

WORCESTER POLYTECHNIC INSTITUTE

# Talking about Food: Improving Communication Between Ghanaian Women and Medical Practitioners

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An Interactive Qualifying Project submitted to the faculty of Worcester Polytechnic Institute in  
partial fulfillment of the requirements for the Degree of Bachelor of Science

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## **ABSTRACT**

Worcester has the highest infant mortality rate in Massachusetts, and it is most prevalent in the Ghanaian community. In collaboration with Nhyira Ba, a Ghanaian led organization, we addressed communication barriers between medical practitioners and Ghanaian women on issues related to nutrition, food preparation, and the role of food in Ghanaian culture, by producing educational videos targeted at medical practitioners. With this effort we hope to create greater understanding between practitioners and their Ghanaian patients.

## Acknowledgments

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- We would like to thank our advisor Professor Robert Hersh for his guidance and support in this project. We owe a thanks to him for participation in our project beyond scheduled advisor meeting hours, his sincere interest in our project, and the large amount of feedback he provided throughout the course of writing the paper. His participation made this project a very rewarding experience. In addition, his filming experience and talent was extremely helpful in the video production aspect.
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## EXECUTIVE SUMMARY

Worcester has the highest infant mortality rate (IMR) in Massachusetts; the infant mortality rate is highest among the African/African American population, including the Ghanaian community. According to the Worcester City Council 2014 Annual report, in the last decade Worcester's infant mortality rates have fluctuated, ranging between 7-9 deaths per 1,000 live births, as compared to Massachusetts's overall rate of 5 infant deaths per 1,000 live births. Considering this information, we investigated the leading factors of this high infant mortality and determined how best to utilize our efforts to combat this issue.

Through our research, we found that the physician-patient relationship is pivotal to the health of pregnant women and that maternal malnutrition greatly increases risk of infant mortality. In this project, we sought to identify the contributing health factors associated with IMR while examining the current and past strategies used to address IMR in Worcester. We also looked to investigate the health effects of maternal nutrition on mother and infant, and further identify communication barriers between physicians and immigrant patients. To alleviate the sense of cultural separation, we looked to find methods to facilitate cross-cultural communication between Ghanaian patients and the medical community.

### Current and Past Research Methods

Since 1996, the Worcester Healthy Baby Collaborative, a program that works to reduce infant mortality rates in Worcester through different projects such as the Worcester Healthy Start Initiative, has investigated possible factors associated with infant mortality, namely socioeconomic and ethnic disparities that may negatively affect the mother's health.

Developed through the Worcester Healthy Baby Collaborative, the Worcester Healthy Start Initiative was founded in the early 2000s. The program paired expecting mothers with an advocate that would guide them through their pregnancy with information on maternal education. This program was very successful in reducing infant mortality rates. However, due to lack of funding the program was not able to continue. The Worcester Healthy Baby Collaborative worked to develop Nhyira Ba, a prenatal educational program that provides both medical and lifestyle education to African and Hispanic women. In our project, we collaborated with Nhyria Ba and our sponsor, Jennifer Moffitt a Certified Nurse Midwife, who is the Perinatal Services Manager at the Family Health Center of Worcester to liaise with the Ghanaian immigrant and medical communities. This led to the dissemination of information about Ghanaian cultural food and associated practices in relation to infant mortality.

### Videos

With the research that we conducted through interviews with healthcare professionals, a literature research, and a brief survey of the community, we choose to produce videos to help improve communication between medical practitioners and the Ghanaian community about nutrition, food choices, and the cultural aspect of eating. Our research and collaboration with community advocates and Nhyira Ba members shaped the content and script of both videos.

The first video shows a doctor with limited familiarity with the food practices of Ghanaian women being invited to a Ghanaian radio show to provide advice about nutrition during pregnancy to Ghanaian women. In the course of the radio call in show, the doctor is unable to provide relevant information to the women who call in for advice. The radio hosts take the doctor to lunch at a Ghanaian restaurant where they explain Ghanaian food, common dishes, and eating habits. After the sequence at the restaurant the video concludes with a short scene in an examining room with the doctor and a pregnant Ghanaian women talking with more mutual understanding about nutrition and diet.

The second video is a cooking show a member of Nhyira Ba, demonstrates healthy cooking practices and food alternatives that yield a more nutritious dish, and ultimately, a healthier diet. It is aimed at both the Ghanaian community and doctors as it involves using healthy alternatives for ingredients in existing Ghanaian dishes.

## Findings

Through interviews, we have learned about research fatigue in the Ghanaian community and why a more action-research approach was critical to our project. We also found that despite communication being an issue, there is a sense of respect between many medical practitioners and Ghanaian patients. The Family Health Center (FHC) in Worcester is trying to bridge this gap by utilizing community advocates to reduce communication barriers between the two groups. The work of Nhyira Ba to give voice to the Ghanaian community and to educate medical practitioners on Ghanaian food practices among Ghanaian women has created opportunities for more nuanced, culturally sensitive communication.

Nhyira Ba's role in creating opportunities for more nuanced communication is a critical aspect of this subcommittee that helps bring understanding between the Ghanaian community and medical practitioners in Worcester. Nhyira Ba is a community led initiative and therefore input from the Ghanaian community is more directly translated into action that can bring greater understanding between medical practitioners and Ghanaian patients. With the production of these videos Nhyira Ba aims to create a platform for communication that can eventually lead to greater usage of health services by immigrants as well as better overall health outcomes.

## **Authorship Page**

All members of this IQP group contributed equally to this report.

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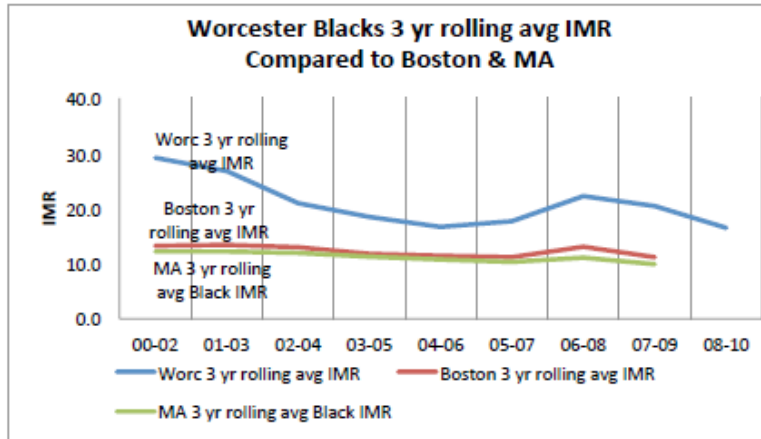
## CHAPTER 1: INTRODUCTION

Infant mortality is the term used for when an infant less than one year of age dies. It is a devastating outcome. The United States is ranked 174 out of 224 countries, thereby indicating that the U.S has a high infant mortality rate considering the fact that it is a first world country (The World Factbook, 2014). Although the United States has many advances in the health care the rate of infant mortality still remains alarmingly high. Causes of IMR are still being investigated, but may include dehydration, diarrhea, lack of breastfeeding, low birth weight, among other causes (World Health Organization, 2013).

In the state of Massachusetts, Worcester, MA has the highest infant mortality rate and it is most pronounced among the city's immigrant population. High levels of stress and poverty is associated with a higher rate of IMR (Spencer, 2004). But miscommunication and mistrust between medical practitioners and immigrant patients also contribute to a higher IMR.

In the last decade, Worcester's infant mortality rates have fluctuated, ranging between 7-9 deaths per 1,000 live births in comparison to Massachusetts's infant mortality rates of 5 (WHBC, 2014). From 1996, the WHBC has investigated the factors that might be associated with infant mortality such as socio-economic and ethnic disparities that may affect the mother's health in a negative way (WHBC, 2014).

According to the annual City Council Report in 2013, the Infant mortality rates among the African and African American community are the highest. Approximately 7% of people in Worcester classified themselves as black; however, 17-55% of infant deaths are to black mothers (WHBC Report, 2014). Below is a chart that displays the 3-year rolling average infant mortality rates of African/African-American infant deaths. As it can be seen in the chart, the African/African-American infant deaths are highest in the Worcester community than in the surrounding cities as well as in Massachusetts overall.



**Figure 1: Chart of the 3-year rolling average of infant deaths**

In order to combat the high infant mortality rate in Worcester, over the past two decades several initiatives have taken steps towards creating positive change in lowering IMR. These initiatives include the creation of the Worcester Infant Mortality Reduction Task which was later on named the Worcester Healthy Baby Collaborative (WHBC). Nhyira Ba was created in 2013 as a subcommittee to the WHBC to be directly involved with the Ghanaian population of Worcester. Our IQP project aims to work alongside the Nhyira Ba subcommittee to continue the progress being made in aiding Ghanaian women to have healthy pregnancies and child.

## CHAPTER 2: BACKGROUND

The city of Worcester has the highest infant mortality rate (IMR) in the state of Massachusetts, surpassing that of all other surrounding communities (WHBC, 2014). In this chapter, we discuss IMR, current and past strategies used to combat IMR in Worcester, the role of maternal nutrition and its effects on mother and infant health, barriers to communication between physicians and immigrant patients, and lastly, methods used to improve communication between healthcare providers and culturally diverse patients.

### 2.1 Assessing the Increase in Infant Mortality Rates: Past and Current Strategies Implemented in Worcester in an Attempt to Reduce IMR

#### 2.1.1 Worcester Healthy Baby Collaborative

Developed in 1996, the mission of the Worcester Health Baby Collaborative (WHBC) is to reduce the infant mortality rates among the African immigrant population in Worcester. The WHBC was created in order to reduce premature births and infant mortality in Worcester. The WHBC is a non-profit organization that is funded by the more than 30 organizations that commit their time and resources to Worcester Healthy Baby Collaborative. The organizations affiliated with the WHBC are displayed in table 1 below. The organization is also funded by a \$20,000 grant (Duffy, 2013).

<b><u>Organizations Involved in WHBC</u></b>
March of Dimes
Worcester Department of Public Health
Tri-County Medical
Umass Memorial Healthcare
Common Pathways
Catholic Charities
Worcester Public Schools
Shrewsbury OB/GYN
Umass Medical School
Edward M. Kennedy CHC
Commonwealth of Massachusetts Department of Public Health
Children's Friend
Reliant Medical Group
Pernet Family Health Service
Community Legal Aid
The National Children's Study

**Table 1: Organizations Involved in WHBC**

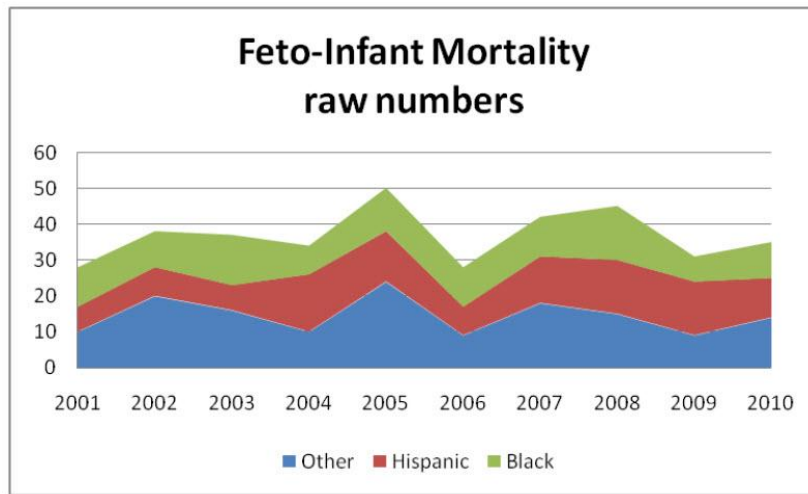
The Collaborative was previously named Worcester Infant Mortality Reduction Task Force (WIMRTF). The Reduction Task Force consisted of a group of 25 volunteers who intended to help reduce the IMR in Worcester. WIMRTF was chaired by UMass Memorial

Children's Medical Center Physician-in-Chief, Dr. Marianne Felice and each month, about 13 at-risk women were enrolled in the program with the intention of reducing the women's chances of experiencing the death of their infant. However, over time the Reduction Task Force evolved into the Worcester Healthy Baby Collaborative. The Worcester Healthy Baby Collaborative has monthly meetings to continue developing and implementing the reduction of infant mortality in Worcester. The meeting consists of a group of doctors, nurses, healthcare professionals, and social workers among others (Coleman III, 2010).

According to Dr. Dale Magee, an active member of the Worcester Healthy Baby Collaborative and an Ob-GYN in Shrewsbury, "infant mortality is a measure of the ability of an entire community to benefit its members." He has been an active member of the Collaborative since 1998. Over the last ten years, the Worcester Healthy Baby Collaborative has taken many actions to reduce the infant mortality rate. Some of these actions include monitoring infant mortality rates by reviewing data yearly through the WHBC. The Collaborative also conducts research in the form of focus groups, structured interviews, genetic analysis, town forums, chart reviews of premature births, and lastly, a visit to Ghana. The knowledge gained is then used to educate the community as well as offering interdisciplinary courses for nursing and medical students. The Collaborative had made several recommendations to the City Council, including the promotion of early and regular prenatal care (Magee, 2011).

### 2.1.2 Monitoring Infant Mortality Rates in Worcester, MA

In recent years, infant mortality rates have been monitored through the generation of data reports through the WHBC. In 2013, the City Council of Worcester has asked the WHBC to report the current findings of infant mortality rates, since the last report from 2007. According to the 2014 report, possible trends of infant mortality may include socioeconomic status, and being that immigrants are in a different country, racial disparity. The reports are generated in order to determine rates of infant mortality in all communities of Worcester as a whole, as well as assessing the infant mortality rates among each community within Worcester. By providing annual data reports, the Worcester Healthy Baby Collaborative can continue to track progress and create programs that assess the current infant mortality rates in Worcester. Figure 2 below displays the annual infant mortality raw numbers from 2001-2010 among each community in Worcester (Worcester Healthy Baby Collaborative, 2010). In the figure below, it can be seen that the African/African-American community has the highest values compared to other groups in Worcester, therefore confirming that the African/African-American community needs to be studied and better understood before attempting to make a change in the health outcomes.



**Figure 2: Worcester Infant Mortality Annual Report 2010**

*i. Start of Worcester Healthy Baby Initiative*

In order for Ghanaian women to get the help they need before, during, and after pregnancy, the Worcester Healthy Start Initiative, a branch of the federal Healthy Start Initiative program, partnered with the Worcester Healthy Baby Collaborative and provided assistance to women during pregnancy and afterward. The Worcester Healthy Start Initiative was a federal program that worked to improve the health and well-being of all mothers, infants, and families in Worcester through community involvement, case management, and educational programming. Women who were pregnant or had a child less than 2 years of age were eligible to enroll.

The initiative worked with pregnant women, mothers with young children, and their families, to ensure equal access to health care and social support resources. The initiative also provided information regarding health care, medical insurance, baby supplies, or any other types of health information. Every woman was paired with an advocate who would assist the mother or mother-to-be with any issues or concerns that she may have had. These advocates were available by phone or appointment. The advocates developed a strong network among other service providers in Worcester and provided a bridge to the greater Worcester community. The Family Health Center of Worcester was also affiliated with this Initiative, and in 2012, the program assisted 110 women. These advocates came from many ethnic backgrounds, and therefore were able to provide culturally sensitive care. The program was a success in the time that it was implemented, as it contributed to the decrease of infant mortality.

In addition to providing education and care to the women, the initiative also conducted outreach to identify social risk factors that impact immigrants. The Initiative also provided transportation to domestic violence assessments. However the Healthy Start Initiative program did not last long due a loss in funding, according to the City Council Report from 2013. Worcester’s IMR was not comparable to other larger cities in the federal Healthy Start Initiative. As a result, the renewed grant request for the Initiative in Worcester was not successful. This was due to the fact that the Initiative was looking to be more city-based than agency based. As a result, the infant mortality rates decreased, and unfortunately this led to a loss in funding.

### *ii. Interactive Community Events in Worcester*

The Worcester Healthy Baby Collaborative has paid special attention to the Ghanaian community due to its high IMR in Worcester. In order to give the Ghanaian community opportunities to express concerns of infant and maternal nutrition, several interactive community events have been conducted in Worcester. In the early 2000s, the WHBC hired experts from Boston University to hold focus groups with the West African community (WHBC Report, 2013). These focus groups helped community members engage in maternal education and discuss their concerns, while aiding the collaborative learning more about culture and health. Focus groups allowed community members to discuss topics such as pica (the practice of eating non-food materials), herbal medicine, home health remedies, and racial discrimination.

The Worcester Healthy Baby Collaborative has created ways to involve the community in order for researchers to become more acquainted with Ghanaian culture and practices. Accompanying focus groups, structured interviews have also been implemented to enable the collaborative to learn more about Ghanaian culture and practices regarding prenatal nutrition and maternal education. Simply conducting research based on what the statistics stated was not enough; involving the community in discussions and forums brought researchers a step closer to finding the root cause of infant mortality.

Accompanying focus groups and interviews, there have also been Facebook pages that assess infant and maternal education for the community. For instance, the Worcester Healthy Start Initiative, the defunded program that assisted mothers or mothers-to-be in the community, held a Facebook page that posted about upcoming meetings, birth classes, and discounts on baby supplies.

### *iii. Qualitative and Biological Research for Indications of Infant Mortality*

Along with community events and the monitoring of infant mortality rates, the Worcester Healthy Baby Collaborative has done research, both qualitative (focus groups) and biological research. For instance, single-nucleotide polymorphism (SNP) genetic analysis was performed on Ghanaian women in order to determine if genetics or heredity played a part in infant mortality or morbidity. In addition to this, town forums have also been created to enable community members to interact freely with each other and have online discussions regarding certain topics such as infant health, maternal nutrition, and infant nutrition. This enables mothers to educate themselves and each other about maternal/infant health.

Laboratory research has provided the possible underlying biological causes of infant mortality. Additionally, providers took a trip to Ghana to begin qualitative research to determine any external factors relating to infant mortality. This enabled them to study traditions in prenatal health and maternal nutrition, and to determine if this has been carried over in the states.

#### *iv. Women, Infants, and Children Programs*

The value of Special Supplemental Nutrition program for women, infants, and children (WIC) was assessed as a public health intervention that seeks to improve birth outcomes and reduce racial disparities. By comparing the infant mortality rates of prenatal WIC participants vs. non-participants it was found that the IMR was lower for the WIC participants.

#### *v. Current Strategies being implemented in Worcester: Nhyira Ba Project*

While programs such as the Worcester Healthy Start Initiative, a program that was developed in early 2000s that helped women in their pregnancy, have been successful in decreasing infant mortality, action is currently being taken in order to assess infant mortality rates among the Ghanaian community through the education program that was developed in 2013, Nhyira Ba. In the recent years, as the infant mortality rates in the African/African-American community increased, this prompted the Worcester Healthy Baby Collaborative to start the Nhyira Ba project (J. Moffitt, personal communication, 2013). This program was a development through the Worcester Healthy Baby Collaborative and sponsored by the March of Dimes based in Texas. Translated to “Blessed Babies” in the Ghanaian language Twi, Nhyira Ba seeks to provide to African women medical information to ensure healthy pregnancies and births. Nhyira Ba aims to support African women in the Worcester community and works to reduce stress of locating to a new community.

Accompanying the educational information for women, there is also a plan to create improved communication between medical professionals and patients. Nhyira Ba also aims to provide medical and lifestyle information crucial for healthy pregnancies and births while helping the Ghanaian community learn to navigate the complex health care system. Taking into account the issues on mistrust of the health care system and research fatigue, Nhyira Ba is still in development en route to creating a suitable program for Ghanaian women in Worcester. The emergence of Nhyira Ba as a subcommittee provides the WHBC with greater access to the Ghanaian community. Nhyira Ba assists African mothers or mothers-to-be, through its Facebook page that provides information regarding infant and maternal nutrition. Lastly, Nhyira Ba is working to provide outreach regarding nutrition to many of the city’s Ghanaian churches.

## **2.2 Role of Maternal Nutrition in Maternal and Infant Health**

During pregnancy, nutrition is a crucial determinant in the health and development of the fetus. Poor nutrition can lead to a variety of pregnancy complications and an increased risk of infant mortality. In the following section, the importance of nutritious maternal diet, as well as the effects of immigration on nutrition and health will be considered. (“CDC - Pregnancy Complications - Reproductive Health,” 2013)

### **2.2.1 Importance of Nutritious Maternal Diet**

According to the Joint Center Health Policy Institute, several of the leading causes of infant mortality, including birth defects, preterm birth and maternal complications of pregnancy



are results of poor maternal nutrition (Lu & Lu, 2007). Proper nutrition is important for healthy babies and mothers, and all expecting mothers necessitate more food and a greater intake of nutrients. When there is insufficient intake of energy and nutrients, the body's reservoir of nutrients are used, leaving the pregnant women weakened. Pregnant women require more protein, iron, iodine, vitamin A, folate, and other nutrients as compared to non-pregnant women. A combination of sufficient energy intake and the incorporation of a nutrient-filled maternal diet are the keys to good maternal health. A diet for ideal maternal health includes fruit, vegetables, and animal products consistently throughout pregnancy. Overall, it is essential for expecting mothers to have a proper intake of nutrients to decrease the chances of pregnancy complications resulting from poor maternal health. (Breastfeeding, 2004)

#### *i. Pregnancy Complications as a Result of Poor Maternal Nutrition*

Gestational hypertension, the condition of high blood pressure during pregnancy, can lead to preeclampsia ("American Pregnancy Association - Promoting Pregnancy Wellness," 2012). Preeclampsia greatly affects the flow of blood to the fetus, risking preterm birth, stillbirth, and a lack of oxygen and nutrients delivered to the fetus, which can cause poor fetal growth (Development, 2012). Both are a possible side-effect of poor maternal nutrition during the prenatal phase. Between 1991 and 1999, preeclampsia accounted for 16 percent of all pregnancy-related deaths in the United States. The exact nutrient deficiencies responsible for the condition are not known, however there is evidence that deficiencies in vitamin E, zinc, and omega-3 PUFA contribute to an expecting mother having this health circumstance (Lu & Lu, 2007).

Iron-deficiency anemia is another nutrition related factor leading to IMR. Anemia is a condition categorized by a low red blood cell count, or a decreased ability of the red blood cells to carry iron or oxygen. Deficiencies in iron, folate, and vitamin B12 can cause anemia ("Anemia in Pregnancy - Online Medical Encyclopedia - University of Rochester Medical Center," 2014). Maternal anemia during pregnancy increases the risk of anemia in the infant, and increases the chances of pre-term delivery or low-birth-weight of the baby (Ireland, 2010).

Other possible-effects from nutrient-deficiencies may include infections as the immune system may be weakened. In 2009, 15% of maternal deaths worldwide were caused by infections. In addition, pneumonia and infections together accounted for 26% of newborn deaths worldwide ("Accelerating progress 2013 report - norad.no," 2014). It is suggested that deficiencies in vitamin A and zinc contribute to the mother's ability to fight infection properly during pregnancy. As a result, severe infections may be responsible for a portion of all preterm births (Lu & Lu, 2007).

Low birth weight (LBW), the leading cause of infant and childhood mortality is caused by preterm birth and fetal growth restriction. There are a number of nutrient deficiencies associated with preterm birth such as zinc, iron, folate, and calcium. Low pre-pregnancy body mass index (BMI) is often used as an indication of poor maternal nutritional status, and is linked

to small-for-gestational-age (SGA), which is indicative of fetal growth restrictions during pregnancy (Lu & Lu, 2007).

Another complication of pregnancy that can occur as a result of a poor diet is gestational diabetes. This is a disorder in which the body does not produce enough insulin or cannot use it properly. Gestational diabetes is a condition that is directly related to blood sugar levels, which depend on diet. Diets low in sugar, full of complex carbohydrates (pasta, rice, grains), and fiber-rich foods (whole grain cereals, breads) are best to keep down the risk of gestational diabetes ("Gestational diabetes," 2014). Infants of mothers with poorly-monitored diabetes have higher chances of experiencing breathing difficulties, low blood sugar, and jaundice during their newborn period (Lee, 2014). In addition, women with pre-gestational diabetes increase their risk for having infants with birth defects, specifically heart and neural tube defects (Lu & Lu, 2007).

Neural tube defects affect the developing brain, spine or spinal cord of a fetus (Medicine, 1999). Intake of folate is crucial to reducing the likelihood of an infant to develop neural tube defects (Lu & Lu, 2007). During pregnancy, low folic acid intake is also associated with a greater risk of preterm delivery, infant low birth weight, and fetal growth retardation (Scholl & Johnson, 2000). Folic acid is found naturally in leafy vegetables, citrus fruits, legumes (beans), and whole grains ("Folic acid fact sheet | womenshealth.gov," 2014).

### 2.2.2 Effects of Immigration on Nutrition and Health

Immigration has diverse effects on the nutritional intake and health of immigrants. Some of the effects include poorer diets after migration due to stress, and financial difficulty in acquiring food (Delavari, Farrelly, Renzaho, Mellor, & Swinburn, 2013). Immigrants are often faced with increased health risks due to changes in diet (Lynn, 2014).

#### *i. Poorer Diet after Migration*

A study completed in Sydney, Australia, assessed the dietary changes experienced by Ghanaians since their migration. In the study, 80 subjects (45 male, 35 female) were recruited from the Ghanaian Association of New South Wales and from local churches in the metropolitan area of Sydney. The mean Body Mass index (BMI) of participants prior to migrating to Australia was significantly lower than their current measured BMI. BMI is a tool used to identify possible health risks in adults (Prevention, 2011). Ghanaian women immigrants who took part in the study consumed 12.6 fewer servings of fruit per week and 5.3 fewer servings of fish per week (Saleh, Amanatidis, & Samman, 2010). This can lead to a decrease in antioxidant intake, which then increases the risk of cardiovascular disease (Saleh *et al.*, 2010). Fruits can provide essential vitamins and minerals to the body, which are important for good health (Prevention, 2012). Further results from this study indicate that a major contributor to the poor health of the Ghanaian immigrants in Sydney was the affordability and availability of familiar healthy foods, mainly fish.

In Ghanaian cooking, fish is a vital, nutrient-rich part of the diet (*Saleh et al., 2010*). It is found that the regular consumption of fish provides nutrients that can lower blood pressure and cholesterol (Staff, 2014). Fish provides protein, omega-3 fatty acids, and vitamins D and B12 ("Health Benefits of Fish: Washington State Dept. of Health," 2014). In Australia, fish was less affordable than beef and poultry. However, fish is lower in saturated fat as compared to other meat options, like red meat. ("Heart disease and diet: MedlinePlus Medical Encyclopedia," 2014) With the substitution of meats instead of fish into their diet, the intake of saturated fat increases. (*Saleh et al., 2010*)

Additionally, research was done to look into both the change in immigrants' diets after coming migrating to the USA, and the associated change in Body Mass Index (BMI). In this study, some 6,600 immigrants (Lynn, 2014) shows that 10% of the participants experienced a rise in junk food consumption, while 8% ate more meat than they did prior to coming to the USA. 15% of participants reported consuming less vegetables, fruits, fish, rice, and beans.

In another study, the effects of migration on food habits were examined with regards to Somali women living as refugees in Australia. 45 females who had migrated to Australia from Somalia within the years 1996 and 2001 were included in the sample. Results indicate that the usual dietary intake and frequency of consumption of 54 foods were kept constant between Somalia (their country of origin) and Australia (present country), so one can deduce that their diets did not change very much. However, the consumption of processed foods including noodles, crisps, and pizza did increase. 60% of the sample group was overweight or obese. From their time spent in Australia, some noticeable changes to the Somali women's diet include the incorporation of breakfast cereals. Also, ready-baked bread was substituted for traditional bread, and lamb meat was consumed over camel meat (BURNS, 2010).

Based on the results of the studies mentioned above, one can conclude that it is not uncommon amongst immigrants to have a decrease in their intake of nutritious food upon immigration (BURNS, 2010) (Lynn, 2014) (*Saleh et al., 2010*). As a result of this decrease in intake of nutritious food, some immigrants gain weight, and become less healthy overall. If the immigrants experiencing a decrease in healthy food intake are expecting mothers, such lacks in nutrition affects their infant as well (Lu & Lu, 2007).

## *ii. Health Effects of Stress*

Stress is a common experience many immigrants share that often leads to the consumption of less healthy foods (Delavari, Farrelly, Renzaho, Mellor, & Swinburn, 2013). This tendency to consume less healthy foods, sometimes called "comfort foods" during times of stress, negatively affects the overall diet and health conditions of immigrants (Lu & Lu, 2007).

Research has examined the stresses experienced by 41 families from a variety of nations in Africa upon immigration to the USA. Families emigrating from Africa struggle with physical and mental health upon their arrival. Immigrants' health conditions worsen upon time spent in

the US, resulting from health access struggles, poor diet, and a loss of protective factors such as family support (Orieny, 2008).

A study of recent Iranian immigrants to Australia concluded that stress during the beginning stage of the migratory transition was common, which affected diet and exercise (Delavari, Farrelly, Renzaho, Mellor, & Swinburn, 2013). In addition, such stresses lead to the consumption of “comfort foods,” which are usually unhealthy and in pregnant women lead to negative effects on the fetus (Lu & Lu, 2007). One third of the study participants gained weight since migrating to Australia, and this was attributed to the newfound stresses they experienced since their arrival. A few participants mentioned that the means by which they coped with the feelings of loneliness and isolation since their arrival has been by overeating and by eating unhealthy foods. In addition, many participants were very interested in trying the new Australian foods, and this fascination with new cuisine often led to weight gain at the start of immigration (Delavari, Farrelly, Renzaho, Mellor, & Swinburn, 2013).

### *iii. Food access and nutrition: the socio-economic context*

A study was done which compared the risk of food insecurity and its associated health risks among young children who were US citizens with immigrant-mothers and those households that had non-immigrant mothers. The study concluded that children of immigrant mothers are at a higher risk of fair or poor health compared to children born to mothers that were not immigrants. Additionally, it was found that newly arrived immigrants were at the highest risk of food insecurity, thus at the highest risk of fair or poor health (Chilton et al., 2011).

A study conducted by Vahabi et al. concluded that recent immigrants from Latin America to Toronto, Canada struggle through more food insecurity than the general population. Also noted in this research was that the biggest difficulty in securing food amongst the Latin-American immigrants is limited financial ability (Vahabi & Damba, 2013). This study suggests a strong relationship between food affordability and physical health. It notes that the risk of clinical diabetes was approximately 50% higher among house food-insecure households compared to food-secure households. A predicted reason for this trend is that food-insecure households often substitute healthy food with less expensive, but energy-dense food. Also, it is suggested that overconsumption of food takes place in food-insecure households in times of food plenty with the expectation of food shortages in the near future (Vahabi & Damba, 2013).

For immigrant women, awareness of healthy food is not impactful without a financial means to incorporate this nutritional awareness into their lives. As seen in the most recently discussed study, the worry for food unavailability can cause a poor diet as well. Because of this, it is important to consider if these immigrant women are able to afford nutritious food.

Women, Infants, and Children (WIC) is a federally funded program that helps women who may not be able to but want to lead healthy-diet lives do so. Pregnant women or new

mothers who meet certain categorical, residential, income and nutritional risk criteria are eligible for this aid ("Women, Infants, and Children (WIC)," 2014). WIC was created based on studies which showed that women who are pregnant, postpartum, or with infants and young children from low-income families, are at a greater risk of inadequate nutrition or health care, or both. Lastly, WIC participation is linked to a reduction in Low Birth Weight, preterm birth, and perhaps neonatal (newborn) mortality (Lu & Lu, 2007).

In addition to the nutritional linked health issues among immigrant populations, there are many health disparities due to communication barriers between the immigrants and their health providers. As the next section will demonstrate, this may be due to the fact that immigrants may have trouble navigating a different health care system as compared to the health systems in their home country.

## 2.3 Barriers to Communication between Healthcare Providers and Immigrant Patients

Culture and background play a role in a person's perspective on treating illness and health. Many immigrants living in the United States have experienced a different health care system and therefore the medical practices in the US may often be new or strange to them (Mohanty et al., 2005). This difference in treatment may lead to miscommunication between providers and their immigrant patients. This in turn can leave the patient with a negative image of the practitioner and lead to mistrust of their providers. According to an article, *Immigrants and Health Care: Sources Of Vulnerability*, by Derose, "immigrants have lower rates of health insurance, use less health care and receive lower quality of care than U.S.-born populations" (Derose, Escarce, & Lurie, 2007, p. 2). In the following sections: language barriers, effects of culture, and differences in treatment, examples will illustrate how these differences can have adverse effects on the doctor-patient relationship.

### 2.3.1. Language barriers

Language is a central of life, it assists us in understanding what people experience, think, and feel. Due to the fact that countless languages are spoken in various parts of the world, verbal communication can be difficult with individuals from different regions of the globe. When immigrants move to the United States they have a difficult time receiving treatment in hospitals due to the language barrier. Studies of various immigrant groups concluded that difference in language between healthcare providers and their immigrant patients can create communication barriers that lead to an increase in medical errors and poor health outcomes (Pavlish, Noor, & Brandt, 2010). This in part is due to patients having difficulty explaining their symptoms to doctors which makes diagnosis difficult. According to Pavlish et al, (2010), sometimes the doctors and the patients feel disrespect because they feel the other party is not attentive to what they are saying.

Professionally trained interpreters are considered as an effective means of communication between immigrants and medical practitioners, and this allows for accurate and culturally

sensitive information exchange (Schapira et al., 2008). While this may seem a well-intentioned option, according to Schapira et al. (2008), they can be problematic due to a lack of privacy between doctors and patients. In addition the presence of the interpreter may cause the patient to withhold information from the doctor. This may be caused by the patient feeling uncomfortable speaking about symptoms with the interpreter present. Often immigrants bring their children as interpreters but even this strategy has proven to be difficult because the children are typically not very familiar with medical terminology. Sometimes the presence of the children also makes it harder to discuss sensitive topics due to the child's age (Degni et al., 2014).

It is very important for practitioners to communicate with their body language and demonstrate conversational warmth to make certain their patients feel important, comfortable and at ease (Negri, 2012). Practitioners must also be aware of their patient's choice of words since certain words have dissimilar meaning in different countries. For example, western medicine views illness as a disease or a sickness that affects an individual's mind and body--it is biologically-mediated in that it can be treated by focusing on the individual. By contrast, Pavlish et al. (2010) describe how Somali immigrants in the United States viewed illness in the holistic context of social detachment and spiritual disparity as opposed to only an individual.

### 2.3.2 Cultural Misunderstandings

According to a study done by Pavlish et al. (2010) relocating causes a lot of stress and discomfort and it is something that takes time getting used to. In addition relocation may lead to disruption in family and social welfare as well as altered health (Pavlish et al., 2010). According to Vincent et al. (2006), part of this is due to exposure to a different culture. Factors that may affect immigrants include Socio-economic factors as well as the environment they live in, which may account for the poor health among immigrants (Vincent et al., 2006). Consequently, stress of a new environment and changes in lifestyle contribute to a decline in health (Pavlish et al., 2010). It is very important for healthcare providers to be aware of their patient's cultural beliefs which encompass many values. Immigrants may have a different understanding of health and how to deal with illness than US born residents. This presents a challenge for both the doctors to provide for their patients, and the patients taking the doctor's advice.

According to Kripalani et al. (2006) due to the lack of understanding between doctors from the U.S and their immigrant patients, patients avoid doctor visits because they feel the doctors are not being sensitive to their culture and that they are being treated unfairly due to their race or ethnic background. As a result, they feel that it is not beneficial for them to go to receive health treatment (Kripalani S. et al., 2006). Therefore it is important for health care providers to be culturally competent in order to work effectively in cross-cultural situations. Providers must "combine the tenets of patient/family-centered care with an understanding of the social and cultural influences that affect the quality of medical services and treatment" in order to be culturally competent (South-Paul J. et al., 2005).



The tenets of Patient and family-centered care make aware the significance of family involvement in the health and well-being of infants, children, and adult family members. Patient and family-centered care encourages the health of individuals within the context of a family setting (“Core Concepts”, 2011). In order to achieve this, experts such as Negri and The Association of American Medical Colleges suggest health care providers must build trust by being understanding and showing compassion towards their patients. According to The Association of American Medical Colleges an important aspect of bridging the cultural barrier, it is important for healthcare providers to ask leading questions that will guide the patient to share information (Beamon, 2006).

Cultural traditions influence how women view pregnancy. For example Haitians believe that during the postpartum period women must eat hot spicy soup three times a day and must not have any cold fluid whatsoever because cold fluids “are believed to be harmful to their bodies, causing headaches, arthritis, or digestive dysfunction” (Eubanks et al., 2010). A Haitian woman states that when she went to her doctor after having her baby the doctor told her to drink cold water and apply cold compresses to her wounds. Clearly the doctor was not aware of the woman’s cultural beliefs, but even when the woman tried to explain that she is not allowed to have any cold fluids the doctor insisted that she follow his instructions. Even though the woman did not agree with the doctor’s views, she listened to her doctor and had cold fluids. However, according to Eubanks et al (2010) the experience with the doctor scarred her for life and she did not appreciate how the doctor did not listen to what she had to say and how the doctor forced her into doing something she was uncomfortable with.

### 2.3.3 Treatment differences Among Various Cultures

There are a few significant discrepancies between healthcare providers and Ghanaian mothers in regards to maternal nutrition and health treatment rooted in cultural differences. For example, in northern Ghana women do not eat eggs or other protein foods during pregnancy because it may affect the weight of their newborn. Additionally, some Ghanaian households believe that diseases and infections have a spiritual reason (Gyimah, 2007) which may prevent the mother or family from treating the disease with western medicine. They might seek traditional treatment in forms of spiritual equipment such as talismans, charms, or amulets, reasoning that they want to remove the “bewitching spirit before resorting to modern medicine if need be” (Obeng, 2007).

According to statistics in the article “Giving Birth: The Voices of Ghanaian Women,” (Wilkinson & Callister, 2010) only 15.5% of pregnant women in the Wiameoase are in Ghana visit the prenatal clinic more than 4 times during their pregnancy. The authors observe that most women who have more than one child do not seek care unless they are well into their 2<sup>nd</sup> or 3<sup>rd</sup> trimester of pregnancy, this is due to the fact that pregnancy is believed to be a healthy state which does not require any medical management. They further report that in order to be able to give birth with a 3-day clinic stay or get a caesarian section, mothers must pay a substantial amount of money. Even though care providers encourage women to put financial issues aside,

one can understand why mothers tend not to give birth at the hospital, simply because they cannot afford it (Wilkinson & Callister, 2010).

In order to solicit the view of Ghanaian immigrants on traditional versus western medicine, a study was done in Toronto, Canada where researchers interviewed a total of 512 people, and had 3 focus groups of 9 people per group. Two of the three groups suggested that about 70% of Ghanaians had a positive view towards traditional medicine, compared to only 30% who had changed their mind after living in Toronto for some time. This finding suggests that traditional medical practices are still highly regarded by the Ghanaian population. However, some immigrants have changed their views after being exposed to western medicine as a result of integration into Canadian culture (Barimah et al, 2008). Therefore it is important for health practitioners to understand the influence of traditional medical practices among their immigrant patients in order to be able to provide culturally sensitive medical feedback.

#### 2.4 A look at some of the best practices related to improving communication between healthcare providers and culturally diverse patients

In order to help practitioners better understand the perspectives and experiences of their immigrant patients, there have been many efforts aimed at bringing culturally competent educational materials to healthcare providers. Some of these include educational videos, manuals for medical students, as well as resources on the internet.

##### *i. Videos*

Videos have been used as an effective means of transferring the culturally competent material to healthcare providers. As part of the training program at the University of Minnesota, School of Nursing, a series of four videos have been created entitled “Worlds Apart.” In the videos, patients and their families are followed through a medical examination. One can observe the way they respond to critical medical choices as well as the way they react to the diagnosis of their treatment possibilities. These videos construct a tool that raises awareness about the social and cultural barriers that may play a part in the doctor-patient communication. Through these videos, healthcare providers can become aware of the culturally diverse backgrounds of their patients. These videos should help deepen the doctor’s understanding of the role culture plays in health care beliefs and behaviors. The four featured videos include circumstances consisting of an African American man on dialysis discussion problems of prejudice in the healthcare system, miscommunication due to translation and religious beliefs of an Afghan man, a Puerto Rican woman's social background affecting her health, and lastly a Laos mother’s conflict between western medical practices and her traditional eastern beliefs against surgery and scars (“Cultural Competency Training Videos”, 2014).

Other examples of educational videos include “Cultural Assessment” created by the American Journal of Nursing Company, to be viewed by nursing professionals. The length of the video is 28:37. The video describes how various diseases affect people with different cultural backgrounds and ethnicities. The video then defines cross-cultural communication and provides



examples of how some things may have different meanings across different cultures. At the end of the video, there is a demonstration of an effective nursing assessment. Some skills that are taught in this video are to show respect for different cultures and to accommodate patients based on their cultural values. This is an important point that we can also use when creating resources for healthcare providers in order to emphasize the significance of accommodating patients based on their cultural beliefs.

Another video example is “African-American Health Issues: A Guide to Healthy Living” sponsored by Pfizer and Kaiser Permanente. The 2:25 minute video is intended for healthcare providers and explores the risk factors African Americans are faced with due to lack of access to preventative health care. In addition, this population eats an unhealthy diet, has a high frequency of teen pregnancy, high rate of asthma, as well as social ills including violence and drugs, which are all addressed in the videos.

“The Angry Heart: The Impact of Racism on Heart Disease Among African Americans” created by Jay Fedigan is a 57 minute video which can be purchased for \$195.00 to be viewed by physicians. The video focuses on the epidemic of heart disease among African Americans by telling the story of Keith Hartgrove, a 45 year old that has already gone through two heart attacks and quadruple bypass surgery. A variety of factors that may have impacted Hartgrove’s health is assessed which include depression, stress, diet, smoking, but most importantly the segregation and racism that he faces. Inseparable from racism are poverty, segregation, substandard education, and discrimination which may ultimately lead to day to day tensions causing high stress.

Lastly, the “Quality Care for Diverse Populations” produced by the American Academy of Family Physicians is a group-training program which includes video vignettes as well as written materials for the users. The training program is intended to help physicians become culturally proficient. The format of the video includes doctor-patient visits in an office setting and explores the cultural and ethnic undertones to health visits. This is done by simulating doctor-patient visits and encouraging collaboration with medical interpreters, recognizing cultural factors, and identifying stresses due to immigration. The written material includes discussion questions, learning objectives, as well as tools and tips to help the physicians when faced with such situations (Gilbert, 2003).

#### *ii. Medical School training programs*

In the year 2000, the Liaison Committee on Medical Education (LCME) announced a standard for cultural competence. This new standard seeks to ensure that faculty and students exhibit an understanding of the customs in which people from different backgrounds perceive health and illness, and the way they respond to do different symptoms, diseases, and treatments. In addition, medical students must learn to identify and suitably address gender and cultural biases in health care provision, while at the same time being considerate of the patients’ health. As a result of this standard, there is now greater motivation and emphasis from medical schools

to incorporate cultural competence education into the undergraduate medical curriculum. Therefore, innovative approaches are needed to encourage the assimilation of culturally-aware educational material into medical school curriculum ("Cultural Competence Education," 2005).

Cultural competence curricula include resources in Pediatrics training geared towards medical students. An example includes the General Pediatrics Clerkship Curriculum and Resource Manual. This manual was developed by the Council on Medical Student Education in Pediatrics and the Ambulatory Pediatric Association (APA). Another example of a curriculum is the Training Residents to Serve the Underserved: A Resident Education Curriculum also developed by the APA. The target audience for this resource is pediatric residents and their medical educators. Lastly, the Culturally Competent Health Care for Adolescents: A Guide for Primary Health Care Providers is created by the American Medical Association (AMA). The target audience for this is primary care physicians who treat adolescents.

As stated in the Cultural Competency guide, cultural competence education is best realized by creating a diverse training approach. This varied strategy should include lectures, in-depth and interactive activities, discussions, as well as analysis of case studies. Moreover, cultural competence education should be continued after medical school and should be integrated into conferences, case discussions, and continuing education conferences. This is all to ensure the delivery of quality care to a diverse population (Beamon, 2006).

### *iii. Social Media*

Supported by the American College of Obstetricians and Gynecologists (ACOG), "When An Infant Dies: Cross Cultural Expressions of Grieving and Loss" is a bulletin that summarized a panel presentation from the National Fetal and Infant Mortality Review program, in 1998. This bulletin examines the cultural traditions of African Americans, Latinos, and North American tribal families in the way they grieve the loss of an infant. This web resource identifies simple strategies for physicians to provide culturally appropriate support for the families. For example the bulletin encouraged doctors to understand the backgrounds of their patients better and try to be empathetic as well as flexible with meeting the cultural practices of individual patients (Shaefer, 1999).

Another resource is the "American Medical Association – Cultural Competence Compendium" online website which contains cultural competence articles as well as links to professional organizations. In addition there is curriculum and training materials and other resources focused on meeting the needs of underrepresented ethnic groups. The website also includes the different spiritual practices and the effects they may have on health care.

#### 2.4.1 Some of the most effective practices geared towards increasing awareness of the Community

In order to effectively target the community as the audience of educational materials, we have looked at previous methods. Previously, in order to improve the diet of Hispanic WIC

population in Washington DC, three educational videos were produced which were based on qualitative research from the target population. The videos aimed to improve the diet while staying within the boundaries of traditional ethnic cooking methods. The videos featured Latino actors preparing common Hispanic dishes and they were filmed in Spanish. In addition to the videos, other nutritional education materials including recipe packets, discussion guides, as well as promotional materials were developed to reinforce the information in the videos. These videos contain step-by-step instructions for food production. In addition, these videos were created for distribution in WIC waiting rooms, focus group education sessions, and for general public usage (Flores, Clark, Butler, & Hamilton, 2003).

In another instance, a nutrition education video and a teacher's guide were produced from focus group interviews, to be used in Florida high Schools. The focus group consisted of high school students, who agreed that creating a video with scenarios and successful stories would work best. The reason focus groups are highly used is that more attention can be given to the specific needs of the community and therefore the materials that are produced are those desired by the audience. These students had expressed interest in ten topics which were of importance to them, including: eating disorders, healthy meals, penalties of unhealthy diets, weight control, nutrition facts, and food labels. In addition, for the production of the videos, the students suggested that too many subjects should not be covered in one video as it might be overwhelming. Moreover, they had suggested that teen-aged actors should be cast to play who come from different ethnic backgrounds in order to better represent the diverse student population (James, Rienzo, & Frazee, 1997)

Lastly, the use of social media has seen to be an effective tool to raise awareness of a community on a topic. "Social media appear to have unique advantages over non-social educational tools" (Paton, Bamidis, Eysenbach, Hansen, & Cabrer, 2011). As was found by Olivia G, there was about 50% exposure of an African American community in the San Francisco area to the topic of Infant Mortality Rate from social media resources. The methods used to raise awareness included mediums such as radio ads, bus ads, churches, posters in clinics, daycares, waiting rooms, as well as community organizations. Therefore this indicates that by increasing the availability of information regarding a topic, the familiarity of a community to the topic is likely to increase (Oliva, Rienks, & Smyly, 2010).

## **CHAPTER 3: METHODOLOGY**

The primary goal of this project is to help healthcare providers learn more about the food preferences of Ghanaian women, how they prepare food, and the nutrition content of that food in order to better advise pregnant Ghanaian women on culturally appropriate and healthy food choices which can lead to better pregnancy outcomes. The secondary goal is to collaborate with women from the Ghanaian community to identify acceptable healthy food substitutes for pregnant Ghanaian women. Through extensive collaboration and feedback from medical practitioners and members of the Ghanaian community we produced two videos that sought to improve communication between medical practitioners and Ghanaian women about food choices during pregnancy. The objectives of our project were:

- 1.) Identify the views of Ghanaian women in Worcester toward the health care they have received during their pregnancy
- 2.) Understand the concerns that health practitioners have in regards to providing care for pregnant Ghanaian women
- 3.) Acquiring an understanding of common Ghanaian foods and their nutritional value in order to suggest culturally-sensitive healthy alternatives
- 4.) In collaboration with members of Nhyira Ba, identify key themes and filming strategies to produce a set of engaging and culturally appropriate videos about nutrition and food choices for providers and Ghanaian community

This chapter describes our efforts to realize our objectives.

### 3.1 Identify the views of Ghanaian women in Worcester toward the health care they have received

To better understand the views of Ghanaian women towards the health care they received in Worcester during their pregnancies, we conducted five thirty-minute interviews with members of Nhyira Ba and the Worcester Healthy Baby Collaborative. In our interviews we discussed infant mortality, cultural barriers that Ghanaian community members face when moving to a new location that might induce stress, and lastly ways to implement maternal and nutritional information to the community.

We obtained consent from the interviewees to record all of our interviews. Prior to beginning the actual interview, we started off by giving a brief summary of our project from a script to make sure all the interviewees had the same information, and told them what we hope to gain from the professional that we are interviewing at the time.

To gain knowledge about diet and practices of pregnant women in the Ghanaian community, we first interviewed healthcare professionals Susanna BioNyarko, a Ghanaian elder and patient advocate at the Family Health Center, and Grace Williams, the Ghanaian chair of the Nhyira Ba project, who is also a registered nurse. These Ghanaian healthcare professionals have firsthand experience of Ghanaian culture. We focused on the following questions in our interviews with them: “

- In the time of your involvement, what have you noticed in terms of your Ghanaian patients’ nutrition intake, eating/religious habits, or work (number of hours or jobs)?”
- “Do your Ghanaian patients have access to medical insurance?”
- “What can we do to help practitioners understand their diverse patients?”
- “Do new Ghanaian mothers feel discriminated against, intimidated by, or confused in using health services? If so, why?”

The complete list of interview questions for Grace is included in the Appendix B.

### 3.2 Understand the concerns that health practitioners have in regards to providing care for pregnant Ghanaian women

In the literature, Edward T. Hall’s “Iceberg model” of cultural influences on communication, illustrates that many of the significant cultural perspectives of a patient may not be fully apparent during a doctor’s visit. Some of the cultural contexts that may not be apparent include socioeconomic status, occupation, health, previous health experiences, religion, education, social groupings and cultural beliefs, expectations, and behaviors. Therefore, we sought to better understand what Worcester health practitioners assume about their Ghanaian patients as well as how that assumption may affect the doctor-patient relationship. Specifically,

one of our primary objectives is to understand the concerns that health providers have in regards to the food choices of their Ghanaian pregnant patients.

In order to better understand the evolving approaches of WHBC which includes the recent collaboration with the Ghanaian community through the emergence of Nhyira Ba, we interviewed Dr. Dale Magee. Dr. Magee, an active member of the WHBC, was the Worcester Commissioner of Public Health. He is also a biostatistician who has analyzed much of the infant mortality data from Worcester. Therefore we sought to seek his knowledge about trends in infant mortality rates among the Ghanaian community in as well as important key factors that may play a role in infant mortality. Questions specific to Dr. Magee's interview include "Why is infant mortality rate so high in Worcester?" as well as "What were the previous strategies and techniques used to decrease infant mortality?" For a complete list of the questions in this interview, please see Appendix A.

To better understand the needs of the Ghanaian community, we interviewed Grace Williams, the chair of Nhyira Ba. For a complete list of the questions from these interviews, please see Appendix B.

### 3.3 Acquiring an understanding of common Ghanaian foods and their nutritional value in order to suggest culturally-sensitive healthy alternatives

Health practitioners often consider the diet of pregnant women because it may be linked to infant health outcome. Ultimately our group needed to make ourselves well-versed in Ghanaian food culture to determine the nutrition content in common foods prepared and eaten by Ghanaian women. In our literature search, we found a reliable source that introduced a few Ghanaian dishes. Through the "Dawn of Cooking," a guide of the food to expect for the Peace Corps members going to Ghana in 2003; we learned many customary Ghanaian dishes. We used this list to obtain a better idea of the different types of Ghanaian food.

To identify common Ghanaian foods, we discussed food choice and food preparation with Ghanaian women in Nhyria Ba.

To gain hands-on understanding in the study of Ghanaian cuisine and practices, our group had dinner at Paloma, a local restaurant that serves traditional Ghanaian food. Our group had palaver sauce, which is a stew often eaten in Ghana, made with spinach, agusi, tomatoes, and onion. Fufu, pounded dough made of yam or cassava, and peanut butter soup were among the foods our Ghanaian collaborators suggested we try. The picture below shows our team at Paloma. Our sponsors and community members are also shown in the photo, and they explained the traditional Ghanaian dining practices, such as washing one's right hand before and after eating, the use of hands in the eating of Fufu, and which foods typically are eaten together.



**Figure 3: Paloma Restaurant**

With the help of Nhyira Ba members we were to determine those dishes where Ghanaian women might be willing to substitute healthier alternatives. The suggestions on the dishes we chose to make the healthy alternatives were based on the following questions:

1. Are the initial dishes authentic to Ghanaian culture?
2. Does the overall taste of the healthier dish seem close enough to traditional dish to still be accepted?
3. Are the healthy alternatives simple and easy enough to be practiced?
4. Which dishes have the greatest potential to make a difference in these women's health because they are popular enough among the expecting mothers?
5. Are there any other leaner, more nutrient-rich foods you could see replacing this less-healthy food in this Ghanaian dish?

It was recommended by the members of Nhyira Ba that the dishes with the greatest potential for healthier substitutes was fufu, rice (mixed - white rice with brown), and spinach stew (palaver sauce).

In order to better understand the nutritional side of typical Ghanaian foods, our group interviewed Victoria Anderson, a clinical nutritionist with a specialty in dietetics at UMass Medical School. She was interested in our cause and was eager to help out Nhyira Ba. In our



discussion on maternal nutrition we asked the following questions: Appendix C contains the meeting minutes from meeting with Victoria Anderson.

1. What have you seen lacking in the diet of pregnant Ghanaian women?
2. What are the most common ailments women are exposed to with the nutrients that are most frequently lacking?
3. What may be some good ways to incorporate missing nutritious foods into their diet?
4. How available are the foods (especially vegetables) Ghanaians are accustomed to in Ghana locally here, once they come to the states?
  - i. If not, are there foods similar enough common in their diet available to them?

### 3.4 In collaboration with members of Nhyira Ba, identify key themes and filming strategies to produce a set of engaging and culturally appropriate videos about nutrition and food choices for providers and Ghanaian community

From our background research and interviews with Nhyira Ba members, we, along with our sponsor Jen Moffitt and Nhyira Ba identified topics about nutrition, food preparation, and food choices for short videos. We originally came up with the idea of creating three fifteen minute videos; the first would demonstrate the interaction between Ghanaian patients and their doctors; the second would focus on Ghanaian foods and its nutritional value, by interviewing interview a Ghanaian nutritionist, and the third would be a cooking show that involves cooking healthy alternatives of common Ghanaian foods. After discussing our video idea and looking at the pros and cons we decided to make some changes to the videos while still keeping the overall goal of the project.

Through further discussion and script development with Nhyira Ba and our sponsor, we identified two key themes. One video was targeted at medical practitioners who provide care for pregnant Ghanaian women and considered cross cultural perspectives on food; the second was targeted at the Ghanaian community and looked at healthier alternatives for common Ghanaian foods. In order to capture what we want our audience to see in the video, we developed storyboard, which can be seen in Appendix F. We then filmed the videos; with equipment from the Academic Technology Center we used three cameras to capture the action. The videos were filmed in different locations. For the video targeted to medical practitioners the locations included WPI's radio station, a local Ghanaian restaurant, and Family Health Center of Worcester. The healthy alternative food choice video was filmed in Mercy Amo's home. After shooting the video, we edited them using Adobe premiere pro.



## CHAPTER 4: FINDINGS

The emergence of Nhyira Ba as a subcommittee of the Worcester Healthy Baby Collaborative has helped the WHBC better understand how Ghanaian women perceive their pregnancies and what they expect in their interactions with medical staff and researchers. In this chapter, we discuss Nhyira Ba as the link between the Ghanaian and the medical community. Here we consider what we've learned about the concerns doctors have about the nutritional intake of their Ghanaian patients as well as the concerns Ghanaian patients have about local health services. We then discuss our collaboration with representatives from both the Ghanaian and medical community in Worcester and describe what we have learned by working with Nhyira Ba regarding cross cultural research. Lastly, we discuss Ghanaian food practices and the videos we produced in collaboration with Nhyira Ba and the Family Health Center.

### 4.1 Nhyira Ba: The connection between the Ghanaian community and the medical community

Cultural diversity can present challenges, specifically in a doctor patient relationship, if the doctor does not know how to approach cross-cultural interactions. This may be due to the fact that the interactions lead to a patient's perception of cultural insensitivity or ignorance of the practitioner. As a result, communication barriers between medical practitioners and their culturally diverse patients are at present a concern in areas containing large immigrant populations which includes Worcester.

Though communication may be an issue, we learned through our interviews with our sponsor Jennifer Moffitt there is a sense of respect between practitioners and their culturally diverse patients in Worcester. We also learned that the Family Health Center (FHC) of Worcester is trying to further bridge the gap between the two communities through the use of community advocates. Sussana BioNyarko is a community advocate at FHC and is herself a Ghanaian immigrant to the United States. She works alongside the nurses and doctors in order to help reduce communication barriers for the Ghanaian patients as well as aid them in navigating health services. Family Health Center also has community advocates for other ethnic groups including the Hispanic and Vietnamese population.

Though progress has been made for culturally diverse patients, such as Ghanaian patients, to feel more at ease using health services, there still remains much work to be done. In addition to aiding the Ghanaian women in navigating health services, reducing communication barriers for both patients and practitioners is currently a focus.

In an effort to further advance these works, Nhyira Ba was created in 2013 as a subcommittee to the Worcester Healthy Baby Collaborative. Nhyira Ba means 'Blessed Babies' in Twi, one of the languages spoken in Ghana, and has been created in order to serve as a connection between the Ghanaian and medical community in Worcester, MA.

#### 4.1.1. By the Community, For the Community

Nhyira Ba is a Ghanaian-led community organization that aims to better understand Ghanaian behaviors and practices around pregnancy and to set up programs to support healthy pregnancies. Nhyira Ba is able to directly convey the concerns of the Ghanaian community to healthcare providers by having the motto “by the community, for the community.” This slogan is translated into action through the Nhyira Ba Facebook page, church meetings, and by encouraging direct community involvement in the Nhyira Ba efforts.

During our collaboration with Nhyira Ba, we saw the direct effect of the Ghanaian community’s participation in the subcommittee. Grace Williams, a registered nurse and Ghanaian radio show host, who is deeply connected with the Ghanaian community of Worcester, was announced the new Chair of Nhyira Ba. As such she is in charge of leading the monthly meetings. In addition, Mercy Amo, also a Ghanaian radio show host who is deeply invested in the project and regularly attends Nhyira Ba meetings. Amo volunteers her time and resources in order to help with the creation of informative videos for the Ghanaian and medical community. Other women from the Ghanaian community also actively participate in the subcommittee meetings indicating their interest in the project. Therefore it is observed that members from both the medical as well as Ghanaian community are involved in Nhyira Ba. As a result, the motto “by the community, for the community” is being recognized, thereby making the subcommittee very practical in its proposition to help the understanding between the two communities.

#### 4.1.2 Involvement of Other Organizations in Nhyira Ba

Efforts from a variety of groups to the subcommittee have greatly supported the work being accomplished by Nhyira Ba. In response to two decades of projects and studies to reduce the overall infant mortality rate in Worcester, MA, Nhyira Ba was created. The two aspects that make it stand out from previous efforts are that it more directly involves the community being affected by IMR, as well as the contribution of other groups such as March of Dimes, Clark University, and UMass Medical School, that are also working towards the same goal. The contribution of these groups bring alternative perspectives to the subcommittee which include statistical support from the March of Dimes, research perspective from Clark University and physicians perspective from UMass Medical School.

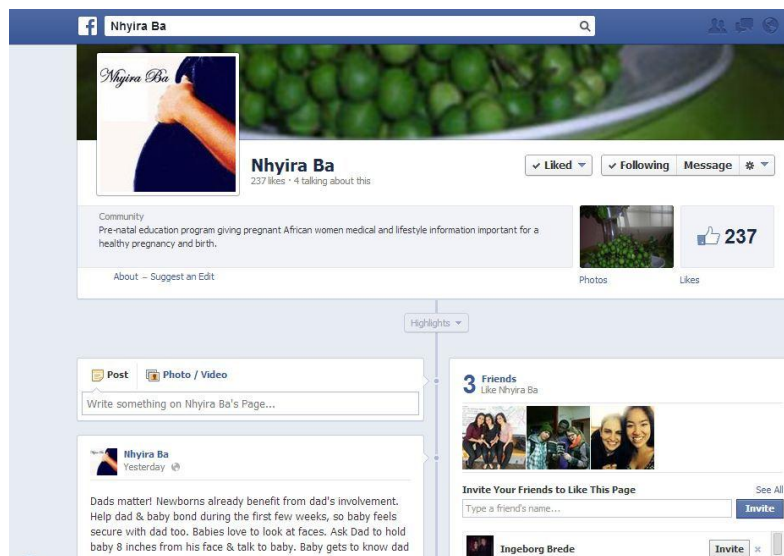
March of Dimes is a nationally accredited program that works to end premature birth, birth defects, and infant mortality. Alexis Travis is the State Director of Program Services for the March of Dimes and an active member of the Nhyira Ba subcommittee. By having the close connection with March of Dimes, Nhyira Ba can stay up to date on national trends in regards to IMR as well as strategies being implemented across the nation to combat IMR. At the second Nhyira Ba meeting, Alexis brought to our attention the new March of Dimes 2013 Premature Birth Report Card which had been recently released. In the report card it was indicated that Massachusetts had 10% preterm births, which is one of the leading causes of infant mortality. In addition, the African/African American ethnic group continued to have the highest reported IMR.

Clark University in Worcester is also an institution that contributes to the efforts being headed by Nhyira Ba. Professor Marianne Sarkis of Clark University, a medical anthropologist, is an avid contributor to Nhyira Ba. Her efforts in coordinating different programs with Nhyira Ba include the development of an educational video regarding Ghanaian women’s health. The video featured Maame Grace (Ghanaian elder) and seven other women speaking about the ways they take care of themselves, encouraging other women to ask for help, and to talk to men with any concerns they may have. The video was filmed in Twi with English subtitles.

In addition, Professor Sarkis prepared “Text 4 Baby” flyers in Twi. The flyers would be beneficial for Ghanaian women who are more fluent in Twi to learn about the great services that “Text 4 Baby” offers. The flyer features pictures of Ghanaian women in order to be culturally sensitive. These flyers were then distributed to healthcare community meetings, grocery stores, and other locations of interest to the Ghanaian community.

Lastly, there are collaborations with UMass Medical School. Shelly Yarnie hosts a Population Health Clerkship for medical students in order to help them become better familiarized with Ghanaian patients. This Clerkship is a two week program for Medical Students from UMass which allows them to be fully dispersed in the Ghanaian community and culture and learn of their background.

#### 4.1.3 Nhyira Ba Outreach Efforts



**Figure 4: Nhyira Ba Facebook page**

By utilizing several different outlets and sources, Nhyira Ba is able to expand its efforts to provide Ghanaian women tips on navigating the healthcare system and allowing for a platform of understanding between the Ghanaian women and medical practitioners.

The Nhyira Ba facebook page serves as a social media source of education for immigrant Ghanaian women. The facebook page disseminates useful information about nutrition and pregnancy to the Ghanaian community. In addition, other health related resources and videos are shared on the facebook page. Therefore this allows for more direct exchanges between the medical community working on Nhyira Ba and the Ghanaian community living in Worcester. Examples of these educational materials include the educational video created by Professor Sarkis on Ghanaian women's health and well-being.

In addition, the inclusion of short blurbs on the Facebook, regarding health and nutrition, are great reminders for people as they show up in Ghanaian women's Facebook newsfeed. Our group created blurbs that were mainly based on a nutrition module from Blessed Babies educational curriculum. The purpose of the blurbs was to serve as helpful reminders for the Ghanaian women with regards to their health and overall wellbeing during pregnancy. Appendix G shows a sample of these blurbs.

Overall it seems that with the emergence of Nhyira Ba, there is much work that is being accomplished and there are so many people dedicated to this cause. Nhyira Ba is trying to instill the notion that high infant mortality in the Worcester region among African women can be most effectively combated, if the community itself is directly involved in the cause.

## 4.2 Collaboration with Community Representatives in Worcester: What we learned working with Nhyira Ba

### 4.2.1 Research Fatigue in the Community

There have been successes in determining possible factors leading to infant mortality through monitoring infant mortality rates by the WHBC and focus groups with the Ghanaian community in the early 2000s. However, we have found that among the Ghanaian community there is considerable "research fatigue". According to persons involved in the WHBC, the community has been extensively researched and interviewed in recent years (G. Williams, personal communication, 2013, D. Magee, personal communication, 2013). One consequence is that many women in the Ghanaian community no longer want to act as research subjects and take part in complicated interviews and surveys when they do not see the direct benefits. This dynamic influenced our project. Our project originated as a web-based delivery system of nutrition information—which was seen as unsuitable to the needs and interests of the Ghanaian community. It changed to a much more collaborative endeavor where we and women from the Ghanaian community co-created outreach material about Ghanaian food, food preparation, and nutrition to help inform the views of medical practitioners

### 4.2.2 Culture: Family dynamic and Privacy in the Community

#### *i. Family dynamic*

Typically when migrating to another location, immigrants often end up having to leave family members behind and hence lose their support networks. These new dynamics play a substantial role in the well-being of pregnant women. Instead of extended families to help,

Ghanaian women may not have other family members to help them raise their children, find work, go the supermarket, etc.

#### *ii. Privacy in the community*

According to multiple interviewees, Ghanaian residents in Worcester tend to be very private in talking about their personal lives, particularly a subject as sensitive as pregnancy. In the Ghanaian community, women are unwilling to talk about health and family matters, especially about situations such as losing a child; it is a conversation that seldom occurs in the community. This unwillingness can hinder physician-patient discussions on the role of nutrition in pregnancy.

#### 4.2.3 Medical System Barriers for Ghanaian community due to cross-cultural miscommunication

We also inquired about possible barriers that may negatively impact Ghanaian women navigating the medical system. Cross-cultural misunderstandings can arise when healthcare professionals insist a patient consume foods that may not be within her cultural comfort zone. As one of our interviewees noted “not everyone can understand people who have very strong cultural backgrounds that it’s very hard to let go. Some practitioners can’t understand that” (Williams, personal communication, October 2, 2013). From this, we found it is important to encourage both medical practitioners and patients to adapt, whether to patients with varying cultural backgrounds or health care systems that are different than what immigrant patients are accustomed to.

Key findings from our interview with Grace were that doctors may not understand that their patients have difficulty explaining what they are going through. For example, the Ghanaian patients may not be able to say what kinds of medications they are taking supplemental to their prescribed medication even if it may be hazardous to their health. It is also noted that the job of the physician is to educate their patients with the awareness that their patients are entitled to do as they wish with that information. Therefore it is an important finding from Grace that she believes that health care providers should be educated to learn to understand the cultural backgrounds of their patients as well as to allow their patients to continue their traditional medicines if it is helping them health wise. :

In addition, from collaboration with Nhyira Ba we learned what Ghanaian women’s views may be on interacting with health professionals in terms of feeling discriminated against, intimidated by, or confused in using health services. Additionally, immigrants tend to compare their experiences here to the healthcare they had received in their home country and they understand that the healthcare here is much better.

We also inquired about the priority that healthcare and nutrition play in the lives of immigrant Ghanaian women. Since these women are typically balancing two or three jobs, going

to school, taking care of their family, they do not have time to seek regular medical attention. Additionally, between the need to send money back home to families in Ghana and the high cost of medical care in the US, financial affordability may be another reason the health care system is not utilized to its fullest potential. This is an important finding because it shows that Nhyira Ba may have to work even harder to encourage Ghanaian women to make healthcare and nutrition more of a priority.

We also found that Ghanaian mothers may feel discriminated against, intimidated by, or confused in using health services - this may be due to comparison of the healthcare received back in their home country to the health care in the U.S as it may be viewed as better or worse. One reason for misunderstanding between healthcare providers and Ghanaian women is that immigrant Ghanaian women are used to the healthcare they received while in Ghana. Therefore this can lead to miscommunication between physician and patient in terms of cultural perspective.

SNAP, Supplemental Nutrition Assistance Program, benefits are often available to Ghanaian residents who apply. This program provides financial assistance to purchase food to millions of eligible, low income individuals and families. In addition to SNAP, WIC is also available for many Ghanaians to utilize. WIC is a federally funded, supplemental nutrition program for Women, Infants, and Children (WIC). It provides supplemental foods, health care, and nutrition education for low-income pregnant women, expecting mothers, and newborn children up to age five. Evidence suggests Ghanaian women do not use SNAP benefits as much as they could due to concerns that using such nutritional services might jeopardize their immigration status. According to an advocate for the Ghanaian community, SNAP benefits are provided to Ghanaian mothers in Worcester who qualify, but for many women these benefits are too meager to purchase an adequate amount of healthier foods (BioNyarko, personal communication, October 2, 2013).

The maximum monthly allotment of SNAP benefits for a family of four is \$632. Therefore for a family that relies entirely on SNAP benefits, they can spend about \$21 on food per day. Moreover BioNyarko claims that time spent working extra jobs to cover the costs of food that SNAP does not cover often takes up a large portion of the time of the expecting mothers to the point where she has too little time to prepare healthy food. Despite the availability of the SNAP and WIC assistance, malnutrition may remain. A possible reason for this is that some Ghanaian women who qualify for Women, Infants, and Children: Food and Nutrition Services (WIC) do opt not to use WIC coupons because they believe, mistakenly, that it might harm their chances for citizenship (Williams, personal communication, October 2, 2013).

Another aspect of accessibility to food is transportation. Women either have cars themselves, have family or friends with cars, or they can use bus passes which are readily

available at FHC. Therefore it seems that transportation does not hinder access to supermarkets, farmers markets, and Ghanaian stores to buy culturally appropriate, nutritious foods.

Lastly through our contact with the Victoria Andersen, a nutritionist at FHC, we learned that often times the children of the immigrants will do some of the grocery shopping as their English might be better. However as a result of their young age, they are attracted to sugary and often times unhealthy foods. Therefore, this is another reason the immigrant families might consume more unhealthy foods.

#### *i. Survey to assess Ghanaian culture and food practices*

In order to figure out what kind of content would be most beneficial to the healthcare community regarding Ghanaian food culture, we created a brief survey. Most doctors have limited knowledge of their Ghanaian patients' food culture and were very interested to find out more about their patients.

#### 4.2.4 What we learned about cross-cultural collaboration with Nhyira Ba

At the onset of our project, we saw our role as one of taking suggestions from our advisors, sponsors, and members of the Nhyira Ba team and catering to their suggestions. Over the course of our collaboration, we saw that everyone's opinion was considered and that everybody had an equal voice. Collaboration with Nhyira Ba enabled us to learn a great deal about the cross-culture experience, especially considering that everyone on IQP team comes from a different ethnic background. Learning about a different culture not only enabled us to discover different ways that cultures approach certain facets of life, but to also find ways that may overlap with each culture. This collaboration was important because it was not simply a hypothetical proposal where the only objective was writing a paper - rather this was something that directly affected the community.

By getting to know members of the Ghanaian community, we were able to build a closer relation to the community and the end result of this project became even more important to us. Nhyira Ba members assisted us in developing content for our videos, including the development of the script and performing in the videos. Working alongside Mercy and Grace from Nhyira Ba gave us first-hand experience in immersing ourselves in another culture without having to travel to Ghana. Having been raised in Ghanaian culture, Mercy and Grace were able to assist us in making our educational videos as grounded in the lives of Ghanaian women.

The amount of dedication invested into this project from our sponsor, Jen Moffitt, and the Nhyira Ba team was substantial, and it helped us realize how much our project could impact the community. Our project sought to break down barriers of communication between Ghanaian patient and their doctors. By asking the simple but powerful question, "What would you want your doctors to know?" we created a forum where everyone's voices could be heard. With the



resources and community members we had access to, we made a tool that can be the starting step to building greater trust in the medical system that will encourage future use of healthcare.

### 4.3 Ghanaian Food Practice and Culture

One of our main focuses during this project was on the nutrition of typical Ghanaian dishes, and how their cooking practices affect their nutritional properties. The Ghanaian diet, similar to many other diets, is high in salt, oil, and amount of food per portion, all of which are associated with the development of high blood pressure, low-nutrient intake, and obesity. Additionally, we learned about the healthy alternatives available for the Ghanaian population to modify some of their dishes slightly to increase the overall nutrition in the dish, as well as the effects that immigration has on diet.

#### 4.3.1 Medical practitioners have limited awareness of Ghanaian eating habits and make recommendations about diet and nutrition that are not relevant to Ghanaian pregnant patients.

There are a number of Ghanaian eating habits that are passed down through generations. The Ghanaian sense of “breakfast” is different than the average US breakfast. Typically the Ghanaian population does not have certain foods designated to be “breakfast foods”. This finding is important for doctors to realize when making food recommendations. This is because if they suggest certain foods for breakfast that Ghanaians typically would not eat, this would suggest cultural insensitivity.

Additionally, it is also noted that calcium is often a lacking nutrient in the Ghanaian diet as the majority of the population does not consume milk or most dairy products. Over time, calcium deficiencies can cause low bone mass and increase the risk of bone fractures. In pregnant women, low amounts of calcium can also lead to poor bone development in the fetus. Therefore, further miscommunications occur when doctors recommend their Ghanaian patients to have dairy products in their diet.

Another food practice Ghanaians often display is the lack of snacking in their daily lives. Since they do not snack, they often have meals with larger portions. Under the assumption that pregnant women often snack, doctors may suggest to their Ghanaian patients to eat smaller portion-sized meals. However since snacking is not a common practice, the women do not follow the suggestion of the uninformed medical practitioner to have smaller portions. In the case that they do follow the doctor’s suggestions on smaller meals, they would receive an inadequate amount of food.

Ghanaians often add excess amounts of salt to their dishes. Salt is a learned taste and that the best way for anyone to “un-learn” the consumption of high amounts of salt would be to gradually decrease the amount added to food. Following this finding, medical practitioners can take away that giving recommendations to cut out salt completely from certain foods, is



unrealistic. However by doctors suggesting a more gradual approach to reducing salt intake, the patients would feel that the ultimate goal of a ‘greatly reduced salt intake’ is more attainable. Making attainable salt recommendations would best benefit the health of the Ghanaian population since excessive salt intake can result in an increase in blood pressure and an increased risk of heart attacks.







#### 4.3.2 Traditional cooking styles carried over to the US from Ghana can have a negative effect on overall nutrition content of the Ghanaian dish.

According to our interview with a Ghanaian nutritionist, Ghanaians often overcook food, which reduce the available nutrients, but many Ghanaian women are unaware that overcooking decreases the nutritional value of their meals.

Oil is often used in excess in Ghanaian dishes. In Ghana there is a lack of refrigeration and the excess oil poured onto food serves as a means of preservation. Our interviewees noted that many Ghanaians still use oil in this way because that is the way cooking has been passed down in their family even though Ghanaians in Worcester have access to refrigeration.




Table 2 below shows foods that Ghanaians in Worcester typically eat. This table shows the main ingredients and the cooking style associated with each of the dishes, which mostly include the use of oil for frying. As can be expected, the cooking style often has an effect on the nutritional outcome of the prepared food as compared to the food when raw, and the various effects are shown in the table. The last column gives a brief description of the overall health content of the dish, ranging from significant vitamin presence to health concerns.

**Table 2: Food Preparation Style vs. Health Outcome**

<b>Ghanaian Dish</b>	<b>Main Ingredients</b>	<b>Cooking Style Used</b>	<b>Cooking Effects on Nutritional Properties</b>	<b>Health/Pregnancy Outcomes</b>
Kelewele 	2 Plantains, lemon juice, oil,	Fry	Increased trans fat	Fried food, high cholesterol/blood pressure ensues
Groundnut Soup 	Meat, groundnut paste, tomato paste	Crock-Pot	Vitamin C depletion	Good source of protein
Fufu 	Cassava and Plantain	Overheat processed starch	Plantain nutrients decreased	Good source of energy, few vitamins
Jollof Rice 	Meat/poultry, tomatoes, cooking oil, rice	Rice-Cooker	None	Good source of vitamin C and vitamin A
Garden Egg and Agusi Stew 	Garden eggs, onion, tomatoes, melon seed, mackerel	Fry onions and tomato	Vitamin C depletion	Good source of calcium and vitamin C
Palaver Sauce 	Cocoyam leaves (spinach), onion	Overcooked spinach	Vitamin C depletion	Nutritional value reduced due to protein breakdown

4.3.3 Often there is a culturally sensitive healthy alternative that can be incorporated into traditional Ghanaian dishes.

There are quite a few staple foods in Ghanaian culture, but our group focused on the few shown in the table below. According to our Ghanaian collaborators, these dishes are popular enough among the community and have the greatest potential for healthy alternatives, so our team focused on these dishes. Shown below are additional examples of the staple dishes in the Ghanaian cuisine that were to be used in the ‘Healthy Alternative’ portion of our cooking video. The main ingredients and the nutritional benefits of the foods are stated. Lastly, included in the chart are the areas each dish could improve on in order to increase overall nutritional quality.

Dish Name	Spinach Stew	Vegetable Stew	Fufu
Image			
Main Ingredients	Spinach, tomatoes, melon seed, mackerel	Rice, Onions, Tomato Stew	Fufu boxed flour
Nutritional Benefits	Iron (spinach), calcium (mackerel)	Vitamin C (tomatoes)	Fiber and potassium (plantain)
Unhealthy Characteristic	Overcooked → nutrient loss	1. Excess salt/oil 2. Palm Oil	Not enough nutrients
Healthy Alternative/Advice	If using frozen – thaw first then mix	1. Fresh tomatoes 2. Canola Oil 3. Added vegetables	Make Fufu with half boxed/half blended plantains

**Table 3: Healthy Alternatives**







Healthy alternatives to the Ghanaian diet can be made in a number of ways. Brown rice can be added to white rice because the former has more whole grains since it has not been bleached. In addition, the nutrition of vegetables can vary greatly depending on the way they are prepared or stored. For example, whenever possible, it is recommended to use fresh tomatoes over canned because the latter sort have high amounts of sodium. To compensate for calcium deficiencies in many Ghanaians who lack dairy products in their diet, coconut milk can be an option to provide calcium. Almonds, canned salmon (eaten with bones), and sesame seeds can also compensate for the lack of dairy in the typical Ghanaian diet. Lastly, the nutritionist

emphasized that Ghanaians use excess amounts of salt in their diet, but the main form by which they do so is through Maggi cubes. She also suggested that the use of Maggi cubes in the Ghanaian food practice be gradually lowered.

4.3.4 Immigration can have an adverse impact on the diet of Ghanaians as the tendencies for food choices change with food availability and food costs.

The transition from Ghana to the US is difficult for many, but it helps if traditional foods, which are an essential part of any culture, are available after migration. Some of the healthier foods available in the US are unfamiliar to the Ghanaians. In addition, some of the traditional foods in Ghana are not available locally in Worcester, MA. For example, to accommodate for the lack of Coco Yam, the Ghanaian community substitutes spinach in their foods. Many foods the Ghanaian women are used to eating are the ones that contain large amounts of carbohydrates and lack many essential nutrients. (BioNyarko, personal communication, October 2, 2013). A balanced diet is one that includes essential nutrients. A lack of nutrients can cause pregnancy complications.

**Table 4: Ghanaian Food and its Availability**

<b>Common Ghanaian foods</b>	<b>Nutritional properties (in relation to pregnancy)</b>	<b>Food availability</b>	<b>Food substitutes w/ similar nutritional properties</b>
<p><i>Palavar sauce</i></p> 	- iron	Typically made w/ Cocoyam leaves	Spinach
<p><i>Fresh tomatoes</i></p> 	- vitamin C - vitamin A	Less commonly used than in Ghana because affordability difference	Canned tomatoes (contains more sodium than fresh tomatoes)
<p><i>Fufu</i></p> 	-starch (energy) -potassium -vitamin A (plantains)	Cassava not widely available (only at certain times)	Available in processed in a box; less natural than the traditional Ghanaian
<p><i>Tuozañi</i></p> 	- magnesium - phosphorus	Imported (expensive) cheaper during some seasons	No substitute
<p><i>Palm kernel soup</i></p> 	-fiber -protein	Imported, so expensive	Canned and imported
<p><i>Peanut butter soup</i></p> 	- protein (though high in cholesterol)	Ghanaian one only has the peanut butter, no other added ingredients	Peanut butter in the US has other ingredients added to it

In Table 4, the nutritional benefits of the Ghanaian foods as well as reasons the food may not be a part of the Ghanaian diet in Worcester (whether it be for financial reasons or because the food is not sold in markets here) are mentioned. The last column describes the substitutes, foods available in Worcester, MA that Ghanaians use to in place of their traditional Ghanaian foods.

We have discovered that although there are quite a few foods unavailable in the US from Ghana, there is still quite a number of foods that are available in the States.



**Figure 5: Boxed Fufu**



**Figure 6: Kenkey**

Above and below are two staple parts of Ghanaian cuisine. A picture of a box of Fufu and one of Kenkey are above.

#### 4.4 Bridging the Communication Gap

From background research and working with our sponsors, our IQP group, Jennifer Moffitt, and Nhyira Ba, came to a consensus that the best means of bridging the gap in the cross-cultural split as experienced between medical practitioners and Ghanaian patients would be to create culturally sensitive videos. In order to do so, we worked closely with Nhyira Ba and practitioners from Family Health Center to identify themes for the videos. Together we developed a culturally relevant script that would appeal to both the Ghanaian and medical audience. Lastly, our group learned about improvisation while filming and acquired experience in the post-editing process.

##### 4.4.1 Identifying key themes in the provider video

Through our close collaboration with our sponsors, we learned much about the needs of the Ghanaian community. The meetings with our sponsors that were held either at Family Health Center or WPI, greatly influenced the themes we chose to emphasize in the videos. These meetings also helped us identify the appropriate audience for each video and determine the length of each video based on how much time the medical practitioners and Ghanaian women

would devote to watching the videos. After many meetings and discussions, we figured the best way to grasp the viewers' attention was to include more than one setting in the script. The settings included a radio station, a Ghanaian restaurant, and hospital examination room to make the videos more engaging.

These videos helped voice the concerns of Ghanaian women while also showing that they are powerful, informed, and thoughtful. In this way we sought to change what is typically a power imbalance between Ghanaian women and doctors. Together with our sponsors we came to the conclusion that by focusing on a few themes throughout the videos such as nutrition and communication, we could help improve the relationship between health practitioners and their patients and the Ghanaian community overall.

For the medical practitioners we chose to illustrate the need to be sensitive to their patients' culture in order to reduce communication barriers. Collaboratively, in the first video we deemed it necessary that doctors become more familiar with the foods that Ghanaians eat (and their respective nutritional value) since food is a large part of the culture. Without cultural awareness, a doctor might appear to be culturally insensitive, thus creating a sense of mistrust in the patient. Our team decided to illustrate this idea to practitioners in hopes that they could make efforts to bridge this gap by becoming more aware of Ghanaian customs around food.

The first video was directed at providers. Our second video, which focused on the importance of nutrition in maternal health, was targeted at Ghanaian women. The point of this second video was to show the healthier alternative of common Ghanaian food that Ghanaian mother can use for more nutritional meals especially during pregnancy. Instead of going with our original project idea, which was to translate the nutrition module into an online lesson, we chose a much more interesting way to report the importance of nutritional value in common Ghanaian dishes. Our sponsors informed us that many Ghanaians prepare food that has limited nutritional value for pregnant women. Therefore they felt that it was important to provide alternate recipes to increase the nutritional content of these common dishes.

In addition to the findings mentioned above, for the second video, our team agreed that the importance of portion-control needed to be further emphasized in the educational videos. Eating nutritious foods is of high importance for overall nutrient intake, however making sure to get the right amounts of food is also crucial. Overeating leads to diabetes, high Body Mass Index (BMI) and poor nutrition. Because of this, our team made it a point to include details of portion-size in the healthy cooking video.

#### 4.4.2 Developing the script collaboratively

It is important to emphasize the involvement of our sponsors throughout the entire process of making the script. Our WPI project team met with Mercy, Grace, and Jen often and



the script was developed largely with the help of our community sponsors. Our sponsors' feedback on the scripts was very helpful in letting us know how relatable the material was to health practitioners as well as Ghanaian women. With their collaboration we determined how to best communicate the themes in an appropriate manner to both the Ghanaian audience and the medical community.

The first script was too critical of medical practitioners and portrayed them in a one dimensional way, suggesting they had little awareness of cross cultural miscommunication issues. Therefore it was suggested by Jen that video one would be just as effective and more realistic if the cultural unfamiliarity of the doctor was made in a more subtle way. To make the doctor's role more realistic, we highlighted Jen's knowledge as a practitioner. Additionally, Jen's character (the doctor) had too much of a leading role in the first script - therefore we balanced the roles between the doctor and patient character; we found it was important to portray the balance in the power relations between the characters.

Jen proposed the idea of having two contrasting Ghanaian pregnant patient-doctor interactions. In one scene, the practitioner would be unaware of Ghanaian culture and nutrition; therefore the viewers would see the negative effects of the doctor's unfamiliarity.



**Figure 7: Radio Scene**



After the unsuccessful medical appointment, the doctor would become acquainted with Ghanaian custom dishes and cooking practices.



**Figure 8: Paloma Restaurant**

The audience would then be directed to the final scene where another attempt at cross-cultural communication is made. Based on the contrast between the two appointments, it is clear that communication between doctor and patient is more effective when the doctor is culturally aware.



**Figure 9: Family Health Center**

For the second video, the team had to critically think about how to improve the nutritional value of local Ghanaian diet while making simple enough changes to be generally accepted by the Ghanaian community. With the help of the FHC nutritionist, Jen, Mercy, and Grace and we came up with the three foods that Mercy would cook in the healthy cooking video. The chosen dishes were palaver sauce (spinach stew), rice and vegetable stew, and fufu.

**Figure 10: Healthy Cooking Alternatives**





There were quite a few ideas brainstormed to make these dishes healthier, but our team had to be careful to not make the changes too drastic or else they would not be widely received by the Ghanaian community. For example, when finding out just how much healthier brown rice is than white rice, our team suggested completely switching out the traditional white rice used in ‘rice and stew’ for brown rice. But from our collaboration with our Ghanaian sponsors, we decided to suggest to the community to make half brown rice, half white rice. To replace white with brown rice was thought to be too much of a change to the traditional way of preparing rice in the Ghanaian community.

#### 4.4.3 We found that improvisation can lead to a more natural dialogue and is often necessary when using technology and working collaboratively.

The scripts contained dialogue and for the provider video, the script was followed very closely. And although the scripts contained dialogue, they were created so the actors would know the main points to discuss and the order of the script, yet allowing them to make any improvisations as they best saw fit. This was especially the case with the healthy cooking video. To make the acting as natural as possible, some parts of the script were written as key speaking points to hit rather than dialogue. This left room for improvisation and resulted in a much more natural-feeling dialogue from the actors. The acting was very successful in its execution.

**Figure 11: Improvisation**



There were some instances where technical improvisation occurred. Such an improvisation was necessary when one of the external microphones did not pick up sound properly; therefore we resorted to recording some scenes on our cell phones to provide maximum angle shot coverage. Additionally, at one of the locations we filmed at, there were only two available outlets to charge the camera batteries, therefore our team utilized cell phones to compensate when one of the cameras ran out of charge.

As our team set up the camera angles, we ran into problems of cameras or people being in the shot. Since our pre-made storyboard suggested a few angles to focus on, we tried to capture both the facial expressions of the actors at significant times, and to zoom out when all of the characters in the scene were interacting together. It was important, as we have learned from filming, to create visual diversity for the viewers. It was a learning experience to know how the camera worked, and how to film in such a way that was visually interesting for the audience, all the while seeming natural and making the content of the scene apparent.



**Figure 12: Camera Angles**

## CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

Initially our project started with the intention of adapting online a maternal health nutrition curriculum, *Blessed Babies*. However, such an approach was considered to be both irrelevant and inappropriate for Ghanaian women. Taking this feedback into consideration, our project shifted and sought to take into account more fully the perspectives of Ghanaian women about food, nutrition, and pregnancy. Through a collaborative process our videos depicted themes and issues that Ghanaian women believed medical practitioners needed to know about their views about nutrition and their food practices. The goal of these videos is that the medical practitioners, equipped with newfound knowledge would be more capable of giving better maternal health advice.

Collaboration with Nhyira Ba influenced our project greatly. Through our extensive work with the organization through interviews, community meetings, and feedback our group has been able to learn much about the struggles Ghanaian immigrants face in Worcester. These adversities range from the miscommunication with local medical community, to poverty, lack of support systems, to not having certain traditional foods available in Worcester. A large number of factors contribute to poor maternal health seen in Ghanaian immigrants, which greatly increase the chances of infant mortality rates. This project has helped to give the Ghanaian population a voice to share what they would like their doctors to know about nutrition and their expectations as patients.

### 5.1 Limitations

At the start of this project, it was understood that a research-based approach such as using focus groups would be unlikely to work with the Ghanaian community. Reasons for this are the sensitive nature of infant mortality as well as the widespread research fatigue felt by the Ghanaian community. Research fatigue prevented our group from a more involved collaboration with Ghanaian women that could have helped us survey their opinions and views in a quantifiable, detailed manner. Therefore our results were limited to the feedback from our sponsors and may not have been completely representative of the Ghanaian community as a whole.

Additionally, our survey to medical practitioners which assessed the aspects of Ghanaian culture and practices members in the medical community were unfamiliar with had a limited number of respondents and so may not be representative of the views of the larger medical community in the city. .

### 5.2 Recommendations

Based on our experiences collaborating with Nhyira Ba, we recommend the following:

**We recommend the continued collaboration with Nhyira Ba to improve the student relationship with the Ghanaian community.** While collaborating with Nhyira Ba, it may be

beneficial for future students to become more directly involved with the Ghanaian community. Naturally, advances in this type of relationship should be taken in collaboration with Nhyira Ba, as it is sensitive and entirely dependent on the reception of the community to the students.

**We recommend showing the videos to both practitioners and Ghanaian women in order to identify new themes and platforms that may help enhance communication.** By getting more feedback from both the medical community and Ghanaian women, efforts can be more directly used in aspects that may be able to further enhance communication between doctors and Ghanaian women. For example, the use of radio plays, additional videos, phone apps, and other forms of social media may be productive means of improving communication.

**We recommend the development of a non-invasive way to determine the efficacy of the videos amongst the Ghanaian population.** Since research fatigue has been a limitation for research amongst the Ghanaian community in the past, a less intensive, more interactive means of acquiring feedback is recommended. Since Ghanaian culture is known to be more private towards people outside of their own culture, by having community members conduct the studies. Therefore a setting where the relationships are deeply-rooted in community would be the best place to gather feedback.

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## Appendix A – Interview with Dr. Dale Magee

**1) Why is infant mortality rate so high in Worcester?** If we look at Hispanic community, low education rates, high single parenthood rates, and high poverty rates, these are all associated with the increase in IMR. In the black population, over the years, the number of births to African Americans in Worcester has decreased in the last 20 years. Babies born to immigrant populations have been going up, and if we look at where these women are coming from, the most are coming from Ghana. Looking at prof of the women, diff from Hispanic women who are dominated by single parenthood, high school drop outs. Premature birth is the driving force in infant mortality. For Ghanaian community, babies are dying before the first day. Many of them are dying within hours because they're so premature, they're beyond reach of medical care. What triggers it is unclear. IMR in Worcester is 20 per 1000, lower than it would be in Ghana. In Ghana, the rate is 60 instead of 20. Babies in Worcester 3-500g. In Ghana wouldn't be recorded because there are so many births occur outside of hospital, so IMR is 60 but would likely be higher in Ghana because weight isn't reported. Ghana had a considerably higher incidence of low birth weight babies compared to other African countries. This opens possibility of it being cultural or genetic cause as opposed to socioeconomic status. Ghanaians are employed, trying to advance their education, and prevalence of people from Ghana has grown in the past decade.

**a) What percentage of infant mortality rates is attributed to the Ghanaian community in Worcester?** As high as 25%, but it varies from year to year since the numbers are small

**b) Why does location seem to affect infant mortality rate of immigrants?** It's unclear. It could be the location or stress of being in a new environment. There's some data to state, infant death among immigrant population tend to be lower than subpopulation who're native to U.S. Looking nationally at immigrants who're black, immigrants have lower infant mortality rates than African-Americans.

**2) What are the organizational methods and previous techniques used to decrease infant mortality?** Part of it has to do with access. Particularly among people who're new to area. The concern is that they don't understand the health system or healthcare, making sure that there's outreach to the groups and that early in the pregnancy they're able to access prenatal care, not only the medical help they need but nutritional supplementation. We had a program called healthy start initiative, which got defunded last year, to connect women giving birth in Worcester. Looking at referrals for food, housing, and other stresses that pregnant patients mind, etc.

**3) In the time of your practice, of all your Ghanaian patients, what have you noticed in terms of:**

**a) Nutrition (do they have lack of)** I don't have a lot of Ghanaian patients myself, just to let you know, I involve myself with this project, and I stopped doing deliveries over 15 years ago. My suspicion is that they probably don't have typical western diet, so there is an issue regarding content that we don't understand and also when it comes to recommending how to improve, we need to recommend what's appropriate to their native diet. The other issue that has come up is whether there are any unusual supplements that provide danger or habit to them. There's a condition called pica, where they eat things that have no nutritive value (clay or ice). As immigrants, they don't always have a tremendous amount of trust in the healthcare system or outsiders. When we ask questions, the answer we get may be what they think we want to hear.

**b) Habits (eating, religious)**

Are there any religious practices or cultural barriers that would prevent their consumption of certain foods?

**4) Are Ghanaians in Worcester able to afford healthy food?** WIC provides sources for women, and that likely is the case.

**a) Do they receive food stamps?** I don't know if all of them do or not.

**5) How much data from past research is available about diet and pregnancy within the Ghanaian Community?** I'm not aware of any.

**6) Since our goal is to create videos directed to healthcare providers, do you feel that the videos would be useful or effective?** They have to be brief, so we're talking about Youtube video here and providers would be very action oriented. Distill things to what physicians need to do, that's what they like the most, tell them what to do. Have a solution in the video. Making something for people in Worcester and what kinds of foods Ghanaians want, would be helpful. For example, do they need more iron, vit D, what sources of fruit do they typically eat? Is there anything they typically eat that could be hazardous?

**7) Do you think there is anything else we should know that would benefit this project?** It's an interesting idea; the fact that I don't know a lot of the answers to your questions highlights the notion that what we plan on doing would be very useful. Physicians in general don't have a lot of Ghanaian education at all.

## Appendix B – Interview with Grace Williams

### Before the interview script

Hi Grace, this is Loan speaking. We have Melanie and Atieh in the room. (HI! 😊) Thanks in advance for agreeing to do this interview with us. Just to give you an overview of our project so far, our focus of the project is to develop a series of videos---digital stories or interviews ---of how Ghanaian women in Worcester have navigated the health care system in the city. The videos would be targeted to practitioners in order to help them better understand the views of Ghanaian women. Before we start this interview, do you have any questions you'd like to ask us about the project focus?

### Interview Questions

**1) To what extent would Ghanaian women be interested in participating in such a video project?** Most Ghanaian women hold two or three jobs at a time so the participation part is going to be a challenge, but I do have some people who are very committed to doing something so I will see what I can do. Also, there's a thing with doing things for "free", Ghanaians don't really do things for free and when it comes to volunteering that is a big challenge. But I will try and see if I can get as many women as possible who would be volunteering but it would be a challenge, and depending on the time frame.

**2) We would be willing to train Ghanaian women to make digital stories in a workshop. Do you think such a workshop would be a good idea and, if so, what steps should we take to make it happen?** It would be nice to go to churches and introduce the programs to the church members and let them know if there are incentives or some kind of gift vouchers that would make someone really come and do it on their days off. You can go to the churches to get more people to come at one time. **How much time?** Maybe two hours (10oclock = Ghanaian time) and when you say ten o'clock, there's this thing called Ghanaian time, when you say ten that person would be there for 10:30, and when you schedule something within an hour it won't work and when you schedule something for two hours you know that person would or might be there for about 45min-1hr.

**3) Another possibility is that we could train someone from the Ghanaian community who could then lead the digital story telling? Do you think that might be a better option?** You could train someone in the community, it would work very well. Someone who's really willing to take out the time and do it. If the person is available today and then tomorrow they're like oh I have an appointment I have to go there and here. You can post all of these questions to my email and I will follow up on them

**4) Do you see yourself or Mercy playing a role in this digital storytelling process?** Oh myself? On top of all I do? I don't know. What's the time frame when do we have to start and when do we have to end? Between October and December you should be able to go to the churches and explain it to them? I think I can do that on Sunday, I could take it upon myself. Mercy is very busy. Yeah I will do it.

**5) Do new Ghanaian mothers feel discriminated against, intimidated by, or confused in using health services? If so why?** Yes, most have trouble with understanding the way insurance works and certainly with people accepting our culture. You know, not everyone can really understand a culture that's different from western culture, or not everyone can kind of understand people who have very strong cultural backgrounds that it's very hard to let go. Some practitioners can't understand that part and most of my research is geared towards educating practitioners to know this is where they (Ghanaians) are coming from and they (practitioners) kind of have to understand if whatever they're (patients) practicing is helping them health wise, just let it go (or allow them to go ahead and practice them). Most practitioners have not come to the point of accepting this fact, so it's hard for them [patients] to explain what they're going through or the kind of medications they're taking on the side even though it's working. They find it difficult to explain it to the physician that this is what I'm taking on the side so the physician would know if it's counteracting with the medications that they are prescribing and I think through it and because I'm in the health field its quite different but most Ghanaians are really struggling with this and it's a big struggle.

**How can we help practitioners understand?** I think the videos would really help and when it's done we will be able to distribute it to healthcare providers so they can understand our perspective and also you can go to different seminars, I don't know how far you can go with that. I think the videos would really help with educating healthcare providers.

**- Points to help them understand culture** – Generally number one is to be able to accept all cultures, most people have a strong attachment to their culture and if whatever they're doing is not illegal, and it's not killing them health-wise, just accept the person's choice. Even if it is, if you give someone medication and they say "I'm not taking the medication because I'm praying to God and that He'll heal me. All that practitioners can do is to explain the benefits of taking the medication while respecting the person's opinion. If some practitioner really has a big issue and then it puts the person off and he/she might say "I'm not even going to the doctor's until there is an emergency." People need to have the freedom of choice to take the medication or not, the practitioner's job is to educate them and practitioners need to accept that.

**6) How do you think we could use radio and/or Facebook to communicate the ideas about health and nutrition to the target women?** The radio show is done in my language, and the info we have, we can announce it on there and once in a while I will invite someone to come in for an interview. Having someone here who speaks English and having to translate things will slow things down though. Radio is the best way I will be able to carry on the message.

**7) What other means besides the Facebook Blurbs would you recommend we use to get the nutritional/pregnancy guidance to the Ghanaian mothers?** Most effective would be digital storytelling. Churches will be dragging their feet but we need to keep on nagging them to get them to say yes. The churches are number one, and gatherings and parties. Youtube is good for storytelling, and **DVDs**. Go to the church and give out the copies. Show them a few seconds of the DVD to get them to watch the whole thing afterwards.

**8) What deliverables would you like to see for this project?** Anything to do with videos is number one, not written materials—don't waste your time or your paper or your ink or anything!

Would it be a good idea to have a gathering at church, baby themed – If there are freebies then people would want to come. **Food?** Oh yeah, definitely. I don't know if any Ghanaian nutritionist would be able to come? Food must be cooked and ready. We can talk about the healthy things and show them how to cook it.

## Appendix C- Victoria Anderson Meeting Minutes

Members present: Loan, Farhat, Melanie, Atieh, Grace, and Victoria

1. Grace brought food samples
  - a. Wild Egg Plant
    - i. Peas that are high in Iron, good for pregnant women (encouraged in Ghanaian community)
  - b. Abemu Dro
    - i. Contains pam nuts
    - ii. Made into soup
    - iii. Good from increasing milk production
2. Victoria:
  - a. WIC mass
    - i. Women receive coupons
    - ii. Info from WIC contrary to culture (ex. Eat wheat bread/brown rice)
      1. Victoria: A better way is to encourage smaller steps
        - a. Ex. Mix white rice w/ brown rice
          - i. Cooking time is longer
          - ii. Have to add 2x water
  - b. Reasons Victoria sees new moms:
    - i. Obesity
    - ii. Concern of OBGYN
    - iii. Gestational diabetes
  - c. She recommends pill/chewables to women to get sufficient iron (if needed)
  - d. Very common for moms to miss breakfast
    - i. Important to assess how often they eat
  - e. Culturally aware Nutritional recommendation for Ghanaians:
    - i. Iron
      1. Beans, porridges → inexpensive
    - ii. Meats
      1. Goat (common)
        - a. low in fat, good source of protein
    - iii. Fish
      1. Red fish and tilapia
        - a. 2x a week
        - b. Try to incorporate tuna and sardine (can get from WIC)
    - iv. Chicken
      1. Do not include skin
  - f. WIC

- i. Can enroll and meet w/ nutritionist
    - g. Challenges with Ghanaian community:
      - i. Calcium missing in Ghanaian diet
        - 1. Don't drink milk
          - a. Can get cheese from WIC
        - 2. Good sources of calcium
          - a. Almonds
          - b. Canned Salmon (eaten with bones)
          - c. Yogurt
          - d. Sesame seeds
      - ii. Switch to new culture → leads to obesity
        - 1. Also lack of activity
        - 2. Relying on other ppl to do shopping
          - a. Ex. 12 yr olds go shopping & buy unhealthy foods
      - iii. Lots of salt in Ghanaian diet
        - 1. Use Maggie cubes
        - 2. Canned tomatoes (w/ high sodium)
      - iv. Misleading info from WIC
        - 1. Ex. Free juices from WIC are high in sugar!
    - h. Advice for videos
      - i. Include props in video
        - 1. Adults learners learn by experience
        - 2. Sugarstacks.com
        - 3. Show how to make brown rice in rice cooker
    - i. Foods to encourage Ghanaian women to eat/that is culturally appropriate
      - i. Avocado
      - ii. Soups & stews (good)
        - 1. Peanutbutter soup
        - 2. Fish stew
        - 3. Palmnut soup
        - 4. Okra stew
      - iii. Olive/Canola oil → healthier
3. Grace:
  - a. Reason for thick layer of oil on top of food in Ghana is to preserve the food
    - i. But here, people have refrigeration
    - ii. Also high salt → for preservation
      - 1. Victoria: Salt is a learned taste
        - a. Can be gradually unlearned..
    - iii. Also the overcooking of food is to preserve food
4. Online resources given from Victoria



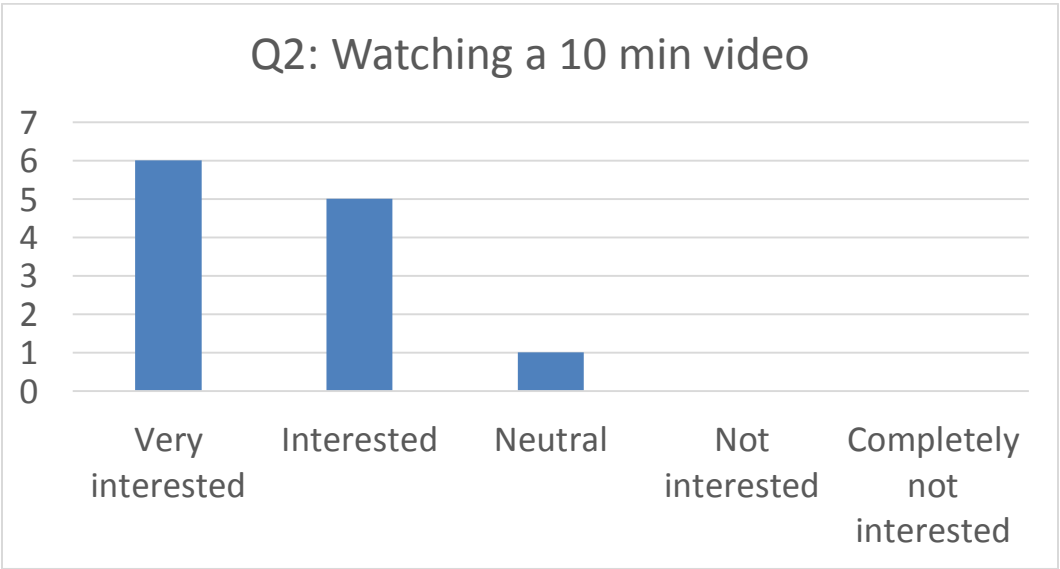
- a. Myfunesspa.com
  - b. Livestrong.com
  - c. Calorieking.com
  - d. Oldways.com (has food pyramids from different cultures)
5. Overall health advice
- a. Eating regularly
  - b. Understanding carbs
  - c. Protein
  - d. Include calcium sources
  - e. Include Iron
  - f. Keeping hydrated
  - g. Foods to include:
    - i. Low sodium canned tomatoes
    - ii. Ginger
    - iii. Onion
    - iv. Garlic
    - v. Focusing on leaner protein
    - vi. Healthy grains
    - vii. Avocado → not high in cholesterol (very good)
6. Suggestion from Victoria to be able to make healthy substitutes in Ghanaian foods
- a. Ask the women: how would you make the food healthy?

## Appendix D - Doctor's Survey Results

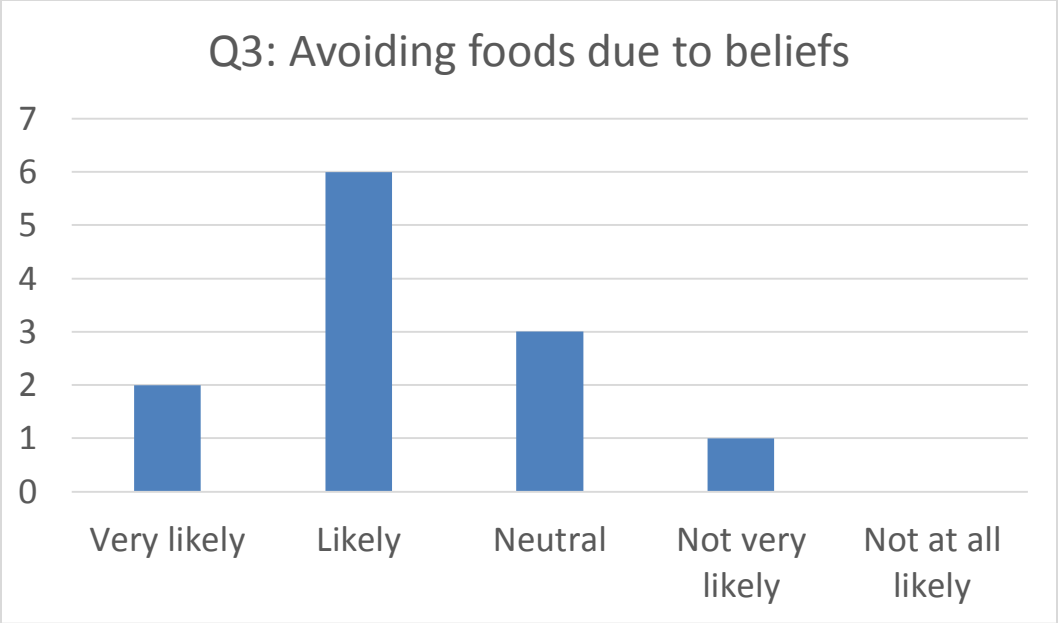
ID	Q1: As a healthcare provider, what concerns, if any, do you have about the diet of your Ghanaian patients?	Q2: How interested are you in watching a ~10 minute video consisting of information regarding Ghanaian food, its preparation, and nutritional facts?	Q2 Comments	Q3: How likely would your Ghanaian patients be to avoid eating certain foods due to their beliefs that these foods would lead to complications during pregnancy?	Cmts
1	High carbohydrate load	Very interested		Likely	
2	I don't know the typical Ghanaian diet.	Neutral		Neutral	
3	? How well balanced. > Carb's. ? enough vegetables	Very Interested		Likely	
4	high carb low protein	Very Interested		Not very likely	
5	high starch/carb	Interested		Likely	
6	Only worked with one or two	Very Interested		Neutral	
7	None that specifically relate to their being Ghanaian, owing to my ignorance, other than usual concerns if they are poor and have inadequate food security or nutrition awareness.	Interested		Neutral	I have no idea!
8	Limited fresh vegetables & fruit in diet. High starch & carbohydrates diets.	Interested		Likely	
9	Availability of food for new-to-area moms. Folate in diet for pregnant women. Vitamin D for those no longer in the sun. Over-availability of novelty Western foods at cheap cost with no nutritional value.	Interested		Very likely	
10	Too many carbs	Interested		Likely	
11	Typically low on fresh green vegetables and fiber	Very Interested	Although I could see how for some people 10min is too	Very likely	

			much. 5 would be ideal		
12	I don't know enough to know what concerns I should have.	Very Interested		Likely	I don't know

Raw Data for Survey Results



Graphical Summary for Question 2: How interested are you in watching a ~10 minute video consisting of information regarding Ghanaian food, its preparation, and nutritional facts?



Graphical Summary for Question 3: How likely would your Ghanaian patients be to avoid eating certain foods due to their beliefs that these foods would lead to complications during pregnancy?

## Appendix E – Final Script

Script Development: DOCTOR PATIENT COMMUNICATION

### *Scene 1: Radio show studio*

(Small talk before the show airs, Jen walks in and is greeted by Mercy and Grace)

**Grace:** So glad you could make it today even with the storm, I know getting down the hill from the hospital can be tough in this weather

**Jen:** Yeah, I was lucky we picked out a good car for New England's moody weather

**Mercy:** What a good a choice 4-wheel drive was for our family too!

**Grace:** With all this car chatter, we sound like men. Let's get to girl chat, pregnancy!

**Mercy:** Oh boy haha, speaking of that, we're airing soon! Everyone have their headphones and mics on?

**Jen:** All set!

**Grace:** Ready when you are!

(Grace counts down 3-2-1, motioning with fingers to let others know they'll be on air)

**Grace:** Hello, and welcome to the Mercy and Grace show on 109.6 FM! Today we have a special guest joining us in our show, her name is CNM Jen Moffitt and she is an advanced practice clinician. She's here to provide us with nutritional information and advice on how you can improve your health! Jen, thank you very much for taking the time to join us and talk about important issues.

**Mercy:** Yes, that's right we're taking in calls so if you have any questions about health, dial 555-5555 for on-air advice! So Jen, welcome aboard our radio show, why don't you tell us a little about yourself and what you do..

**Jen:** Hi everyone, I'm Jen Moffitt! (Jen please explain a little about yourself and what you do) It's my pleasure to be here. Thank you so much for inviting me on your show.

**Grace:** Oh pleasure is all our 's!!

**Mercy:** Yes, we're so excited to have you here, the community has been looking forward to getting some health advice.

**Jen:** I've been looking forward to this day! I'll certainly try my best.

**Jen:** [insert small intro about the importance of good health and nutrition as pertaining to typical western healthcare] I am glad to have a chance to talk about nutrition in pregnancy, because eating healthy food is one of the ways that women can help their babies to be healthy.

**Mercy:** I'm sure you will be fine! Hopefully our callers go easy on you, \*chuckles\*

**Grace:** Did you hear that out there? (to her callers, specifically) Go easy on her, we want her to come back! :P

*Phone interview*

**Mercy:** Okay, first caller you're on the line!

**\*Banku\***

**Caller 1:** Hello Doctor, my name is Hope. I have some questions about my diet.

**Jen:** Hello there Hope! What is your question?

**Caller 1:** One of my favorite foods to eat is Banku. Would you say that it's healthy for me to eat it all the time?

**Jen:** Do you mind telling me what Banku is?

**Caller 1:** Banku is a mix of fermented corn dough and cassava dough

**Jen:** When I hear you talk about all that dough, it makes me want to ask you how often you are eating it. I want you to think about adding colorful foods like fruits and vegetables to your diet.

**Grace:** Ah yes, how delicious our Ghanaian food is, but how carb-filled! \*chuckles\*

**Jen:** What are some of your favorite fruits or vegetables?

**Caller 1:** Names a couple that I know and a couple that I don't know...

**Jen:** How do you say that last one? Palovar?

**Grace:** (to Jen, reassuringly) It's okay Jen, we can't all know everything! Thank you for listening and calling in, Hope!

**Jen:** I will do some research on that one. Have a great day!

**Mercy:** Okay, next caller you're on the line!

**\*Breakfast\***

**Caller 2:** Hi Doctor Moffitt, one of my friends from church told me that pregnant women can lose calcium when they're pregnant, and I don't want it to hurt my baby. What should I eat to keep my calcium levels healthy?

**Jen:** Well there is a lot of calcium in milk, so drinking milk or putting it on your cereal when you eat breakfast would improve your calcium levels.

**Caller:** Um, milk in my cereal? I don't even eat cereal.

**Jen:** No problem. You could have a glass of milk with your toast, or have a cup of yogurt with some almonds for breakfast.

**Caller 2:** Toast, yogurt? We don't have those either ...

**Jen:** There is a lot of iron in dried fruit, and in dark leafy greens.

Caller is silent.

**Grace:** Okay, Jen can look more into your question and we'll respond to you by calling the number you used to call in to this show today.

**Mercy:** Yes, thanks for calling in! To respond to your question, we will probably also make an announcement on the show. Sound alright? (positive, reassuring voice)

**Caller 2:** Um, yes, that's fine. Thank you!

**Grace:** Take care now. Thank you so much for tuning in and for your question!

**Mercy:** Next caller, hello, what is your question?

**\*Snacking\***

**Caller 3:** Hello Doctor. I have terrible nausea and I am throwing up a few times a day. What can I do for that?

**Jen:** I know I am supposed to be talking about good nutrition here, but did you know that the combination of potato chips and lemonade has been shown to reduce nausea in research studies? Also, you should be eating every two-three hours – never letting your stomach get empty, because that's when people feel more nauseous.

**Caller 3:** Oh, snacking? We don't really do that much. I don't see anyone else at church snacking either.

**Jen:** I would try to think of some foods you enjoy that are portable so that you can snack throughout the day.

**Caller 3:** Yes, okay I will look into that. thanks Doctor. Bye.

**Mercy:** Yes, thank you so much, Nurse Midwife Moffitt. That's all the calls we have time for today, but we will be sure to have this guest back to answer more of your calls another time.

**Grace:** So, hey Mercy, you said you wanted to go to the Ghanaian restaurant down the street right? Are you still hungry? (winks at Mercy)

**Mercy:** (at first confused, then understanding of Grace's gesture), oh um, yes. I'm starving. Jen, would you like to come with us?

**Jen:** Well, I'd love to! I can see from those calls that I have a lot more to learn.

**Mercy:** Off we are then!

**Setting:** Restaurant

*[After walking in the restaurant and greeted by host, Jen looks around the restaurant with an excited expression]*

**Jen:** Thank you so much for inviting me to the restaurant

**Grace:** We're glad you could join us!

**Mercy:** Do you know what you would like to order?

**Jen:** I have no idea, but I'd love to try typical foods, as well as foods that you'd consider healthy, what would you recommend?

**Mercy:** I personally love Banku, spinach stew and peanut butter soup

**Grace:** Yes those are a few of my favorite foods as well. I think I will have the same.

**Mercy:** We can order a little bit of each food so you can try it all. How does that sound?

**Grace:** Great idea!

*(Waitress comes and takes order. Mercy and Grace order 1)banku 2)peanut butter soup, and 3) spinach stew. For drinks--3 bottles of Malt)*

*Time lapse--The food is brought out...*

**Jen:** This looks so delicious, and it smells great.

**Grace:** We hope you enjoy it. *(Grace passes over the Banku)* Grace please explain a little about Banku.

**Jen:** Interesting! Its taste really good, how exactly do you prepare it?

**Mercy:** *(Please talk a little about how its prepared and talk about the culture behind the food.)*

*\*\*Voice over states the nutritional content of food\*\**

**Mercy:** Try some of this *(she passes Jen the spinach stew with some rice)*. This is Palavar Sauce and it's prepared by.....*And talk about the tradition or culture behind the food. Also explain how it's typically eaten.*

*\*\*Voice over states the nutritional content of food\*\**

**Jen:** This is so delicious. The spinach is great source of iron ..... I will also have to recommend my Ghanaian patients to eat more of this dish.

**Jen:** Do you ever try brown rice?/ Can you also cook this meal with brown rice instead of white rice?

**Mercy:** interesting... I have never tried this with brown rice. Is it supposed to be healthier?

**Jen:** Yes it's.....

**Grace and Mercy:** I will definitely try that next time. Thank you for the advice.

**Mercy:** Jen, here is some peanut butter soup , it's usually eaten with fufu,*(Mercy gives a bowl with fufu and soup to Jen)*

**Jen:** Thank you!

**Mercy:** *(explain the soup and how its prepared and give a little cultural background the soup )*



**Mercy:** We usually eat the fufu with our fingers like this (she demonstrates). You take a piece of fufu and make a groove in it and scoop up some of the soup. The meat from the soup is usually left to be eaten last because it represents having wealth (?).

*\*\*Voice over states the nutritional content of peanut butter soup\**

**Jen:** I think I'm starting to get the hang of this. It's actually kind of fun eating with my hands.

**Jen:** So are there any food that you had in Ghana that is not available here?

**Grcae:** Yes, I would love if we had wache, and Tz available here.

*(Mercy and Grace: When talking about all the Foods please make sure to talk about the culture behind the food and how its prepared and eaten. We want the doctors watching to learn about Ghanaian Culture and food practices)*

**Jen:** Thank you Mercy and Grace for inviting me to the restaurant for lunch!

**Mercy:** Just so you know we don't have regular breakfast or lunch food, in the morning we eat the foods that you see here.

**Jen:** Oh that's very interesting, now I understand why one of the callers was a bit dismayed when I tried to encourage her to eat cereal/ milk.

**Grace:** We want to really thank you for taking the time to really engage with us and learn more about our culture and traditions!

**Jen:** I really enjoyed spending time with you as well as learning about your cultural dishes. Now I feel like I can recommend more Ghanaian dishes to my Ghanaian patients and help advise them on how to prepare it in a healthy way.

**Grace:** We are so glad you enjoyed the food. And I'm sure your Ghanaian patients would really appreciate your advice on healthy Ghanaian dishes to eat.

**Mercy:** It was an absolute pleasure having you with us today. Hopefully we'll try to plan another radio show program soon and we would love for you to join us again.

**Setting:** Family Health Center

**Setting:** Exam Room (first appointment with the patient)

**Anna, the patient, talking on the phone with her husband:** (outside the hospital, )

"Oh, [husband's name], I hope today goes better than the last time I was here".... "I know I know it has to go well.."... "Okay, I will give it another chance..bye I will see you at home"

*Jen leaves her office and goes to her scheduled appointment with her Ghanaian patient. She is feeling confident that the appointment will go well due to her new knowledge on Ghanaian culture.*

*[Jen opens the door to come in to see her patient, with a smile on her face]*

**Jen:** Good morning, [insert name of patient]! I'm Dr. Moffitt! How are we doing today?

**Patient:** Hello, Dr. Moffitt, I am doing well, thank you, how are you?

**Jen:** That's great to hear! And I'm well, thank you! You are in for an exciting journey! So [insert patient's name] since this is your first appointment with me, I'd like for us to get to know each other! Tell me a little bit about yourself; I understand that you are from Ghana. How long have you been here? Were you able to adjust well to living here?

**Patient:** Well, I came over here in the states about 6 years ago. It was a very difficult transition from Ghana, but I am slowly adjusting.

**Jen:** I'm sure it was a difficult transition, but I am glad that you're adjusting. Do you have any children?

**Patient:** No, this will be my first child.

**Jen:** Oh fantastic! I am sure your husband is very excited! How has your pregnancy been? Are there any concerns that you would like to discuss with me?

**Patient:** It has been going well so far, but I have noticed that I am gaining some weight. I am worried that I may be gaining more than I should.

**Jen:** I completely understand, but it's normal for a pregnant woman to gain weight! It's also important to make sure that you're getting the right nutrients! What foods have you been eating during your pregnancy? Have you been eating more of Fufu and Banku or are you eating more foods like Peanut Butter soup or spinach stew?

*[Patient gives doctor a shocked expression because she did not expect the doctor to know about Ghanaian cuisine].*

**Patient:** Oh, you know about Ghanaian foods? How did you learn about them?

**Jen:** I actually learned a little bit about Ghanaian culture and the foods recently! I was invited to talk on a Ghanaian radio show and the two radio hosts invited me to a Ghanaian restaurant! The food was amazing!

**Patient:** I'm very happy that you know all of this! I have been eating Fufu with peanut butter soup, Banku, and *[Grace please also name some foods that we didn't talk about in the video, we want to show that the doctor can still learn from her patient as the patient learns from her]*.

**Jen:** Oh, *[Name of the new unknown food]*? Can you explain to me what that is?

**Patient:** Sure! It's *[Explain what food and talk about some of the ingredients]*

**Jen:** Oh that sounds absolutely delicious! Make sure you are eating enough of *[this food?]*, it contains folic acid and *[other vitamins?]*, and that's important to have for your pregnancy!

**Patient:** I will doctor! Thank you for your advice! I appreciate you learning about my culture.

**Jen:** You are most certainly welcome. Let's strive for a smooth pregnancy! Do you have other questions for me or concerns?

**Patient:** No, not at the moment.

**Jen:** Okay, that's fine. If you have any concerns before your next appointment please do not hesitate to call me! Before you leave, the nurse will come in to run some blood tests. I hope to see you at your next appointment! You can go to the front desk to make your next appointment. I will see you in 4 weeks!

**Patient:** Thank you, Dr. Moffitt! It was great meeting you. Bye

*\*Both leave feeling good about the appointment\**

*[Patient goes to front desk to make her next appointment!]*

## **Script II: Healthy Alternative to Ghanaian Dishes**

Mercy's healthy cooking show

### **Foods to be prepared:**

1. Palavar Sauce (Spinach Stew)
2. Rice and Stew
3. Fufu

### **Points for Mercy to say:**

#### 1. While making Palavar Sauce:

- I try not to overcook the spinach
- Frozen spinach is just as good for you as fresh spinach
- I use canola oil for cooking because it's better for your health than

#### 2. Rice and Stew

##### -Rice:

-I cook brown rice because it is delicious and much more nutritious than white rice. If you're not sure if you'd like it, just give it a try, or at the least, cook your rice half white and half brown.

-Just add extra water and allow for some more time, and you've got nutritious and delicious rice that you can eat with any meal.

##### -Stew:

-I use all fresh tomatoes for the sauce, it's very easy to make the sauce, just blend the chopped tomatoes and onion and stir over medium heat.

-I got all my veggies from WIC

-frozen veggies is just as good for you as fresh veggies

#### 3. Fufu:

-blend plantain and cook with boxed Fufu

-Traditionally: Cassava (yoka) + plantain

### Notes to Hit:

1. encourage water (hydration)- have Grace walk into the scene with the water bottle:

**Mercy:** Wow, you really do bring that water bottle everywhere

**Grace:** Yes haha, the more water I drink, the healthier I feel. Dehydration can lead to early contractions, and I wouldn't want that to happen!

2. Canned vs. Fresh tomatoes

**Grace:** Oh I see you're using fresh tomatoes! What a great idea! Fresh and frozen vegetables are just as good, and healthier because they have less salt than the canned vegetables.

**Notes for Mercy or Grace:** Can you mention about these ingredients below?

-less Maggi cubes

-salt content in canned tomatoes

The End: (taste-test); Wow, this tastes so good! And Mercy, this is even without adding Maggi cubes, right?

3. More vegetables in diet

**Mercy:** I'm making food today with lots of vegetables. It's good to cut back a little on starchy foods while pregnant because starchy foods can lead to gestational diabetes.

### Other Notes:

**Oil Usage** → **Mercy:** Hey now. *(holds up the cup of oil or bottle of oil)* I'm about to add the oil and I'm reminded of something I learned very recently. *(Excitement)*, Now, if your maame is anything like mine, we've carried the Ghanaian tradition of being oil-lovers. A lot of us have just accepted this amount of oil because it's been passed down through the years. but ... STOP RIGHT THERE!

*(hands up in front of her, making the universal 'slow down, stop' hand motion)*

This is NOT HEALTHY! Ghanaians started using this much oil, and salt, to preserve certain foods. Since we can easily preserve these foods now in refrigerators, so using layers of oil like we're used to is not needed. AND! We get a much healthier meal if we don't. *(winks at camera)*

### **OIL PRESERVATION:**

*--Using excess oil to preserve food was a tradition used in Ghana and carried over to the states. While this method is effective in preserving foods, it can have detrimental health effects on our bodies. Don't use too much oil where you see it sitting on top of the food. It's hard to avoid eating the oil when it's mixed in there, but less oil is used then you wouldn't have to worry about over consuming the oil.*

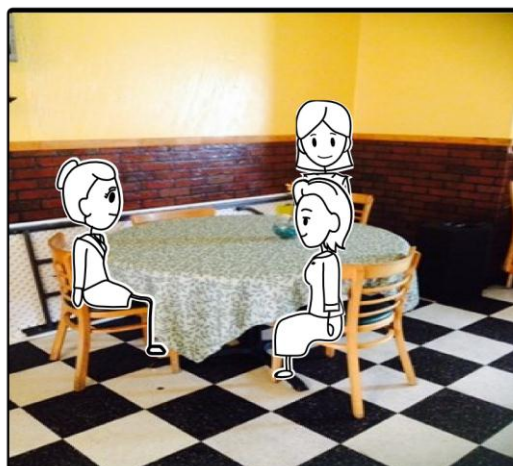
**Proportions** → **Mercy:** We all love to eat. This is known. But to keep our hearts and our body healthy for our children and for our families in the years to come, a huge thing that can turn a healthy meal into an unhealthy one is how much we eat. (scoops it out) This is how much we should be eating. This fist is a good starting idea of how much of each food we should eat. You see your fist, that's how much food.

(show plate of food w/ good propor, reference items to help w/ visualization, include fist proportions)

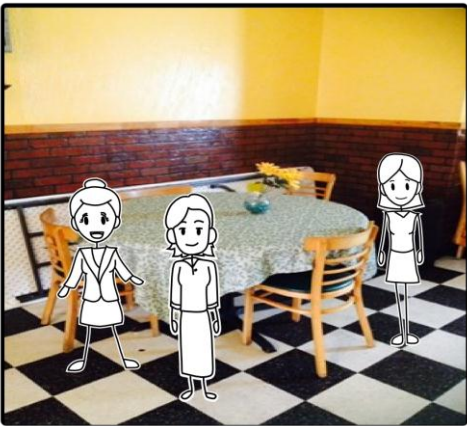
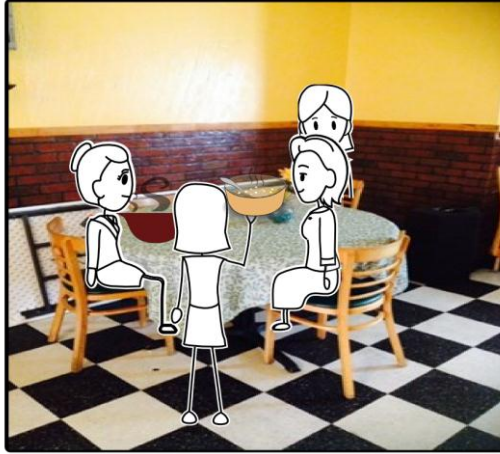
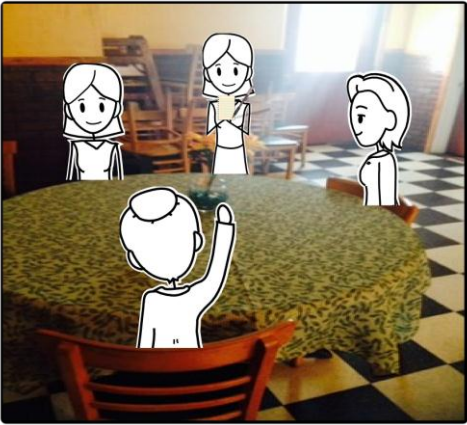
*Camera Note:* Have it aimed down at the properly-portioned plate in one scene, after Mercy is finished with her fist-portioning. (Birdseye View)

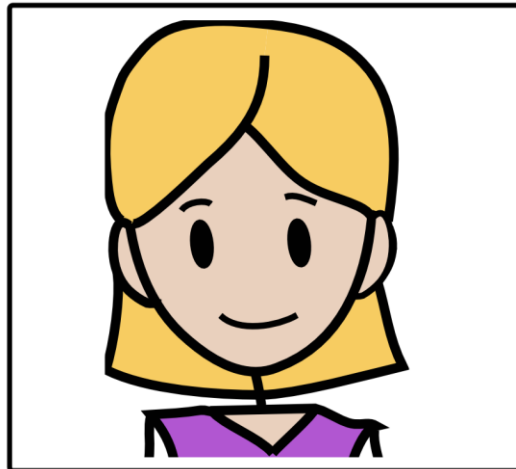
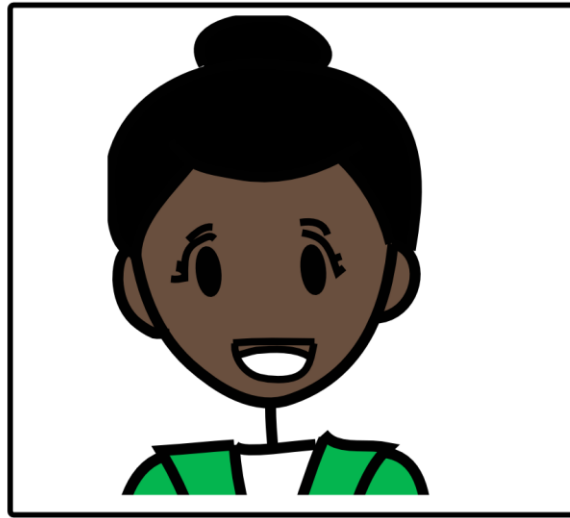
# Appendix F – Story Boards

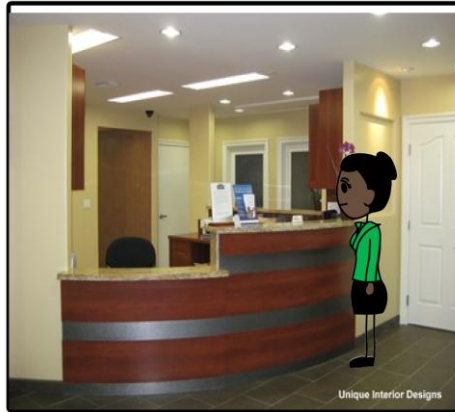
Video 1



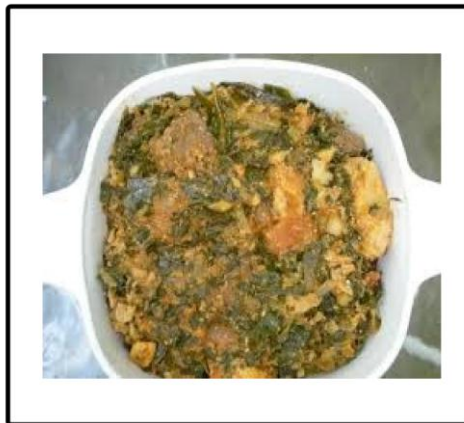








Video 2







## Appendix G- Facebook Blurbs

Nhyria Ba facebook blurbs:

1. Concerned about how much weight you're gaining during pregnancy? The average is between 25 and 35 pounds. Talk to your doctor if this doesn't sound like you!
2. If you want your baby's bones to grow, be sure to have lots of calcium! Sources are cottage cheese, milk, yogurt, orange juice with calcium, among lots of other healthy options!
3. A healthy diet and a fair amount of exercise is just what you need to do to give yourself the best chance to avoid gestational diabetes.
4. If you have morning sickness, keep in mind that eating smaller, more frequent meals and limiting high intake of high-fat and spicy foods may help prevent it.
5. Hungry for a snack? Have these nutritious snacks that you and your baby can enjoy: fresh juice or fruit juice, dried raisins (raisins, prunes), low-fat cereal bars, or peanut butter on carrots!
6. Fast foods such as fried chicken and French Fries aren't a part of a healthy diet, but that doesn't make it off limits! So if a pregnant woman is careful, she can get a healthy meal just about anywhere.
7. Don't forget to eat: lentils, spinach, black beans, peanuts, and asparagus! (foods w/ high folic acid content)
8. Drink 6-8 glasses of healthy fluids a day!
9. Are you anemic? Eat iron-rich foods: red meat, enriched breads, dried beans, dried fruits, and green leafy vegetables!!
10. A woman who is pregnant should never go on a weight-loss diet. It is dangerous because neither mother nor baby will receive the nutrients needed for the baby's growth and development. If a woman doesn't gain enough weight during pregnancy, it can harm the baby.
11. Good nutrition is important for everyone, but for a pregnant woman, what she eats can make a big difference in how she looks and feels, and in how her baby grows and develops.
12. Vitamin supplements are necessary to help a baby get everything it needs - especially folic acid and iron. Folic acid is important for everyone in maintaining health. It plays an important role in the production of normal red blood cells and may help prevent heart disease, stroke and certain cancers, especially colon cancer.