food stamps, such as I get everything else, my vegetables, still my fruit, and…my meats…but it helps a lot” Both services allow families to consume more mineral and nutrient-rich produce and proteins.

Six women (46%) reported experiencing difficulties using WIC benefits at the grocery store. The most cited reason for experiencing difficulty was due to the fact the benefits did not pay for specific products that they needed, mainly produce. Another reason given was that items in grocery stores were labeled as covered by the benefits when they were not and they did not find out until they reached the checkout line. One woman indicated that she often found one of her children was not included in the coverage when he technically should have been.

Eleven women (84%) reported using WIC and SNAP benefits with ease. Many of women expressed that WIC benefits greatly supported their monthly food needs. No one indicated that they were food insecure but when asked if the benefits helped them get everything need for the month common answers were, “pretty much” or “I guess.” Many answers, though affirmative, were indifferent to the extent to which they found the benefits to assist with purchasing food.

One of the women who reported she received SNAP but not WIC felt participation was not necessary for her family. The strict guidelines associated with participation in the program dissuaded her from enrolling, “no, I haven't used WIC, the only reason I don't want to use WIC, because they prick your finger. I can deal with needles. I can do the shots...” She felt the pain associated with the finger prick of glucose testing was more troublesome than any other injection or blood draw. Because of her past negative experiences with finger pricks, she decided her participation in WIC was not necessary if glucose testing was a requirement. As explained above, participation in WIC requires regular health checks and educational classes. Many participants view these requirements as metaphorical hoops to jump through and not opportunities to improve maternal health.

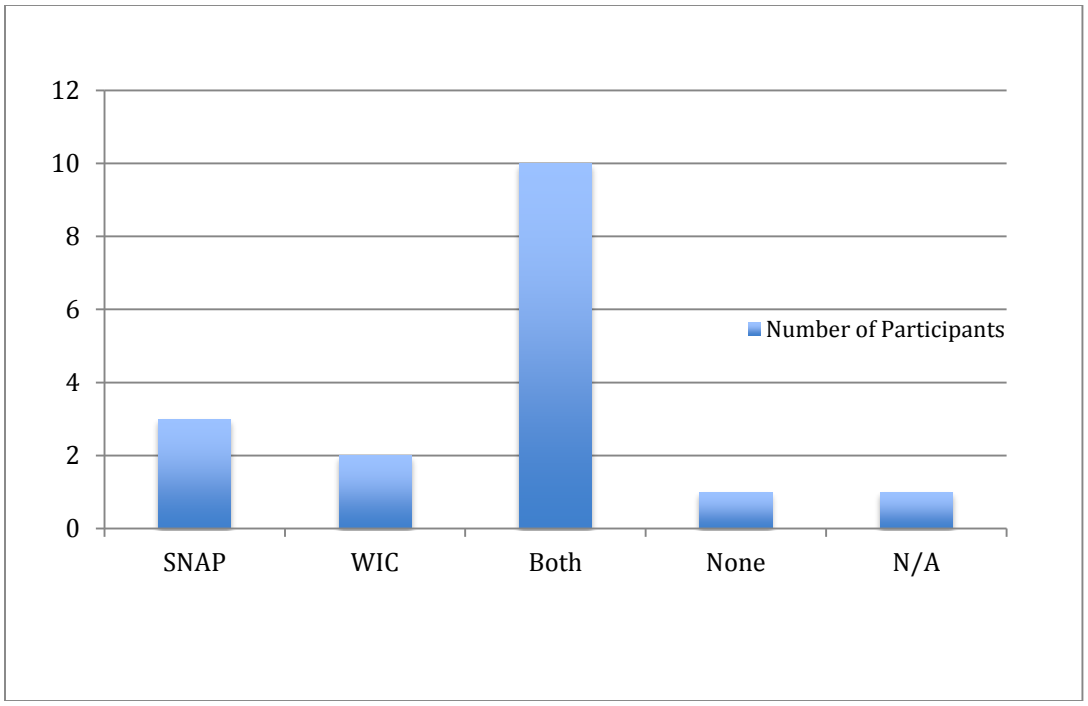

Figure 5.2. Participants receiving government food assistance.

Another research goal of this project was to understand some of the barriers to optimal prenatal nutrition for the expectant mothers. Most women insisted that thinking about their baby's heath, as well as their own, made it easy to make nutritional choices. Three (18%) women explained that significant and family members encouraged them to make more nutritious choices. Two women (12%) reported that WIC helped them make healthier choices not only because of the extra income but also because it is required of their participation. Two other women (12%) expressed that it was easy for them to make healthier dietary choices because they craved fruits and vegetables while they were pregnant. Craving nutrient dense produce is an advantage, but it would be necessary for these women to ensure they were also receiving other necessary nutrients and vitamins from a variety of food.

A proxy of access to a full selection of produce, grains, legumes, and meats was the grocery stores at which pregnant participants were accustomed to shopping. Six women (35%) reported the most common location to buy groceries was Wal-Mart both in the past and with their own families. Value stores as indicated by the participants such as Save-A-Lot, Sack N

Save, and Albertson's were the second most frequently mentioned locations. Several women mentioned stores that had gone out of business such as a specific Sack N Save, Super 1 Foods, and King Savers. Two women recalled shopping for groceries at local farmer's markets and butchers with their mothers. This is something they did not do with their current families since they no longer lived near a farmer's market or butcher.

All of the grocery stores mentioned are full service stores with a full produce, meat, and dairy selection. Many studies have shown a link between a decreased risk of obesity and cardiovascular disease and the accessibility of full service grocery stores (Cummins & Macintyre, 2006; Inagami et al., 2006; Morland et al., 2002). The experience participants traditionally had shopping for food at locations with a wide variety of nutrient dense foods has protective factors against chronic disease.

5.5 Meal Habits

The meal habits of the expectant mothers varied greatly. The Institute of Medicine recommends that pregnant women consume three meals and three snacks a day to ensure constant delivery of necessary nutrients. Pregnant women should avoid prolonged periods without energy intake to guarantee optimal birth outcomes (Institute of Medicine (IOM) of the Natonal Academies, 2005). According to Hennessy et al., many studies have shown that meal frequency among expectant mothers varied greatly, which increases a woman's risk factors for preterm birth (Hennessy, Volpe, Sammel, & Gennaro, 2010). Skipped meals results in an overall loss of vitamins and minerals necessary for healthy pregnancy and into the child's development.

Five women (29%) reported that their meals and snacking habits were inconsistent throughout their pregnancies. Most women reported eating breakfast and dinner. Two women (12%) reported skipping breakfast either because they did not have time or they felt too nauseous

to eat in the mornings. One woman skipped breakfast because she often slept in late. Two other women (12%) reported skipping lunch because they took regular naps during the time that they would normally eat. They experienced fatigue as a result of their pregnancy and chose to sleep rather than eat lunch. One of these women reported only eating once a day before she got pregnant. A different woman insisted she skipped dinner because she did not have time.

At lunchtime, meal habits and food selection varied based on the women's sleep and work schedules. Three women (18%) reported sleeping through lunch and having a big dinner or eating a substantive breakfast before. Lunchmeat sandwiches were highly representative of what a typical lunch looked like among the participants. Eight women (47%) explicitly listed sandwiches as a preferred part of their lunch. One woman described her eating habits especially now that she is pregnant:

> I'm really a snack girl, so I'll probably eat some chicken nuggets or maybe a sandwich or something. I'm not big on lunch… No, I'm not big on it…. I guess cause I eat a good breakfast. I'm not really an eater, so if I eat breakfast I want really just a snack for lunch and then I'll eat for dinner.

Though this woman was managing pregnancy-related nausea, she struggled to eat breakfast or lunch and preferred to snack instead, which appeared to be very sparse in volume and variety.

Many women included convenience foods as part of their lunch. Nine women (53%) mentioned energy dense foods like chicken nuggets, corn dogs, hotdogs, chips, soda, egg rolls, French fries, as well as Subway fast food sandwiches. Four women (24%) included some form of chicken as an element of lunch. As mentioned above, chicken was a very popular choice throughout the course of the research. However, some of the chicken options were fried, in the form of fried chicken or chicken nuggets. Three women (18%) mentioned general produce options, *fruits*, *vegetables*, juice, or salad, and one woman mentioned corn as something she might eat for lunch. These options display little variety among the participants' lunches.

One woman, who often skips lunch because she naps during the same time, described her typical lunch as, "whatever I can find." From this information it is difficult to draw conclusions about the quality or type of the food she consumes. Her response indicates that she is not very concerned about her dietary habits, which could make it more difficult to adjust them in the future.

Three women (18%) reported having consciously moved their dietary preferences away from energy dense foods and towards more nutrient dense food since they became pregnant. Six women mentioned *vegetables* as a part of their dinner meal and two women included salad. Only one woman was specific about types of vegetables. Most cited *vegetables* as a vague category to be understood as encompassing a variety.

One woman explained how she worked to incorporate fresh vegetables and lean meat, like salmon, into her dinner planning:

> Most of the time I do salmon. I use fresh herbs. A salad. Most of the time we do salad or a steamed vegetable. I always use a steamed vegetable because I don't like cooking a whole lot of the nutrients out of them because sometimes it can draw stuff out of it. Sometimes I like it fresh, do a salad, don't cook anything that goes in it, but use cauliflower and things like that. I do mashed potatoes sometimes because I love potatoes, of course. I do a piece of whole-wheat bread or a roll of some type. Then I eat a pretty nice-sized portion of peach cobbler and ice cream.

Another woman indicated that she did not play a role in her household's meal planning, which influenced her meals. When asked what a typical dinner looked like in her household her answer was, "whatever my dad wants to fix." She included that most of the time she skips breakfast and lunch and at a "big plate" at dinner. Compared to the quote from the woman above, this participant displayed little interest in meal preparation and planning so it was dependent on the individual preparing the meals, usually her father, to ensure she received adequate prenatal nutrition.

5.6 Roadblocks

A goal of this research was to understand roadblocks faced by the participants to obtain a nutrient dense maternal diet. Roadblocks might include time constraints or lack of transportation. The most predominant roadblocks were cravings, nausea, heartburn, and lack of energy associated with their pregnancy. Eight women cited one of these symptoms as the overriding reason that made it most difficult for them to eat what they believed to be a healthy, prenatal diet.

Snacking was a common theme throughout the research. Some women enjoyed snacking between meals and felt it helped them control their hunger and their nausea, whereas some women felt strongly that they could not snack nor had no desire to snack, mainly due to their lack of appetite. The most common form of morning sickness, experienced by 80% of women, does not affect the health of the mother or fetus if nutrition is maintained throughout the pregnancy. However, the more serious form, known as hyperemesis gravidarum, might complicate the pregnancy and the health of the mother and fetus if it is not treated (Quinla & Hill, 2003).

One woman explained how, due to her intense morning sickness, she had to change how she eats, "…I learned on this pregnancy to eat...because I used to not be a snacker when I was pregnant or not but I learned that by snacking or eating small, small meals it makes it better so I have been better than my two previous pregnancies." A second woman learned to adjust her typical eating to incorporate more snacking, "usually I'm not a snacker but now that I'm pregnant I have to because if I don't then I get nauseated, I feel sick." By decreasing the size and increasing the frequency of their meals they have learned that they can control nausea.

One participant expressed difficulty eating regular, healthy meals. She attempted to eat a large, nutritious breakfast to sustain her throughout the day. In the past, she experienced difficulty finding the time, the energy, the motivation, and the desire to eat more substantive

meals. She noted she had always been a picky eater but she also had little time to herself since most of her day was spent caring for her other children. She acknowledged that she needed to work harder to consume more nutrients during her pregnancy She preferred eating breakfast and snacking throughout the rest of the day instead of consuming the recommended three meals a day. A lack of vital nutrients throughout the course of her pregnancy might have negative implications on the health of mother and child.

Although not major roadblocks, time and transportation were discussed as well. One expectant mother said that transportation was a roadblock for because she was sharing a car with her sister, which made it necessary for her to plan in advance to shop for food and other necessities. Two women stated time constraints frequently prevented them from eating how they thought they should. One of the women was in graduate school and had a difficult time balancing her studies and caring for her other children.

Two women (12%) felt there was nothing holding them back from eating nutritive meals except themselves. These women believed eating healthy was a choice they needed to make. It was difficult for them to be faced with the temptation of more energy dense foods. Despite the temptation, they believed they had the self-control to choose between those foods and more nutrient dense options. One woman expressed why there was no reason why she could not eat healthier meals while she was pregnant:

> It's all about choices. It's all about choices. It's whatever I decide to eat. Nothing makes it difficult for me. If I choose to, oh, I don't want to eat vegetables today, I just want to eat this, I just want to eat meat, or I just want to eat fruit today, that's a choice that I decide to make. Nothing other than that makes it difficult.

A second woman asserted that eating healthier meant taking more time to think about her options and not let outside influences or time push her to make innutritious choices, “you see all this extra different stuff, but…Yes, so much more, but I take time to eat salad and fruit…It's open, the doors are all open, there's no reason why I can't eat healthy.” Though this was not a strong

theme in the research, their choices were something that was expressed strongly by the women who reported this to be their only roadblock.

CHAPTER 6

DISCUSSION

In this chapter, I discuss in-depth the major themes that arose during the research and analysis. I discuss these themes in the context of the topics of infant mortality and prenatal nutrition within the health needs of the expectant African American women of Tarrant County.

6.1 Grand Canyons: Authoritative Knowledge and Patient-Provider Connection

Health care providers, co-facilitators, and the director of the Birthing Project, Nikia Lawson, were interviewed during the research to better understand the multiple routes practitioners and educators use to address the issue of prenatal nutrition and infant mortality. The director of the Birthing Project was also a certified practicing doula, who provides care and support to expectant mothers before, during, and after their pregnancies. Not only did she have the perspective of a director of a local non-profit with a specific focus of reducing infant mortality but she also had the perspective of having helped met the many needs of pregnant women.

The experiences of the health care providers and co-facilitators varied greatly. As a result of their personal and professional experiences, some providers felt that they had more in common with their patients, and thus more understanding of what they experienced on daily basis. All but two providers and co-facilitators were mothers, which allowed them the perspective of having experienced pregnancy and parenting. One of the co-facilitators recounted her experience as a teen mother on a fixed income and government benefits, which she strongly felt allowed her to relate to the young mothers she encountered in Centering. Another co-facilitator discussed how she has witnessed the structure of families in the community change in the last few decades. She felt that life for families has evolved from being family-centered to

individual-centered and this shift in family dynamics has impaired a local mother's support network. This co-facilitator saw a strong connection between a supportive family and the overall health of an individual. When community is degraded, so is one's health and, in her view, this change has been a large loss to mothers and children. Both of these co-facilitators were members of the community that they also served through the JPS clinic. They both asserted that they were able to sympathize with the mothers and families with whom they worked.

The aforementioned co-facilitators believed they shared enough in common with their patients that they knew how to deliver the most relevant care. However, all providers and co-facilitators spoke about four major barriers experienced by their patients to achieving optimal health and birth outcomes: food insecurity, an overabundance of fast food, a lack of education, and little enthusiasm for their personal health care. The perception of these four main barriers is a demonstration of the divide created when the individuals with the authoritative knowledge (the providers and co-facilitators) are providing care for those with bodily knowledge.

6.1.1 Food Insecurity

The majority of the providers and co-facilitators asserted that food insecurity was one of the largest nutritional barriers that patients faced, especially among African American patients. One provider explained how she viewed the food insecurity of many of her patients, "I mean with the moms that are in low income communities, moms that are in impoverished situations, the biggest challenge is food…when you're in a community where there are no fresh vegetables, your only resources of nutrition is the corner store." Another co-facilitator elaborated on the ways in which the clinic staff would come to understand that a patient is food insecure, "I don't think they have enough sometimes. When they come here, just for a visit, they always come in here and ask for food. And you can tell some of them are really hungry. I don't think they have

enough food sometimes at home." The Centering programs offer a table of snacks and bottles of water for the patients. The provider felt that the ways in which the patients gather around the snacks made them appear very hungry. One provider explained how she sees the connection between food insecurity and community resources:

> You have low-income moms that don't have transportation if there is a grocery store close by. To get to that grocery store then they're resorting to the community store that they can walk to. Which probably doesn't have any fresh fruits or vegetables or canned goods that have a shelf life of sixteen years. So that's pretty much what they're facing.

Most providers and co-facilitators believed that food insecurity drove their patients to engage in dietary behaviors that were not optimal for healthy birth outcomes. Their responses illustrated a discrepancy between how they felt about their patients' food accessibility and how the pregnant participants felt about their food accessibility.

The providers and co-facilitators believed food insecurity was a root cause of poor nutritional behaviors, yet none of the pregnant participants reported feeling food insecure. The definition of food insecurity differed between the patients and the providers and co-facilitators, leading to a rift. This rift impacts the trust patients have in the providers to understand their situations and the quality of delivery of care because it displays how little both the provider and the patient understand about each other. The provider enters the clinical relationship with the authoritative knowledge about what food insecurity is and how it affects a patient's health.

6.1.2 Fast Food

The overabundance of fast food was the second most mentioned nutritional challenge providers believed the patients faced. One provider observed, "the difficulty of avoiding fast and prepared and processed foods I think is probably the biggest challenge." This provider mentioned that she observes many patients with jobs in fast food restaurants, which makes the task of avoiding such foods doubly difficult. Another provider related a story in which she witnessed an

overweight patient experiencing weight-related complications during her pregnancy ask her husband to get her breakfast at McDonald's. The provider felt this to be a poor, if not detrimental, nutritional choice for the patient.

The intake of fast food does not adhere to the specific nutritional guidelines imparted upon the patients by the USDA, WIC, and their providers. Their authoritative knowledge of nutrition was constantly questioned by what they viewed as their patient's very poor diets, which was taken to be neglect and lack of enthusiasm.

6.1.3 Education and Support

The providers and co-facilitators saw lack of education and the lack of external support as substantial nutritional challenges for the patients. Several providers believed that the patients simply did not have a basic understanding of nutrition, which prevented them from putting into practice many of the dietary changes that were suggested.

> Of course if a mom doesn't know what foods are nutritional she's not going to eat it. So we have to educate moms on what's good, healthy nutrition…when you're low income, nine times out of ten, you're under-educated. So under-educated moms and uneducated moms don't know any better then what's available to them from a traditional store.

This provider saw a link between socio-economic status and education, which contributed to poor dietary choices. One co-facilitator saw two factors, the lack of education and the lack of external support, as working together in a reinforcing fashion:

> So if you're not educated, you don't have access, you don't have somebody supporting you to get to another place then ignorance is all you're going to permeate in your life…So it comes to a perpetual cycle of ignorance that leads to ignorance that leads to ignorance. People say, "If you had the knowledge, you'd do better. If you knew better, you'd do better." Well having knowledge doesn't help if you don't apply it.

According to this co-facilitator, positive dietary behavior needed to be reinforced by other factors to make a change in a patient's life, otherwise it would not be sustainable. The authoritative knowledge of the providers and co-facilitators has education and class origins. Because they

have the background knowledge and live at a higher socio-economic status, there exists an inherent disconnect between them and their patients.

6.1.4 Lack of Enthusiasm

Two co-facilitators mentioned what they what they believed to be a lack of enthusiasm as an overriding prohibitive factor to optimal prenatal nutrition. This lack of enthusiasm was displayed in what these providers viewed as complacency towards their dietary health as well as the health of their fetuses. One co-facilitator explained how difficult it is to provide care to patients when such complacency is displayed, “they just kind of tell you what you want to hear. They tell you that they're eating healthy but sometimes I just really don't believe them. If they were eating healthy, they wouldn't be going through some of the things that they're going through. It's kind of hard.” Another provider indicated, especially in patients with gestational diabetes, the women did not feel motivated to follow through with nutritional guidelines. The providers and co-facilitators seemed disappointed that the patients lacked enthusiasm about something so important. The providers and co-facilitators proposed several reasons during interviews. Some proposed the patients had low expectations of themselves and others, the patients lacked trust in the health care system, and the patients had little access to nutritive foods.

As noted above, the discrepancy between what the providers and co-facilitators constituted as food insecurity and what the pregnant participants believed it to be differed greatly. To the providers and co-facilitators, participation in WIC and SNAP defined food insecurity and a lack of access to healthful choices. Most of them also thought that the origins of food insecurity were structural. They believed that these structural factors prohibited their patients from achieving nutrition according to the biomedical definition. From the perspective of

the providers and co-facilitators, patients relied more heavily on traditional and customary foods that do not adhere to the most current dietary rhetoric.

Most of the patients did not view their dietary behaviors as deeply flawed or affected by larger outside resources. They felt WIC and SNAP helped only in that it provided them with extra income. To them, their participation never meant they would go hungry without it. They demonstrated they understood which foods and meals were nutritive options and which were not, even if the food they reported eating differed from their definitions of healthy.

Such a rift between the beliefs of the patients and the beliefs of the providers and co-facilitators created a differential in trust and health care delivery and engagement. According to authors Meyer and Ward:

> A high level of trust between patients and providers: encourage patients to submit to examination and treatment, enhance the likelihood of return for follow-up care, increase patient receptiveness to health promotion counseling, facilitate disclosure by patients, enable providers to encourage necessary behavioral change, and may grant patients more autonomy in decision making about treatments (Meyer & Ward, 2008)

Trust between a patient and a provider encourages improved delivery of care and better overall health outcomes. Yet, if patients cannot trust the health care system, they cannot trust the provider. Many reasons exist as to why the expectant mothers in this research might have lacked trust in health care system, which, according to the providers and co-facilitators, manifests as lack of enthusiasm or noncompliance. O'Malley et al. (O'Malley, Sheppard, Schwartz, & Mandelblatt, 2004) assert that one reason the African American community distrusts the health care system is because of the community's history with American medical malpractices. When it comes to the discrepancies between the lived experiences of the providers versus that of the patients, Cooper-Patrick et al. (Cooper-Patrick et al., 1999) found that African American patients felt their clinic visits were less participatory than white patients, whereas patients with providers of similar race felt like they had more say in their care. The authoritative knowledge held by the

providers creates a climate of distrust and skepticism in the clinical setting for various reasons, race and class being two.

6.2 Food Desert

The proliferation of food deserts in some Western nations is an undeniable factor that shapes maternal health and nutrition. The existence of food deserts played an important role in this research. They were mentioned frequently by many of the providers and co-facilitators and represent a rapidly growing body of research. Despite the fact that none of the expectant mothers expressed concern about food deserts or felt like they were food insecure, the providers and co-facilitators stressed that they were concerned about their patients' access to nutritious foods within the local food deserts.

Food deserts, "populated urban areas where residents do not have access to an affordable and healthy diet," directly impact access to nutrient dense foods within communities around the U.S. The nation's economy was greatly affected by highly competitive big-box grocery stores in the last decades of the twentieth century. Large availability of space, low costs, and low wages became crucial for competition within the grocery store business. Large food retail outlets moved out of urban centers to find more space and to reduce costs. Urban residents who could not move to suburban areas were left with few affordable choices for healthy foods. This succession of social and economic events created the modern concept of food deserts and redefined food insecurity in the U.S. (Cummins & Macintyre, 1999).

According to the Tarrant County Public Health department, there were 11 zip codes designated as food deserts in 2013. The providers and co-facilitators were aware of the surrounding food deserts but the knowledge of which was held as authoritative, since their patients never perceived their existence. Patients cannot always obtain the expectations of

optimal nutrition behavior invented by the assumptions of food deserts and food insecurity created by the medical community.

6.3 Milk

The remainder of chapter 6 will examine three areas in which nutrition advice failed to meet the patient dietary and social needs. The topics of milk and other dairy products, Omega-3 fatty acid diet supplementation, and portion size are analyzed to illustrate the way in which the health of expectant mothers is affected by the medical community's authoritative knowledge.

Throughout the course of the interviews, there was not much discussion about consumption of milk. Since most of the participants were receiving benefits from WIC, milk should play a large role in daily diets. Twelve women mentioned that they drink milk Only two women mentioned that they loved drinking milk and made it a large part of their diet. One woman insisted that she preferred cheese to milk and forced herself to drink milk only because she knew it was good for her. Two women indicated that they were able to purchase more milk for themselves and their families with their WIC benefits.

Most women who mentioned consuming milk indicated that they enjoyed it or had no issues with digesting milk. Three women discussed not enjoying milk or feeling as though they were lactose intolerant. One of these women could digest yogurt without problems but avoided milk, "I eat yogurt, I can't drink milk by myself. It has to be with cereal…I used to drink milk…I like milk, I don't know if I'm lactose intolerant because every time, with milk, I'm going right to the restroom." Another woman discussed the trial and error she experienced trying to find a suitable dairy product she could consume, "I didn't eat dairy because cheese sometimes would make me sick. I'm not lactose intolerant, but it's just sometimes, I guess, the salt content would kind of make me sick. I ate a piece of cheese the other day, and it just totally messed my stomach

up." As discussed previously, most women listed milk in response to a question about what kinds of foods they felt offered the most important nutrients for pregnancy. I was not surprised to find that this was a common response as milk and other dairy products are foundational foods in the U.S. and are considered to contribute to optimal health for the whole population.

6.4 Omega-3 Fatty Acids

The lack of conversation around omega-3 fatty acids from providers, co-facilitators, and patients was surprising. Other essential vitamins and nutrients were widely discussed but omega-3s were never mentioned. Research into the necessity of omega-3s for pregnancy has been growing over the last couple of decades but its relative unpopularity might be to blame for the lack incorporation into local education.

Omega-3 fatty acids are vital for fetal neurodevelopment and support a higher birth weight and longer gestation, primarily the forms known as DHA and EPA (Greenberg, Bell, & Ausdal, 2008). The most widely available source of omega-3s, fish and shellfish, are highly restricted to pregnant women due to their high mercury levels. It is likely that omega-3 levels are lower during pregnancy despite the necessity for an increased intake. It has been found that low-birth weight babies have lower levels of omega-3s than full-term babies and increased intake can lengthen gestation by 6 days (Troxell et al., 2005). Low levels of omega-3s have profound effects on both the baby and the mother during pregnancy in addition to an increased risk of depressive symptoms in women who have low levels after birth (Mozurkewich et al., 2011). It is recommended that pregnant women consume an increased amount of DHA a day, which according to the FDA, can be safely achieved with 1 to 2 servings of seafood a week (Coletta et al., 2010). Overall, Americans consume less than the daily 200 to 500mg of DHA and EPA recommended by WHO (WHO; Blasbalg et al., 2011; Mayo Clinic, 2013). This should be of

larger concern to the health care community in Tarrant County since there seems to be a strong connection between preterm birth and low levels of omega-3s, as preterm birth is one of the leading causes of infant mortality in the county and the leading cause in the U.S.

6.5 Portion Size

Portion size is an important factor in a balanced diet. This is an issue that should have been addressed more in the research since balanced portions are necessary to obtain essential vitamins and nutrients without gaining more weight than necessary during pregnancy. The JPS dietician briefly addressed portion size during the second Centering sessions in which it was recommended that portions of carbohydrates do not exceed those of vegetables and protein. However, as detailed in chapter 2, portion sizes ebb and flow for those living in the "food stamp cycle" (Dinour et al., 2007; Jones & Frongillo, 2006). Towards the end of the month and the end of one's benefits, portion sizes shrink. Portion sizes grow again once a household's benefits are reinstated the following month. Food insecurity makes predicting consistent portion size difficult. Even with the JPS LD providing information about what constitutes healthy portions of carbohydrates, protein, and vegetables, some patients may not be able to adhere to those recommendations.

During the research, reported preferred foods consisted mostly of carbohydrates, such as French fries, potatoes, and macaroni and cheese, as well as meats, such as chicken, pork and beef. Carbohydrates and meats with protein and iron are necessary for balanced health but excessive amounts can be harmful. One woman indicated she usually skipped breakfast due to a lack of time, and skipped lunch because she was usually sleeping, but ate a large dinner. Eating only one large meal a day high in energy dense foods, especially dinner, can lead to unnecessary weight gain, decreased energy, and digestive issues (Latner & Schwartz, 1999; Smeets &

Westerterp-Plantenga, 2008). Understanding the factors that shape portion sizes among this population is necessary to effectively address the topic of nutrition during pregnancy.

6.6 Recommendations

Recommendations drawn from this research that would benefit participants in TNWBP Fort Worth are presented. First, participants reported that they would like to learn new recipes that they could use at home. A recipe book of fast and simple recipes could be a large component of an education module. The recipes should be made up of easily found, recognizable ingredients and prepared in healthful ways in order to demonstrate that it is possible to feel satisfied with a meal while not consuming a large number of calories. It is important that the recipes are not too unfamiliar to participants because it is likely that many would not want to try new foods in a group environment. One recognizable ingredient should be chicken breast since it was so popular among the participants. Chicken breast offers a significant amount of protein in an affordable, small serving size. Many participants mentioned healthful cooking methods for chicken and other meats, such as baking and roasting, and these should be reinforced.

Leafy greens should also be included in a class with specific intent on preparation since the nutritious elements can be cooked out quickly. Cooking oils and their fat contents should be addressed because some are better for cooking at high heats and also provide necessary fatty acids.

Many of the providers and co-facilitators stated several times that they saw a lack of variety in the diets of most of the patients. A nutrition education class should include the familiar items in the diets of the participants. The expectant mothers displayed knowledge of a large variety of fruits and vegetables. The most difficult task would be to present them in an appetizing

manner. Providing familiar recipes that combine typical and new ingredients is one way to expand upon a preexisting knowledge base.

A nutrition education class should also, clearly and concisely, present the nutrition information of the most commonly mentioned foods and dishes. Doing so would make it easy for a participant to compare the nutritional value of one vegetable with another and decide for herself whether or not it is an optimal choice. This education will be giving participants tools they can use, not only for future pregnancies, but also for their families.

This information should be presented on top of easily exhibited information about the most important vitamins and minerals for pregnancy, such as B6, calcium, carbohydrates, fiber, folate, iron, magnesium, niacin, protein, and zinc. It should be reinforced that most of these nutrients can be obtained from a variety of vegetables, like leafy greens, nuts, and whole grains, in addition to meat. An education module should also address the importance of omega fatty acids and the best sources, apart from fish. Certain types and servings of fish are allowable during pregnancy and should be built upon with accessible recipes.

Finally, portion size needs to be addressed in a nutritional education class. Portion sizes of protein, fruits, and vegetables, and carbohydrates all differ. Nutritional guides offer measurements for recommended portion sizes but many are in grams, which is not easy to visualize for many people. Visual aides, like measuring cups and spoons, would be useful when explaining portion sizes. Some of the most important dishes to educate about portion sizes would be pasta and rice, which were very popular among the expectant mothers. Too many carbohydrates can affect one’s energy levels and spike blood sugar levels.

Future research should delve deeper into exactly what participants eat. This could be determined with an in-depth 24-hour food recall or food diary. This would establish a baseline

from which to base changes in diet and nutritional behavior. A diet recall would show an excess of certain, innutritious foods, which could be strongly addressed with education.

Future research should examine the eating and meal habits of the participants. How much they eat and when they eat is important to know in order to change diet behavior. Skipping meals and portion size appear to be two issues that could be addressed among the participants. Maintaining a steady diet should, whether or not they feel it possible, make up future research and education.

6.7 Conclusion

Energy dense foods tend to be cheaper and more widely available than foods high in essential vitamins and nutrients in underserved and marginalized urban areas. The existence of food deserts precludes families from obtaining an appropriate amount of nutrient-dense foods for optimal nutritional health. Hypertension, high cholesterol, diabetes, and other diseases that are a result of being overweight or obese are the outcomes of a nutrient-poor diet. Yet, communities suffer in other ways when they lack access to vital micronutrients, such as poor birth outcomes.

The African American community of Tarrant County continues to surpass other metropolitan areas around the state in having the highest infant mortality rate in Texas. In 2011, the infant mortality rate within the African American community also surpassed the national rate of 6.06 out of 1,000 live births by more two times (FastStats:Infant Health, 2014). The leading cause of deaths for infants in Tarrant County is preterm birth, which is often a result of poor prenatal nutrition. A woman's nutritional status, not only during pregnancy but also before conception, determines the development and health of her infants for years after birth.

For the African American women and families of Tarrant County who receive governmental assistance in the form of WIC benefits, the USDA has outlined a specific guide to

optimal nutrition that must be followed. This guide, in the form of a shopping list and educational units, enforces a predetermined knowledge of what does and does not constitute ideal nutritional choices a woman must make for herself and her family. The USDA, a federal institution backed by scientific expertise and policies, has presented these choices in a form of Authoritative Knowledge to ensure the nation rises to and maintains a healthy state through complete nutrition.

According to research, some Tarrant County women find complete nutrition difficult to attain. Many factors, such as a lack of resources, a lack of time, and a lack of knowledge of what complete nutrition looks like, prohibit the consumption of nutrient dense diets for the expectant mothers. Families have strong food traditions that have developed from a long history of perseverance that cannot be easily upended. Public health interventions designed to change nutritional behavior should aim to incorporate and expand upon the knowledge and skills participants already possess to provide a sense of accessibility and capability.

The majority of the participating health care providers and co-facilitators that work in the community have little in common with the African American women that participated in the research. The providers and co-facilitators found it difficult to understand the nutritional behaviors the patients demonstrated. This lack of understanding between the two groups presents considerable obstacles that can inhibit the delivery of necessary care. The providers and co-facilitators that can unquestionably empathize with the participants still find it very difficult to reach out and help in the ways they believe are necessary. They know that prenatal nutrition is crucial for healthy birth outcomes and to thus reduce the rate of infant mortality in Tarrant County but many factors stand in the way.

Nutrition during pregnancy permeates all levels of the social-economic model. The public policies set in place by the USDA define proper nutrition for all Americans, derived from the

biomedical perspective. The entities within in the community absorb the federal guidelines and enforce these guidelines through food assistance programs like WIC and SNAP. At this level, the discussion about what is ”good” and what is “bad” nutrition takes shape. The opposition between what is considered good and bad nutrition is more deeply expressed at the institutional level. Clinical interactions between health care providers, nutritionist, co-facilitators, health educators, and pregnant patients reiterate the definitions of proper prenatal nutrition, whereas patient’s perceptions of nutrition are held as inferior at this level.

At the interpersonal level, definitions of ideal nutrition are integrated and influenced by interactions within and between formal and informal networks. The biomedical definition of nutrition at this level is affected by issues like interpersonal cultures, the norms within families and local communities, and local access to foods, transportation, and education. All of the features within the interpersonal level influence an expectant mother’s perceptions of nutrition at the intrapersonal level.

The intrapersonal level, or an individual’s own knowledge, attitudes, and beliefs, is the origin of the social-economic model and the heart of any desired change from the public health perspective. The individual feels change when the outermost layers are altered. As the social-economic model shows, the causes of disparities in nutrition and health can be found throughout the layers and do not originate solely from the individual. Any actions taken to change the dialogue around the connection between prenatal nutrition and infant mortality in Tarrant County should start at the public policy layer and work towards the intrapersonal level to fully encompass all of the layers and aspects of this issue.

REFERENCES

Abu-Saad, K., & Fraser, D. (2010). Maternal nutrition and birth outcomes. *Epidemiologic Reviews*, *32*(1), 5–25. http://doi.org/10.1093/epirev/mxq001

Chen, A., Oster, E. & Williams, H., (2014). Why is infant mortality higher in the US than in Europe? (pp. 1–34). Retrieved from http://economics.mit.edu/files/9922

ASH, A. (2013). HHS and USDA announce the appointment of the 2015 Dietary Guidelines Advisory Committee. Retrieved February 12, 2014, from http://www.hhs.gov/news/press/2013pres/05/20130531a.html

Baldwin, K. A. (2006). Comparison of selected outcomes of CenteringPregnancy versus traditional prenatal care. *The Journal of Midwifery & Women's Health*, *51*(4), 266–272. http://doi.org/10.1016/j.jmwh.2005.11.011

Barker, K. K. (1998). A ship upon a stormy sea: The medicalization of pregnancy. *Social Science & Medicine*, *47*(8), 1067–1076. http://doi.org/10.1016/S0277-9536(98)00155-5

Bell, K. M. (2012). Centering Pregnancy: Changing the system, empowering women and strengthening families. *International Journal of Childbirth Education*, *27*(1).

Bernard, H. R. (2006). *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. Rowman Altamira.

Blasbalg, T. L., Hibbeln, J. R., Ramsden, C. E., Majchrzak, S. F., & Rawlings, R. R. (2011). Changes in consumption of omega-3 and omega-6 fatty acids in the United States during the 20th century123. *The American Journal of Clinical Nutrition*, *93*(5), 950–962. http://doi.org/10.3945/ajcn.110.006643

Block, J. P., Scribner, R. A., & DeSalvo, K. B. (2004). Fast food, race/ethnicity, and income: A geographic analysis. *American Journal of Preventive Medicine*, *27*(3), 211–217. http://doi.org/10.1016/j.amepre.2004.06.007

Boney, C. M., Verma, A., Tucker, R., & Vohr, B. R. (2005). Metabolic syndrome in childhood: association with birth weight, maternal obesity, and gestational diabetes mellitus. *Pediatrics*, *115*(3), e290–296. http://doi.org/10.1542/peds.2004-1808

Brigitte Jordan. (1997). Authoritative knowledge and its construction. *Childbirth and Authoritative Knowledge: Cross-cultural Perspectives* (pp. 55–79). Berkley: University of California Press.

Browner, C. H., & Press, N. (1996). The production of authoritative knowledge in American prenatal care. *Medical Anthropology Quarterly*, *10*(2), 141–156. http://doi.org/10.1525/maq.1996.10.2.02a00030

CDC-Infant Mortality. (2014). Retrieved December 11, 2014, from http://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm

CDC - Preterm Birth-Prematurity. (2014, October 20). Retrieved December 11, 2014, from http://www.cdc.gov/reproductivehealth/MaternalInfantHealth/PretermBirth.htm

Coletta, J. M., Bell, S. J., & Roman, A. S. (2010). Omega-3 Fatty Acids and Pregnancy. *Reviews in Obstetrics and Gynecology*, *3*(4), 163–171.

Cooper-Patrick, L., Gallo, J. J., Gonzales, J. J., Thi Vu, H., Powe, N. R., Nelson, C., & Ford, D. E. (1999). Race, gender, and partnership in the patient-physician relationship. *Journal of the American Medical Association*, *282*(6), 583–589.

Cummins, S., & Macintyre, S. (2006). Food environments and obesity: Neighbourhood or nation? *International Journal of Epidemiology*, *35*(1), 100–104. http://doi.org/10.1093/ije/dyi276

Dinour, L. M., Bergen, D., & Yeh, M.-C. (2007). The food insecurity–obesity paradox: A review of the literature and the role food stamps may play. *Journal of the American Dietetic Association*, *107*(11), 1952–1961. http://doi.org/10.1016/j.jada.2007.08.006

Dirks, R. T., & Duran, N. (2001). African American dietary patterns at the beginning of the 20th century. *The Journal of Nutrition*, *131*(7), 1881–1889.

Drewnowski, A., & Specter, S. E. (2004). Poverty and obesity: the role of energy density and energy costs. *The American Journal of Clinical Nutrition*, *79*(1), 6–16.

Dubay, L. C., & Lebrun, L. A. (2012). Health, Behavior, and Health Care Disparities: Disentangling the Effects of Income and Race in the United States. *International Journal of Health Services*, *42*(4), 607–625. http://doi.org/10.2190/HS.42.4.c

Erio Ziglio. (2002). Repositing Health Promotion: Research Implications. In J. Watson & Platt, Stephen (Eds.), *Researching Health Promotion* (2nd ed., pp. 23–38). London: Routledge. Retrieved from http://healthpromotionresource.ir/uploaded_files/31606/1/researching%20health%20promotion.pdf#page=18

FastStats:Infant Health. (2014, July 14). Retrieved January 13, 2015, from http://www.cdc.gov/nchs/fastats/infant-health.htm

Fischer, M. J. (2003). The relative importance of income and race in determining residential outcomes in U.S. urban areas, 1970-2000. *Urban Affairs Review*, *38*(5), 669–696. http://doi.org/10.1177/1078087403038005003

Fowles, E. R., & Gabrielson, M. (2005). First trimester predictors of diet and birth outcomes in low-income pregnant women. *Journal of Community Health Nursing*, *22*(2), 117–130. http://doi.org/10.1207/s15327655jchn2202_5

Goldenberg, R. L., Culhane, J. F., Iams, J. D., & Romero, R. (2008). Epidemiology and causes of preterm birth. *The Lancet*, *371*(9606), 75–84. http://doi.org/10.1016/S0140-6736(08)60074-4

Greenberg, J. A., Bell, S. J., & Ausdal, W. V. (2008). Omega-3 fatty acid supplementation during pregnancy. *Reviews in Obstetrics and Gynecology*, *1*(4), 162–169.

Hennessy, M. D., Volpe, S. L., Sammel, M. D., & Gennaro, S. (2010). Skipping meals and less walking among African Americans diagnosed with preterm labor. *Journal of Nursing Scholarship*, *42*(2), 147–155. http://doi.org/10.1111/j.1547-5069.2010.01345.x

Inagami, S., Cohen, D. A., Finch, B. K., & Asch, S. M. (2006). You are where you shop: Grocery store locations, weight, and neighborhoods. *American Journal of Preventive Medicine*, *31*(1), 10–17. http://doi.org/10.1016/j.amepre.2006.03.019

Infant Mortality Summary, Tarrant County. (2011). Tarrant County Public Health.

Ingraham, C. (2014, September 29). Our infant mortality rate is a national embarrassment. *The Washington Post*. Retrieved from http://www.washingtonpost.com/blogs/wonkblog/wp/2014/09/29/our-infant-mortality-rate-is-a-national-embarrassment/

Institute of Medicine (IOM) of the Natonal Academies. (2005). *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids* (pp. 1–1357).

James, D. C. S. (2004). Factors influencing food choices, dietary intake, and nutrition-related attitudes among African Americans: application of a culturally sensitive model. *Ethnicity & Health*, *9*(4), 349–367. http://doi.org/10.1080/1355785042000285375

Jeanine Bentley. (2012, September 20). U.S. per capita availability of chicken surpasses that of beef. Retrieved December 9, 2014, from http://ageconsearch.umn.edu/bitstream/145688/2/14U.S.%20Per%20Capita%20Availability%20of%20Chicken%20Surpasses%20That%20of%20Beef.pdf

Jerome, N. W., Kandel, R. F., Pelto, G. H., & American Anthropological Association. (1980). *Nutritional anthropology: contemporary approaches to diet & culture*. Pleasantville, N.Y.: Redgrave Pub. Co.

Jones, S. J., & Frongillo, E. A. (2006). The Modifying Effects of Food Stamp Program Participation on the Relation between Food Insecurity and Weight Change in Women. *The Journal of Nutrition*, *136*(4), 1091–1094.

Kirkpatrick, S. I., Dodd, K. W., Reedy, J., & Krebs-Smith, S. M. (2012). Income and race/ethnicity are associated with adherence to food-based dietary guidance among US adults and children. *Journal of the Academy of Nutrition and Dietetics*, *112*(5), 624–635.e6. http://doi.org/10.1016/j.jand.2011.11.012

Klima, C., Norr, K., Vonderheid, S., & Handler, A. (2009). Introduction of CenteringPregnancy in a Public Health Clinic. *The Journal of Midwifery & Women's Health*, *54*(1), 27–34. http://doi.org/10.1016/j.jmwh.2008.05.008

Latner, J., & Schwartz, M. (1999). The Effects of a High-carbohydrate, High-protein or Balanced Lunch upon Later Food Intake and Hunger Ratings. *Appetite*, *33*(1), 119–128. http://doi.org/10.1006/appe.1999.0237

Liburd, L. C. (2003). Food, identity, and African-American women with type 2 diabetes: An anthropological perspective. *Diabetes Spectrum*, *16*(3), 160–165. http://doi.org/10.2337/diaspect.16.3.160

Low L. K., & Durnell Schuiling, K. (2006). Women's health from a feminist perspective. Kerri Durnell Schuiling & Frances E. Likis (Eds.), *Women's gynecologic health* (2nd ed.) (pp. 3–19). Sudbury, MA: Jones and Bartlett Press.

Lucan, S. C., Barg, F. K., & Long, J. A. (2010a). Promoters and barriers to fruit, vegetable, and fast-food consumption among urban, low-lncome African Americans: A qualitative approach. *American Journal of Public Health*, *100*(4), 631–635. http://doi.org/10.2105/AJPH.2009.172692

Lynch, E. B., & Holmes, S. (2011). Food group categories of low-income African American women. *Journal of Nutrition Education and Behavior*, *43*(3), 157–164. http://doi.org/10.1016/j.jneb.2010.02.011

Lynch, E. B., Holmes, S., Keim, K., & Koneman, S. A. (2012). Concepts of healthful food among low-income African American women. *Journal of Nutrition Education and Behavior*, *44*(2), 154–159. http://doi.org/10.1016/j.jneb.2011.04.001

Madan, J., Chen, M., Goodman, E., Davis, J., Allan, W., & Dammann, O. (2010). Maternal obesity, gestational hypertension, and preterm delivery. *The Journal of Maternal-Fetal & Neonatal Medicine: The Official Journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*, *23*(1), 82–88. http://doi.org/10.3109/14767050903258738

Manant, A., & Dodgson, J. E. (2011). CenteringPregnancy: An integrative literature review. *The Journal of Midwifery & Women's Health*, *56*(2), 94–102. http://doi.org/10.1111/j.1542-2011.2010.00021.x

Maternal, Infant, and Child Health: Morbidity and Mortality, Reduce the rate of fetal and infant deaths. (n.d.). Retrieved from http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=26

Mayo Clinic. (2013, November 1). Omega-3 fatty acids, fish oil, aplha-linolenic acid. Retrieved January 6, 2015, from http://www.mayoclinic.org/drugs-supplements/omega-3-fatty-acids-fish-oil-alpha-linolenic-acid/dosing/hrb-20059372

Meyer, S. B., & Ward, P. R. (2008). Do your patients trust you? A sociological understanding of the implications of patient mistrust in healthcare professionals. Retrieved from http://dspace.flinders.edu.au/xmlui/handle/2328/26516

Michael Matinez-Schiferl. (2012). *WIC Participants and Their Growing Need for Coverage* (pp. 1–8). Washington, D.C.: Urban Institute. Retrieved from http://www.urban.org/UploadedPDF/412549-WIC-Participants-and-Their-Growing-Need-for-Coverage.pdf

Millard, A. V., & Kingfisher, C. P. (1998). "Milk Makes Me Sick but My Body Needs It": Conflict and contradiction in the establishment of authoritative knowledge. *Medical Anthropology Quarterly*, *12*(4), 447–466. http://doi.org/10.1525/maq.1998.12.4.447

Missouri Department of Health & Senior Living. Breastfeeding. Retrieved February 23, 2014, from http://health.mo.gov/living/families/wic/foodpackages/breastfeeding.php

Morland, K., Wing, S., Diez Roux, A., & Poole, C. (2002). Neighborhood characteristics associated with the location of food stores and food service places. *American Journal of Preventive Medicine*, *22*(1), 23–29. http://doi.org/10.1016/S0749-3797(01)00403-2

Mozurkewich, E., Chilimigras, J., Klemens, C., Keeton, K., Allbaugh, L., Hamilton, S., Vahratian, A. (2011). The mothers, Omega-3 and mental health study. *BMC Pregnancy and Childbirth*, *11*(1), 46. http://doi.org/10.1186/1471-2393-11-46

My Pregnancy Plate. (2013). Retrieved March 19, 2015, from http://www.ohsu.edu/xd/health/services/women/services/pregnancy-and-childbirth/pregnancy-information/pregnancy-plate.cfm

National Nutrient Database for Standard Reference, Release 27. Retrieved October 12, 2014, from http://ndb.nal.usda.gov/ndb/

Neff, R. A., Palmer, A. M., McKenzie, S. E., & Lawrence, R. S. (2009). Food systems and public health disparities. *Journal of Hunger & Environmental Nutrition*, *4*(3-4), 282–314. http://doi.org/10.1080/19320240903337041

Nutrition. (2014). Retrieved December 31, 2014, from http://www.who.int/topics/nutrition/en/

Olson, C. (2005). Food insecurity in women: A recipe for unhealthy trade‐offs: Topics in clinical nutrition. *Topics in Clinical Nutrition*, *20*(4), 321–328.

O'Malley, A. S., Sheppard, V. B., Schwartz, M., & Mandelblatt, J. (2004). The role of trust in use of preventive services among low-income African-American women. *Preventive Medicine*, *38*(6), 777–785. http://doi.org/10.1016/j.ypmed.2004.01.018

Pelto, G. H. (1987). Cultural issues in maternal and child health and nutrition. *Social Science & Medicine*, *25*(6), 553–559. http://doi.org/10.1016/0277-9536(87)90079-7

Powell, L. M., Chaloupka, F. J., & Bao, Y. (2007). The Availability of Fast-Food and Full-Service Restaurants in the United States: Associations with Neighborhood Characteristics. *American Journal of Preventive Medicine*, *33*(4, Supplement), S240–S245. http://doi.org/10.1016/j.amepre.2007.07.005

Quinla, J. D., & Hill, D. A. (2003). Nausea and vomiting of pregnancy. *American Family Physician*, *68*(1), 121–128.

Reid, J. (2007). CenteringPregnancy: A model for group prenatal care. *Nursing for Women's Health*, *11*(4), 382–388. http://doi.org/10.1111/j.1751-486X.2007.00194.x

Rising, S. S. (1998). CenteringPregnancy: An interdisciplinary model of empowerment. *Journal of Nurse-Midwifery*, *43*(1), 46–54. http://doi.org/10.1016/S0091-2182(97)00117-1

Rosenberg, T. J., Garbers, S., Lipkind, H., & Chiasson, M. A. (2005). Maternal obesity and diabetes as risk factors for adverse pregnancy outcomes: differences among 4 racial/ethnic groups. *Journal Information*, *95*(9). Retrieved from http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2005.065680

Scheper-Hughes, N., & Lock, M. M. (1987). The mindful body: A Prolegomenon to future work in medical anthropology. *Medical Anthropology Quarterly*, *1*(1), 6–41. http://doi.org/10.1525/maq.1987.1.1.02a00020

Shakespear, K., Waite, P. J., & Gast, J. (2010). A comparison of health behaviors of women in CenteringPregnancy and traditional prenatal care. *Maternal and Child Health Journal*, *14*(2), 202–208. http://doi.org/10.1007/s10995-009-0448-3

Singer, M., & Baer, H. A. (2007). *Introducing Medical Anthropology: A Discipline in Action*. Rowman Altamira.

Smeets, A. J., & Westerterp-Plantenga, M. S. (2008). Acute effects on metabolism and appetite profile of one meal difference in the lower range of meal frequency. *British Journal of Nutrition*, *99*(06), 1316–1321. http://doi.org/10.1017/S0007114507877646

Starfield, B., Shapiro, S., Weiss, J., Liang, K. Y., Ra, K., Paige, D., & Wang, X. (1991). Race, family, income, and low birth weight. *American Journal of Epidemiology*, *134*(10), 1167–1174.

Starr, P. (1982). *The Social Transformation of American Medicine*. Basic Books.

State & County QuickFacts. (2015, February 5). Retrieved February 5, 2015, from http://quickfacts.census.gov/qfd/states/48/48439.html

State Health Facts: Infant Mortality Rate (Deaths per 1,000 Live Births). (2014). Retrieved from http://kff.org/other/state-indicator/infant-death-rate/

Steven Cummins, & Sally Macintyre. (1999). The location of food stores in urban areas: a case study in Glasgow. *British Food Journal*, *101*(7), 545–553. http://doi.org/10.1108/00070709910279027

Tarrant County, Texas. (2015, February 5). Retrieved February 24, 2015, from http://quickfacts.census.gov/qfd/states/48/48439.html

Texas Department of State Health Services. (2012). WIC food packages. Retrieved February 23, 2014, from http://www.dshs.state.tx.us/wichd/approved_foods/ap_home.shtm

T.J. Mathews, & Marian F. MacDorman. (2013). Infant mortality statistics from the 2010 period linked birth/infant death data set. *National Vital Statistics Report*, *62*(8), 1–26.

Townsend, M. S., Peerson, J., Love, B., Achterberg, C., & Murphy, S. P. (2001). Food insecurity is positively related to overweight in women. *The Journal of Nutrition*, *131*(6), 1738–1745.

Troxell, H., Anderson, J., Auld, G., Marx, N., Harris, M., Reece, M., & Allen, K. (2005). Omega-3 for baby and me: Material development for a WIC intervention to increase DHA intake during pregnancy. *Maternal and Child Health Journal*, *9*(2), 189–197. http://doi.org/10.1007/s10995-005-4908-0

US Census Bureau 2010 Census Interactive Population Map. Retrieved February 24, 2015, from http://www.census.gov/2010census/popmap/

U.S. Department of Agriculture. Bananas and apples remain American's favorite fresh fruits. (2012, August 27). Retrieved December 9, 2014, from http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=30486

U.S. Department of Agriculture. Dietary Guidelines 2010, Selected Messages for Consumers. (2011, June). U.S. Department of Agriculture. Retrieved from http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/SelectedMessages.pdf

U.S. Department of Agriculture. Questions and Answers on the 2010 Dietary Guidelines for Americans. U.S. Department of Agriculture. Retrieved from http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/PolicyDoc/QandA.pdf

U.S. Department of Agriculture. 2010 Dietary Guidelines for Americans, Backgrounder: History and Process. U.S. Department of Agriculture. Retrieved from http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/PolicyDoc/Backgrounder.pdf

US Department of Agriculture. Background: Revisions to the WIC Food Package. Retrieved February 18, 2014, from http://www.fns.usda.gov/wic/background-revisions-wic-food-package

Victor Oliveira, Elizabeth Racine, Jennifer Olmsted, & Linda M. Ghelfi. (2002). *The WIC Program: Background, Trends, and Issues* (Economic Research Service No. 27) (pp. 1–40). Washington, D.C.: USDA. Retrieved from http://www.ers.usda.gov/publications/fanrr-food-assistance-nutrition-research-program/fanrr27.aspx#.UwODsnmd00o

Wansink, B., & Kranz, S. (2013). Who's Using MyPlate? *Journal of Nutrition Education and Behavior*, *45*(6), 728–732. http://doi.org/10.1016/j.jneb.2013.03.009

What is Energy Density? (2015). Retrieved March 15, 2015, from http://www.nutrition.org.uk/healthyliving/fuller/what-is-energy-density.html

World Health Organization. Population nutrient intake goals for preventing diet-related chronic diseases. Retrieved January 6, 2015, from http://www.who.int/nutrition/topics/5_population_nutrient/en/index13.html

Zhang, Q., & Wang, Y. (2012). Socioeconomic and Racial/Ethnic Disparity in Americans' Adherence to Federal Dietary Recommendations. *Journal of the Academy of Nutrition and Dietetics*, *112*(5), 614–616. http://doi.org/10.1016/j.jand.2012.02.008