Nutrition and Diabetic Management in Urban Kenya

Madeline Jackson

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Nutrition and Diabetic Management in Urban Kenya

Madeline Jackson

Kenya Health and Community Development

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OdochPido and Jamal Omar Awadh

Advisor: Dr. Karama
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Abstract
This Independent Study project sought to identify the changes in nutrition from the traditional Luo culture to the new urban setting and explore the management, perceptions and prevalence of Type II diabetes in an increasingly urban area. The focus was on Type II diabetes since the majority of disease burden stems from this acquired form of the diabetes. Through speaking with elderly community members and shadowing the first line diabetic treatment centers in Kisumu, an assessment of the relationship between changing nutrition and diabetic management showed numerous gaps in the system that will continue to increase unless something is done. Without awareness, diabetes and poor nutrition will continue to plague the development and health of Kisumu and Kenya at large.

Introduction and Background
Currently, health aid to developing countries tends to focus on acute problems of communicable diseases like HIV/AIDS or malaria. While I am not going to try and convince one that these are not important issues, at some point we all need to step back and reassess the situation. Currently, urbanization is occurring at a rate of 4% in sub-Saharan Africa and 40% of all Kenyans live within an urban area. It is great that ARV’s can be attained in multiple places but the health issues of a population are in no way static. Diabetes is a disease expected to more than double in developing countries by 2030, and this is a conservative estimate. The current view that diabetes and other non-

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communicable diseases are of the developed or rich is completely false and has the potential to lead to an epidemic of completely preventable and manageable disease.

The disease of diabetes is a tricky concept to define. It is technically a metabolic disorder within the body where the pancreas does not produce enough or any insulin to regulate sugars in the blood. This leads to hyperglycemia (too much sugar in the blood), which over time is degenerative to organs and body function. There are three main forms of diabetes. Type I is typically a genetic disorder which is inherited and develops at a very young age. Type II is the acquired form of diabetes where your body does not produce enough insulin to regulate the high intake of sugars. Many people develop this as a consequence of their lifestyle or diet. A diet high in fats, carbohydrates and sugars, as well as lack of physical activity, typically leads to the development of Type II diabetes.\(^3\)

In Kenya, Type II diabetes accounts for 85-90% of the diabetic disease burden.\(^4\) Gestational diabetes can develop during pregnancy and leads to renal complications, it is typically absolved once the pregnancy comes to term. This type of diabetes affects about 4% of pregnant women.\(^5\) The symptoms of diabetes include but are not limited to: frequent urination, excessive thirst, extreme hunger, unexplained weight loss, increased fatigue, irritability, blurred vision, impotence and numbness or tingling sensation in the feet.\(^6\)

Diabetes is notorious for remaining undiagnosed in the majority of Kenyans because many of the symptoms may go unnoticed or can be written off as other

\(^5\)Kenya National Diabetes Strategy, 2010
\(^6\)Kenya National Diabetes Strategy, 2010
conditions. The most common complications of diabetes are with the eyes, heart, kidney, blood vessels and feet. If left untreated, the disease can kill or significantly inhibit bodily function. This study will focus primarily on the prevalence, management and perceptions of Type II (check capitalization of T) diabetes in Kisumu, Kenya.

Diabetes is an increasing problem worldwide. Currently, the International Diabetes Federation puts the prevalence at about 285 million people across the globe. The majority of these people (80%) live in under-developed or low-income countries. Diabetes is predicted to become the 7th leading cause of death worldwide by 2030, a 50% increase in deaths due to diabetic complications.

The prevalence in Kenya is estimated to be 3.3% of the population. However, this excludes the some 60% of diabetics that doctors and health officials in the country claim are not yet diagnosed. A recent estimate by the Kenya Educational Medical Research Institute (KEMRI) places prevalence as high as 10% by 2030. The disease burden of diabetes is increasing at a rate that should be explored further.

The Kenyan Ministry of Health developed a National Diabetes Strategy in 2010 in accordance with the new constitution to try and address the rapid increase of diabetes in Kenya. The strategy outlines the current and potential prevalence of diabetes and accurately assesses that unless it is addressed holistically and soon in public health policy, diabetes will continue to plague development (the population?). Diabetes affects the most productive age group in the society and is an unnecessary financial burden on

7Kenya National Diabetes Strategy, 2010
8Kenya National Diabetes Strategy, 2010
10Diabetes Factsheet, 2012
citizens of lower economic means. The strategy includes, awareness, stricter food guidelines, increased infrastructure to care for diabetic patients and insurance that every citizen regardless of economic status can access the care necessary to combat diabetes. The overall mission is stated, “to promote the provision of high quality, accessible, affordable and evidence-based diabetes prevention and care services to all people living in Kenya” In part, this study comments on the strategy’s success or lack thereof in managing and providing support to diabetic patients.

In Nyanza province, the largest city is Kisumu. Declared a city in 2000, Kisumu has a population of close to 400,000, a number that is rapidly increasing. This urbanization has led to an increase in public transportation, grocery stores, healthcare demand and the development of slums. The urbanization has also drastically changed the diet of the population. Many elements of urbanization have only been looked at as benefits but several of the changes in lifestyle have had drastic and detrimental health effects on the urban population. There is one provincial hospital and two district hospitals within the city proper. Currently, these hospitals do not have a dedicated diabetic clinic and the only hospitals in the area with those services are private. This leaves a large chunk of the population vulnerable to diabetes not only because there is no community awareness but also because you can only afford to treat and manage the disease if you can afford it.

The rapid changes in diet and perceptions of food amongst the Luo tribe in Kisumu have the potential to combine with this lack of aid and create even more problems with non-communicable disease (should define diabetes as a non-

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13Kenya National Diabetes Strategy, 2010
14Kenya National Diabetes Strategy, 2010
communicable disease before you use this). In the past, rural traditions, food was fresh caught, harvested, foraged etc. This not only made food more readily available but also excluded high amounts of processed carbohydrates, sugars and fats. However, with urbanization comes a new trend. These days there are grocery stores providing an abundance of food but now with added preservatives, sugars, fats, carbs, oils, you name it. Combine this with the mentality that food should never go to waste and over-eating is a sign of economic stability and you are bound to have a crop of unhealthy lifestyles in urban areas.\textsuperscript{16} This new diet is also now combined with less physically demanding jobs, more access to transportation and leisure time that includes TV. A lack of physical activity is just as dangerous as an unhealthy diet. The lack of education about healthy lifestyles is a major issue for diabetes management.

One issue specific to treating diabetes in Kenya is the community’s perception of the disease itself. Because it is not communicable many people delay seeking treatment until it is absolutely necessary but it is too late to take preventative measures. For this reason, amputations and renal failures are not uncommon amongst diabetic patient in Kenya.\textsuperscript{17} There is also a strong presence of faith in healthcare within Kenya; many people will simply not manage their diabetes because ‘god’s will’ will shape their outcome.\textsuperscript{18}

\section*{Setting}

Kisumu is located in Nyanza province with a population estimated at 394,000. It is Kenya’s only port on Lake Victoria and fishing is one of the major
industries in the area. 47.8% of the population lives under the poverty line, compared with 29% nationally, and 13% of them have some amount of secondary education. Roughly 85% of the population is from the Luo tribe. Nyanza province, the province in which Kisumu is located, is often considered as one of the ‘sickest’ provinces in Kenya. The HIV prevalence is 16.2% of the population and 35% of the population has contracted malaria.

Urbanization has led the development of slums in and around Kisumu. The largest and most prominent slums where the majority of research was conducted were: Manyatta, Kibuye and Nyalenda. These living conditions are often sans running water, electricity and proper sanitation. However, unlike traditional slums in Nairobi, these slums have some element of urban planning and over-crowding is not nearly as prevalent. Suburbs of Kisumu sit on the outskirts of town while many of the residents work in Kisumu town. The main suburb utilized in this study was Gesoko, located just outside of Manyatta slums. In addition to slums and suburbs, research was conducted in semi-urban villages in the hills of Kisumu. To many, these are ancestral as well as permanent homes and helped to establish more distinct differences from town and the traditional village.

The two healthcare facilities utilized in this study were both public hospitals established and funded by the Kenyan government. The Nyanza Provincial Hospital or JaramogiOgingaOdinga Teaching and referral hospital (JOOTH) is a tier 4 healthcare facility in Kenya. There are approximately 400 operating beds and 4

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19 *Kenya National Diabetes Strategy*, 2010
21 "JOOTH Visit." Personal interview. 21 Nov. 2012.
outpatient clinics. This facility treats diabetics Monday through Friday and has eye care and pharmaceuticals on site. This hospital is often the hospital that district and sub-district hospitals refer patients to if their services do not include what the patient needs. The other hospital used in the study was Kisumu East District Hospital, a tier 3 healthcare facility. The hospital only treats diabetic outpatients on Thursdays at their clinic and it has significantly less resources than the provincial hospital.

**Methodology**

The objective of my research had three main facets. The first used community elders to assess how the community’s lifestyle has changed from rural, Luo traditions. The second objective included an assessment of the management on the level of district healthcare under the Kenyan government. I sought to explore delays in diagnosis, management and follow-up for patients with diabetes, and how the physicians as well as case managers adhere to measures of treatment. The final objective studied diabetic patients on an intimate, case-specific level.

I began with community interviews where I assessed the past eating, exercise and lifestyle habits of the Luo tribe. I also asked about perceptions of nutrition in the city compared to a traditional village as well as perceptions of the causes of diabetes. This portion of my research included 9 in-depth interviews; which can be seen in appendix A, and a number of shorter conversations around town. Initially, it was meant to be a focus group discussion, but after additional thought, I decided separate interviews would

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22“East Kisumu District Hospital Visit.” Personal interview. 22 Nov. 2012.
warrant more independent and diverse answers as well as provide more tell tale similarities to draw conclusions from. Interviews were verbally consented to, see Appendix D- Figure 3, and conducted with a translator in either Dholuo, Kiswahili or English based on the interviewees’ preference.

The assessment of district and provincial hospitals in the area included sitting in on diabetic clinics, accessing data and records for diabetic patients, observation of other daily hospital activities as well as two in-depth doctor interviews at the JOOTH, see appendix B. At the East Kisumu district hospital, the days that diabetic doctors were present, there was often an overload of patients so interviews were conducted on an informal basis and in between visits with patients.

Assessment of diabetic patients’ management was initially supposed to be based on a survey, however; upon initial review neither hospital would allow an in-depth questionnaire. Instead, I sat in on doctor-patient visits as well as doctor-nurse visits at each hospital and observed. Two community interviewees coincidentally had diabetes, more in-depth and diabetes specific interviews were conducted with them, see appendix A.

Findings
The findings of this study are split into two main segments; nutritional changes and diabetic management. Exploring each aspect thoroughly and then making connections can provide a more holistic view of the diabetic polemic in Kisumu.
**Luo perceptions and traditions of nutrition**

“So at the end of the day, when you compare the two foods the one in the village adds more value to your life than the one that fills your stomach in town.” - Community Elder

The perceptions of food that exist within the Luo culture are very important when assessing the nutritional aspects that lead to diabetes. Often times, perceptions of food matter more than facts or figures. In the community surveys, almost every Luo respondent alluded to money determining what they eat. When asked what perceptions of food exist in your culture, one woman responded that, “We believe that where you are having food, you serve it in good quantity. They know you as a rich person, or someone who is safe.” This idea that quantity is quality exists in all aspects of food in Kisumu. When you are served ugali, or any food for that matter, the quantity is often large if the host is trying to impress you. One man also responded that having a lot of food shows you are hard working and you are a good man. Food was found to be extremely indicative of socioeconomic status in Kisumu and Luo culture.

A large portion of the community survey responses focused on the concept of being full and satisfied or eating a healthy amount. About half of the community respondents responded that they would rather be full and satisfied than concerned with the nutritional merits of their food. The other half of community respondents said that it was very important for food to be healthy but when asked if they

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23 “Community Interview 1.” Personal interview. 15 Nov. 2012. Appendix A.

24 “Community Interview 7.” Personal interview. 15 Nov. 2012. Appendix A.

25 “Community Interview 5.” Personal interview. 15 Nov. 2012. Appendix A.
control portion size in their household, all of them said they did not. One woman claimed she would keep filling bowls until everyone had enough food. It is unclear whether this half of respondents did not understand the question’s intentions or they knew what someone conducting a survey of nutrition would like to hear. Either way, the dichotomy between responses elicits the implicit conclusion that the perception of quantity being quality persists above health concerns.

Within the community, there is also a complex where most respondents knew they should try and eat healthy, yet their perceptions of what healthy eating entails were a bit skewed. When questioned as to which foods were good for them, 8 out of 10 respondents said avoiding fatty foods and sugars was key. Yet, when asked what their preferred method of cooking was every respondent (n=10) said frying food was their favorite. Additionally, when asked what foods were good for ones health, three respondents said all foods were good for you. There is clearly a split between people’s nutritional knowledge and what they practice. Elders surveyed said it was more important for food to be healthful rather than filling and tasty but their answers tell a different story.

The factor of food being healthy rather than filling and tasteful hits a roadblock in a number of places. While each elder responded health was of utmost priority, they also all said that ugali flour was the most important food to have in a home. Ugali is a cornmeal served at lunch and dinner that is basically pure carbohydrates. Most Kenyans eat white ugali and it is not uncommon for a Kenyan

26 Appendix A
27 “Community Interview 3.” Personal interview. 15 Nov. 2012. Appendix A.
28 Appendix A.
29 Appendix A.
to consume it every day in massive quantities. The health benefits from white ugali are minimal; its main purpose is to provide quick energy and fill the stomach. In the village, the energy and filling effects are essential due to the prevalence of physically demanding jobs. In a city, energy expenditure is not nearly as high due to the large amounts of transportation, readily available goods and services and more sedentary work. The Luo elder’s responses clarified that the tradition of ugali has not adapted to the city lifestyle.

Traditional eating in Luo culture was simplistic, rich in nutrients and proportional to the amount of work, walking and overall energy expenditure in the village. A traditional breakfast in a Luo village consisted of fermented millet porridge without sugar. Lunch would include sukuma wiki or traditional vegetables (leafy greens) and ugali or a dish called githeri, which is boiled maize and beans. Dinner would often include the same dishes as lunch plus traditional fish called omena or stewed tilapia. Leafy greens or traditional vegetables were very important to respondents in the community survey. They were served at each meal and are still revered for providing the health benefits many Luo swear by. Also downplayed in the traditional diet are meats like beef, goat and chicken. Four elders even responded they choose not to eat meats because they were not good for their health and not as traditional. Each elder in the survey responded that they felt the traditional diet is more beneficial and healthy for them and their families. Half of the elders (n=5) also said that diet in the city is very different from their traditional way

\[\text{Appendix A.}\]
This change is important to assess in reference to the diabetes explosion in urban Kenya.

**The City’s Nutritional Effect**

"However, as people move to towns people are becoming urbanized and their lifestyle is changing and that is why we are moving so much into the diabetes because our diet has changed." - Community Elder

Urbanization introduces a number of changes into the traditional diet. In Kisumu, urbanization has had the most drastic effect on the nutrition and eating habits of the Luo tribe. To assess these effects, the changes must be quantified and catalogued. The community survey was extremely helpful in identifying the nutritional changes in Kisumu.

The most apparent change in Luo diets from urbanization are the refined carbohydrates and sugars now present. Bread, sugar, and flour are three now readily available and frequently used foods in Kisumu that were non-existent in the traditional culture. One respondent claimed, "If I recall right how we were brought up, bread was never ever, ever in our diet... I hardly ever ate bread. And hardly ever had sugar. If I ate bread and sugar and butter maybe when I went to Nairobi to visit my aunt." It is not only that these foods are available in the cities, but also that they are now frequently used. Four homes visited during community interviews

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31 Appendix A.
32 “Community Interview 3.” Personal interview. 15 Nov. 2012. Appendix A.
33 “Community Interview 6.” Personal interview. 15 Nov. 2012. Appendix A.
served bread and margarine with tea, while claiming that they mostly took porridge for breakfast.\textsuperscript{34}

Part of the prevalence of processed carbohydrates and sugars is caused by the new phenomenon of grocery stores and supermarkets. When people move to a city, no longer can they have their own shamba (farm) to produce fresh foods that are readily available; instead foods and goods must be packaged to store and sold in one convenient location. Kisumu itself has an abundance of fresh markets with fruit and vegetables, but 2 community respondents claimed the produce often was priced too high and all community respondents said that they utilized the local supermarkets weekly.\textsuperscript{35} Nakkumatt, Tusky’s and Okwala are the three main supermarket chains present in Kisumu. Alongside necessary goods like soap, rice, oil, etc. you can now buy pastries, pizza, fried chicken, candy, and an abundance of other processed goods not previously available. One community respondent affirmed the difference that grocery stores and supermarkets provide from the village: “So, they will balance their diet but only with natural foods. Yeah. You would not find all this fancy stuff that we have in the stores like sausages, bacon you go to Tusky’s, Pizza. No nonono, you just eat fresh from the farm. So we had the natural foods.”\textsuperscript{36}

Packaged foods are also hurting the nutrition of urban areas. Additives, processed nutrients and fats are added to packaged food to increase shelf life. When asked if they pay attention to the energy and fat contents on packaging all

\textsuperscript{34}Appendix A. 
\textsuperscript{35}Appendix A. 
\textsuperscript{36} “Community Interview 4,” Appendix A.
community respondents (n=10) responded that they did not look at all. If anything, people said they would look at the date of expiration. Furthermore, the nutritional content on packaging is not user friendly. If included on packaging, nutritional amounts are put in terms of 100 grams. However, 100 grams of nuts are very different in amount and serving portion from 100 grams of popcorn. Part of the reason people do not look at nutritional content could be due the overall difficulty of deciphering serving sizes.

Alongside the presence of quick foods in supermarkets, there is now a push to make food in less time than traditionally done in the village setting. Omena, a small, traditional, Luo fish, used to be stewed and cooked for hours and hours before eating. Now, the fish is fried and then dried with salt in the sun so that it will cook quickly. Tilapia, a traditional fish, also follows this same process. The treatment of frying then salting makes the fish quicker to stew but adds additional fat and salt to the dish. Trans fats and sodium now mask this traditional sustenance, and any nutritional benefits are outweighed. One respondent in the community saw this need for speed as an effect of the younger generations:

“Foods that were boiled for long hours can no longer be boiled. All the stuff that was dried were meant to be boiled for very long hours. That fish that I told you, the bambara these were fishes to be boiled for hours and hours and hours until they produce stew that looks like milk. But nowadays our IT girls, we call them IT girls. Information technology, we call them computerized. They just cook. Like is just microwave. People don’t want to waste time cooking. People want to boil rice in microwaves.”

37 “Community Interview 4,” Appendix A.
Cooking presents another nutritional dilemma in the city, namely that of fats. You cannot go into any Kenyan home without finding some form of cooking lipid. The traditional fat used was Ghee, a form of clarified, trans fat-free butterfat. It has a number of nutritional benefits like reducing cholesterol levels and aiding in the secretion of gastric acid. However, Ghee has a major drawback, it cannot be stored for long periods of time and as a consequence is very expensive in supermarkets. When asked about this a community elder informed, “They turn to these Kimbo, refined oils. We never used that at that time. Now we use these refined oils instead of ghee.” Traditional Luo culture also used natural, un-processed fats from fish and ground nuts. This shift may seem practical, but it has a lot of negative benefits that are harming a nutritious population. These margarines, vegetable oils and solids are all chock full of trans and saturated fats. In fact, if you were a Kenyan looking for a budget fat in the supermarket, the saturated and trans fats are half as expensive as the healthier alternatives of poly, mono and un-saturated fats. Kenyans are using cooking fat at the same traditional rate, but without the original nutrition ghee and natural fats from fish and ground-nuts used to contain.

“Town,” or an urban setting, also presents another nutritional disaster, fast foods. Hotelis, street vendors and quick service restaurants are now filling the void of a cooked meal during a days work. Community elders were asked what they would eat if in town and in need of a meal. The answers were varied but telltale in a

39 “Community Interview 4,” Appendix A.
40 “Community Interview 4,” Appendix A.
41Chart 1, Appendix C.
number of aspects. One man said if he had a lot of money he would get some soda, ugali and fried matumbo. A woman claimed that she doesn’t like the foods in town and would seek out fruit or roasted maize, but her son was another story, “Tito, you would not go for chips.” [Laughing] He responded that he would enjoy chips but then she embellished, “If you interview this age, you will find that the girls. They will go for chips. Chips, chicken, sausages. But him, he will go for nyamachoma, ugali, fish. But the energy part of it will make the component for the men. But the girls will want just the slight snacks.” The propensity for women to go for the smaller, yet more calories from fat foods may be accurate; however this negates the fact that food in hotelis is hardly nutritious.

Part of the reason fast foods in town are so dangerous is their content of fats. Fried matumbo, a food one hoteli owner said was a customer favorite, draws 46% of its calories from fat. The recommendation of the American Diabetic Association (ADA) suggests that no one food should have more than 35% of its calories come from fat. An analysis of the street foods available costs’ versus the percentage of calories from fat elicits some important facts. The general trend found here was that more expensive foods tend to have less percentage of their calories from fat. The foods with the highest percentage of calories from fat are in the middle of the price range and the less filling foods, which are cheapest, tend to be on the lower

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42 “Community Interview 6,” Appendix A.
43 “Community Interview 6,” Appendix A.
44 Chart 1, Appendix C.
end of percentage of calories from fat as well. Most Kenyans, when in town, will opt for the most filling yet cheapest option to eat and unfortunately these foods are the highest in caloric content from fats.

Socioeconomics also play a role in the nutrition of urban areas. With, so many choices available, your choices or ability to buy certain foods determines how others view your socioeconomic status. One elder astutely put it, “In the village we don’t usually use mafuta [oil]. But in town, we have to try. We use mafuta in town. When we are at home, if fact I can make it without mafuta. If I am here, it will make me look so poor if I cannot afford mafuta so I must go into town and buy.” Money also was the number one barrier among all community respondents to accessing the foods they need. When asked what food is easiest to afford and find when low on money respondents replied that oil from the markets, unga (ugali), bread, margarine and beans were easiest to afford when low on money. The socioeconomics of nutrition traditionally have the stigma of, rich people eat more and can afford the more fatty foods. But in reality, when in town, the foods available on a low budget are just as nutritionally detrimental as those reserved for the ‘rich.’

**What Causes Diabetes?**

“That is what I wanted you to tell me.”

- Community Elder

Officially, “Diabetes Mellitus is a chronic metabolic disorder that occurs when the pancreas does not produce enough insulin, or when the body cannot effectively

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46 Figure 1, Appendix C.
47 “Community Interview 7,” Appendix A.
48 Appendix A
49 “Community Interview 6,” Appendix A.
use the insulin it produces." The number of people outside of the medical field who can not only decipher the language of this definition but also place it into practical knowledge is very few. This dichotomy between health and education of the masses plagues not only developing nations but also developed nations like the US. Preventing a non-communicable disease like diabetes becomes much more difficult if the people do not understand the clinical terminology and basis of it. In this study, gathering perceptions across sectors of the community was important in determining to what extent degrading nutrition will increase the prevalence of diabetes in Kisumu.

Community perceptions of diabetes are a tricky beast to handle. The community has a varied education level and history with the disease. About half of the community respondents (n=6) in this study knew the basics: too much sugar causes diabetes. However, upon being asked the question, most people were initially inclined to say they did not know. Two had the perception that diabetes only occurred in the elderly and after being informed that even children could develop diabetes one woman responded, “No, I did not that is sad. I never thought diabetes would be inherited. I never thought.” Furthermore, none of the community respondents thought that a diet high in fats or carbohydrates could cause type II diabetes. A diabetic woman thought that worries after her daughter-in-laws death had caused her diabetes. All respondents in the community survey

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50 Kenya National Diabetes Strategy, 2010
51 Appendix A.
52 “Community Interview 6,” Appendix A.
53 Appendix A.
54 “Community Interview 8.” Personal interview. 15 Nov. 2012. Appendix A.
were aware of what diabetes was; however the causes and precautions for diabetes were virtually unknown.

These perceptions of people matter just as much as any sort of increased infrastructure for diabetic care will. The information and education of what causes diabetes and how to prevent it is not permeating like it needs to. When speaking with doctors, all (n=3) claimed that the patients who understood and managed their diabetes best were those with Type I diabetes, or the inherited kind. One doctor said, “Most of them are trying, but there are a few of them, I don’t understand why they don’t understand about the disease or you know the culture here also plays an important role. They just don’t care some of them.” If diabetic patients have trouble understanding and learning about the disease, how is the general public expected to learn to prevent it?

Alongside the difficult language, many of the systems in place to inform and educate Kenyans on diabetes miss their intended audience. For example, a poster in the JOOTH outpatient clinic displayed suggestions for diabetic patients. One of the suggestions was to avoid fatty foods accompanied by a picture of a hamburger. The problem with this is, how many Kenyans eat hamburgers on a daily basis? Slim to none (explain that there should be a photo of ugali or other bad food that they would understand). In addition, using words in radio adds like ‘insulin,’ ‘carbohydrates,’ and other uncommon vocabulary misses much of the general population.

55 “Clinician Interview 1.” Personal interview. 21 Nov. 2012. Appendix B.
56 Figure 3, Appendix D.
Diabetes Management

_Jamaringa Oginga Odinga Teaching Hospital (JOOTH)_

The Jaramogi Oginga Odinga Teaching hospital, formerly Nyanza Provincial Hospital, is a tier four health facility funded by the Government of Kenya and overseen by the Ministry of Health. There are approximately 400 operational inpatient beds and four dedicated outpatient clinics available to all citizens of Kisumu and Nyanza province for minimal cost. The diabetic services here encompass both inpatient and outpatient. This study focused on assessing the outpatient clinic.

Every day of the week, besides Saturday and Sunday, the clinic at JOOTH sees diabetic patients. On average they serve about seven patients a day. Wednesdays, specifically trained diabetic doctors work the clinic. The cost is 100 Kenyan schillings and the wait time is posted as fifteen minutes to one day. According to a clerk, most people come in the morning and will leave by lunch if not seen. Patients see a clerk initially who takes their fasting blood sugar (if diabetic), weight, height, blood pressure. After having their vitals taken, patients wait for the doctor to see them.57 The visits with doctors are brief and comment upon any major changes in health. Most patients are given a follow up visit to the clinic after they have been discharged from the wards with diabetic complications.58

When admitted to a ward, patients receive nutritional counseling as well as some diabetic education from trained nurses on matters such as insulin

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58 “Clinician Interview 1,” Appendix B.
administration, checking feet, and overall care. Upon being asked about the extent of diabetic education available, one doctor explained, “We try to counsel them. For example, if they are admitted with an illness we just do some counseling once we are discharging them or here in the clinic. But it is not something; it is not a protocol we follow. It will just depend; some of us just feel like we don’t have time to do it. Yeah.”

Nutritional education also is a bit lagging at JOOTH, both doctors interviewed said that they would refer patients to the nutritionist if necessary but most of the time there is a shortage of counselors. One doctor explained, “They send the students. Last month, every day we had a student for consultation. Like this month, we don’t have any. So when we are in dire need we just go to their office and seek consult from their office. They pay the consultation fee for just this consultation, like 100 schillings. And then they can go.” This additional cost often deters patients from receiving any kind of nutritional education.

The clinic at JOOTH also has the ability to refer to an in-house ophthalmologist for diabetic retinopathy; however, there is no laser therapy available at the hospital so cataracts and other complicated disorder must be referred to private hospitals in the area. Foot care is done in the clinic but both doctors interviewed said that diabetic foot was a big problem for management in the hospital. Amputations are very common reasons for admittance to the ward. Insulin is available at a subsidized rate from the pharmacy onsite but the

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59 “Clinician Interview 1,” Appendix B.
60 “Clinician Interview 1,” Appendix B.
61 Appendix B.
62 “Clinician Interview 1,” Appendix B.
63 “Clinician Interview 2.” Personal interview. 21 Nov. 2012. Appendix B.
hospital often experiences long periods without insulin, some as long at six months. Kidney function tests and HB1 tests (define HB1 in glossary) are offered once every six months for an additional fee.\footnote{64 "Clinician Interview 1." Appendix B.}

Records are kept in each patients file at the hospital as well as compiled into basic databases for records use. The ledgers for daily use are done by hand and also sporadic in which vitals they take from each patient. Some patients have their weight and height recorded while others simply have their fasting blood sugar records. Most patients are marked as return and their ages ranged from as young as 9 to 65+.\footnote{65 Chart 1. Appendix D.} The database that has been put together for diabetes includes the number of female/male insulin and non-insulin dependent patients seen each month as well as the number combined for yearly totals.\footnote{66 Chart 2. Appendix D.} Vitals and other specifics like type of diabetes or common complications are not compiled for further research and review.

The JOOTH likes to boast what is called Comprehensive Diabetic care, the recommendation by the World Health Organization. This means that all services needed by a diabetic are offered in house and for one comprehensive fee.\footnote{67 "Clinician Interview 2." Appendix B.} The Kenyan National Diabetes strategy also states this is a priority. However, most services like nutritional counseling and eye care are not readily available at the JOOTH and they cost an additional fee. Long waiting times and short doctor-patient visits deter patients from coming to the clinic. Doctors are also very conscious of a patients’ ability to pay at JOOTH and they will often discourage admitting patients
for complications if they feel payment will be an issue.\textsuperscript{68} In short, the JOOTH is trying to do a lot with a little and it seems as though a lot of the diabetes infrastructure initiatives under the Kenya National Diabetes Strategy have yet to take place.

\textit{East Kisumu District Hospital}

The East Kisumu District Hospital is a tier three facility, located more centrally in town than the JOOTH. It has both inpatient and outpatient services and a clinic, which rotates different conditions by day of the week. Wednesdays are diabetic days and the clinic tries to schedule 25 diabetic patients experiences complications, needing follow up after discharge or needs medication refills. The actual number that end up coming sits somewhere around 40 patients. As a result of this time crunch, most doctors do not like to work the diabetic clinic.\textsuperscript{69} Doctor visits are also very brief; approximately five minutes each, in an effort to fit every patient in.

There is no posted wait time but the nurse taking vitals and registering patients said that people would be there until sun down waiting for care.\textsuperscript{70} The structure of patient visits is very similar to the JOOTH. After the laboratory takes patients fasting blood sugar, a clerk takes vitals like weight, age, height and blood pressure. If a patient has high levels of sugar in their blood, they will be

\textsuperscript{68} Appendix B. \\
\textsuperscript{69}“East Kisumu District Hospital Visit.” Personal interview. 22 Nov. 2012. \\
\textsuperscript{70}“East Kisumu District Hospital Visit,” 2012.
automatically admitted. This data is written in the patients’ independent medical records.\(^7^1\)

There is a pharmacy on site but prescriptions are only available Monday, Wednesday and Friday. The cost to receive care is a 100Ksh registration but any further care needed is an additional fee when referred to the JOOTH. Most patients who come in are elderly and manage their diabetes well although some do not fully comprehend the disease, according to the doctor on staff.\(^7^2\) Nutritional counseling is non-existent but the nurse taking vitals said that she does recommend dieting or a normal diet with portion control to patients.\(^7^3\)

Compared to the JOOTH, the Kisumu East District Hospital is just barely addressing diabetic management in Kisumu. One of the issue with this is the district hospital is far more centrally located in town and more frequently used by people who live in the city of Kisumu compared to JOOTH.\(^7^4\) The JOOTH caters to the entire province and often times the people associate the larger hospital with longer wait times. Comprehensive care is not at all present at the district hospital but this is due to the limited resources and financial support.

\textit{Diabetes in Kisumu, Kenya}

All physician respondents (n=3) said that the hardest part about treating diabetes in Kisumu was the culture. One doctor stated bluntly that the culture and

\(^{7^1}\)“East Kisumu District Hospital Visit,” 2012.

\(^{7^2}\)“Clinician Interview 3.” Personal interview. 22 Nov. 2012.

\(^{7^3}\)“East Kisumu District Hospital Diabetic Clinic.” Personal interview. 22 Nov. 2012.

\(^{7^4}\)“East Kisumu District Hospital Visit,” 2012.
diet are her largest barriers to providing comprehensive diabetic care in Kisumu.75

Another physician embellished,

“The urban sort of diet is terrible. It has a lot of refined sugars which in fact is very negative, in fact brings people to become diabetic rather fast. Especially those who are genetically pre-disposed to the disease. They become obese because they do little, they eat a lot. That obesity plus refined carbohydrates, less exercise. In fact, actually, leads to more urbanized population becoming diabetic.”76

Interestingly enough, another doctor blamed the unhealthy diet on carbohydrates, not sugars. The main culprit in her eyes, ugali. She explained that the food was pure carbohydrates and that people take too much when eating, she also said that they recommend diabetic patients stay away from the white ugali which is processed and has minimal health benefits. However, the brown ugali, or ugali made from millet is considered not as tasty as the white ugali so most diabetic patients do not follow her instruction. Her nutritional problems also expand past too much white ugali, she thought, “And then the ones who are in town, I think it is because of the change in lifestyle they indulge in too much, in a lot of fatty food.”77 Doctors know the diet in town is unhealthy, but reversing a mindset and culture as well as affecting an entire urban population’s eating habits on minimal infrastructure and funding is easier said than done.

75“Clinician Interview 1.” Appendix B.
76“Clinician Interview 2.” Appendix B.
77“Clinician Interview 1.” Appendix B.
Lack of research is another barrier that diabetic management comes across not only in Kisumu, but also in Kenya. One doctor was adamant in his belief that without research funding, diabetic management and understanding would continue to be overwhelmed in the current system:

"It's been there for a long time. But most of the African governments have failed to recognize it as a major area of concern, they want to concentrate on infectious diseases. Because they think those are more important. And most ministries of health in all African countries tend to want to talk about infectious diseases, malaria, TB, HIV and some things because they think that these are major cause of mortality in their country. Things like cancers, heart conditions, diabetes and things is not something to talk about because according to them they are not important. When we generate information, when we generate data. It promotes their recognition and addressing of the issues."  

This need for increased research is also mentioned in the Kenya National Diabetes Strategy but its effects are slow coming and yet to be seen.  

Lack of primary care poses an issue for diabetic management because diabetes is not able to be caught early on. In each hospital observed, high blood sugars led to admission to the ward and then diabetic education. Increased access to primary care could curb this trend by ensuring small medical issues are addressed and assessed early on. One doctor at JOOTH, claimed that diabetes is now being recognized more early on but another doctor at the same hospital said one of her

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78"Clinician Interview 2." Appendix B.
biggest issues treating was that sometimes their management and complications are too far deteriorated by the time they see her for an appointment.\textsuperscript{80} There is also the issue that only a third of the diabetics in Kenya have been diagnosed as so.\textsuperscript{81} Primary care could help ease this burden.

Economics play a very large role in diabetic Kisumu diabetic management. One diabetic said the reason she could not manage her diabetes was because the clinic fees were too high and she needed the money to feed her family.\textsuperscript{82} Additionally, doctors and the district hospital and JOOTH said they avoided admitting patients who they knew could not afford to pay their bills. One doctor explained the financial burden would far outweigh the disease burden and if the patients lived close to the hospital she could try and manage it from home.\textsuperscript{83}

Affording medication and insulin also leads to diabetic mismanagement. Many patients try to ration their insulin or oral medication to make it last as long as possible.\textsuperscript{84} This leads to fluctuating sugar levels, ineffective insulin control and many other complications that can actually worsen the diabetic burden. Kidney function tests and HB1 tests carry price tags of 1,200 and 600 shillings respectively.\textsuperscript{85} Most patients have trouble paying the 100-shilling registration fee for clinics let alone these exorbitant fees to manage their diabetes. Very few patients can afford to own a glucometer (define?) so management of sugar levels falls by wayside and are left to estimation; patients have no tangible way of assessing their own personal

\textsuperscript{80} Appendix B.
\textsuperscript{81} Kenya National Diabetes Strategy, 2010.
\textsuperscript{82} “Community Interview 8.” Appendix A.
\textsuperscript{83} “Clinician Interview 1.” Appendix B.
\textsuperscript{84} Appendix B.
\textsuperscript{85} “Clinician Interview 1.” Appendix B.
management and diet in regard to their diabetes. Every doctor interviewed for this study as well as every community member and diabetic patient claimed that finances were their largest barrier to adequate care, nutrition and overall health.

Insulin is another a tricky subject here in Kisumu. The insulin must be kept cool at all times, but many residents of Kisumu do not have refrigeration let alone electricity. Diabetic educators teach those patients who are insulin dependent how to use traditional Luo cooking pots to store their insulin. By placing insulin in a watertight container and submerging the container in the clay cooking pot filled with water, the insulin stays cool through evaporation. This innovation is one way that care providers and diabetics alike have overcome challenges of diabetic management in Kisumu.

Under the new healthcare acts in Kenya, any person seeking medical attention is required to know their HIV status. This would seem to be an issue with patients seeking diabetic care; they do not want to know or reveal their status because of stigmatization so they prolong seeking medical attention. However, a doctor at the JOOTH said that interestingly enough most diabetic patients are not HIV positive. Another doctor claimed this would never prevent a patient from coming in, and they will still treat patients even if they refuse the test. Approximately 16% of the population in Nyanza province is HIV positive, yet it is interesting it does not inhibit any sort of diabetic management so far.

86 "Clinician Interview 3." Personal interview. 22 Nov. 2012. Appendix B.
87 "Clinician Interview 2." Appendix B.
88 *Kenya National Diabetes Strategy*, 2010
89 "Clinician Interview 1." Appendix B.
90 *Kenya: Kisumu County Fact Sheet.*
Conclusions and Recommendations

Diabetic management in Kisumu has the potential to be overwhelmed. The disease is becoming more widespread and known amongst people, yet they do not seem to be changing their diets. The diet has drastically changed to include many new and harmful foods but the perceptions and attitudes towards food have not witnessed this change. As more people move to cities in Kenya, the diabetic burden should only be expected to increase.

Nutrition has changed from the traditional constructs and diabetes is increasing in these new urban areas. This correlation is not coincidental. New diets include fats, sugars and massive amounts of carbohydrates while diabetes management struggles to provide education and awareness on healthy eating. The system is being overwhelmed with new diabetic cases but the resources and infrastructure do not exist yet to prevent diabetes and educate the people. The unique situation of a developing country coupled with urbanization has the potential to lead to an epidemic of new diabetic cases amongst the number of other communicable diseases like HIV and malaria currently plaguing healthcare.

My recommendations for combatting this problem are extremely apparent. Bring nutrition and education to the people of Kisumu and the prevalence and development of diabetes will drastically reduce. Teaching people which fats are healthy and safe to cook with, which foods are sometimes foods, how to manage portion sizes and ensure balanced meals and proper perceptions of food are ways to curb the diabetic onslaught in urban Kenya. As for the healthcare side of things, nutrition should be more heavily addressed as well as diabetic education. Type II diabetic people are not separate from the community, they are parts of it and they
have developed diabetes because of the urban diet and lifestyle. Without proper instruction they will never be able to change their diet, educating them on proper eating and management should be of utmost concern to policy makers. Providing cheap insulin will not help if they will try and ration it, or eat massive amounts of tea in their sugar and mounds of ugali with meals. Infrastructure and facilities will continue to be burdened and overwhelmed by diabetes if people are not educated and taught nutritious ways of eating in the city.

**Glossary of terms**

ADA: American Diabetes Association

HB1: Also called A1C A test that measures the amount of sugar bound to the hemoglobin in your blood.

HIV: Human Immunodeficiency Virus

Insulin: peptide hormone, produced by beta cells of the pancreas, and is central to regulating carbohydrate and fat metabolism in the body

JOOTH: JaramingaOgingaOdinga Teach Hospital

Mafuta: Oil in Swahili

Shamba: Farm in Swahili

Unga: Ugali flour in Swahili
Works Cited

Books, Articles, Websites


*Interviews/ Visits*

"Clinician Interview 1." Personal interview. 21 Nov. 2012.

"Clinician Interview 2." Personal interview. 21 Nov. 2012.

"Clinician Interview 3." Personal interview. 22 Nov. 2012.

"Community Interview 1." Personal interview. 15 Nov. 2012.

"Community Interview 2." Personal interview. 15 Nov. 2012.

"Community Interview 3." Personal interview. 15 Nov. 2012.
"Community Interview 4." Personal interview. 15 Nov. 2012.

"Community Interview 5." Personal interview. 16 Nov. 2012.

"Community Interview 6." Personal interview. 16 Nov. 2012.

"Community Interview 7." Personal interview. 15 Nov. 2012.

"Community Interview 8." Personal interview. 15 Nov. 2012.

"Community Interview 9." Personal interview. 15 Nov. 2012.

"Community Interview 10." Personal interview. 15 Nov. 2012.


"East Kisumu District Hospital Visit." Personal interview. 22 Nov. 2012.

"East Kisumu District Hospital Diabetic Clinic." Personal interview. 22 Nov. 2012.

"JOOTH Visit." Personal interview. 21 Nov. 2012.

"JOOTH Diabetic Clinic." Personal interview. 28 Nov. 2012.
Appendices

Appendix A

Community Interview 1

When you buy food do you look at the food or the energy content that is on the Packaging?

I used to check, when I went to the market you know even in the supermarket. When I want something I just check the expiration. [She checks the content of the expiration]

Does she check to see if it is high or low?

Both, both. [She wants to see if the content is well balanced for her consumption]

So what is well balanced to you? Is it more carbohydrates, or fats or a balance of them?

[She prefers more carbohydrates and I think in most African set ups we prefer a lot of carbohydrates because of the nature of our works. We need a lot of energy. There is a lot of energy input. So usually carbohydrates are high. And then but when it comes to diabetic cases you see how their diets are controlled. And due to different illnesses, people are advised nutritionally on what they should value more, because we have different sicknesses like sickle cell anemia, we have HIV/AIDS, we have cancer. So everyone now has a nutritional line that they have to follow. When I was talking to your colleague I said, if are on ARV’s you have to take not less than 8 glasses of water every day for the *** to be kicked out of the system. SO you see, you have to narrow down because of the **** factors in your body you cannot take water like any other person. So, sometimes other conditions will tone you down to specific foods. Yeah. And you can be advised by the doctor you need this amount of carbohydrates, you need to work on protein, things like that. The people who are HIV positive, the nutritionist will tell them what they need to boost their immunity and all that stuff. So sometimes, nutrition here gets so much into the system when somebody has fallen ill and gets the directive from the medic, you need to work on your diet so that you can improve your health. And then there are those people who are also obese and they have to reduces, there are people with high blood pressure they
have to control some of their food. They really have to look at this content, before they eat because of the pressure.] Like this one, she came with a card and that low CD4, so I must refer her because she is already... *Luo Talking/English Interjections. Pause to check Anne’s blood pressure.*

**Where do you buy the majority of your food?**

[Oile market. *But you see we have two types of food, there are foods that you must buy from the store, and there are foods that you get from the market.* Like vegetable, some people prefer to get them from Oile or Kibuye. Some people absolutely do their shoppings at the stores. Because, they will get the vegetables, they will get the cooking fat.]

**The stores are so expensive though for produce...**

[and then the amounts and the quantities, you see in Kibuye you can get cooking fat even for ten schillings. You can’t get that from the stores.]

**So it depends on the food where she goes?**

[Yes. And also which area you... there is middle class, there is high class, there is low class. Yes.]

**Does she think that what she eats here in town is different from what she would eat in her ancestral or traditional village?**

[Very different]

**Very different. How?**

[There you deal with fresh vegetables that we get right from the farm. *Luo/English Interjections.* We have cassava, we have sweet potatoes which are very nutritious. Yeah. There are groundnuts, you also remember that they are very fresh because you know the source. Yes. It is different from what you buy from the market. ‘Cus like I know in a central province we buy a lot of vegetables from the sewer lines. In the villages there she says there are bananas, you know they grow bananas, we cook them. Yes. Even the drinking water, clean and safe. Yeah.]

**Do you treat your water here?**

[Yeah, even in the TBA lessons, they teach mothers to drink clean treated water. To avoid things like typhoid, amoeba, because when you are carrying a pregnancy you are very delicate so those are some of the lessons they give the expecting mothers.]

**So do they teach them to boil the water or how do they teach them?**

[Now there is this population service center or something like that. PSI. They have really been working on safe water and the mosquito nets so that]
pregnant mothers sleep under the nets. So that they don’t catch malaria. They drink treated water and they were providing water cans and water guard. And they Show you how to use it. SO they teach you how to treat the water so that everybody can be able to drink safe water. To curb malaria, typhoid and these water borne diseases. Yeah.]

**So in the town she says she eats differently, how is it, she says she eats less fresh vegetables here, and more of what? Are there more fats, or what how is it different I guess. What does she eat more of here?**

[Ok in town there is a lot of junk food, its different from the village set up. Here, you go to town you feel hungry you get chips, you take some chips. Crepes you know. Broiler chicken. But in the village.] There isn’t. [Those things are not available. When you are hungry, you go to the kitchen and prepare a good, decent meal with not too much oil. So at the end of the day, when you compare the two foods the one in the village adds more value to your life that the one that fills your stomach in town. There is so much ready food in town that you can get but most of it is junk. Yes.]

**Do you try and exercise regularly? Do you know anyone who tries to exercise regularly?**


**What causes diabetes?**

[So she is saying it can either be inherited or bad eating habits. Yeah. Some eating habits bring about diabetes. So there are those who inherited it because they were born with it. And there are those ones who caught it up along the way because of their eating habits. *LUO/ENGLISH interjections.* So lack of exercises also. Lack of exercises are now, depending on what foods you are eating, taking it without burning them out contributes.]

**Thank you, you know a lot about it.**

[Let us show you her stove. The one she is using... *LUO/ENGLISH interjections.*]

*End Transcript.*

**Interviewer**[Translator]Interviewee
Can you ask if there diet is any different here in town than it would be in the village?

Uhm, what are the perceptions of food in their culture?

What is her preferred method of cooking?

What does she do if she does not have oil?

Ok, uhm does she pay attention to the nutrition facts or the energy on the packaging?

Does she eat snacks in town and if so, what kinds?

So who buys them? Like the crisps in the store?

Is it more important for food to be tasteful and filling? Or to be healthy?

Can you ask, if she is low on money where will she go to buy food?

What is the most important food to have in a household?

Does she take sugar in her tea?
LUO TALKING/ENGLISH INTERJECTIONS [Yes, she takes.]

How much she puts in, is it more about taste? Is it more about rationing?

LUO TALKING/ENGLISH INTERJECTIONS [She takes it because it is sweet in her mouth. It tastes sweet.]

What foods are bad for your health?

LUO TALKING/ENGLISH INTERJECTIONS [She doesn’t know, she just eats.]
LUO TALKING/ENGLISH INTERJECTIONS [So she says she doesn’t take meat. She is not allergic, it doesn’t harm her. But when she gave birth and saw the umbilical cord she hated meat. From henceforth she doesn’t eat meat.]

So what foods does she think are good for her health?

LUO TALKING/ENGLISH INTERJECTIONS [A lot. Vegetables.]
LUO TALKING/ENGLISH INTERJECTIONS

Does she exercise?

LUO TALKING/ENGLISH INTERJECTIONS [Just the daily activities.]

Does she have any barriers to getting the food she needs?

LUO TALKING/ENGLISH INTERJECTIONS [Money.]

What is her main form of transportation in town?

LUO TALKING/ENGLISH INTERJECTIONS [She walks. Yes.]

Can you ask what causes diabetes?

LUO TALKING/ENGLISH INTERJECTIONS [She doesn’t even know]

Sawa. Asante Sana.
Community Interview 3

LUO TALKING/ENGLISH INTERJECTIONS

What is a typical day of food here like for her? What does she take for breakfast and so on...

[Tea with either bread or sweet potatoes, bananas. That’s for her breakfast]

Ok, Lunch and dinner?

LUO TALKING/ENGLISH INTERJECTIONS [So she says at lunchtime she prefers eating ugali with the vegetable. Like either cabbage there is also another traditional vegetable called cowpeas. I will show you the different types of traditional vegetables when we go to the market so that when we talk about them you have an idea what they look like. Yeah. Otherwise I am sure you are imagining. So that’s what she prefers for her lunch. For dinner she prefers githeri. You know githeri?]

Do you generally cook, or who cooks in the house?

[She cooks on her own. If she is busy her children cooks. Yes.]

Does she look at portions like when she cooks to make sure that there are equal amounts?

LUO TALKING/ENGLISH INTERJECTIONS [She looks at the number of people she is going to cook for. She cooks portions based on what is available at that time.]

So if you buy bread, does she look at all at the energy amounts on the packaging?

LUO TALKING/ENGLISH INTERJECTIONS [She doesn’t look.]

Where does she do the majority of her shopping?

[Just at the retail shops. The retail shops. Sometimes at the open markets and sometimes just on the road.]

What is the most important food to have in a house?

[Flour. Yes.]

Do you look at how much sugar you add to tea in the morning or porridge or wheatabix?

[She measures.] LUO TALKING/ENGLISH INTERJECTIONS [She measures the water and the milk then she knows the amount of sugar to add]

Has she ever received nutritional counseling from the hospital or somewhere else?

[So she says she had some ulcers. And ulcers are usually the reactive of the acids. So there are bitter things that she is not supposed to take because]
they are acidic. Yeah. SO it is not about nutrition but it is about the tastes. SO if it is bitter it provoke the ulcers. But if it is soft it is fine.]

**What foods does she think are bad for her health?**

[Avoid oils. She is very specific about the cooking oils that she uses.]**LUO TALKING/ENGLISH INTERJECTIONS**[So I was asking her, has she gone through the contents for her to define this is what is good for me because it contains ABCD. But she is saying she has not gone through the contents, but the comfort she gets when she uses them is what lures her into buying them. Yeah.]

**Is comfort how full she is, or...**

[Not how full. You know there are some foods that do different things, some upset your stomach. You get a running stomach. But others you will eat you are very comfortable. Like other people narrow down to specific liquid or oils like ulianzo (corn oil), and that stuff. But that one is very expensive for ordinary Kenyans to afford. Yeah. Because its refined oil. So that is the difference.]**LUO TALKING/ENGLISH INTERJECTIONS**

**What is more important, for food to be healthful or for food to taste good?**

**LUO TALKING/ENGLISH INTERJECTIONS**[To help the body. Yes.]

**So what foods are good for your body?**

**LUO TALKING/ENGLISH INTERJECTIONS**[Fish, potatoes (sweet), those are the traditional ones. She also says once in a while some meat.]**

**Does she have any barriers to getting the food that she needs?**

**LUO TALKING/ENGLISH INTERJECTIONS**[Finances. That’s the only barrier.]

**Do is she is low on money where does she go to buy food? Does she go to the market or to the store? Where does she go?**

**LUO TALKING/ENGLISH INTERJECTIONS**[Supermarket.]

**Like Tusky’s or Nakumatt?**

**LUO TALKING/ENGLISH INTERJECTIONS**[Tusky’s is closer to her. It is the best]

**Typically if she is moving around in town how does she travel?**

**LUO TALKING/ENGLISH INTERJECTIONS**[If she is in a hurry, she will take a matatu. But if she is not in a hurry she will walk.]

**What causes diabetes?**

**LUO TALKING/ENGLISH INTERJECTIONS**[She doesn’t know.]** LUO TALKING/ENGLISH INTERJECTIONS
Does she try and exercise regularly?

I used to dance. [She still dances.]

What is the perception of food to her in her culture?

[Her perspective about food is as long as she can eat and be filled. That is it. If it is meat it just meat. If it is vegetables it is just vegetables.]

Thank you very much.
Community Interview 4
@Kibowsa

Do you think your diet is very different from what it would be in a traditional village?
Yeah it is.

Really, How so?
You know, traditional food. We get them in the reserve here. But in town you will buy. **Now here, I will plant mine and bring from the shamba and cook. But in town you have to buy.**

What are some perceptions that you have of food within your culture? How do you think about food?
Mmm, it is important but actually you need money also. Because you see things like sugar you cant get that from your courtyard. So you still need money also.

Uhm, if you were to choose something cooked, how would you prefer it to be cooked?
Like green leaves you will cook, boil and then fry. I like them both.

If you were in town oing work or running errands and you needed food what would you go get?
Ugali and sukuma wiki, just green leaves. And also it will depend what is in your pocket.

So if you had a lot of money to go into town what would you go buy?
If you have money you will get a lot of things. If you don’t have money, you will stay hungry.

So if you had a lot of money when you are in town and you wanted to buy a meal, what would be your perfect meal?
Fish, fried fish. First it is fried and then stewed a bit.

Do you look at how big your portions are?
Because in town they give you a quantity proportional to your money it is just sliced. And also you know fish, there is big, small medium.

So if you were at home would you just eat until you are full or would you make sure you only eat this much?
At home actually we have a lot of food, because we have a lot of family. We cook big amounts of food. We split it to mama, children, everybody. Until you are full.
If you were to buy a packet of crisps would you look at the energy information on the back?
The energy. Yeah that one we consider. Like instead of taking tea with milk we take ah flour, flour of millet. Porridge. Which is more nutritious than the tea. And also this one is a processed food, so you cannot compare to the one where I maybe take one to the machine and get maize flour. Then I come and cook ugali.

So is it better to eat the processed for or the natural food?
The natural food.

Do you think you eat more processed food in town or in the village?
In town.

So, do you think it is more important for food to be tasteful and filling or do you think it is more important to be healthy?
The food should be healthy.

So if you could take a little bit of vegetables because they are healthy compared to a lot of bread, you would take the little bit of vegetables?
Yes.

So if you are low on money, where would you go to buy food?
I have a lot of money actually. Both. Some things you only find in town and some only in the market.

So if you buy food where do you go, do you go to the market?
Market. Village market.

What is the most important food to have in a food?
Here we mix, although the most important one, the usual one is ugali.

SO, when you put sugar in tea or porridge do you watch how much you put in?
Very little. Even at times I take without sugar. Sugar takes a lot of energy and it gives away the nutritional value of the food.

What foods are bad for your health?
First of all I will talk of sugar. And uhh most of the drinks, like sodas. Those ones me I don’t take. And any other foods, I think is health. And you know most of food depends on how you cook.

So what foods are very very good for your health?
The greens and ugali.

What is your favorite kind of ugali?
Brown.

**Do you try and exercise regularly?**
I do very much.

**What kinds?**
Digging, slashing. You know at home you have almost have a lot of exercise. I have a cow here I have to take out.

**DO you have any barriers to getting the food you need?**
Yeah if I cant get money I cant get food.

**So what kind of food can you buy if you don’t have money?**
Like the vegetables, I can get the seeds from the market and plant.

**In town, do you think people can do that?**
No, they cannot.

**What do you know about diabetes?**
I don’t know much about it.

**Do you know what cuases diabetes?**
A lot of sugar in the blood.

**What is your main for of transportation?**
I use matatu and the times I used to be strong I use a bike.

*End Transcript.*

**Interviewer**
[Translator]
Interviewee
Is this your ancestral home here?
Yes.

Do you think your diet is any different from what it used to be out of town?
Very much different.

How would you say it is different?
The traditional foods that we used to eat, especially when I was young. We were living right in the village, this is semi urban. This is not really a village.

If I recall right how we were brought up, bread was never ever ever in our diet. Laughing Bread, rice, chapatti, mm mm LUO TALKING/ENGLISH INTERJECTIONS We used to have breakfast, let me start with breakfast. Can I go slowly a bit?

Yes.
So our breakfast, our grandmother used to wake up at 5. And make a big suffaria of umhbreakfast which was porridge. Almost every morning, I was brought up on porridge. And that porridge was made out of millte. Millet and cassava. That porridge never had sugar by the way. LUO TALKING/ENGLISH INTERJECTIONS What they used to do with that porridge was that ah previous evening you would mix up the flour and cover it. So it stays overnight. That is called fermentation. You ferment it over night then early in the morning you make the porridge. So instead of us using sugar, the taste of that porridge would just be that kind of fermented taste. So We would have that porridge with maize, boiled maize. Fresh from the garden, boiled again the previous night. Or sweet potatoes, or cassava, boiled cassavas. I think in my formative years, that was from the time I was born up to class seven, that is what I was brought up on. I hardly ever ate bread. And hardly ever had sugar. If I ate bread and sugar and butter maybe when I went to Nairobi to visit my aunt. But back at home Anne, sincerely, that is what our grandmother brought us up on. She wanted to know the difference between the food that we are eating now and the traditional food. Back at that time, I told her back at that time. Right now even in the rural areas it’s a mixture so there is a little change. Not so much. Its mostly, I think 70% is still that diet. 30% maybe you can find someone eating bread or mandazi, buns that is and tea. But during those days mostly it was just porridge.

I
don’t remember taking tea and bread and butter when I was growing up. It was porridge, sweet potatoes, boiled cassava, boiled maize and a mixture of beans and maize. That would be what we had a lunch time. So I don’t know what you want us to focus on but I am telling you what we were brought up on. _LUO TALKING/ENGLISH INTERJECTIONS_ It would be ugali, mostly ugali. White or brown. _LUO TALKING/ENGLISH INTERJECTIONS_ So, it would be ugali with Omena. _LUO TALKING/ENGLISH INTERJECTIONS_

**How do you eat the omena?**

Wholesome the way it is. _LUO TALKING/ENGLISH INTERJECTIONS_ You cook it, it is boiled. It is boiled and then stewed. And the stewing was different my grandma would boil it and then just cut some onions on top of it and then put, ghee, in water.

**So ghee is very expensive now, but it is the traditional fat used.**

*What do you think people turn to?*

The turn to these Kimbo, refined oils. We never used that at that time. Now we use these refined oils instead of ghee.

**What would you say are the perceptions of food in your culture?**

_LUO TALKING/ENGLISH INTERJECTIONS_ Hard working. Hard working. I mean for you to have food you must be hard working. Especially in the shamba, almost all that food was from the shamba. Except maybe daga and obembo, fish. The bigger fish. [So you know now we are not in town, this is an ancestral home. Now there are more in town and in slums.] _LUO TALKING/ENGLISH INTERJECTIONS_

**In your house now, what would you say is your preferred method of cooking?**

I like to fry my food now. _LUO TALKING/ENGLISH INTERJECTIONS_ Maddie I wasn’t finished with the traditional food. I think that has impacted greatly on our health today. There was something also we used to eat. Very interesting. Vegetables _LUO TALKING/ENGLISH INTERJECTIONS_ Boiled vegetables. _LUO TALKING/ENGLISH INTERJECTIONS_ [Cow peas] And then you boil it and just put you know, salt. My grandmother use to put it in her palms like this and then take it. They never had these diseases we have. SO you were asking the difference, the difference is very big. If we ever changed our diet it was maybe to dried fish or to dried meat. _LUO TALKING/ENGLISH INTERJECTIONS_

**So now what would you say is a typical lunch?**
Now a typical lunch is sukuma wiki, and ugali. Maybe with ah daga, meat. Occasionally, not all the time. Like I think maybe the last time I prepared meat was three days ago. But I didn’t enjoy it, I stopped taking meat. I don’t like meat anymore. *LUO TALKING/ENGLISH INTERJECTIONS*I take chicken, I take fish, but red meat I stopped taking. I take occasionally but I don’t enjoy it anymore.

**So if you were in town and you needed to get something to eat, what would you eat?**

These days, I will look for fruit salad any time. If I don’t get fruit salad I will take uh roastednjugu. Ground nuts. oR boiled gorund nuts. Or boiled maize. Ok, I can go into a hotel but I don’t like it and I do it very occasionally. Even I think two days ago I went into town I was hungry. So now what do I do, I cant eat in the hotel. I don’t like the food in the hotel anymore. Its unhygienic. So I look for roasted ground nuts I took a bunch of bananas. SO I ate that as I was coming home until I came and cooked my own food. But that is my age. Not everybody else does that. I don’t know whether Anne does that.

**So what about your son?**

Fish.

**What kind?**

Fried fish. And ugali. Because that is ah next to the lake. It is easily accessible. *[You know we call ugali our energizer]* Tito, you would not go for chips? *Laughing*

*If you interview this age, you will find that the girls. They will go for chips. Chips, chicken, sausages. But him, he will go for nyamachoma, ugali, fish. But the energy part of it will make the component for the men. But the girls will want just the slight snacks.]*

*LUO TALKING/ENGLISH INTERJECTIONS*

**When you cook food do you control portion sizes?**

Not at all. We eat as we cook. That has never even popped into my mind. Hahaha

*LUO TALKING/ENGLISH INTERJECTIONS*

**Do you watch nutritional facts when you buy foods?**

Not at all.

**Do you think it is more important for food to be tasteful and filling or to be healthy for you?**
Both. Yeah.

**But if you had to choose one?**

If I had a choice to make that is I would definitely go for health. [But you know, that one is now in Nyanza province. Now, if you were to ask that question in western Kenya they would go for quantity. Not quality]

**If you are low on money where do you go to buy food?**

If I am low on money and I really want to make best use of what I have I would go to the market. It is cheaper. It is cheapest.

**Where do you typically shop here for food?**

Market, we have small kiosks around here but they are too expensive for me. I hardly buy from them.

**Do you shop in any of the big super markets?**

When I have money. When I have good money, not small money.

**If you shop in the super markets, what do you think they are better for?**

Things like liquid hand soap. Things like ah liquid margarine. I don’t buy cooking oil from the supermarket. Things like bread you know, toiletries. But I have found they are cheaper at the market. They have all those things at the market. I hardly go to Nakkumatt anymore. When I go to Kibowsa, I buy everything I need.

**What do you think is the most important food to have in a home?**

Unga. All the time. [Ugali] If I have ugali... *LUO TALKING/ENGLISH INTERJECTIONS*

**Do you pay attention to how much sugar you add to tea in the morning?**

I do. Sometimes I even do away with sugar completely. Sometimes when I feel I want to eat, usually I do that when I am better off financially. But when I am hard up I take sugar. *LUO TALKING/ENGLISH INTERJECTIONS*

**What foods do you consider to be bad for your health?**

I don’t know. I have never considered that. *LUO TALKING/ENGLISH INTERJECTIONS* I concentrate on the necessities you see. So I don’t have to go overboard or down.

**What do you think is good for your health?**

Anytime, vegetables and fruits. I love fruits too much. *LUO TALKING/ENGLISH INTERJECTIONS* If I was able I would eat fruits during
breakfast, lunch, evening. Fruits. But they are expensive by the way. Very
expensive. I can hardly afford it.

**What is the best value fruit?**

Usually when I am low on money, I take oranges, I take mangoes. Ah but
when I have money I go for watermelons, bananas, a whole mixtures of
fruits. Pineapples. Yes definitely. *LUO TALKING/ENGLISH INTERJECTIONS*
It depends on the season. ON the market. You will find avocados this market.

**Do you exercise regularly?**

I don’t. I used to. [She does the daily work]. There was a time I could do
some little exercises behind my bedroom, but I stopped. I cant say I do a lot
of it. And then there are days I spend a lot of time in the shamba. I can go
in the morning when it is cool and come back in the evening. I just carry my
food there. But that one it is not regular. Like I think the last time I did that
one was three years ago. When my husband was still alive. But since the
boys have been here I hardly do any work. They do all the work. I tell them
I have done all the work for you since you were kids now I am old, I need to
rest. So somebody does the floor and somebodys does the dishes. I only do
a little work. So these days I hardly exercise. I feel it. I can feel it in my
bones.

**Do you have any barriers to getting the kinds of food you need?**

Barriers? Money. That’s the only barrier. Seasons don’t affect much because
if something is phased out another takes its place. You also want to change.
It is good. Like in January we are not going to have very many vegetables.
We will not be able to afford any vegetables. And now I have a lot of
vegetables. So when I have a lot of it, I eat a lot of it. So when it goes off
season, then I go to daga. The small fish. Omena.

**What is your main form of transport?**

Neighbors house I just walk. But market it is a walking distance but I usually
take a matatu. But it is a walking distance. *LUO TALKING/ENGLISH INTERJECTIONS*

**What do you think causes diabetes?**

I commonly believe it is just too much sugar.

**What do you know about diabetes as an illness?**

That is what I wanted you to tell me. But I know it is a disease that ah
mostly affects aged people, and it makes them lose control of their urine.
Something like that. That is about all I know about diabetes. Most of the people, [Did you know even children get it?] No, I did not that is sad. I never thought diabetes would be inherited. I never thought. *LUO TALKING/ENGLISH INTERJECTIONS.*
Community Interview 6
@Manyatta
LUO TALKING/ENGLISH INTERJECTIONS
Do you think your diet is different here in town than it would be in a traditional village?
I used the same food. Here the common food that we eat is the common food that we eat in the village. So they are the same foods.

What are the perceptions of food in your culture?
LUO TALKING/ENGLISH INTERJECTIONS
The quantity... LUO TALKING/ENGLISH INTERJECTIONS
We believe that where you are having food, you serve it in good quantity. They know you as a rich person, or someone who is safe.

What is your preferred method of cooking?
LUO TALKING/ENGLISH INTERJECTIONS
I always prefer frying it, namafuta. I prefer cooking it with mafuta.

Do you also cook like that in village?
Yes, we always use.

Would you say you use more oil for cooking in town or in the village?
LUO TALKING/ENGLISH INTERJECTIONS
In the village we don’t usually use mafuta. But in town, we have to try. We use mafuta in town. When we are at home, if fact I can make it without mafuta. If I am here, it will make me look so poor if I cannot afford mafuta so I must go into town and buy.

Do you like to use mafuta because of the taste, or why do you like to use it?
I use it because of the taste. It tastes good. If I do not use it to cook, I am just forcing myself to eat that.

Do you control portions in your household?
LUO TALKING/ENGLISH INTERJECTIONS
I just put it. I just see with my eyes if it is enough. If it is not enough, when the bowl is empty I go to the kitchen and prepare another portion in the bowl.

If you were to buy jam, would you pay attention to the nutritional information on the back?
I don’t. I'm used to one fat, if I don’t get that I just look for an alternative. But I don’t read the contents always.

What is your preferred kind of cooking fat?
I like the oils. I used to like Kimbo but these days I have changed.

If you were in town and needed to eat, where would you go/what would you get?

*LUO TALKING/ENGLISH INTERJECTIONS* Something light like maybe soda, chips. Maharagwe.

So things that are ready in the market. Ok. Do you think it is more important for food to be tasteful and filling or for food to be healthy?

Food should be good for your body. Healthy.

Where you do buy the majority of your food?

From the market.

Do you ever use the grocery stores?

Rarely because they are expensive.

What is the most important food to have in your home?

Ugali.

*LUO TALKING/ENGLISH INTERJECTIONS*

Do you add sugar to tea in the morning?

*LUO TALKING/ENGLISH INTERJECTIONS* I add sugar.

Do you add it until it tastes good or just enough so it is tasty?

Just a bit.

What food is bad for your health?

Food contains a lot of fat.

What food is good for your health?

The local foods. Porridge, ugali, mboga.

Do you exercise regularly?

Only when walking. When I go to the market to buy these things every day I walk. I don’t go on a bike, I go on my feet.

So your main form of transportation is on foot?

Yes. On foot.

Do you have any problems getting the food you need?

There are so many things I need, my important food like porridge. Sometimes I don’t get them. I don’t have porridge in my house because I like that money. To buy that porridge.

So the problem is money?

Like this whole month I have not taken my porridge.

What do you eat instead?

Tea in the morning and then after that I don’t take anything.
What causes diabetes?
A lot of sugar.

End Transcript.
How long have you been diagnosed with diabetes?
*LUO TALKING/ENGLISH INTERJECTIONS* [Four years, it started as high blood pressure. But now the joints are also aching]

Was she diagnosed in a hospital or in a clinic?
*LUO TALKING/ENGLISH INTERJECTIONS* [Russia hospital, yes]

Do you go to any diabetic or nutritional clinics regularly?
*LUO TALKING/ENGLISH INTERJECTIONS* [So she says she has not been there for one year. Because she says for you to attend that clinic, before your file has been brought to the clinicians desk you have to pay 100 schillings. And sometimes she doesn’t have that money]

Does she regularly check her blood sugar levels?
*LUO TALKING/ENGLISH INTERJECTIONS* [She said the sugar level is ok, but when she takes tea with sugar she now shits and vomits. Yes.]

Does she have a monitor?
[No, definitely not]

Is your diet different here in town than it would be in the village?
*LUO TALKING/ENGLISH INTERJECTIONS* [The food that they eat in town now is ugali and sukuma. Maybe when she gets beans and rice. She saying the foods that are at home might not be very tasty but are very healthy. Yeah so its different from. Its different.]

What are some perceptions of food in the Luhyia culture?
*LUO TALKING/ENGLISH INTERJECTIONS* [They don’t have any culture surrounding it, everyone is busy with their business. Nobody thinks about what the other is doing. So if you have food it is up to you.]

What is her preferred method of cooking?
*LUO TALKING/ENGLISH INTERJECTIONS* [When she fries her food she feels nauseated. So she boils. Then maybe put very little oil if any at all.]

Does she control her portion intake at all, say limiting carbs?
*LUO TALKING/ENGLISH INTERJECTIONS* [All she knows is that ugali gives energy, mboga give vitamins. But she doesn’t control portions.]

If she buys bread in the store does she look at energy information?
*LUO TALKING/ENGLISH INTERJECTIONS* [She stopped reading a very long time ago. She used to but now she is saying she is old. She doesn’t really care about what is there.]
Can she outline a typical day of food here?

*LUO TALKING/ENGLISH INTERJECTIONS*[Tea. Tea without sugar. Yes. She doesn’t like doughnuts but she can take groundnuts. She only takes one meal per day. That means if she takes her lunch she will not eat until the next day.]

**Does she experience any problems with exhaustion?**

*LUO TALKING/ENGLISH INTERJECTIONS*[Yes.]

**Have you spoken to a doctor about this?**

*LUO TALKING/ENGLISH INTERJECTIONS*[She says she has seen the doctor and explained this. However, the one hundred schillings that she has paid will go. The doctor will prescribe for you drugs. Which if you go to the chemist to buy will be a thousand plus. Which is unaffordable. Basically. It is unreasonable to go to the doctor. Because even after getting the prescriptions..]

**Is she on any prescriptions currently?**

*LUO TALKING/ENGLISH INTERJECTIONS*[She says when she is in a lot of pain she just takes extra strength panadone. The pain killers. But she used to use that drug that is called zanatal. Rosatal.]

**Does she have any issues with vision?**

*LUO TALKING/ENGLISH INTERJECTIONS*[Her vision is ok.]

**Does she check her feet?**

*LUO TALKING/ENGLISH INTERJECTIONS*[They are ok but painful.]

**Has someone told her she should check them regularly?**

*LUO TALKING/ENGLISH INTERJECTIONS*[She has not been told. But she doesn’t have the sores]

**Does she have any loss of feelings in her extremities or in her feet?**

*LUO TALKING/ENGLISH INTERJECTIONS*[Yes. She has. And the sweat, but you know some of that can also come with menopause.]

**Has she ever experienced any seizures or loss of consciousness?**

*LUO TALKING/ENGLISH INTERJECTIONS*[She only feels dizzy when she has had malaria attacks. But she has never had fits.]

**Can you ask her if it is more important for food to be tasteful and filling or for it to be healthy?**

*LUO TALKING/ENGLISH INTERJECTIONS*[The healthy one.]

**If she is low on money, what kinds of foods can she buy?**

*LUO TALKING/ENGLISH INTERJECTIONS*[The cow peas and the apothe.]
Where does she buy the majority of her food?
LUO TALKING/ENGLISH INTERJECTIONS [Just the local market.]

What is the most important food to have in a home?
LUO TALKING/ENGLISH INTERJECTIONS [Unga, ugali.]

What foods are bad for your health?
LUO TALKING/ENGLISH INTERJECTIONS [The green grams, they give her ulcers. And sukuma wiki.] LUO TALKING/ENGLISH INTERJECTIONS [The foods which are not healthy are meat and fatty foods. And when she is taking to her clients she teaches them what is health to take and what is not healthy for them. But most of them will go for the tasty food but not the healthy food. Yeah.]

Does she exercise regularly?
LUO TALKING/ENGLISH INTERJECTIONS [She walks. Even in the morning she walks to kibuye.]

So what is her main form of transport?
LUO TALKING/ENGLISH INTERJECTIONS [So if it is a long distance, she will take a matatu. But if it close she will walk.]

Does she have barriers to getting the food she needs?
LUO TALKING/ENGLISH INTERJECTIONS [Money.]

What is the most common complication she has with her diabetes?
LUO TALKING/ENGLISH INTERJECTIONS [When she starts feeling pain she cannot walk properly. She has to work while sitting down. She has to sit down.]

Can you ask what causes diabetes?
LUO TALKING/ENGLISH INTERJECTIONS [She doesn’t know. Worries. Cus’ she says hers started by high blood pressure and it came because of high blood pressure? Her daughter and law died and left her very young baby so she could carry the baby and cry. So I think it depressed her and blood sugar levels. So it brought out these complications.]

End transcript.
Community Interview 8

LUO TALKING/ENGLISH INTERJECTIONS

Do you think that your diet is different here in town than it would be in town?

LUO TALKING/ENGLISH INTERJECTIONS[They are the same.]

LUO TALKING/ENGLISH INTERJECTIONS

Is there not a higher use of cooking oil in town than in the village? 

[Yes there is a lot of using of oil, and then if you go deep interior there are foods that are still considered like traditional foods. Like ok, she is married here but she is from Uganda. If you go to a Ugandan set up, they have their traditional ritual bananas. They call it matoke. So, they boil those bananas and they mash. And on most occasions the stew they make is groundnut stew. They don’t use any oil to fry it. The only oil they get is from the natural groundnuts. Also like the vegetables sister Kogele gave us, you remember? That’s a typical African food that you can get in a village. You don’t have to use oil. In the village they used to extract oil from cream. After you’ve milked you get cream and from cream you get butter. So that’s a natural fat. It is cholesterol free, it does not have any side effects. So you find that in the village, people don’t come to buy kimbo all these names that we have in the market. People would opt to use the natural oils. When you go to coast, you find that these coconut oil that is natural. And you know there is even oil in fish. So, deep in the village people would look for alternatives. However, as people move to towns people are becoming urbanized and their lifestyle is changing and that is why we are moving so much into the diabetes because our diet has changed. And these people who are using the traditional stuff are very healthy. Because if you go to like Uganda you would get the Matoke, you’d get the African vegetables, you’d get the sweet potatoes. So, they will balance their diet but only with natural foods. Yeah. You would not find all this fancy stuff that we have in the stores like sausages, bacon you go to Tusky’s, Pizza. No nonono, you just eat fresh from the farm. So we had the natural foods. If you go to a certain age group of Luo’s they will tell you they don’t eat fried fish. They will get the the fish from the lake, they will either roast it and eat it with ugali. It might not be the white ugali, it will be the brown one. And you know, we don’t use fertilizer to plant sorghum. Where as we use fertilizer to plant maize. So you find that maize has more chemicals than the sorghum. So sorghum is more
neutral. So a traditionalist will want to eat the natural, the native food. If they get fish, they would steam it, boil it until its ready. **But they would not put salt or so many of those things. But now when you move to town and you give somebody fish that is boiled and it is saltless they will tell you yuck, they will not taste it.** So there is the traditional set up that people still believe in their early foods. They don’t believe in our stuff, they call our stuff junk. So depending on how far somebody has moved from their native homes to town, but there are still original natives who do not believe in this stuff we are taking in town. But they are a very small percentage. Yes. They will not take like tea, they would not put sugar. Maybe with water and milk, maybe with soya. Other don’t even take tea leaves. They believe there is a lot of narcotic, nicotine in tea leaves. So they don’t even take tea leaves. Others they really don’t take sugar, whether in tea or in porridge. And porridge the traditional porridge, the native porridge was that one that is made from millet. Yeah. The brown porridge, very healthy. And once you take it you could go to the shamba the whole day. At lunch time you will cook maize and beans. Only water, maize and beans and salt and you eat. But supper with your fish you just boil your fish and eat. But with the current system, even omena that we would boil for four hours will only cook for four minutes. People are eating. So even the system of cooking has changed. **Foods that were boiled for long hours can no longer be boiled. All the stuff that was dried were meant to be boiled for very long hours. That fish that I told you, the bambala these were fishes to be boiled for hours and hours and hours until they produce stew that looks like milk. But nowadays our IT girls, we call them IT girls. Information technology, we call them computerized. They just cook. Like is just microwave. People don’t want to waste time cooking. People want to boil rice in microwaves. You don’t want to cook ugali everyday, you put it in the fridge, tomorrow you just put it in the microwave and eat it.** So they system is changing as it is getting urbanized. But there should be a complete contrast between **ANSWERS**

**Could you ask what her perception of food is in her culture?**

**LUO TALKING/ENGLISH INTERJECTIONS**[/She she says the perspective about ah food, its like everybody can get food. Those people who have more money can add value to their food because they can raise their standards to
a certain level. They can add more to their table than the ordinary person who has less money.

**Does she think that makes them healthier if they have more money?**

*LUO TALKING/ENGLISH INTERJECTIONS* [You could live with a lot of money, but the kind of food you eat is junk. You can have very little money, organize yourself and remain very healthy. Than a person who has money. There is a tendency of when you have money you eat foods that are oily foods that are sweet and all that kinds of stuff. So the person that has money remains healthier than the person with more money.]

**Does she control portions in her family? Like how much she eats or how much her family eats?**

*LUO TALKING/ENGLISH INTERJECTIONS* [She does not. So she doesn’t portion of for them. She just cooks for everybody to eat. She has three children. Yes.]

**Can you ask what her preferred method of cooking is?**

*LUO TALKING/ENGLISH INTERJECTIONS* [She cooks in an African pot, and she like frying her food well.]

**Like the pots that we saw earlier?**

[Yes, yes. And that one is a very special pot. You will not come a cross it everywhere. It is in specific homes like sister Kongele’s.]

**If she buys packages like bread, does she pay attention to energy information like amount of carbohydrates, fats or sugar?**

*LUO TALKING/ENGLISH INTERJECTIONS* [She only check the expiring date.]

*LUO TALKING/ENGLISH INTERJECTIONS*

**Is it more important for food to be tasteful and filling or to be healthy?**

*LUO TALKING/ENGLISH INTERJECTIONS* [Healthy.]

**If you are low on money, where are you more likely to buy your food?**

*LUO TALKING/ENGLISH INTERJECTIONS* [Just the retail shops around here, the local shops.]

**Does she shop in the major supermarkets?**

*LUO TALKING/ENGLISH INTERJECTIONS* [She doesn’t go to the big stores, she sends the children.] *LUO TALKING/ENGLISH INTERJECTIONS*

**What is the most important food to have in your home?**
LUO TALKING/ENGLISH INTERJECTIONS Ugali. [Haha I think that is the general answer.]

If she adds sugar to chai, does she pay attention to how much she puts or just until it tastes good?
LUO TALKING/ENGLISH INTERJECTIONS [So she says she puts ratios that are not a health hazard but at least so that the tea is not tasteless.]

What foods are bad for your health?
LUO TALKING/ENGLISH INTERJECTIONS [They don’t eat meat, they don’t eat chicken.] LUO TALKING/ENGLISH INTERJECTIONS [She is trying to describe the vegetable that they eat meat, they don’t eat chicken.]

So is it common I guess for people not to eat meat for their health? [Red meat you know is not good. We have learned that. So when people narrow down, when it comes to health issues people are nutritionally advised to eat white meat. There are a lot of disease that are contained in red meat. Yeah. Like the people who get diseases like gout, arthritis, some of them are contributed by red meat. Rabbit, chicken, pork, fish, this is very... Fish, she eats omena she eats, but red meat no. Pork is very expensive. One kilo goes for 900 schillings. The best is white meat.]

Does she exercise regularly?
LUO TALKING/ENGLISH INTERJECTIONS [She runs after the cows. That’s the way she gets her exercise.]

Does she have any barriers to getting the kinds of food she needs?
LUO TALKING/ENGLISH INTERJECTIONS [money. Money is the barrier. In town, we don’t have big farms where you can put everything. So you cannot produce the foodstuffs for yourself.]

So, if she is low on money what kind of foods can she buy?
LUO TALKING/ENGLISH INTERJECTIONS [She just cooks githeri, to take with tea.]

Is she needs to go somewhere in town how does she get there?
LUO TALKING/ENGLISH INTERJECTIONS [She walks.]

Can you ask what she knows about diabetes?
LUO TALKING/ENGLISH INTERJECTIONS [If you take too much sugar, you can get diabetes and it can kill you. She has been hearing over the radio. Yeah, there are some programs that I think talk about diabetes. I think they talk about the diet of diabetes.]

Could she actually run through a day of what she eats here?
LUO TALKING/ENGLISH INTERJECTIONS [She is saying she loves tea. Then if she gets cassavas potatoes. Then they just love taking tea for lunch hour and ugali. With vegetables. She says she eats a lot of maize.]

Is she luo?
[She is Ugandan married to a luo. This is her marital home. But she can speak luo because the community she deals with are luo.]
Community Interview 9

*LUO TALKING/ENGLISH INTERJECTIONS*

**Can you ask if he diet is any different here in town than it would be in her traditional village?**

*LUO TALKING/ENGLISH INTERJECTIONS*[No difference. The foods are the same.]

**What are the perceptions of food within her culture?**

*LUO TALKING/ENGLISH INTERJECTIONS*[They have a traditional food which is called...It is eaten by almost everybody. She says a bit of baking flour and a bit of maize flour you mix it and then cook it like drop scones. Gurasa. And Kisra.] *LUO TALKING/ENGLISH INTERJECTIONS*[So its like food that is common and affordable for everyone. Everyone is the same.]

**What is her preferred method of cooking?**

*LUO TALKING/ENGLISH INTERJECTIONS*[She fries but not so much.]

**What method does she use a lot?**

*LUO TALKING/ENGLISH INTERJECTIONS*[Boiled. With the tomatoes and onions.]

**Does she control her portion intake?**

*LUO TALKING/ENGLISH INTERJECTIONS*[She takes the portions. Like she loves the vegetables.]

**Does she pay attention to the caloric content on packaging?**

*LUO TALKING/ENGLISH INTERJECTIONS*[She does yes.]

**Is it more important for food to be tasteful and filling or to be healthy?**

*LUO TALKING/ENGLISH INTERJECTIONS*[Healthy.] *LUO TALKING/ENGLISH INTERJECTIONS*[She says she has a problem with her knees. They told her not to take too much salt, too much fat. So she avoids them and takes more vegetables.]

**Can you ask if she is low on money where is she more likely to buy food?**

*LUO TALKING/ENGLISH INTERJECTIONS*[Town. The supermarket. Nakkumatt. Things like sugar, rice she buys from stores. The prices are good there.]

**What is the most important food to have in a household?**

*LUO TALKING/ENGLISH INTERJECTIONS*[Unga, sukari, and chili. Flour, sugar and rice. Anything else she doesn’t miss so much.]
Can you ask which foods are good for her health?
*LUO TALKING/ENGLISH INTERJECTIONS*[She says vegetables are good for her. And then ugali for the energy.]

**Does she have any barriers to getting the foods that she needs?**
*LUO TALKING/ENGLISH INTERJECTIONS*[Money.]

**What is her main form of transport in town?**
*LUO TALKING/ENGLISH INTERJECTIONS*[She can walk up to the stage for a matutu. Then she picks the matatus to town.]

**Can you ask what causes diabetes?**
*LUO TALKING/ENGLISH INTERJECTIONS*[Too much taking of sugar.]
Appendix B
Clinician Interview #1

My name is Dr. Kamau

How long have you been practicing?
For two years. I am a medical officer. That is like a GP, something like that.

And you work mostly out of the clinic or you also do in-patients?
I do inpatients, most of them in the medical ward. ICU, and I do the other clinics.

On average, how many diabetic patients would you say that you see a day?
Around 7, sometimes more. Like in the diabetic clinics, today I have seven. We run the diabetic clinic every day. On Average, 7-10.

Ok, and the patients you see, are they generally managing their diabetes well or are they kind of lagging in areas?
Most of them are trying, but there are a few of them, I don’t understand why they don’t understand about the disease or you know the culture here also plays an important role. They just don’t care some of them.

So would you say nutrition is one of the biggest issues with treating it?
Yeah. Uhm nutrition, affordability of medication, especially those who are on insulin. Sometimes they can’t afford.

So if someone cannot afford their insulin do you often see that they are admitted?
Mmm, on most occasions we have insulin in the hospital at a subsidized rate. From the government. Now, when that one is over, you get a problem. When it’s out of stock.

How often would you say it runs out of stock?
Like once in a year. Like last year it stayed for like six months. And that was hectic, yeah.

Do you see any patients that you diagnose as new diabetics? I noticed a lot of the people who come through the clinic are return patients...
Yeah, but what happens, the new patients that we get go straight to the ward. Now from the ward, once they are stable, that’s when they come to the outpatient clinic. Mostly, they present as a new case, they will go to the emergency department. That is the casualty. Then from there they are admitted. But if they are stable, these type II diabetic
with sugars of around 20 there is no need of admission, so they come to the clinic.

**If a diabetic patient is coming to the clinic, why are they coming?**
They mostly come for drug refills. Because we give them for a span of one month. We give them for one month. They come for drug refill, they come for we take their weight, we take their sugars, because most of them they can't afford the glucometer and they just come for the sugars. And that is basically it. Then once in six months we do their kidney function tests, we do their HB1 if they can afford because that is another added cost.

**How much do they cost?**
The HB1 is around 600 Kenyan schillings, and then the kidney function test is around 1,200. So for most of them it's a bit high.

**Do you have any follow up with patients if they are admitted and discharged?**
The follow up is through the clinic. We give them a date, like if we discharge them on a Friday we give them a day to come back in one week. But then when they come back, they come back to this clinic.

**If people do not have glucometers, do you teach them other ways to manage their diabetes?**
The nurses teach them how to take their sugar, the nurses also are the ones who teach them how to inject themselves with insulin. Yeah.

**Is there any sort of nutritional counseling?**
Yeah. At the clinic normally. They do not come that often because sometimes we have shortages. They send the students. Last month, every day we had a student for consultation. Like this month, we don't have any. So when we are in dire need we just go to their office and seek consult from their office. They pay the consultation fee for just this consultation, like 100 schillings. And then they can go.

**What would you say is your largest barrier to providing diabetic care?**
Finances. Finances and the culture. Culture, diet, yeah.

**Is there a food group you think people over-indulge in?**
Especially the carbohydrates, in this are the main diet is ugali. You know it is mostly corn. The diabetics we mostly advise them to use the brown ugali. You know that is made from millet. But most of them, ok I have tasted it it is not as nice as the white ugali. So people tend to eat the white ugali. And then the ones who are in town, I think it is because of the change in lifestyle they indulge in too much, in a lot of fatty food.

**Do diabetic patients have access to an ophthalmologist when they come?**
They do.
How many patients would you say you refer to the ophthalmologist?
Ok I just tell, if I see there is need to be seen by an ophthalmologist I just refer. I just write. I am not sure if they go. But most go.
What about a podiatrist, to look at the feet?
No, I am the one who is supposed to be doing it.
Would you say that you see a larger issue with diabetic foot care here?
There is. We have a lot of diabetic food, especially in the wards. Yeah.
Is amputation common?
Very common, yeah.
The average cost to the hospital, do you have any idea of what that is?
I do not know.
Would you ever prevent admitting because of inability to pay?
Yes sometimes I would, because I know patients they are better off at home. Because once you admit them you control their sugars and they can’t pay their bills. If they come form near I just tell them it is better you come to the clinic, I manage you from the clinic and then you go home. Because you will admit them, they get the treatment they its time to go home, they don’t go home normally.
So they are not allowed to leave until the pay? That’s the rule?
Sometimes they are waived. There is what we called the waiver system, but it takes time. It can even take three weeks. But most of them that are admitted are the type one. Because most of them have the insulin. Type II the oral drugs, the prices are a bit fair.
So the type two patients that do become insulin dependent, would you say they have a higher or same rate of admittance?
They are even worse, because the type two who have now become insulin dependent their management is a bit tricky. Because most of them, they don’t want to use insulin. They still want to stick to the orals. Yeah.
Are there any sort of diabetic educational programs available?
We try to counsel them. For example, if they are admitted with an illness we just do some counseling once we are discharging them or here in the clinic. But it is not something, it is not a protocol we follow. It will just depend, some of us just feel like we don’t have time to do it. Yeah.
The mandatory HIV test, do you see any reluctance of people to come in because of the test? Or any instances of letting their diabetes get very very bad because of the test?
No but funny enough, very few diabetic patients are HIV positive. I don’t know how. We have some few, so that is not our main issue
now, that they wont come to clinic because of the tests and you know its not mandatory. If they decline the test you don’t force them.

**So do you still treat them?**
Yeah I treat them, If they decline I will just do my part. Because even in the ward, those who are diabetic you will get someone who will decline the test, and clinically you know she is positive. SO you just do your part.

**Why do you think there are more women than men who come into the clinic?**
African men, will only come to the hospital when they are really sic, when they are almost dying. Even the other diseases. Women, I think even in HIV care I will see, like in the follow up clinic, most of them are women. Men are a bit reluctant with their health.

**Do you have anything else you would like to add about diabetes management in this area?**
What makes this tough is the finances, our government has still a lot to create.

**Would you have any suggestions for the system?**
They are trying, especially through the media and radio. Now they are trying to make people aware of the disease. I think for the last two months I have seen adverts on them. I think that should be more enhanced so that people are more aware of the disease.

**Thank you very much, your answers are very interesting.**

**Clinician Interview 2**

**How long have you been practicing?**
I have been practicing since 1983 as a doctor, and I became a specialist in internal medicine in 1988. In 1996, I became a specialist in respiratory.

**On average, how many diabetic patients do you see throughout the day?**
We see quite a few diabetic patients daily. I see in-patients mostly.

**What is the most common condition that diabetic patients are hospitalized for?**
Poorly controlled diabetes.

**Are there any common complications?**
Diabetes complications are quite many because of poor control. We see diabetic foot leading to amputation, we see retinopathy leading to blindness, we see nephropathy leading to renal disease, and we have also occasionally seen people who have autonomic neuropathy and they are very dizzy and they cant stand. Even diarrhea is part of autonomic neuropathy.

**What is the average length of a stay for an in-patient?**
Most of these patients come because of poor diabetes control, we try to make it very quick. We try to bring the sugars down very quickly and we send them home in about five days. Average.

**Do they receive any nutritional counseling?**
Yes, it is part of the ongoing thing. We do that regularly. Whenever we have diabetic patients we treat them but we also advise them on nutrition, care of their feet especially, storing of insulin. You know there is a lot of challenge there, we don’t have fridges here so people have to devise ways of keeping it cold. And then we also must instruct on how to measure, because sometimes because of poor vision it becomes a bit of a challenge, but those who can see we teach them how to measure and so on and so forth. It’s a continuous process.

**Do you find a majority of diabetic patients manage their diabetes well?**
I’ll put it this way, I think half of our patients do it very well. Because they are well educated on the issues of diabetes. There is a group that is poorly controlled because they don’t understand it. They don’t understand what we are telling them. They don’t understand how to inject themselves, so they can miss injections on a regular basis and so on and so forth. And that is the reason for the frequent admissions and complications that we see.

**Would you say that there is any sort of socioeconomic difference in the patients that you see?**
Exactly, that is one of the biggest problems. Economics. Yeah, when the public government facilities cannot give out insulin to these patients and they can’t afford to buy it then they just stay without anything in the government hospital. There are those who can afford but even if they afford now they start rationing it. So they take a half dose or a quarter dose because they want to have it for a long period of time. That’s really part of the inadequate knowledge that we are talking about. Yes.

**Would you say the diet or culture in town affects the prevalence of diabetes at all?**
The diet? The urban sort of diet is terrible. It has a lot of refined sugars which in fact is very negative, in fact brings people to become diabetic rather fast. Especially those who are genetically pre-disposed to the disease. They become obese because they do little, they eat a lot. That obesity plus refined carbohydrates, less exercise. In fact, actually, leads to more urbanized population becoming diabetic.

**How would you respond to the statement that only rich people can get diabetes?**
It’s not quite true. However, I think type II diabetes is common among rich people because they can choose the lifestyle. The lifestyle tends to promote the development of diabetes. For instance, their feeding...
habits, their sedentary lifestyle they can afford to drive. They can't do much forms of exercise. And they become diabetes because it's processed. Even poor people get type II diabetes, yes.

**Do you ever refer people to an opthamologist or someone to care for their feet?**

For the complications? Yes, for the eyes of course we send them to the ophthalmologist to actually advise and continue treating them. If they have diabetic foot, we might require amputation because we don't encourage that. We normally send the to the surgical team. We try very hard not to have them amputated, that's a sign of treatment failure. We try to preserve the feet as much as possible.

**Eye care at this hospital if they are referred, is it an additional fee?**

If they do want it, they are referred. We don't refer a lot of these patients however, because one. The only thing that will happen if they have diabetic retinopathy would be what requires laser therapy, we do not have laser therapy here so we have to refer them elsewhere. And that is an additional cost. (Two private hospitals do it)

**What would you say is the average cost to the hospital to admit a patient?**

For diabetic patients who come in and stay for five days, I think it will not be more its like say lets put it up to 150 schillings daily. For those now who are, that's not much money now is it. The cost to the hospital, because once they are in the hospital we provide food, and we provide medicine and they don't pay that much because it is highly subsidized.

**Would you ever avoid admitting someone because of an inability to pay?**

We try very much not to admit patients. Not just because of costs, but because there are many issues when people are admitted to the ward. 1, psychological because now somebody feels I am too sick and some develop depression. The other reason of course is exposure to other diseases in the ward because you know we don't segregate patients so much. Some can get very infectious disease like Tb for instance. And so on. So basically it is better to keep patients in their homes as much as possible. In all cases, not necessarily diabetes we wish to treat people as out-patients.

**SO clinics like this become...**

Very important. We examine them, we tell them what to do and things like that.

**Do you think most insulin dependent patients you discharge are able to afford and administer the insulin to themselves?**

Yes, especially the ones who have been with us in the ward. We teach them. Actually, it is done by a nurse educator who actually
understands the diabetes in detail. So we teach them how to inject, measure and store insulin. As you realize, I said earlier, there is no fridge so we have our own traditional method.

**So how do you store insulin if you don’t have refrigeration?**

What we tell our patients, if you are in South Africa you will get something different. Every community has their own way of doing it. There is a pot, you know our porridge pot, have you see our porridge pot? It can make water very cool. Did you know that? Do you know the mechanism? There is a little bit of water passing to the outside and that small amount of water is like a small dew or something on the outside it evaporates eventually. There is what we call latent heat vaporization, once it is taken off every molecule takes off heat. And whatever remains inside becomes cooler. And so what we normally advise is we take something water tight container and you put something heavy like sand or some small pieces of stones then you take some cotton wool and put it on town then you can place your bottle of insulin on top and close it. And then you can tie it with a string and dip it in water. When you want it you just pull the string, open, use insulin and put it. It works very well for our patients. It’s the best, its cheap and you don’t need electricity because we don’t have electricity in most of the villages.

**What would you say is the rate of readmittance rate of patients who leave the ward?**

Oh yes, we try very hard to make sure that they don’t get readmitted when they are in the ward. Because we look at the reasons why they get admitted and try to address those problems. It might be beyond our means but we try very hard. The most common reason for these patients being admitted is poor diabetes control. And as I said it is usually due to lack of insulin in our public facilities. Sometimes. Not always. And if it is out of stock, like sometimes it does get out of stock they have to buy. And when they buy, because they don’t have much money, they either ration it because they want to take a half dose or a quarter dose to last them a long time. Then that leads to sugars going up and they end up in the wards and so on and so forth. So, we try very hard to advise that they should try as much as possible to have insulin, and a few of the them don’t come back.

**Do you think the mandatory HIV test deters people from seeking care for their diabetes?**

No, not at all. We screen all patients by the way, even the ones who have come for various diseases like what we have seen today. They are actually tested for HIV and we are looking at the statistics. It doesn’t deter people from coming to the hospital.

**Why would you say more women than men come seeking care for diabetes than men?**
Probably you could be right. Women tend to be more keen on their health compared to men. Men are really careless people, they want to do things so they feel that coming to the clinic is a waste of time. So you see more women coming for clinics than men for that particular reason. The carelessness they don’t care so much and so on.

**Do you see the prevalence of diabetes increasing at all?**

I would say so yes. The lifestyles are changing and I think this is really associated with the increasing number of diabetic patients.

**Would you say that they management and overall care for diabetes is getting overwhelmed or keeping up with the amount of patients?**

I wouldn’t say we are getting overwhelmed, but what I can say is that there is need to train more people in diabetic care. So that we are armed. We currently have fewer people see more patients. But we cant say we are overwhelmed as of right now. There are several NGO’s right now in Kenya who are working to ensure that all public facilities have people that are trained for diabetes care. They are trying to do that from time to time, ok. So we hopefully will get more people trained to take care of diabetic patients but as of the moment there are many but we are able to cope. We are coping. Because like in this hospital we have what is called like comprehensive diabetes care. Which is in line with what the WHO recommends, comprehensive diabetes care. Where patients come and have all services under the same roof at the same time. SO we see them daily. We don’t wait until certain days, this clinic is for Wednesday. Except Saturday and Sunday. Africans are now coming out very strongly, there is need for diabetic care. We have more Africans now becoming affluent and more Africans becoming diabetic. And we are recognizing the disease now early. Previously we never used to, people used to die without a diagnosis. Today we recognize, we start treatment and we need to make sure they lead a normal life without dying. The current chairman of the International Diabetes Federation is from Cameroon. But he is working on what he is trying to form an African diabetes association. There is going to be one conference for Africa in Yaounde. We hope that with time we will be getting statistics, we will be getting information from various countries in Africa to help us make decisions in Africa as far as what is called planning. We need to know what is the disease burden in Africa. I think one of the other reasons we don’t have statistics in Africa is that there is very poor funding for that kind of research, nobody will fund you. So we are picking and hopefully we will get some as funding.

**Would you say NCD’s are now being more recognized in the African medical community?**
Its basically advocacy. If you ask me I would say its more advocacy. Its been there for a long time. But most of the African governments have failed to recognize it as a major area of concern, they want to concentrate on infectious diseases. Because they think those are more important. And most ministries of health in all African countries tend to want to talk about infectious diseases, malaria, TB, HIV and some things because they think that these are major cause of mortality in their country. Things like cancers, heart conditions, diabetes and things is not something to talk about because according to them they are not important. When we generate information, when we generate data. It promotes their recognition and addressing of the issues.
### Appendix C

**Chart 1**

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**Average Price of a 'good' fat**  
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Figure 1

Cost vs. Calories from Fat

Appendix D
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*compiled not reported*
Verbal Consent given for interviews:

DISCLAIMER: “Thank you for completing this thorough questionnaire. All responses are voluntary and confidential. If any question makes you uncomfortable or you do not wish to answer, please let me know and we may skip it. By participating in this survey you are giving implied consent, that is any of your answers may be used in research findings and final publication.”