

PREGNANCY-RELATED NUTRITIONAL BELIEFS, KNOWLEDGE, AND  
CULTURAL PRACTICES AMONG KENYAN IMMIGRANT WOMEN  
LIVING IN TENNESSEE

By

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As sociologist Claude Fischler posits, “Food not only nourishes but also signifies” (1988:276). Similarly, British literary theorist, Terry Eagleton argued that “[it] is never just food—it is endlessly interpretable—materialized emotion.” (1998:204). I was drawn to this research project after getting an admission to Middle Tennessee State University and wondered how and what do pregnant immigrant women eat, especially in a foreign country and especially those women who migrate to foreign countries when they are adults and cultural practices are already ingrained in them.

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## ABSTRACT

With the rise of immigrants in the United States, maternal health has remained a major concern to the public health sector. As these immigrant patterns continue, it is worth understanding the nutritional beliefs and cultural practices among pregnant immigrant women in the United States. Relying on a sample of 10 immigrant women from Kenya aged between 24–40 and who have lived in Tennessee for a minimum of two years, I explored their traditional nutritional beliefs and cultural practices during pregnancy. Using a semi-structured interview guide, I examined key areas which include: foods that are avoided during pregnancy, foods that are recommended during pregnancy, and the reasons/ motivations behind increasing some foods while avoiding certain foods. Using the Health Belief Model (HBM) as the conceptual framework to interpret the qualitative data, I found that Kenyan immigrant women living in Tennessee know and subscribe to many Kenyan nutritional beliefs and food-related cultural practices during their pregnancy in the United States. Kenyan pregnant immigrant women subscribe to these nutritional beliefs for promotion and protection of the well-being of the mother and the baby.

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## CHAPTER I: BACKGROUND

Improving maternal health is a top public health goal (United Nations 2005). Reports show that roughly 810 women die daily across the globe due to childbearing and pregnancy-related issues (World Health Organization 2019). Most of these women are from low-income countries, especially Sub-Saharan Africa (Kenya included). Several studies show that poor maternal diet increases the risk of newborn deaths, birth defects, low birth weights, and premature births (Barker et al. 2006; Black et al. 2008; Black et al. 2013).

Interestingly, similar trends of maternal mortality and adverse pregnancy outcomes such as stillbirth, cesarean section, and preterm birth delivery have been observed in developed countries among the immigrant population (Malin and Gissler 2009). According to a report from Bradby et al. (2015), most migrants experience poor health compared to the host population due to unique health challenges. For example, they oftentimes cannot access health care services during and after the pregnancy period, which may endanger the life of the mother and the baby (United Nation High Commission for Refugees [UNHCR] 2015). Most immigrants experience poor health, while others have better health (D'Souza, Jayaweera and Pickett 2016). These disparate outcomes are well known. Factors such as income level, social support, language barrier, and pre-immigration health status help explain these differences. Traditional pregnancy nutritional beliefs, however, have not been adequately put into consideration.

A report from United Nations International Children's Emergency Fund (2008) highlights cultural beliefs and practices as factors that may increase the risk of malnutrition. However, these cultural beliefs are intended to have positive effects on

people practicing, including maintaining societal norms, social cohesion, promoting health, and reducing the risk of complicated labor and deliveries. Therefore, immigrant women from these low-income countries practice their traditional pregnancy beliefs in foreign countries with the intended purpose of promoting health and protecting the baby and the mother (Ahlqvist and Wirfält 2000; Garnweidner 2013). Besides, these practices are deeply rooted in their culture and are passed to other generations (Satia 2010). Yeasmin and Regmi (2013) assert that upon arrival into their host countries, immigrant British Bangladeshi women continued with their pregnancy beliefs even after living in Britain for more than ten years.

Yeasmin and Regmi (2013) and Chakrabarti (2010) are among the researchers who focused on pregnancy, cultural practices, and nutritional beliefs among immigrants. They noted that immigrants carry with them their traditional pregnancy beliefs and continue with traditional cultural practices in their host countries. This clearly shows that these beliefs exist among immigrants. However, it is unclear if pregnant Kenyan immigrants have traditional nutritional beliefs and if they are practiced after immigrating to the United States. So, to address these shortcomings, I explored the following research questions: 1) what are the nutritional beliefs and cultural practices among pregnant Kenyan immigrant women living in Tennessee? And 2) what are their reasons or motivations for these practices?

## CHAPTER II: LITERATURE REVIEW

Several studies have examined pregnancy and traditional nutritional beliefs and practices among immigrant women in foreign countries. General findings show that immigrant women continue with their traditional pregnancy nutritional beliefs in their host countries. To bring this into context, D'Souza, Jayaweera and Picket (2016)

posit that immigrant women from Asia, Africa, Latin America, and Middle East countries adjusted their dietary practices during pregnancy. These practices are embedded in their culture and are passed to the next generation. To demonstrate the existence of nutritional pregnancy beliefs among immigrant women in foreign countries, a study of women from Iran living in Sweden revealed that pregnant women reduced their food portions during pregnancy and restricted high carbohydrates diet weeks nearing the delivery date. The purpose was to reduce the weight of the fetus, thus minimizing the chances of giving birth to big babies. Giving birth to a big baby was linked to a higher risk of complications such as caesarian delivery, death of the baby and the mother during delivery (Ahlqvist and Wirfält 2000). Immigrant women with high-risk pregnancies in Canada as well knew and held dietary beliefs within their community. Pregnant women ate home-cooked fresh meals coupled with drinking a lot of fluids. The women ate most of the meals with butter in order to soften the cervix and facilitate easier delivery (Higginbottom et al. 2014). Additionally, consumption of specific foods, such as apples and dairy, was believed to improve the skin of the baby (Higginbottom et al. 2014).

Ahlqvist and Wirfält (2000) similarly found that maternal food practices were salient in determining the skin complexion of the baby. The Iranian women believed that a light-skinned baby was healthy and preferred in their community. Likewise, Yeasmin and Regmi (2013) noted that drinking juice and /or eating fruits makes the baby's skin soft and good looking according to British Bangladeshi women. In order to give birth to a light-skinned and intelligent baby, pregnant women are encouraged to eat fish in plenty, which contains phosphorous. Sour foods, such as cherries, were

also recommended to cleanse the mother's blood. It is thought that unclean blood was believed to affect the baby's growth (Higginbottom et al. 2014).

The idea of maintaining womb balance was also a common practice among immigrants. According to Vietnamese living in Australia, a pregnant woman was recommended to eat 'hot' foods like pepper and refrain from consuming 'cold' foods like fruits especially during the first trimester. For the second trimester, a pregnant woman was allowed to eat all foods. During the last trimester, she has to reduce her food portions (Mitchell and Mackerras 1995). Similarly, Higginbottom et al. (2014) noted that pregnancy was considered a hot period and cold foods were consumed, to create balance in the womb.

To demonstrate further the continuity of traditional food practices, Lindsay, Gibney, and McAuliffe (2012) found that some pregnant women who migrated from Africa chose not to consume a Western diet for fear of risking becoming obese during pregnancy. While some women continue with their traditional practices, others choose to blend them both. According to Ngongalah et al. (2018), women from Sub-Saharan Africa, who migrated from low-income countries (i.e. Kenya); to high-income countries (i.e. Canada) tend to apply Western nutrition practices while sticking to their African cultural practices. The above discussions show that immigrant women have and still hold most of the pregnancy beliefs in host countries.

#### *Motivations to Adhere to Nutritional Beliefs among Immigrants*

Nutritional beliefs during pregnancy were followed by immigrants, mainly to achieve positive pregnancy outcomes. Iranian women believed that giving birth to a small child increases the survival chances of both the baby and the mother. Pregnant

women adjusted their eating habits, e.g., avoiding foods rich in carbohydrates weeks nearing delivery date. A small baby was preferred for an easy vaginal birth (Ahlqvist and Wirfält 2000). Similarly, the South Asian immigrant women living in Australia adjusted their diets during pregnancy to ensure the unborn child and themselves are in good health. Of the most 'importance' to them was to have a healthy baby and also to live long lives (Bandyopadhyay et al. 2011). Immigrant women living in Canada with high-risk pregnancies as well consumed 'good' food, or rather recommended food which includes vegetables and fruits and they avoided 'bad' food e.g. fatty and oily foods to stay healthy. They believed that consumption of fatty and oily foods during pregnancy will result in higher weight gain hence giving birth to obese babies which will further bring complications e.g. c-section delivery or death (Higginbottom et al. 2014). Conversely, some other immigrant women saw the importance of increasing food portions since they were eating for both the baby and the mother (Bandyopadhyay et al. 2011). Yeasmin and Regmi (2013) noted that good and bad food beliefs were known and practiced among British Bangladeshi immigrants. 'Good' food, such as vegetables, milk, and fruits, were considered nutritious and safe for mother's consumption. On the other hand, there was also 'bad' food to be avoided; one example, pineapple, was considered unsafe for both the baby and the mother.

Most immigrant women highlighted the importance of relatives and friends in practicing appropriate dietary behaviors during pregnancy. Apart from receiving help from relatives and spouses in doing home chores such as cleaning and cooking, first-time mothers also received emotional support, including encouragement, from older women (Higginbottom et al. 2014). Other women received advice from their families in their home country on proper dietary practices through cell phones and Skype

(Higginbottom et al. 2014). Chakrabarti (2010) similarly noted that new arrival immigrants from Bengali were hosted by families and friends from their home countries who helped them navigate around the city until they settled. Newly arrival Bengali immigrant women narrated how living with other Bengali women in the same apartments, attending the same mosque, and working together in the same city was of great importance since they could interact and help each other where necessary. Such informal interactions among the Bengali immigrants at work and other various places provided opportunities to learn ideas regarding eating healthy foods and exercising for good mental health. Also, through interactions, individuals shared knowledge and heeded the advice on how to take care of themselves especially during pregnancy.

Bengali women also stated that during their stay in New York City, they kept in close contact with their relatives back home. One woman explained how she communicated with her family regularly since the calling rates for international calls were low (Chakrabarti 2010). Through such communications, she was guided on proper dietary practices such as what to eat and what to avoid during pregnancy. She further explained how her mother's voice was therapeutic and helped in coping with pregnancy. Other than advice on eating healthy during pregnancy, pregnant Bengali immigrant women acknowledged that they received gifts, e.g. foodstuffs, from their family members back home which made them feel special and loved. Besides, in-laws came to the United States before the delivery date so that they could help the mother of a newborn in daily home chores such as cleaning, taking care of the baby, and cooking traditional Bengali foods (Chakrabarti 2010). Yeasmin and Regmi (2013) as well noted that most British Bangladeshi immigrant women lived with their relatives in the same household where everybody was expected to show respect to men. Also,

decisions made were in line with cultural beliefs set by the male. It became a norm that every member of the family adhered to the cultural practices including nutritional beliefs regardless of the individual's status in the society. Each family member will likely adopt the same morals especially the children when they grow up.

Other than receiving proper dietary advice from family members, immigrant women acknowledged that health care practitioners were also very important sources of nutritional knowledge during pregnancy. During prenatal visits, immigrant women living in Canada with high-risk pregnancies heeded dietary knowledge from health care practitioners. Some women explained how their doctors told them to avoid foods (e.g. chicken wings) on the hot sauce because it was not good for the baby. Food (e.g. rice) was recommended by the doctor and that is what she ate during pregnancy (Higginbottom et al. 2014). Similarly, Yeasmin and Regmi (2013) found that British Bangladeshi women relied on medical doctors for guidance on proper dietary practices during pregnancy. Sweets and sugary foods were discouraged by doctors to balance glucose levels in the body. Other women also avoided sugary food to minimize the risk of gestational diabetes. Chakrabarti (2010) likewise noted that apart from the support pregnant women received from family members, they were also advised to consult with their doctors in New York City for guidance during the pregnancy period. This shows the importance of biomedical knowledge during pregnancy.

Household income also influenced food access and food choices among immigrant women (Ahlqvist and Wirfält 2000). According to Black et al. (2011), healthy food was expensive especially for individuals with low-income. This could likely hinder individuals from eating healthy food and/or practicing healthy behaviors.

This resonates with De Irala-Estevez et al. (2000), who asserts that households that have higher incomes have better chances of enjoying different diets. The main reason for this is that higher income is associated with increased purchasing power, which can help promote diverse diets. Unlike higher-income people, low-income families are more likely to consume unbalanced diet foods, with a low intake of vegetables and fruits. However, high income does not necessarily guarantee a better-quality diet, but the type of foods an individual can choose from increases.

### *Theoretical Framework*

Study results were interpreted and conceptualized using the Health Belief Model (HBM). The Health Belief Model (HBM) is a commonly used public health model that emphasizes personal beliefs and attitudes in the adoption of a healthy-related practice and explains why individuals adjust their diets to maintain health-related behaviors (Rosenstock 1974). According to HBM, healthy behavior is an individual's perception or belief about a health condition and available coping mechanisms to reduce the risk. Furthermore, the HBM states that the following factors affect an individual's decision: individuals must believe that they are likely to be affected by a health problem (susceptibility), the problem is posing threats to their health (severity), implementing coping mechanisms will reduce the risk (benefit), and no barrier will prevent implementation of these coping mechanisms (barrier) (Rosenstock 1974; Sari 2018). In turn, the HBM model states that the above four factors are affected by cues to action. HBM cues to action are occurrences and experiences that motivate an individual to adopt a certain health behavior. Some of the motivators include peer support, access to knowledge about the risk, contact with

others who have gone through the same experiences and advice from professionals such as health care practitioners (Tarkang and Zotor 2015).

Applying the HBM to the issue of pregnant women and nutritional beliefs, they are likely to continue with their traditional dietary beliefs and practices and/or seek medical advice if they perceive that the consequences of not adhering to them are serious. If a pregnant woman perceives that she is at a higher risk of developing a disease such as gestational diabetes, obesity, or not having a safe delivery, due to complications during pregnancy, she will execute recommended dietary practices to reduce the risk. Lastly, if the woman perceives that she will gain positive returns such as positive pregnancy outcomes, she will most likely follow the recommended dietary practices.

### CHAPTER III: RESEARCH METHODS

#### *Recruitment of the Participants*

After receiving expedited approval from the Institutional Review Board on May 5, 2020, at Middle Tennessee State University (Appendix A), I relied on convenience and snowball sampling methods to recruit participants within my local network of Kenyan women (Polit and Beck 2008). Besides, I am a Kenyan-born woman currently residing in Tennessee. I have lived in Murfreesboro for two years, closely connected to the Tennessee-based Kenyan immigrant community. I am also a woman of reproductive age which made it easier to recruit my participants. Through my established local network, ten women participated in the study.

### *Participants*

The participants provided their demographic information (see Table 1) related to age, marital status, number of times they have been pregnant, the highest level of education, current occupation, ethnic groups, and approximate annual household income. A total of ten women of Kenyan descent who are currently living in Tennessee participated in the interview which was conducted via cell phone. All the women have lived in the United States for at least two years. All participants became pregnant in the United States with at least one child, and the highest number was three children. Data on age distribution showed that the lowest age recorded from participants was 24 years and the highest being 40 years of age. In terms of their marital status, seven were married; two were cohabiting, while one was divorced. Two respondents had completed a high school level of education, seven had earned bachelors' degrees, and only one had a post-bachelor level of qualifications. In terms of their occupations, the following occupations were reported: a teacher, a housewife, a public health officer, a social worker, a nursing student, a graduate student, two Certified Nursing Assistants, and a nurse. Concerning estimated household income (inclusive of those with husbands), two women earned greater than \$50,000, three earned between \$40,001–50,000, one earned between \$30,001–40,000, two earned between \$20,001–30,000, one earned between \$10,001–20,000 while one reported earnings were below \$10,000. When asked to indicate their ethnic identity, two were from the Kalenjin tribe, three from the Luo tribe, two from the Kikuyu tribe, two from the Luhya tribe, and one from the Meru tribe. This formed a representation of the major tribes from Kenya that form more than 50% of the whole population. I maximized on diversity across ethnic identity and age to explore cultural differences.

Several studies have been done to understand pregnancy experiences among women of color in comparison to white women (Alhussen et al. 2016; MacLemore et al. 2018). However, learning about Black women's health should not focus on the ways their behavior and context deviate from whiteness. In fact, after decades of these studies, adverse pregnancy results have persisted among women of color, and thus, the decision was made to study exclusively women of color, specifically Kenyan immigrant women. This focus helps to elucidate commonly shared immigration experiences and to understand great diversity among immigrant community based on ethnic group, social class, status, educational level (Kioko 2010) which might shape pregnancy experiences.

Most recent available data (2009-2013) suggests approximately 102,000 Kenyan immigrants reside in the U.S. (Migration Policy Institute 2015). Kenyan immigrants in the United States are more formally educated than the general U.S. population. For example, 30% of Kenyan immigrants in the U.S. have a bachelor's degree and 16% having post-bachelor's degree compared to the general population in the USA, which has approximately 20% and 11% people with bachelor's and post-bachelor's degrees respectively (MPI 2015). Furthermore, 93% of Kenyan immigrant population are in the labor force in comparison to 80% of the United States population. Most Kenyan immigrants are employed in the following five fields: engineering, law, academia, science, and health care. Kenyan immigrant households were more likely to earn higher income than general US population with 31% earning over \$90,000 while 13% earned over \$140,000 per annum (MPI 2015). The above offers context to the socio-economic status of Kenyan immigrants in United States in comparison to the U.S. general population.

### *Data Collection and Analysis*

The demographic data gathered from participants can be found in Appendix B. Additionally, I used a semi-structured, open-ended interview guide shown in Appendix C to collect data. Semi-structured interviews enable the researcher to identify and understand the motivations of nutritional beliefs while allowing respondents to express themselves freely (Horton, Marcve and Struyven 2004). The participants understand and speak Swahili as their first language. However, I interviewed them using the English language. Before interviewing each participant, I sought oral consent. The interviews were conducted via cell phone and digitally recorded. I then transcribed the interviews and analyzed for major themes. All interviews were conducted between June and September 2020, which lasted between 25 to 50 minutes. All participants completed the interviews and no monetary incentives were provided. Participants were asked about foods that should be avoided and foods that are advised or recommended during pregnancy, motivations to adhere to nutritional beliefs, and who advised them on proper nutritional beliefs during pregnancy. They were also asked about their food sources, how often they ate during pregnancy, and if these dietary practices help the baby and the mother be well during and after pregnancy.

After transcribing all the interviews, I reviewed interview transcripts repeatedly and carefully, examining line by line to identify significant statements (Patton 1990). The transcribed interviews were then coded. Initial coding was done to identify patterns. The codes were then analyzed further to identify emerging themes from the study. Pseudonyms were used to identify my participants to ensure the confidentiality of their information. The themes that emerged during the study are as

follows: foods that are avoided during pregnancy, foods that are increased or recommended during pregnancy, pregnancy experiences, and the role of health education during pregnancy.

## CHAPTER IV: RESULTS

Participants mentioned specific reasons why certain foods are to be avoided while others are recommended to consume during pregnancy. Participants reported learning of these nutritional beliefs from their mothers, mothers-in-law, women who have had past pregnancy experiences, and healthcare practitioners. Presented below are the foods avoided and foods that are increased and recommended during pregnancy (See Tables 2 and 3).

### *Foods that are Avoided during Pregnancy*

Several foods that are to be avoided during pregnancy and the reasons for avoidance were identified in the study. These foods include eggs, oily, and fatty foods, coffee, sugary foods, and seafood.

Eggs were mentioned by a few of participants as a food that is avoided during pregnancy. Out of ten women interviewed, four stated that eggs should not be eaten during pregnancy. Three women reported learning this information from family members and one reported hearing of it when she was in Kenya:

“When I told my mother I am pregnant, she advised me not to eat eggs at all... she said eggs have cholesterol... I don't know.... but I did not eat eggs during my pregnancy period as by my mother's advice, she said it can bring complications and the baby can easily die.” (Jackie)

Similarly, Esther stated, “Eggs is believed that when eaten during pregnancy it will make the fetus grow big you will experience difficulties when you are pushing the baby.” While Jackie and Esther reported avoiding eggs entirely during pregnancy,

Alekwa consumed eggs after the second trimester but avoided the yolk because it is believed to aid in gaining weight by the mother, which is likely to increase the weight of the baby. She states “Eggs, especially the yolk, contribute to weight gain according to my mother-in-law. She said I can eat [eggs] after the first six months when the baby is not experiencing rapid growth in the womb.” Betty also echoed Alekwa’s sentiments, stating, “I heard when I was in Kenya that women are not supposed to eat eggs when pregnant because the eggs make the baby grow big which can bring complications during labor.”

Fatty and oily foods such as fatty meat, fried chicken, and French fries were mentioned as the foods that are discouraged during pregnancy. Four out of ten participants communicated that oily foods could lead to weight gain and also lead to risks like high blood pressure and/or gestational diabetes to the mother and Down syndrome to the baby. Phyllis noted:

“Fatty foods like fried chicken and fries were some of the foods that I avoided because I didn’t want to gain weight and have a big baby which might lead to high blood pressure; my mother said if I have to eat, I should eat really small [portions]. Also, when I was growing up in Kenya, pregnant women were restricted to such fatty foods because they believe that gaining weight means the baby becomes big too, you see... so they wanted to protect the mother and the unborn baby from risks that may occur during the labor process. These risks like not able to push the baby.”

Carol mirrored this response stating, “In my community, we believe that when you eat sugary and fatty foods when pregnant, you might have a baby with drooling saliva and down syndrome baby respectively.”

While Phyllis and Carol learned about reducing oily foods when they were in Kenya, Sera and Alekwa mentioned that they learned to reduce fried food during their prenatal appointments. Sera said, “I learned from here to reduce fried foods since my

blood pressure was high. In Kenya, we don't eat fried foods mostly, especially in rural areas." Similarly, Alekwa stated: "I saw it wise to cut it off when I was pregnant because she told me too much oil and coffee can increase blood pressure."

Coffee and tea were reported by three participants as foods consumed mainly for breakfast in Kenya. They contain caffeine which is a commonly consumed stimulant in the general population. Participants attributed the avoidance of coffee to advice from their doctors in the United States. Caffeine is a stimulant that is believed to not only increase the blood pressure and heart rate of the mother during pregnancy but also change the baby's sleep pattern and/or movement in the later stages of pregnancy. Sera states: "Caffeine is not good for babies and I think it wasn't good for my high blood pressure as well." Jackie and Alekwa, as well, communicated that caffeine can cause complications such as stillbirth and miscarriages which may risk the life of the baby and the mother, that is why they decided to cut it off for the entire period even if their doctors advised them only to reduce their coffee intake. Jackie reports: "Coffee contains caffeine.... It's like alcohol which can lead to stillbirth and miscarriages. You know, my doctor told me to reduce coffee, but I had to quit coffee completely." Alekwa also supports Jackie's sentiments by reporting that too much coffee can lead to increased blood pressure during pregnancy period and she states: "I love coffee so much and my doctor told me to cut off or drink little coffee. I saw it wise to cut it off when I was pregnant because he said too much coffee can increase my blood pressure."

Sugary foods were mentioned by two participants as items that they avoided during pregnancy. High consumption of sugary food tends to contribute to higher pregnancy weight gain, development of gestational diabetes, increase risk of pre-

eclampsia, and giving birth to obese children. Mercy reports “I also avoided foods with sugars... I was already hypertensive and eating more carbohydrates during pregnancy would have caused induced diabetes.” Mercy acquired this information through personal research.

Other foods that were avoided during pregnancy include seafood generally. Out of ten, two participants who grew up from the Lake region in Kenya reported not eating crab and shrimp during pregnancy. It is believed that undercooked crab and shrimp contain mercury which may delay the development of the brain system of the baby. Mercy mentioned that “...a lot of seafood like crab and shrimp is what I avoided during pregnancy because our mothers told us back at home that is not good during pregnancy.” Fish is recommended during pregnancy but certain types of fish such as tuna, mackerel, and sushi are believed to contain chemicals/minerals which can cause malfunctioning of the baby’s brain. Betty states: “...tuna fish and sushi contains mercury ... not recommended.” Mercy as well states, “Tuna and mackerel contain mercury which affects the brain of the baby.”

Avocado was mentioned by one participant as one of the fruits that are restricted during pregnancy. Since it is a fatty fruit, eating avocado is adding more fats to the body which will make one gain weight. Ann discussed:

“Avocado is fatty fruit. My grandma in Kenya was telling us you are a girl and no need of adding more fats to the body because you will gain weight which is not okay. (Laughs) Although medics recommend eating fruits generally, I could not change my mind from what I heard from my grandma since I was little; I never ate an avocado during my pregnancy.”

*Foods that are Increased/Recommended during Pregnancy*

Participants referenced several foods that were recommended and thus they increased their consumption during pregnancy. These foods include vegetables, fruits, liver, meat, water, and ugali.

Vegetables were mentioned by eight out of ten participants as the major food that was encouraged or increased during pregnancy. The most common vegetables mentioned by participants include spinach, kale, collard greens, and dried traditional vegetables. It is believed that vegetables contain fiber. Participants reported to have consumed many of these vegetables and learned about increasing the number of vegetables eaten by health care practitioners and their family members. Mercy reported learning from her mother to increase vegetables during pregnancy. She reported: "...I ate a lot of greens. Vegetables are the source of vitamins." Jackie and Carol reported learning of this information from their doctors. Carol reported:

"...vegetables in plenty is what I ate... health workers ...told me to eat collard greens and spinach to increase my blood level. Vegetables generally are vitamins and have a good impact because they are nutritious and help in the growth of the baby."

Jackie also reported that she had iron deficiency even before becoming pregnant; so, when she was pregnant her doctor advised her to eat a lot of vegetables. She stated: "I had an iron deficiency in my body. So, when I became pregnant my doctor tested my iron level and she advised me to take vegetables in plenty."

While Jackie and Carol reported learning from their doctors to increase vegetables, six other women learned from their family members in Kenya. Also, various reasons for increasing vegetables were mentioned by these participants. Phyllis and Jackie believed that eating vegetables during pregnancy helps to improve

iron levels in the body. Phyllis stated, “Eating vegetables and especially spinach and traditional vegetables help increase the blood level of anemic women during pregnancy.” Esther, as well, stated that vegetables, especially traditional ones, helps in increasing blood in the body during pregnancy. Sera and Betty mentioned consuming dried traditional vegetables that were brought to them from Kenya. Sera requested dried vegetables from a friend in Ohio to curb her cravings: “I craved for traditional vegetables and I had to ask another Kenyan friend in Ohio, and she sent me the ones she brought from Kenya.” On the same note, Betty consumed the vegetables that her sister-in-law brought when she visited the U.S. “Thank God to my sister-in-law who visited and brought to us dried vegetables and other foodstuffs from home.” Ann reported getting dried traditional vegetables from a local international market while others dried them in Kenya and brought them to the USA. On a similar note, Phyllis reported bringing the seeds and planting them in her garden during the summer so she could continue, and she stated:

“I grew up with my grandmother who always cooked traditional vegetables and now that am an adult it is so hard...not to eat the vegetables. When I visited Kenya, I brought vegetable seeds and corn seeds as well. I plant them in my garden... we harvested a lot of vegetables last summer. We pluck them fresh, pre-boil, and store in refrigerators... my husband and I eat them a lot.”

Participants also reported eating a variety of fruits during pregnancy. Fruits like oranges, mangos, kiwis, apples, lemons, and others were frequently mentioned by participants. Fruits were stated to contain fiber and nutrients which helps in the growth of the baby. Other various reasons for fruit consumption were mentioned by participants. Alekwa reported that eating fruits for aesthetic effect on the baby. “My mother-in-law told me to eat fruits, especially oranges, in plenty because it makes the baby’s skin soft.” Ann also stated that fruits are sources of vitamins generally, but specific fruits such as lemons help to curb morning sickness too. She states, “Fruits

like oranges and apples are generally recommended during pregnancy because it is a source of vitamins. My sister advised me to eat lemons or oranges whenever I experienced nausea.” Jackie, as well, reiterated that fruits are recommended for everyone because it is a source of vitamins. She reported: “...fruits and vegetables in plenty, fruits in general like oranges and apples are recommended for everyone by health workers because they are sources of vitamins.”

Liver and red meat are among the foods that were to be increased during pregnancy. It is believed that liver and red meat contain iron that helps in reducing the risk of anemia and keeps the blood of the mother healthy. Other than that, it boosts the fetus’ neurological development and provides a good source of proteins that help in the growth of the fetus. One participant mentioned eating liver and red meat as advised by her doctor. Sera reported: “I was advised by my doctor to eat red meat and liver because I was low in iron.”

Nearly all participants mentioned eating ugali before and during pregnancy. It is the staple food in Kenya, mostly consumed during dinner time. It is served with green leafy vegetables, beef stew, or milk. The flour used for making ugali is available in local international stores. It is rich in nutrients and provides a good source of carbohydrates which gives strength to the body. It is believed that hot ugali has fewer calories than cold ugali. Esther stated: “Cold ugali is avoided because it makes a pregnant woman gain weight...but hot ugali is okay.”

### *General Experiences during Pregnancy*

Pregnancy and childbearing are important periods among Kenyan communities and many societies globally. Study participants, however, described that

their pregnancies were challenging generally. The women interviewed communicated that it was hard adjusting to being pregnant, especially for first-time mothers. Most of the women reported craving for different foods, feeling nausea, vomiting, feeling ‘sickly’, insomnia, and exhausted mostly especially towards the delivery date. Some participants stated that they developed high blood pressure and anemia during their pregnancy.

As stated earlier, two participants gave birth both in the U.S. and Kenya while the rest gave birth in the U.S. only. Participants who gave birth both in the U.S. and in Kenya communicated that there are some noticeable differences. Betty stated: “Pregnancy in the U.S. is a little bit stressful; you are busy all the time and you feel ‘sickly’ constantly... you are not yourself. In Kenya pregnancy is more of a community thing, relatives will come to push things [help in cooking, cleaning, etc.] for you when you are tired but here everyone is busy and no family members around.” Phyllis stated: “I feel like I had a huge support from family at home, after birth, friends and family help in doing house chores for 1-2 months...they say a woman is recuperating...here [US] my husband used to help but you know he drives [a] truck, he couldn’t do much, and it was tiresome holding a newborn with my 2-year-old son.” In Kenya, participants enjoyed the care and help from immediate relatives and friends thus raising the child as a community. In the US, they relied mostly on their spouses for support since they had few relatives and friends. Sera stated: “I can’t imagine doing this [pregnancy journey] without my husband, in my third trimester, I needed help at night... it could have been tough without him.”

*The Role of Health Education during Pregnancy*

I also asked the participants about sources of proper dietary practices during pregnancy. Almost all participants reported attending prenatal visits and being in contact with their doctors until delivery day. Health care practitioners were reported to be one of the sources of dietary knowledge, Sera stated: “My doctor advised me to eat red meat in plenty.... I was anemic.” Betty also shared: “My doctor emphasized on eating a well-balanced diet and foods that supplement folic acid like bread, cereals for the neural function of the baby.” Betty further stated: “I heard when I was in Kenya that pregnant woman is not supposed to eat eggs. Eggs make the baby grow much. Currently am a nursing student and I have learned that eggs are a source of proteins and do not have any effect as they used to tell us. I avoided them by then though.” The above example illustrates how bio-medical knowledge can sometimes conflict with cultural knowledge, and a pregnant woman decides on which recommendations she should follow.

Kenyan immigrant women also learned nutritional knowledge and health beliefs from female family members, media, and their personal experiences. Jackie reported, “my mother would call me every day to ensure that I ate healthily. She used to tell me to boil my vegetables.” Most participants communicated that family members were the first source of dietary knowledge, but for some women, they learned through their own experiences. As illustrated by Phyllis, “I developed high blood pressure for my first pregnancy and for my second and third pregnancy I became cautious by watching my food portions, types of foods that I eat generally.”

## CHAPTER V: DISCUSSION AND CONCLUSION

### DISCUSSION

The results of this study demonstrated that the sample of Kenyan immigrant women living in Tennessee know and subscribe to many Kenyan nutritional beliefs and food-related cultural practices during their pregnancy in the U.S. These findings are comparable with similar studies across the globe. As two examples, Ahlqvist and Wirfält (2000) and Garnweidner (2013) found that Iranian women living in Sweden and women of different ethnic backgrounds living in Oslo, Norway, respectively, continued with their pregnancy beliefs in their host countries.

Promotion and protection of the well-being of the mother and the baby emerged as major reasons why Kenyan pregnant immigrant women subscribe to these nutritional beliefs. The health and well-being of the child were important and were also stated in the literature among the Iranian women living in Sweden and British Bangladeshi respectively (Ahlqvist and Wirfält 2000; Yeasmin and Regmi 2013). Other reasons for adhering to these traditional nutritional Kenyan beliefs emerged from this study. They are conceptualized using the Health Belief Model (HBM) below.

#### *Perceived Severity*

Perceived severity is a personal belief in the seriousness of the medical /health condition (Sari 2018). The perceived severity of a health condition influences an individual's behavior more than the actual severity of the condition. If the person understands and believes that unhealthy practices such as eating sugary and oily and fatty foods might expose them to pregnancy risks such as higher weight gain, giving birth to obese children, gestational diabetes and that these risks might be detrimental

to the baby's and mother's health, she is likely to adopt traditional nutritional beliefs and/or follow doctors' advice to minimize the risk. The interviewed women stated that they decreased the intake of oily, fatty, and sugary foods because they believed that such foods may lead to severe consequences like increased weight gain which will furthermore lead to giving birth to obese babies. Higginbottom et al. (2014) also found that women with high-risk pregnancies living in Canada increased 'good' food which includes vegetables and fruits while they avoided 'bad' food which includes fatty and oily foods, as they believed it will make them gain higher weight during pregnancy. The interviewed Kenyan women in Tennessee communicated to me that the risk of being diagnosed with high blood pressure and gestational diabetes prompted eating home-cooked foods with increased vegetables and fruits that they perceived to be healthy for pregnant women. High blood pressure and gestational diabetes during pregnancy might heighten poor pregnancy outcomes which include but are not limited to slow growth of the baby, low birth weight babies, and also death.

### *Perceived Susceptibility*

Perceived susceptibility is an individual belief that she is vulnerable to some health condition (Sari 2018). The more an individual believes she is at a higher risk, the more likely for the person to adopt a particular health-related practice to avoid or reduce the risk. Pregnancy is a period that the body of a woman transitions physically, mentally, socially, and hormonally (Biaggi et al. 2016). During pregnancy, women may be exposed to risks that include but are not limited to weight gain, obesity, gestational diabetes, and high blood pressure. The interviewed women stated that oily and fatty foods expose them to risks such as increased weight gain and complications

such as high blood pressure, gestational diabetes which might ultimately result in death. On the other hand, the increased intake of red meat and liver which are rich in iron and vegetables, and fruits which are believed to contain vitamins that enhance the healthy growth of the fetus was recommended. Riang'a, Broerse, and Nangulu (2017) and Higginbottom et al. (2014) both found that Kalenjin pregnant women in Kenya and women with high-risk pregnancies living in Canada, respectively, increased 'good' food which includes vegetables and fruits while they avoided 'bad' food which includes fatty and oily foods, as they believed it will make them gain higher weight and bring other complications during pregnancy.

#### *Perceived Benefits*

Perceived benefits are one's belief that engaging in health-related behavior can positively influence pregnancy outcomes (Sari 2018). A trend in my research was that women adhered to the above-stated nutritional practices mainly for the survival of the fetus and the mother. To increase the chances of the survival of the baby and the mother, foods rich in vitamins and fiber were encouraged during pregnancy. This is in line with Riang'a, Broerse, and Nangulu (2017) who found that pregnant Kalenjin women consumed foods rich in vitamins, iron, and fiber to increase the blood level of the mother and give strength to push the baby safely during delivery. Kenyan immigrant women in Tennessee adhered to healthy dietary practices during their pregnancy to have positive pregnancy outcomes and quick recovery of the mother after birth. Yeasmin and Regmi (2013) also noted similar results among British Bangladeshi. The Kenyan women also stated that to experience delivery with minimum risks to the mother and the fetus, a pregnant woman should refrain from consuming fatty and oily foods. This echoes Higginbottom et al. (2014), who found

that pregnant women living in Canada restricted fatty and oily foods since they believed it resulted in increased weight gain and complications such as gestational diabetes, high blood pressure, miscarriages, giving birth to obese babies, and death. Skin complexion was also a salient feature to both the baby and the mother. To achieve it, maternal dietary practices such as eating fruits and drinking a lot of fluids during pregnancy were also believed to increase the aesthetic effect on the baby. These findings are comparable to numerous scholars (Ahlqvist and Wirfalt 2000; Higginbottom et al. 2014; Yeasmin and Regmi 2013) who noted similar results among immigrants.

### *Barriers*

Barriers are hindrances perceived to limit an individual from practicing a healthy behavior (Sari 2018). For example, the level of income of a pregnant woman determines if an individual can adopt appropriate healthy dietary practices or not. The income level of a pregnant determines access to food (Ahlqvist and Wirfalt 2000). Some interviewed women faced challenges in accessing healthy foods which ultimately hindered them from practicing healthy behaviors. Other women explained how Kenyan foods are scarce in Tennessee and if they are there, they are expensive, and individuals could only afford to buy them once or twice a month. Also, some participants further explained that local international markets are far from where they live, doubling food prices, especially when one does not have a personal car and has to use an Uber or a Lyft. Student participants as well, narrated how stipends from schools are insufficient to buy diversified foods, hence eating the available food. Conversely, some women with a higher income were able to buy a variety of foods which enabled them to eat healthy foods. The above findings are comparable to De

Irala-Estevez et al. (2000) who found that households with higher income have a better chance of diversified diets unlike households with less income that limits them from buying healthy foods. This shows that adopting a healthy lifestyle can be challenging for women due to low income, high cost of healthy foods, and less accessible local markets due to distance.

### *Cues to Action*

These are occurrences and experiences that motivate a person to engage in healthy behavior. Some of the motivators include peer support, access to knowledge about the risk, contact with others who've gone through similar experiences and advice from professionals such as health care practitioners (Tarkang and Zotor 2015). As reported by the participants, during prenatal visits, pregnant women were guided on dietary practices by medical practitioners. Depending on an individual's health condition during pregnancy, doctors may restrict and/or encourage particular foods. Nearly all participants, stated, they consulted with their doctors during pre-natal visits, throughout pregnancy and followed the doctor's advice accordingly, while they were both in Kenya and/ or the United States. Participants stated that medical practitioner's emphasized increasing the intake of vegetables and fruits as they contribute to the healthy growth of the baby. The doctors also emphasized eating red meat and /or liver especially for women who had a deficiency of iron in the body. On the other hand, excess consumption of coffee, oily foods like fried chicken, French fries, and sugary foods were discouraged by doctors as they linked such foods with increased weight gain and development of complications such as high blood pressure, gestational diabetes, and giving birth to obese children. This resonates with Higginbottom et al. (2014) findings that indicate 'good' food, or rather recommended food, includes

vegetables and fruits while bad food includes fatty and oily foods. Most of the participants within this study consumed well-balanced diet home-cooked foods which include carbohydrates, proteins, and vitamins. They further narrated eating till satisfaction, as they were eating for the two. This contradicts with Riang'a, Broerse, and Nangulu (2017) and Ahlqvist and Wirfält (2000) who found that the Kalenjin women in Kenya and Iran women living in Sweden, respectively, reduced food portions during pregnancy to reduce the baby's weight and limit the size of the baby during pregnancy. Furthermore, participants demonstrated knowledge on the importance of food types for example, identifying fruits and vegetables as a source of vitamins, which contradicts with Yeasmin and Regmi's (2013) findings that British Bangladeshi women lacked nutritional knowledge during pregnancy.

Peers and family shape and influence personal food choices and eating habits. With the rise in technology, individuals communicate and network regularly with their relatives and friends across the globe. In this study, the majority of participants highlighted that they kept in contact with their family members in Kenya through phone calls, social media, emails, etc. In addition, the Kenyan immigrant women reported that they highly valued the experiences and knowledge on pregnancy that their relatives have, thus the reason to consult with them. Similarly, Ahlqvist and Wirfält (2000) found that Iranian women living in Sweden as well, kept in touch with their families in Iran because they highly valued their experiences and dietary knowledge on pregnancy. My participants narrated how they did video calls with their relatives in Kenya and in the process got guidance on healthy dietary practices during pregnancy. Chakrabarti (2010) as well, established that Bengali women living in New York City maintained close contact with their families back home due to access to an

internet connection and low international calling rates. This constant communication with the family enables continuous guidance, regarding healthy traditional practices during pregnancy.

Social networks established through Kenyan-based communities in churches, created informal groups whereby women supported and helped each other through a variety of activities, including hosting baby showers for each other and preparing home-cooked Kenyan meals for a new mother until she is 'strong' enough to cook for her family. This resonates with Chakrabarti's (2010) findings who found that Bengali immigrant women helped and supported each other emotionally. Such informal interaction strengthens relationships and offers avenues for disseminating healthcare-related information. Immigration experiences shaped by networking among ethnic groups are also important in maintaining health because such informal networks may evolve over time to provide opportunities to advocate for women's health and general health among immigrant communities.

From the above discussion, the study demonstrated the role of culture in relation to HBM. The health belief model provides a helpful framework for conceptualizing personal attitudes and beliefs in adopting health-related behaviors. It helps in understanding why Kenyan immigrant women choose to consume or avoid particular foods during pregnancy period. The concern of their baby's and their own health are the major reasons why Kenyan immigrant women adhere to nutritional beliefs. Also, influence from the family, peers and health-care practitioners contributed to adoption of health-related behavior during pregnancy.

Participants demonstrated that influence on traditional beliefs especially from female relatives was highly valued and led to the adoption of healthy practices.

However, Oniang'o, Mutuku and Malaba (2003) posit that pregnancy-related beliefs vary among communities, individuals, regions, religious groups, and countries globally. Additionally, Riang'a, Broerse, and Nangulu (2017) posit that, Kenya consists of 42 ethnic groups with wide array of nutritional beliefs and cultural practices. The influence of cultural beliefs is however, complicated at the individual level, which means the impact will not be homogeneous among individuals or groups thus, the need of knowledge concerning diverse pregnancy-related practices in order to create effective interventions.

Although HBM helps in understanding individual's intention to adopt a particular behavior and factors influencing the behavioral change, behavior is not only predicted by personal beliefs and attitudes but also should be conceptualized within a social-ecological framework (Stokols 1992) to understand world view, social and institutional structures, and how they impact human health. More confounding factors such as, length of stay in the United States, educational level, socio-economic status, institutional barriers, and systemic inequalities in health disparities could be important in shaping individual experiences in behavioral change. Several studies reported health care disparities and increased risk of adverse pregnancies among women of color (Alhussen et al. 2016; MacLemore et al. 2018). Findings show that women of color are treated with disrespect based on their skin color, language barrier, educational level, low level of income, marital status, and the type of their health insurance (MacLemore et al. 2018). Furthermore, during prenatal visits women of color are given less information particularly, information related to nutrition and medical procedures. Such inequalities in health care sector may lead to poor pregnancy results.

Educational level determines an individual occupation, which in turn is likely to influence the income of an individual. The level of education can also influence dietary behavior. Women with higher education have greater chances of attaining maximum dietary diversity. This could be so because women with higher education might have acquired necessary knowledge on appropriate dietary practice. Kearney et al. (2000) posit that the level of education is important in making informed dietary choices. It enables an individual to make wise decisions on what type of food to eat, when to eat, number of times to eat, and what combinations are safe. Most of the participants in the study are formally educated which might have influenced their nutritional behavior during pregnancy. This means a more educated sample may influence more positive beliefs and behaviors among women immigrants during pregnancy.

Also, participants with higher income have a higher tendency of consuming diversified and balanced-diet foods unlike those with low-income. This is comparable with De Irala-Estevez et al. (2000) findings. Health belief model constructs are comprehensive. Furthermore, it does not elaborate how the constructs interact with one another; therefore, application of HBM constructs may restrict comparison of studies globally. Similarly, the Kenyan immigrant women have different beliefs from women in United States whose beliefs are more applicable to the Health Belief Model.

#### *Policy Recommendations*

The results of this study indicated that accessing healthy foods is challenging especially to some participants who have a low-income level. I recommend that medical practitioners (e.g. nutritionists and nurses) discuss proper dietary practices

and modify client's diet recommendations to match their income. In addition, outreach programs conducted by hospital dietitians may help to create awareness of local resources (e.g. food banks present in Tennessee). Nutritional knowledge was primarily learned from female family members in Kenya, friends in the U.S., and health care practitioners. This creates an opportunity for health care practitioners to incorporate cross-cultural knowledge that considers cultural food practices while addressing practices that may not be suitable for the well-being of both the baby and mother. I suggest that acknowledging traditional practices will enable health care practitioners to communicate proper dietary recommendations. Since participants relied mostly on health care practitioners for dietary information, the health care system should address the root causes of perinatal racial and ethnic inequalities for all staff. Additionally, the U.S. government should allocate more funds to health care sector to ensure that low-income women access quality care, especially during pregnancy. And while the focus of this thesis was the phase of pregnancy, extending postpartum Medicaid coverage to six months or even a year would improve maternal health as well. Lastly, social, and financial programs that address maternal health issues are warranted. This study suggests building a network between health care practitioners and community-based organizations among immigrant communities to support healthy pregnancies.

#### *Limitations and Future Studies*

Although I maximized on diversity across ethnic identity and age to explore cultural differences, the recruited sample was small and did not adequately capture the more than forty-two tribes in Kenya. My participants shared their dietary practices and experiences during pregnancy in the U.S. They highlighted the importance of

support systems while pregnant and various sources of dietary knowledge in Tennessee, it is worth noting that other immigrants in other states may have different experiences regarding pregnancy-related nutritional beliefs. Therefore, future studies would benefit from recruiting a more diverse sample, with attention to education, and occupation. In fact, it would be helpful to compare and contrast these project's results with samples different from Kenyan immigrants in the U.S. Southern State.

Diversification of sample helps to understand the cultural differences among immigrant population and how they intersect with the host culture. Additional data collection methods for example, participant observation, helps the researcher to see non-verbal cues expressed by participants during data collection process, while a longitudinal study could assess changes across the lifespan, numerous children, and even generations. Ideally, future research may involve using different analytical tools, such as the socio-ecological model, that will offer alternative explanations for social phenomenon.

## CONCLUSION

The current study indicate that traditional Kenyan nutritional practices and beliefs do play an important role in the life of a mother and the child despite the women migrating to the United States. In addition, immigration to foreign countries has led to the displacement of some food items that were consumed by immigrants in their home countries which ultimately influences the nutritional status of immigrants. Traditional nutritional beliefs during pregnancy as expressed by participants in this study, determine food choices according to the perceived needs of the fetus and the mother. Most of the participants avoided and /or increased foods due to cultural beliefs and practices that their relatives recommended from Kenya and also advice

from medical practitioners in the USA. The women acquired knowledge on foods to consume and those to avoid from family members and their doctors primarily.

Health practitioners need to be cognizant of various dietary practices, especially for the immigrant groups whom they work with, while at the same time acknowledging that not all immigrant women follow the cultural practices. Individuals may decide which customary practices they follow. Healthcare practitioners need to recognize the complexity of nutritional practices and how family, ethnicity, and income level may shape nutritional beliefs and cultural practices differently. Participants also expressed that pregnancy and birthing in the U.S. is different than in Kenya. During the pregnancy period in Kenya, relatives are there to support and help in cooking, cleaning, etc. while in the U.S., there are few or no relatives to help, they, therefore, missed the care and support. This study will pave the way for continued exploration of traditional foods and cultural beliefs during pregnancy and contribute to literature on health beliefs and practices among immigrant women during pregnancy in the USA. In addition, this study will help to inform health care practitioners that what women decide to eat during pregnancy is as well influenced by the accessibility of particular foods, the income level of individuals, family members, and personal experiences.

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## APPENDICES

*Appendix A: IRB Approval***IRB****INSTITUTIONAL REVIEW BOARD**

Office of Research Compliance,  
010A Sam Ingram Building,  
2269 Middle Tennessee Blvd  
Murfreesboro, TN 37129

**IRBN001 - EXPEDITED PROTOCOL APPROVAL NOTICE**

Tuesday, May 05, 2020

Principal Investigator **Sarah Chebet** (Student)  
 Faculty Advisor Adelle Monteblanco  
 Co-Investigators NONE  
 Investigator Email(s) *sjc6j@mtmail.mtsu.edu; adelle.monteblanco@mtsu.edu*  
 Department Sociology & Anthropology

Protocol Title ***Pregnancy-related nutritional beliefs, knowledge and cultural practices among Kenyan migrant women living in Tennessee***  
 Protocol ID **20-2178**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXPEDITED** mechanism under 45 CFR 46.110 and 21 CFR 56.110 within the category (7) *Research on individual or group characteristics or behavior*. A summary of the IRB action and other particulars in regard to this protocol application is tabulated below:

IRB Action	<b>APPROVED for ONE YEAR</b>		
Date of Expiration	<b>4/30/2021</b>	Date of Approval	5/5/20
Sample Size	50 (FIFTY)		
Participant Pool	Target Population: Primary Classification: <b>Healthy Adults (18 years or older)</b> Specific Classification: <b>Female Imigrants from Kenya</b>		
Exceptions	1. Telephone interaction including verbal consent is approved. 2. Audio taping is permitted (refer below).		
Restrictions	<b>1. Mandatory ACTIVE Informed Consent.</b> <b>2. Identifiable data/artifacts, such as, audio/video data, photographs, handwriting samples, personal address, driving records, social security number, and etc., must be used only for the research purpose as proposed; the data must be deidentified after data processing.</b> <b>3. Mandatory Final report (refer last page).</b>		
Approved Templates	MTSU Templates: NONE Non-MTSU Templates: Recruitment script and verbal consent		
Comments	COVID-19: Refer to the Post-Approval Action section for important instruction		

RBN001 Version 1.4

Revision Date 06.11.2019 Institutional Review Board

Office of Compliance

Middle Tennessee State University

*Post-approval Actions*

The investigator(s) indicated in this notification should read and abide by all of the post-approval conditions related to this approval (*refer to Quick Links below*). Any unanticipated harms to participants, adverse events, or compliance breach must be reported to the Office of Compliance by calling 615-494-8918 within 48 hours of the incident. All amendments to this protocol, including adding/removing researchers, must be approved by the IRB before they can be implemented.

Continuing Review (The PI has requested early termination)

Although this protocol can be continued for up to THREE years, The PI has opted to end the study by **4/30/2021**. The PI must close-out this protocol by submitting a final report before **4/30/2021**. Failure to close-out may result in penalties including cancellation of the data collected using this protocol.

Post-approval Protocol Amendments:

**Only two procedural amendment requests will be entertained per year.** *In addition, the researchers can request amendments during continuing review. This amendment restriction does not apply to minor changes such as language usage and addition/removal of research personnel.*

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

Other Post-approval Actions:

Date	IRB Action(s)	IRB Comments
05/05/2020	Due to the COVID-19 National Emergency, the Office of Compliance grants administrative authority to the Faculty Advisor (FA) to make the necessary changes or revisions to this protocol in the best interest of the health and welfare of the participants and student workers. The FA must notify such revisions upon implementation to the IRB via simple email or using suitable amendment documents. The IRB will audit the revisions at a later date and suggest any remedial measures if necessary.	COVID-19

**Mandatory Data Storage Requirement:** All research-related records (signed consent forms, investigator training, etc.) must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data must be stored for at least three (3) years after the study is closed. Additional Tennessee State data retention requirements may apply (*refer to "Quick Links" for MTSU policy 129 below*). Subsequently, the data may be destroyed in a manner that maintains the confidentiality and anonymity of the research subjects.

**The MTSU IRB reserves the right to modify/update the approval criteria or change/cancel the terms listed in this letter without prior notice.** Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board

Middle Tennessee State University

IRBN001 – Expedited Protocol Approval Notice

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Compliance

Middle Tennessee State University

**Quick Links:**

- Post-approval Responsibilities:  
<http://www.mtsu.edu/irb/FAQ/PostApprovalResponsibilities.php>
- Expedited Procedures: <https://mtsu.edu/irb/ExpeditedProcedures.php>
- MTSU Policy 129: Records retention & Disposal:  
<https://www.mtsu.edu/policies/general/129.php>

*Appendix B: Demographic Characteristics of Respondents*

The questionnaire consists of questions regarding the age, marital status, number of children an individual has, level of education, occupation, ethnic group, and annual income of the household.

1. What is your age? \_\_\_\_\_

2. What is your marital status?

Single ● Married ● Unmarried ● Cohabiting ●

Separated ● Widowed ● Divorced ●

3. How many times have you been pregnant?

4. What is the highest level of completed formal education?

High school ●

Bachelors' ●

Post-Bachelors ●

5. What is your occupation? \_\_\_\_\_

6. What is your ethnic group? \_\_\_\_\_

7 . What is your approximate household annual income? (Combined if you have a spouse)

Less than \$10,000 ●

\$10,001-20,000 ●

\$20,001-30,000 ●

\$30,001-40,000 ●

\$40,001-50,000 ●

Greater than \$50,000 ●

*Appendix C. Interview Guide*

1. What foods do you eat currently?

a. Probe: How often do you eat?

- b. Probe: Where do you get your food?
2. In what ways is this similar or different from your food consumption in Kenya?
3. In what ways was this similar or different during your previous pregnancy (ies)?
4. Probe: How often did you eat when you were pregnant?
5. Probe: Did you increase any foods when you were pregnant? If yes which foods?
6. Probe: Did you avoid any foods when you were pregnant? If yes which foods?
7. You referenced eating... times a day. What was the reason for that?
8. You referenced avoiding certain foods. Why?
  - a. Probe: Where and when did you learn that?
  - b. Probe: From who did you learn that?
9. You referenced increasing certain foods. Why?
  - a. Probe: Where and when did you learn that?
  - b. Probe: From who did you learn that?
10. Were you ever told or taught any food-related practices that help the mother and baby be well during pregnancy?
  - a. Probe: Where and when did you learn that?
  - b. Probe: From who did you learn that?
  - c. Probe: Did you follow these food-related practices? Why or why not?
  - d. Probe: Do you believe it had any impact on your pregnancy? Labor or infant?

## 11. Is there anything else you'd like to share with me?

*Table 1: Demographic summary of participants*

<b>Name</b>	<b>Age</b>	<b>Ethnicity</b>	<b>Occupation</b>	<b>Education level</b>	<b>Marital status</b>	<b>No. of pregnancies</b>	<b>Household income in \$</b>
Sera	29	Luhya	Public health officer	Bachelors	Married	1	Greater than 50,000
Ann	28	Kikuyu	Social worker	Bachelors	Married	2	40,001-50,000
Carol	32	Kalenjin	Nurse	Bachelors	Married	3	Greater than 50,000
Betty	37	Luo	Nursing student	Post-Bachelors	Married	2	40,001-50,000
Esther	35	Luo	Housewife	High school	Married	2	20,001-30,000
Martha	24	Meru	Student	Bachelors	Cohabiting	1	Less than 10,000
Phyllis	40	Luhya	Certified Nurse Assistant	High school	Married	3	40,001-50,000
Mercy	38	Luo	Certified Nurse Assistant	Bachelors	Married	2	20,001-30,000
Alekwa	27	Kikuyu	Teacher	Bachelors	Cohabiting	1	10,001-20,000
Jackie	30	Kalenjin	Graduate student	Bachelors	Divorced	1	30,001-40,000

*Table 2: Foods avoided during pregnancy*

Foodstuff	Reason
Avocado	Fatty fruit which has a lot of cholesterol
Eggs	Makes the baby grow big
Fatty and oily foods	Weight gain, high blood pressure
Coffee	High in caffeine, causes high blood pressure
Seafood	Contain mercury which causes brain malfunction
Sugary foods	weight gain

*Table 3: Foods increased during pregnancy*

Foodstuff	Reason
Green leafy vegetables	Increases blood level, good for vitamin C
Fruits	Increase the blood level of the mother, helps reduce nausea
Liver	Improve iron level in the body
Red meat	Increases blood level, helps in the growth of the fetus
Water	Helps in flushing out toxins in the body