Fall 2009

The Birds & the Bees of the West Usambaras: Family Planning & Population of Sagara & Kizanda Villages

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Acknowledgements

I would like to thank the entire Mazumbai staff, particularly Mr. Kiparu for his help in setting up my study with the local villages. Thanks to Richard and David for their wonderful cooking and kitchen parties. Best beans and rice I've ever had. Thanks to Francis and the rest of the Mazumbai staff for making us feel welcome and at home. I would like to especially thank Beatrice, not only for her excellent work as my translator, but also for her help in organizing interviews as well as her great advice and contribution to my study. I wouldn't have been able to do it without her. A special thank you to all of the women I interviewed. Their openness and honesty was greatly appreciated and I learned so much from their stories. Also, thank you to the villages of Sagara, Kizanda, and Mgwashi for allowing me to conduct my study. Thanks to Baba and Mama Jack and the other students for helping me with all parts of my study. And, of course, thanks to my Mazumbai family. Meals, pets, picnics, games, laughs, and hang out time were wonderfully memorable. Thanks to the forest for keeping me centered and instilling a sense of peace on the community. On the other side of the globe, I would like to thank my professors at Puget Sound for their inspiration and motivation. Last, but not least, thank you to my friends and family for always supporting and encouraging me in my ventures abroad. They have helped me get to where I am today, and keep me moving forward.

Abstract

My study in the West Usambaras took place November 2009. The main objectives of the study were to identify the principle family planning methods of women in Sagara and Kizanda villages, why those specific methods were used, and how they may be changing over time. The study also focused on the population growth and fertility rates of the two villages. I predicted that fertility rates were high and constant, and that most women would use traditional methods of birth control, with only a few choosing to use medication available at the local health clinic or dispensary. My predictions turned out to be partially correct. The population of women in Sagara and Kizanda are currently undergoing a major transition in what methods of family planning are most commonly used. Older generations of women typically used traditional methods of birth control, while the majority of younger womenare switching to dispensary medication. This transition is a result of men's alcohol habits, embracing of new technology, and government endorsement.

While fertility rates are high compared to the national average, the planned/projected fertility rate illustrates a decreasing trend. The oldest generation wanted, on average, 6.9(SE±0.3) children, while women the middle and youngest generations now only plan to have 5.0(SE±0.2) and 3.7(SE±0.2) children, respectively ($\alpha < 0.01$, critical value 0.05, appendix 4). This significant decrease in planned fertility rateis mostly a result of internal community factors rather than pressures from the national government. These community factors include hard living conditions and increased alcohol addiction among men.

Women generally did not recognize a relationship between hard living conditions and population increase. Contrary to the government, the women of the villages thought that living conditions could be improved by other factors, such as better resource management, rather than population reduction.

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Introduction

The global population of humans is now bordering on 6.8 billion, with a projected increase to 9.2 billion by the year 2050 (The Economist, Oct. 2009). These facts are usually stated with an intention to shock, trying to scare people into thinking our planet is not capable of supporting such numbers. And people are not without reason to worry. Currentworld news and political topics focus onfossil fuel dependency and shortage, climate change, and the global economic crisis, to name only a few issues. People are consuming the Earth's resources at an incredible rate and many ecosystems are crumbling under the pressure. Thomas Malthus is shaking a finger from his grave saying, "I told you so." Poverty, drought, hunger, and conflict over resources afflict many of the world's poorest or, "under-developed" countries, and these are where population growth rates are the highest (The Economist, Aug. 2009).

However, many of these fast growth economically developingnations, e.g. India, Brazil, Singapore, etc. are now experiencing a significant decline of fertility rates, which is happening much faster than it did in modernized western countries (The Economist, Oct. 2009). This is a critical leap for the sake of economic growth. Theoretically, a country with more people and fewer resources has to spread those resources and finances thinner, reducing the amount available per person. Typically a country will chose between a policy of population control or population planning. The famous and controversial example of population control was the one-child policy adopted bythe Chinese government with the objective of conserving their resources and avoiding a population that their economy could not support. Population planning policies tend to follow theories commonly referred to as "Demographic Transition Theory"; families with a greater income tend to have fewer children than poorer families(The Economist, Oct. 2009).

In attempt to increase its socio-economic growth, the Tanzanian Government has placed a high value on population policies, attempting to reduce the country's population growth rate.However, in contrast with China, Tanzania has implemented a policy for the sake of influencing or planning, rather than

controlling population. The National Population Policy, created in 1992, expresses the necessity of linking population growth with socio-economic development. The document asserts that if the number of people continues to grow, as it is currently doing in Tanzania by 2.1% annually (www.cia.gov), and the national economy remains the same, there will be fewer resources per person. This will cause services costs to increase without an improvement in quality or quantity. To attack both parts of this problem, the government hopes to reduce the country's fertility rate in order to assist economic growth. The National Population Policy abides by the theory that families will have fewer children if the country has effective health care services, universal education, rural development and modern agriculture, and an old age pension scheme (National Population Policy, 1992).

In attempt to reduce the country's fertility rate, the government has several action plans. It emphasizes the importance of western education, especially for women. If women continue onin school and enter the work force, consequently, they will typically marry and have children later, limiting the number of children they will have overall. Another important factor in reducing fertility is improving health care and western education on family planning. The Tanzanian government uses mass media to advertise the importance of family planning, as well as the availability and benefits of birth control medication. Medical clinics and dispensaries have also been established, especially in rural areas where fertility rates are particularly high (National Population Policy, 1992).

The Tanzanian Government also encourages and supports Non-Governmental Organizations (NGOs) throughout the countries, which are working to spread family planning education and contraceptives, as well as emphasizethe value of small family size. One reputable NGO, Marie Stopes, has been working in Tanzania since 1989, promoting family planning and birth control methods. The NGO originated in London, and has since become the leading provider of sexual and reproductive healthcare services in the UK, and abroad with clinics in forty-three countries around the world. The organization now has twenty-three clinics throughout Tanzania's main cities (Marie Stopes Website).

They also send mobile teams into rural villages to promote and spread family planning services to women who may not have easy access to health clinics. (Marie Stopes Doctor, pers.comm., 2009).

In the Western Usambaras of northeastern Tanzania, the average birth rate is exceptionally high. The population growth rate is about 4% annually (Mrecha, pers. comm., 2009); twice the annual rate of Tanzania and almost four times the annual rate of the world (Encyclopedia of Nations). Poverty in this region is also extremely high. The rainforest is being felled to create farmland, and when the rains come, the topsoil erodes down the mountainside, leaving barren land unsuited for growing crops. Consequently, families are left without a steady source of income and, in some cases, sufficient food (Neville, pers. obs. 2009). Yet, despite poverty, population in the area continues to soar. So why would families in the West Usambaras, many who have little stimulated income, continue to have so many children? Western logic would say, more kids mean less food and resources for the rest of the family, and dividing the family's farmland among many children creates consistently smaller plots per person. Malthus would say they are driving themselves into a catastrophe at an extremely rapid rate.This scenario also lends support for observations of stage 2 of demographic transition theory.

Contrary to many people's first opinions and conventional western wisdom, high population growth rate in the West Usambaras is not a result of lack of family planning education or birth control availability. For over fourteen years, family planning education and birth control medication have been available free of charge in many of the villages throughout the West Usambaras (Bendera, Kizanda Medical Officer, pers.comm., 2009). Yet, the fertility rate in the area remains high. Combining local resource shortages, poverty, birth control availability, and the fertility rate in the West Usambaras led me to the focus of my study: what are the perceptions and methods of family planning practiced by mothers in two villages of the West Usambara Mountains: Kizanda and Sagara?

To explore the topic of family planning deeper and from a more holistic perspective, I decided to also look at potential generational differences of

preferred family planning methods and reasons for them. Given the relatively recent arrival of birth control medication, as well as the high fertility rate in the villages of Sagara and Kizanda, I predicted that very few women would use the medication available at the dispensary and clinic. Additionally, I examined the fertility rate and its potential change over time, including reasons women mentioned for determining the number of children in their families. I looked at this subject and its connection with population perceptions, as well as factors influencing those perceptions. By analyzing family planning and population perceptions from various angles, I hoped to get a better understanding of the issues surrounding birth control and its effect on these communities.

Study Site

My study was conducted in the West Usambaras of the Eastern Arc Mountains (Figure 1). The West Usambaras are a two hundred million year-old mountain range with a historically stable rainforest climate. It is theorized that this long-standing stable climate has allowed for extreme biodiversity to evolve in the area, now making it one of the world's twenty-five biodiversity hot spots (Conte, 2004).

However, today, much of the original landscape has been logged and/or converted into small-scale farmland. Conversion of the natural environment came about from indigenous peoples, as well as German colonists, who came to the area in the 1890s. The German's brought with them new, and mostly unsuccessful, agricultural practices, as well as western cultural influences and reform. The main people currently inhabiting the West Usambaras are the Sambaa people, who continue to rely mainly on subsistence agriculture. As the population in the area has continued to increase, more forest is cut down and farmlandestablished to accommodate the growing number of people. Even so, many farms suffer from a lack of soil nutrients, as the land is not extremely conducive to agriculture and most ofthe topsoil is washed down the steep mountain slopes during therainy seasons (Conte, 2004).

I carried out my study specifically in the rural villages of Sagara and Kizanda in the West Usambaras (Appendix A). Sagara was established as a village in 1999. It includes five hamlets which combined have a population of 492 households and 3,012 villagers. Sagara experienced a 4% increase in population from last year, including only seven individuals from immigration. The dominant religions in the village are Christianity and Islam and agriculture is the main practice and economic income of the area. Cash crops grown in Sagara include maize, beans, yams, tea, and some sugar cane. If a family does not own enough land to sell crops, then their farming practices are strictly subsistence. (Suburi, pers. comm., 2009)

Three kilometers north of Sagara, in the larger village of Mgwashi, there is a government established health clinic, which was recently promoted from the title

of dispensary to clinic. However, so far, it still only has the functions of a dispensary. This includes nurses, a medical official, and select medication. The clinic still remains without electricity and means to diagnose patients other than by the symptoms described. For over twenty-five years, the clinic in Mgwashi has offered complimentary family planning education and birth control medication, including hormonal injections, administered once every three months, and daily oral contraceptives. The Village Executive Officer is optimistic that electricity will be coming soon to the village and bring with it important advancements to the health clinic and community as a whole (Saburi, pers. comm., 2009).

The other location of interviews was Kizanda, a similar village about ten kilometers south of Sagara. Last July, the village of Kizanda was newly formed. It resulted as a split of Mayo, a village that had grown large enough to be split in two. According to the VillageExecutive Officer, Kizanda nowconsists of nine hamlets, including 450 households and 1,800 people. However, from personal observation, I have reason to believe that the population is larger than was reported.Regardless, the population of the village continues to grow rapidly. Like Sagara, Kizanda's economic income is mostly derived from agriculture. Cash crops include: tea, coffee, and cardamom. The main foods grown for the area are maize, cassava, potatoes, and yams. Similarly, the main religions are Islam and Christianity. Kizanda and Mayo share both a primary and secondary school and a medical dispensary (Wande, pers. comm., 2009).

In 1964, the Tanzanian Government established the medical dispensary building in what is now the village of Kizanda. There is one medical officer on duty, along with four nurses. As with the clinic in Mgwashi, Kizanda's dispensary only can supply medication based on the patients described symptoms. For family planning, the dispensary offers education and birth control supplies, again, provided by the government free of charge. Like Mgwashi, these birth control options include oral contraceptives and hormonal injections. The Medical Officer estimated that about 40% of the women in Kizanda use one of these methods of birth control, and most prefer the injection because it is easier than daily taking a pill. Kizanda's dispensary has been offering these services for fourteen years,

and, according to the medical officer, they are well received by the community (Bendera, pers. comm., 2009).

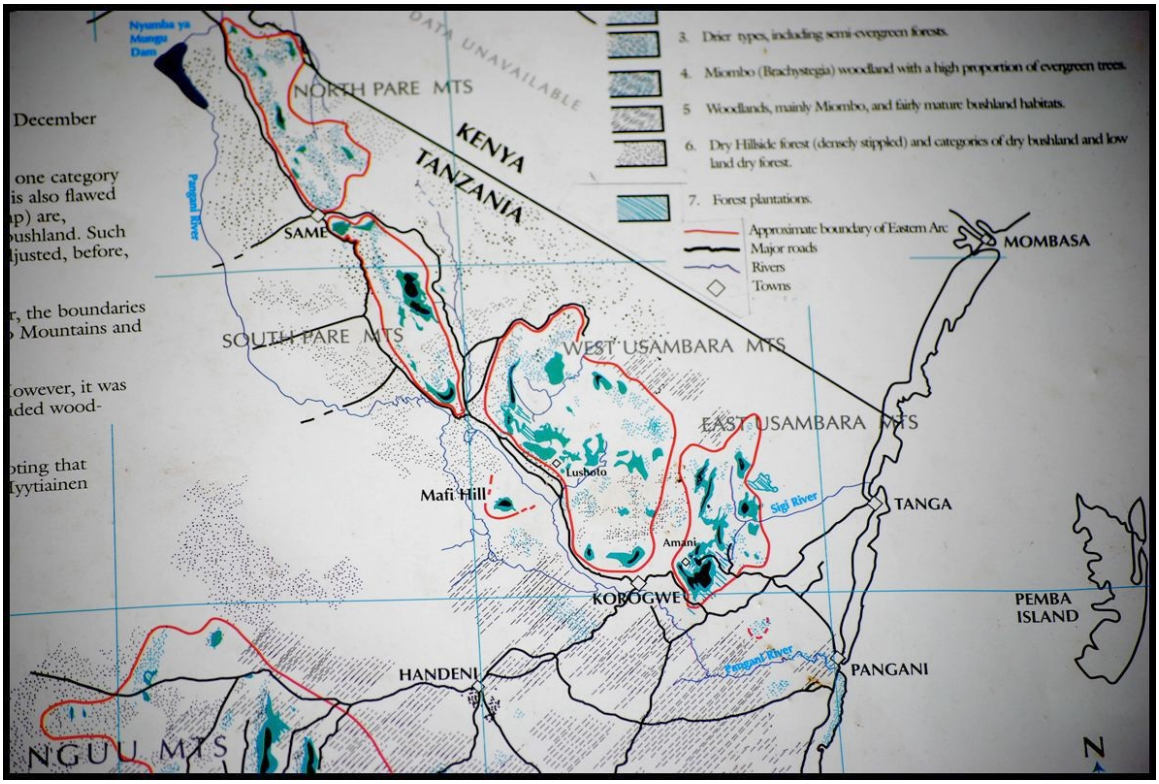


Figure 1.Map of the Eastern Arc Mountains, showing the West Usambara region.

Methods

My study was in the West Usambaras, northeastern Tanzania in the villages of Sagara and Kizanda (Appendix A) and was conducted from November 9th - 25th, 2009. The villagers of Sagara and Kizanda were the sample frame, and the sample population consisted of women ages fourteen and older in these two villages. To collect information from women, I conducted 100 non-random, semi-structured interviews using a translator to assist with Kiswahili and Kisambaa languages. Individually when possible, or in pairs, I asked each woman a set of questions about her family structure, her mother's family structure, preferred family planning methods, perception of birth control medication in the village, overall life conditions, and her opinion of the change in village population (Appendix B). To gather more information on specific topics, I asked additional impromptu questions depending on responses, such as why does she use a certain type of family planning and how did she learn about it, etc.

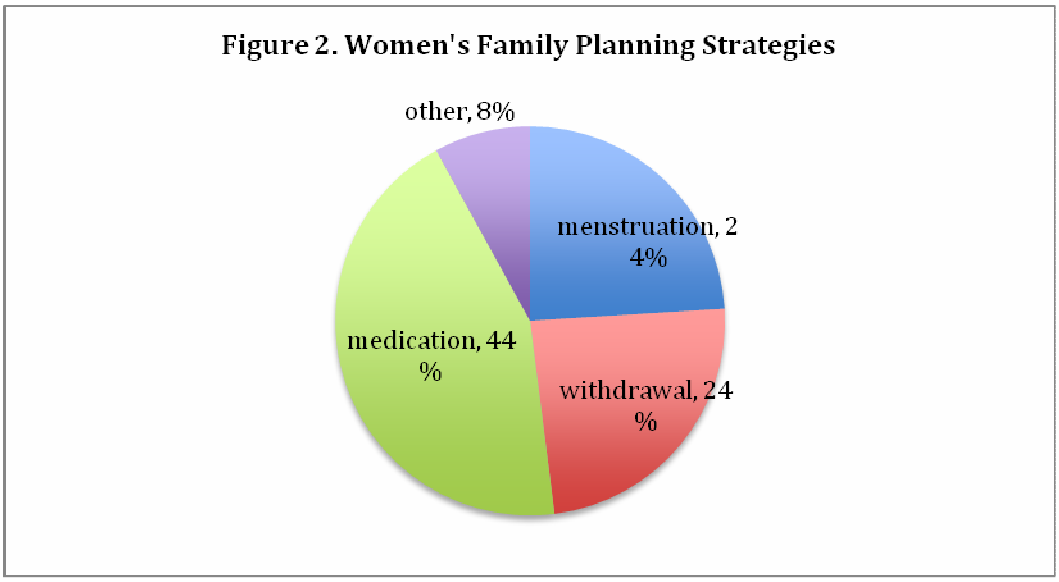
My translator was born and raised in Sagara village and greatly assisted me in setting up interviews with women of various ages. I traveled to women's houses in Sagara and Kizanda to conduct approximately half hour interviews. By intentionally diversifying the generations of women, as well as asking questions about their mothers and families, I was able to get a broader idea of the population trend and how it may be changing over time, including future hopes.

I conducted 100 interviews with women ranging from age fourteen to over sixty. To analyze the results, I separated women into three generations, and compared many factors between them. The first generation consisted of women ages fifty-one and over. The second generation included women between the ages of thirty-one and fifty, and the third generation was made up of women ages fourteen to thirty. Comparisons between the generations included the number of children they already have, as well as the desired number, their current and past methods of family planning, and their opinion of dispensary birth control medication. As a whole group, I looked at the women's opinion of population change in the village, if that change was a problem or not, and their perception of current versus past life conditions.

I also conducted four key informative interviews with Village Officials, dispensary and clinic workers, and a secondary school teacher. Village Officials provided me with background information about Kizanda and Sagara villages, including history, population, economic practices, agriculture, practiced religions, education systems, and any other information about the villages (Appendix C). Interviews with dispensary and clinic workers gave insight into the history, functions, and utilization of the dispensaries and clinic in the area. More specifically, I learned the various types of birth control medication available and how the community receives them, from the dispensary or clinic's standpoint (Appendix C). The schoolteacher provided information about the public schools' teachings about birth control to youth in Sagara village (Appendix C).

Results& Discussion

Women from Sagara and Kizanda practiced various methods and strategies of family planning. Menstruation cycle monitoring, withdrawal, western medication and "other" were the four most common types of pregnancy prevention methods.



Note: This data was collected during November 2009 from 100 non-randomly selected women in Sagara and Kizanda villages located of the West Usambaras, Tanzania using semi-structured interviews.

Menstruation cycle monitoring involves the timing of ovulation and days when a woman is most fertile. Avoiding sexual intercourse during these fertile days prevents pregnancy. This method, however, can be unreliable and difficult to follow. Each woman's ovulation and menstruation cycle is unique and not necessarily consistent from month to month. Ovulation typically occurs about ten days after menstruation, but since it is difficult to know the exact timing, it is recommended for women to abstain from sex for five days before and after ovulation (www.fwhc). Women in Sagara and Kizanda reported various lengths of time of which they believed to be their fertile days. Time periods ranged from two days up to two weeks after they finished menstruating. This perception of fertility is not completely compatible with current western science understanding.However, most women claimedto have never experienced problems with their menstrual cycle and unplanned pregnancies. They also made it clear that for that for menstrual cycle monitoring to be successful, cooperation

and understanding between husbands and wives to avoid sex on fertile days was crucial.

Another common birth control practice mentioned was the withdrawal method. The withdrawal method refers to the act of the male removing his penis from his partner before ejaculation during sexual intercourse.This technique can be unreliable, as well, due to the chance of semen present in pre-ejaculate. However, if responsibly conducted, the withdrawal method is relatively effective in preventing pregnancy. Like menstruation cycle monitoring, the withdrawal method requires communication and compliance between both husband and wife to avoid accidental ejaculation and potentialfertilization of the egg.

A thirdmethod of pregnancy prevention was the utilization of medication available at the local government health clinics and dispensaries. The majority of women who used birth control medication preferred injections tooral contraceptives. The large majority of women preferred injectionsbecause they were thought tocause fewer side effects than pills, which would make women gain weight, have prolonged bleeding, or not be able to become pregnant later on. A couple of women mentioned that pills may cause cancer, but others were quick to say these were just rumors spread by ‘”uneducated people”.Also, women also seemed to prefer injections because one injection every three months was easier for them than daily swallowing a pill.

Other techniques for controlling pregnancy,which were usually coupled with one of the three other methods, includedthe use of local plant species which were prepared to either drink, eat, or wear, water consumption directly after intercourse, a lack of menstruation while lactating, andceremonial dances to give the body power to resist and obtain pregnancies at the necessary times. These dances were preformed at celebrations after a woman gave birth to her first child. Historically, friends and family from surrounding villages would come to celebrate with food and gifts. During this time and the recovery after giving birth, grandmothers would teach women how to use knowledge of their menstruation cycle to prevent pregnancy. Additionally, grandfathers would often teach the

husband about the withdrawal method as a form of birth control. These teachings to the new parents also included how to take care of a spouse and children.

Women from three generations in Sagara and Kizanda villages displayed varyingdifferences in theirpracticed family planning methods. The majority, 53.3% ($^{16}/_{30}$), of women from the first generation, including women ages fifty-one and over, used menstruation cycle monitoring to prevent pregnancy. In the same generation, 30% ($^{9}/_{30}$) of women used the withdrawal method as their main tactic in preventing pregnancy. Very few of these women used birth control medication from the dispensary with only 6.7% ($^{2}/_{30}$) reported using it as their only method of birth control, and another 6.7% ($^{2}/_{30}$) of these women said they had switched from either menstruation cycle monitoring or the withdrawal method to medication. Many women from the first generation said they had never used birth control medication because either it was not available during the time when they were having children, or they did not know about it.

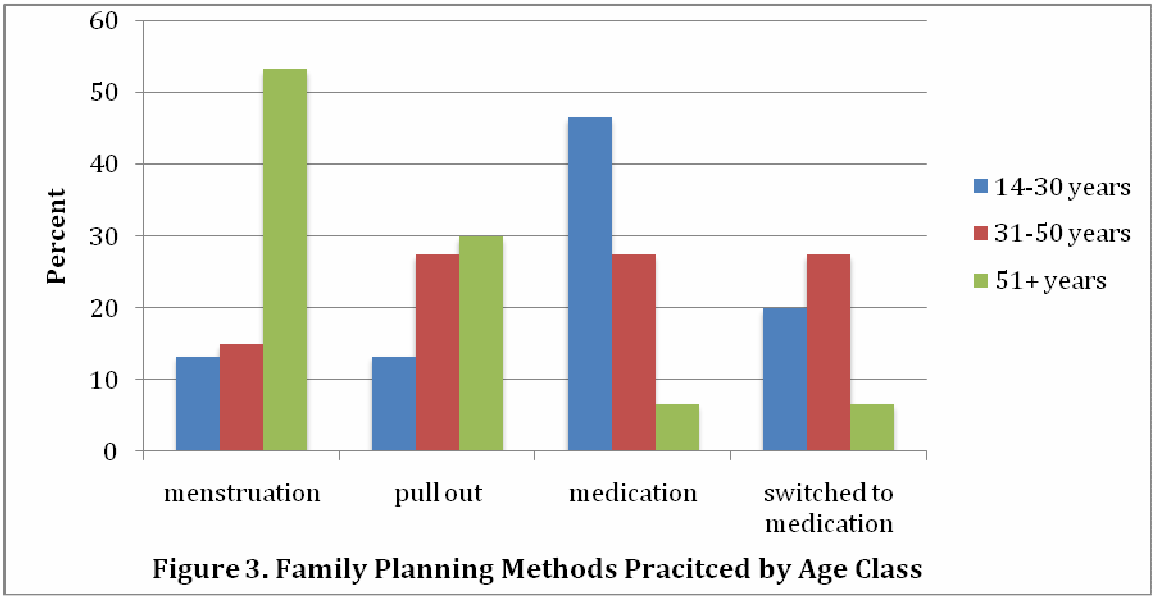


Figure 3. Family Planning Methods Pracitced by Age Class

Note: This data was collected during November 2009 from 100 non-randomly selected women in Sagara and Kizanda villages located of the West Usambaras, Tanzania using semi-structured interviews.

The second and third generations of women displayedseveral differences from the first generation, and from each other, in their preferred methods of family planning. The second age class, including women ranging from ages thirty-one to fifty, practiced a more evenly disturbed variety of family planning

methods. The withdrawal method, dispensary medication, and women who switched from those methods to medication, each accounted for 27.5% ($^{11}/_{40}$) of the population from that generation. The remaining 15% ($^{6}/_{40}$) of women used menstruation cycle monitoring to control pregnancy.

The third and youngest generation, women ages fourteen to thirty, primarily used medication, specifically injections, to prevent pregnancy. The percentile which has only ever used birth control medication is 46.7% ($^{14}/_{30}$) and another 20% ($^{6}/_{30}$) women have switched from using non-medicationmethods to pills or injections – accounting for 66.7% of the youngest age set. Only about a quarter, 26.7% ($^{8}/_{30}$), of women from the youngest generation usedeither menstruation cycle monitoring or the withdrawal method (13.3% each) as their principle method of birth control.

As presented in Figure 3, the family planning techniques used by women in Sagara and Kizanda are currently undergoing a major transition. Historical practices of menstruation cycle monitoring and the withdrawal method are becoming less popular and being replaced by birth control medication with decreasing age in my sample population. A few younger women who used medication said they did not even know of any other ways to prevent pregnancy, so not only are they choosing to use a different method, knowledge of past teachings is decreasing in the communities.

There are several factors thatcould be contributing to this change in family planning practices. When asked why women who switched from non-medicinal methods to medication decided to do so, 15% ($^{15}/_{100}$) mentioned their decision to switch as a result of problems with their husbands drinking habits. Alcoholism has recently become a major issue in Sagara and Kizanda (fifteen women's' interviews, pers. comm., 2009). Women attributed this problem to the arrival and availability of new and several types of alcohol, which are no longer reserved for special occasions. Women said that when their husbands drink, they refuse to respect the established family planning methods by either ignoring when a woman is in thefertile days of her menstruation cycle, or do not follow the withdrawal method. This lack of compliance by men often resulted in pregnancy

of their wives during inopportune times, such as when a mother is still nursing a child. This would force her to wean the child early, which could mean the infant would suffer from a lack of sufficient nutrients. For this reason, many women decided to take complete control of the family planning methodby using dispensary medication, which does not require the compliance of their husbands to be effective.

Another mentioned reason why women switched from using non-medicated methods to birth control medication was simply that the “traditional” ways were outdated and medication was better and more effective. The view is partly a consequence of the ideals of the “new generation”. The “new generation” is a self-imposed title on and by the younger people in the area, who are seen as the generation of science and technology. They have “new”, and typically western, ideas and methods for many things besides family planning methods, including farming tactics, disease treatment, and social practices. Older women seemed to have a negative impression of the “new generation”, claiming they do not respond to the teachings of elders. This disregard includes disturbing the forest, alcohol consumption, refusing to care for their parents in their old age, and a general disrespect for elders.

According to elders, the lack of response from youth has many negative consequences for the community. However, as far as birth control medication is concerned, reactions to it are overwhelmingly positive from all generations (Figure 4). Regardless of whether or not women used the medication, over fifty percent from all age classes considered it to be beneficial because it helped women with family planning.

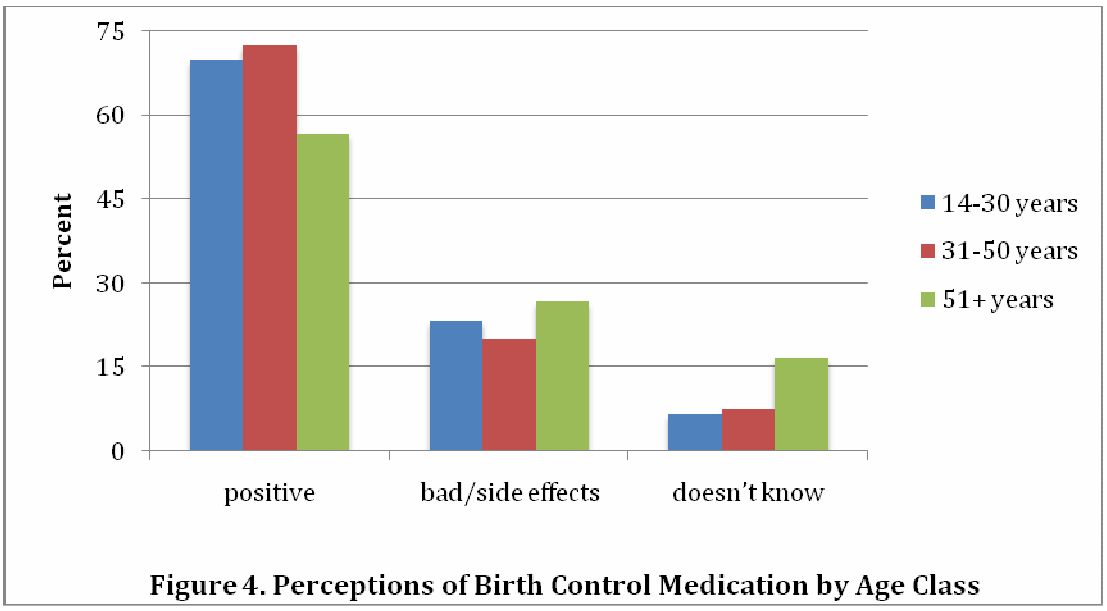


Figure 4. Perceptions of Birth Control Medication by Age Class

Note: This data was collected during November 2009 from 100 non-randomly selected women in Sagara and Kizanda villages located of the West Usambaras, Tanzania using semi-structured interviews.

From Figure 4, 56.7% ($^{17}/_{30}$) of women from the first generation, 72.5% ($^{29}/_{40}$) from the second generation, and 70.0% ($^{21}/_{30}$) from the third generation viewed birth control medication positively. However, negative opinions of injections and pills were still present in the community for all generations. The percents of women who thought that injections and pills were bad or had negative side effects were fairly consistent with 26.6 ($^{8}/_{30}$) from the first generation, 20 ($^{8}/_{40}$) from the second generation, and 23.3 ($^{7}/_{30}$) from the third generation. Only 7.5% ($^{3}/_{40}$) and 6.7% ($^{2}/_{30}$) from the second and third age classes did not know about the medicine, or were unsure of its effects. For the first generation, this percentage was slightly higher at 16.7 ($^{5}/_{30}$).

One of the main driving factors behind the transition from historically practiced birth control methods to medication, as well as its positive perception, could be the Tanzanian Government. As stated in the country's National Population Policy, the government hopes to decrease the population growth rate in conjunction with development as consistent with demographic transition theory espoused by the United Nations and World Bank/International Monetary Fund.To decrease the population growth rate requires first decreasing the fertility rate;

therefore, the Tanzanian government has promoted family planning education and supplied village dispensaries and clinics with birth control medication provided to women free of charge.When asked how they learned about birth control medication, a small percentage of women responded from either responded from friends, or from media sources like radio and magazines. The majority of women who used medication learned about itfrom workers at the dispensary. Medical officers and nurses strongly encourage women to use birth control medication and to restrict the number of children in their family (Key Informant Interviews with local Medical Officers, 2009).

A more forceful way the government promotes small family size is by limiting the free health care a family receives to only four children. This policy is bordering on population control rather than just planning. If a family has more than four children, they will have to pay any extra health expenses that the children require (Juhana, Mgwashi Health Clinic Nurse, pers. comm., 2009). However, no women in my sample population explicitly stated this restriction as a regulating factor in the number of children they choose to have.

The government has not restricted its promotion of family planning to only birth control medication and child policies. Even though abstinence is the primary teaching of local schools, lessons are still given to girls in secondary schools about their menstruation cycles and what days they are most fertile. Schools also teach boys and girls about condoms, pills, and injections as important methods of birth control for when they are sexually active (Margaret, Sagara Secondary School Teacher, pers. comm., 2009).

According to my results, thegovernments' intended goals of decreasing the fertility rate are possiblybeing met. Women in my sample population are increasing their use of birth control medication, and the desired fertility rate in the area is significantly($p < 0.05$) declining (Figure 5).

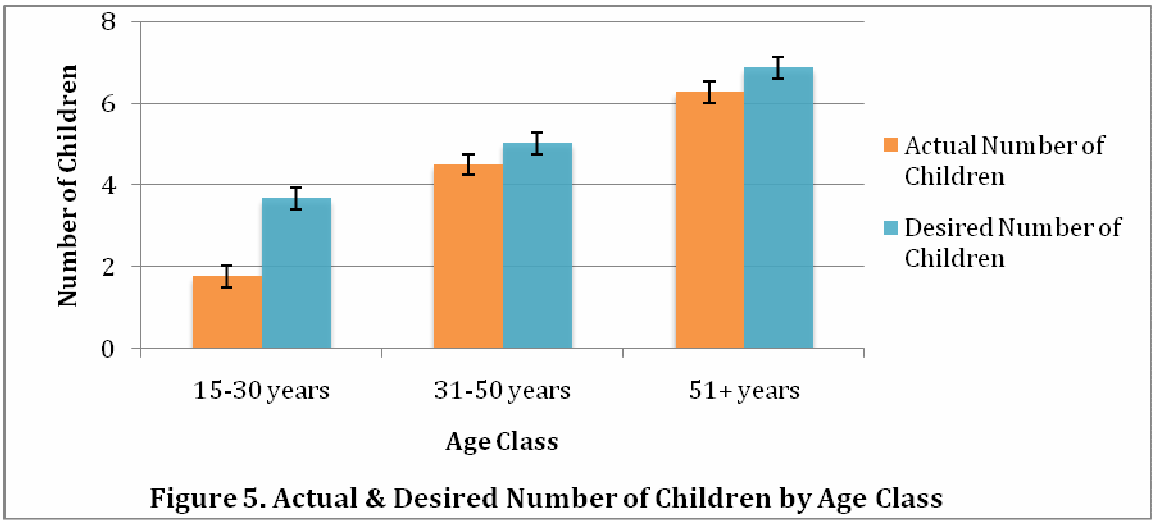


Figure 5. Actual & Desired Number of Children by Age Class

Note: This data was collected during November 2009 from 100 non-randomly selected women in Sagara and Kizanda villages located of the West Usambaras, Tanzania using semi-structured interviews. Bars on chart represent average standard error of the mean.

On average, women from the first generation had 6.3(SE±0.3) children during their lifetime. Women from the second and third generations had, on average, already given birth to 4.5(SE±0.3)and 1.8(SE±0.2) children, respectively. These actual numbers of children make sense even without a decreasing fertility rate, for younger women simply have had less time in their child bearing years than older women. However, the reported desired number of children women from different generationsplanned for their families was also significantly different (ANOVA $p < 0.01$, and all post-hoc tests $p < 0.01$, critical value 0.05, Appendix D). The oldest generation, on average, desired 6.9(SE±0.3) children per family. Whereas, the second generation wanted, on average, 5.0(SE±0.2) children per household, almost two less than the first generation. The youngest generation decreased even more,planning to have only 3.7(SE±0.2) children during their lifetime.

Despite the western education, medical and economic efforts from the government to decrease the fertility rate, the factors that women mentioned as influencing them to decrease the number of children in their familiescame from inside the community. Women across all generations overwhelmingly (96% or $^{96}/_{100}$) said the desired number of children in their families was primarily limitedby hard living conditions and they want to be able to care well for their children. Only

4% ($^{4}/_{100}$) of the women interviewed thought thatliving conditions now were either better or the same as they were during their mother's time. The 96%believed current living conditions, including food availability, money accessibility, and other basic needs, to be much more difficult now than they were before. This trend was evident across all three generations, suggesting thatliving conditions, or at least perceptions of them, have been consistently declining.

When asked why living conditions are harder now than they were before, there were a variety of explanations fromthe women. The majority of women attributed their hard life as a result of the current lack of rain, which some further connected to deforestation. Less rainfall means less abundant and healthy harvests, which reduces the availability of food and profit from the market. For women, this also meant less milk and meat, which are important foods, aidingpostpartumrecovery. One woman specifically mentioned that in her mother's time, after giving birth, women were able to rest and recover for six months. Now, however, there is not enough money or food and too much work to be done, so mothers can only rest for one or two months with their newborns before returning to work in the fields.This environmental explanation of a "hard life" was understandably more pronounced in the older generations with their historical place knowledge including memories of when crop harvests were healthy and plentiful.

Women again mentioned alcoholism (exact percentage unknown because confounded with previous switch to medication), this time as a factor contributing to hard life conditions. To fund their drinking habit, husbands often take money, which could be used to buy food or school supplies for the family, and spend it on alcohol, leaving mothers with more work and less money.To combat this problem, in addition to maintaining their farmland and raising children, women often take other jobs, working as laborers or porters to make extra money to support their families.

An outlier, but interesting response came from a third/"new" generation motherwho attributed harder living conditions now to the western education system. In her opinion, women like her mother and grandmother did not have to

worry about as many expenses, which have been brought about from paying for school tuition, uniforms, books, and other materials (note: primary education is compulsory in Tanzania). Now, this mother has to work much harder to make enough money to send her kids to school, and therefore, her life is "harder" and shedesires to restrict the number of children in her family.

In contrast to the government's opinion, however, most women believed an increasing population is not a problem and does not contribute to hard living conditions in their communities. The majority of the women interviewed from all generations, 67.7% ($^{65}/_{96}$), recognized that the population of their village is increasing (Figure 6).

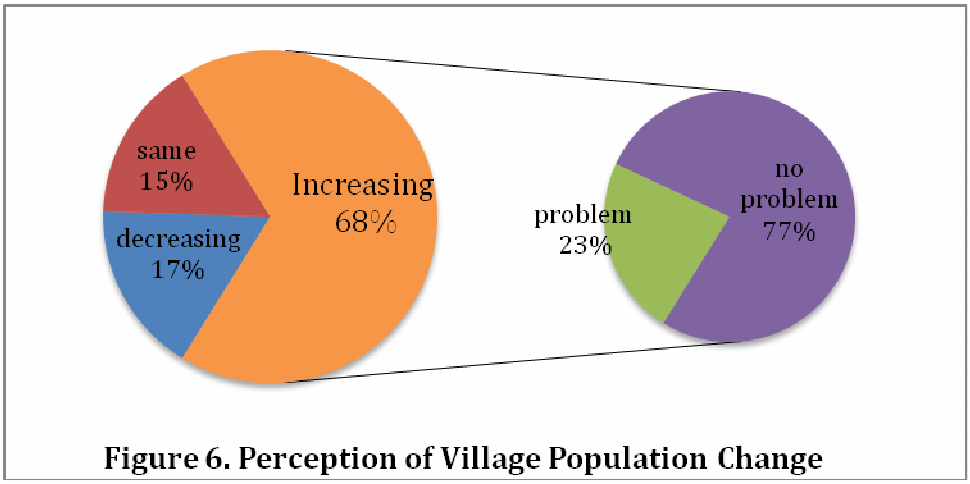


Figure 6. Perception of Village Population Change

Note: This data was collected during November 2009 from 100 non-randomly selected women in Sagara and Kizanda villages located of the West Usambaras, Tanzania using semi-structured interviews.

However, of that 67.7%, only 23.1% ($^{15}/_{65}$) were in agreement with the government in thinking that a population increase could be, or is already, a problem. In addition to that, of the 16.6% ($^{16}/_{96}$) that thought the number of people in their village was decreasing, 37.5% ($^{6}/_{16}$) believed decrease to be a problem. The small percentage of women who asserted that population increase poses problems to their community thought that as the population increases, resources become scarcer and life becomes more difficult. A few women specifically mentioned farm plots being divided into smaller and smaller sections among children, and now provide insufficient support to families, especially if rains are

lacking. But the majority of women, 76.9% ($^{50}/_{65}$), thought that an increasing population posed no problems for their villages.

So, why, in contrast to global and national policies and ideas stressing the importance of controlling population, does my sample population of women from Sagara and Kizanda think population increase is not a problem?In theWest Usambaras, western ideas havealtered school systems, health procedures, environmental conservation ideas, and birth control methods; but negative ideas and fears about population increase seem to be, so far, excluded. One potential reason for this might be that indigenous culture in the West Usambaras includes large family sizes, conducive to agricultural practices. More children meant more hands to help on the farm. If family sizes had always been large, then it may be difficult to understand why and when they should no longer be so.

This concept may be especially difficult to understand and connect with population when so many other outside factors are entering the community and causing newly perceived problems. The opinions of elderly women about the "new generation" and lack of response to cultural or "traditional" teachings, e.g. the introduction of new and abundant alcohol, and western idea of money being the main source of wealth, illustrate just some outside influences that are affecting the villages. It may be that the women are making the connection between hard living conditions and these recent influences, rather than population increase.

Women expressed thoughts that potential improvements to their living conditions would come from more effective resource management rather than population control. A few listed potential resources management strategies that they believed were necessary included farmland irrigation, and forest protection. However, population control or reduction was never mentioned when discussing necessary actions for solutions. In western progressive theory, more people use more resources, but perhaps with more efficient management techniques, fewer resources can stretch farther and support more people. Therefore, it is argued that people can overcome the potential problems an increasing population poses through new resource management strategies or economic policies within

technological limits.One mother illustrated this point by explaining that it would be good for the village population to increase because the villagers would then be able to take advantage of advancements and new technologies that would be a result of population increase.

"It is no problem for women to give birth!", exclaimed one woman, whose opinion was shared by most. But despite the general consensus that an increasing population poses no problems for the community, women still desire to limit the number of children they will have, and that number is significantly ($p < 0.05$) less than previous generations. However, their view is not the same as the Tanzanian Government, that the fertility rate affects living conditions. Instead it is the opposite: living conditions affect the fertility rate. Though, it seems to me that rather than one causing the other, life conditions and fertility share a complex relationship and affect one another, and the way they are perceived change based on cultural perspective, neither being necessarily right or wrong, merely different and connected.

Limitations & Biases

This study could be improved by increasing the number of women interviewed, specifically to get a more accurate picture of the fertility rate, as well as family planning methods. One of the most challenging limitations of my actual study was determining the ages of women interviewed. Many women, old and young, either did not know their ages, or would guess. They would do the same for the ages of their children. Consequently, based off of appearance and number and ages of children, I frequently estimated the age of a woman, or at least determined into which age class she would fall. Another limitation of the study is that the interviewees were restricted to women, most of who were married and had children. By opening up the study to men and their opinions of family planning and population, I would get a more comprehensive view of the issue. The translation of languages is also a limitation of my study. Questions in English may not carry the same meanings in Swahili or Sambaa languages and consequently could emphasize different points or words, altering responses and their significance.

Another critical factor, which may have limited of skewed the responses of women, was the fact that neither I, nor my translator, were married or had children. This made some women reluctant to share their family planning methods with me, being that I would not have received the same teachings they did after giving birth. Also, being a young student from the United States, some women may have altered their responses to questions, answering in a manner they think I want to hear.It is important to recognize, as well, my own potential biases when interpreting responses due to my western upbringing and educational background.

Conclusion

My study on the perspectives, methods, and strategies of family planning practiced by women took place in the West Usambaras in Sagara and Kizanda villages during the month of November 2009. The study also focused on the population growth and fertility rates of the two villages. I collected data through semi-structured interviews. Results show that the sample population isundergoing a major transition in family planning techniques. Older generations of women typically used traditional methods of birth control, while the majority of younger women are switching to dispensary medication. This transition is a result of new medicine, government initiative, and men's alcohol habits.

While fertility rates in the sample population are high compared to the national average, the desired fertility rate is declining. The oldest generation desired, on average, 6.9(SE±0.3) children. Women from the middle and youngest generations plan to have 5.0(SE±0.2) and 3.7(SE±0.2) children, respectively ($\alpha <$ 0.01, critical value 0.05, Appendix D). Community conditions have a greater influence on the declining desired fertility rate than government initiative. These community conditions include hard living conditions and alcohol influence.

Women generally did not recognize a relationship between hard living conditions and population increase. Contrary to government policy, the local women believed that living conditions could be improved by other methods, such as better resource management and rural development, rather than population reduction. This rejection of the demographic transition theory is most likely caused by a difference in cultural perspectives. Western ideals and objectives, while strongly influencing other aspects of Wasambaa culture, view social and economic policy from a different lens, one that is derived from logic, improvement, and progress; whereas, the livelihoods of women in Sagara and Kizanda villages are rooted in traditional cultural practices. Western education and science have begun to alter some of these practices, such as the transition from traditional strategies of family planning to the use of birth control medication, but the deeper ideals of the established culture endure.

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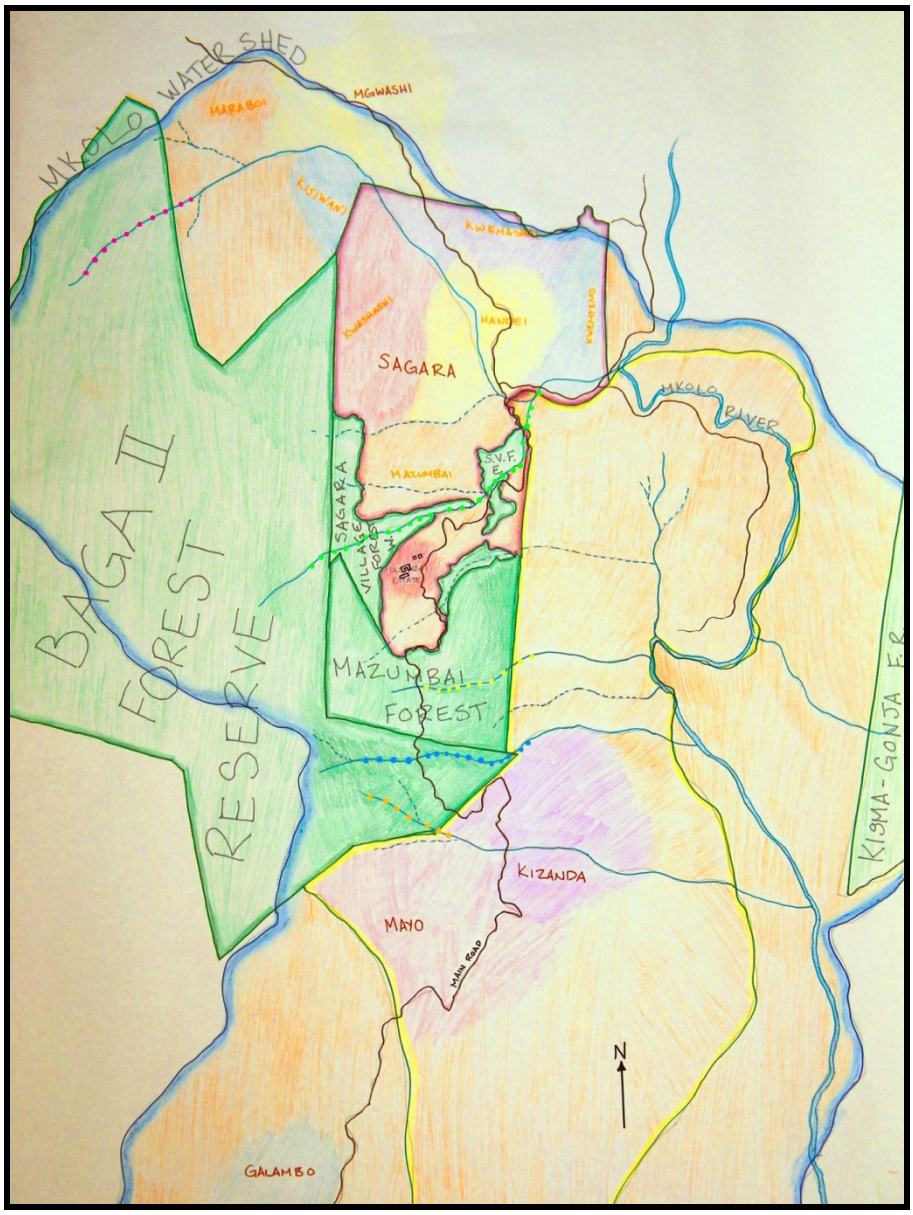
Appendix A.



Map of Study Site, Sagara and Kizanda Villages Areas

Appendix B.

Interview questions for women in Sagara and Kizanda villages
Where are you originally from?
How old are you?
Tell me about your children. Names, ages, sexes, etc.
Would you like more children? Why or why not?
What factors influence the number of children you decide to have?
Do you use any type of family planning method?
    How did you learn about this method?
    How is your husband involved?
How did you learn about this method?
Do you have any problems using your method?
What is your opinion of birth control pills and hormonal injections available at the local dispensary?
    Do they have any effects on your body?
    Why did you switch from using local methods to hospital medicine?
How many children did your mother have?
What type of family planning method did your mother use, if any?
    Why did your mother have more children than you do?
    Are life conditions harder now than they were for your mother's generation?
What do you think about population growth of your village?
Is it a problem for the population to increase or decrease?
    If so, why?

Appendix C.

Interview questions for village executive leaders of Sagara and Kizanda
How long have you been the village executive leader?
When was this village established?
How many hamlets, families, and villagers currently reside here?
What are the main economic incomes for the village?
What are the main types of agriculture in the village?
What prominent religious groups are present?
Describe the formal education system of the area.
What has been the population trend of the village over the past few years?

Interview questions for dispensary and clinic workers
What is your position working at the dispensary?
How long have you been working here?

When was the dispensary established?
Who established and continues to fund it?
What types of services does the dispensary offer?
Do any NGOs work with the dispensary, or help in family planning education?
What types of family planning education and/or birth control methods are supplied?
Are there costs for these services?
How long have these services been offered at the clinic?
What percentage of women in the village use family planning services provided by the dispensary?
Who uses these birth control services?
What is the most common type of birth control used?
What are the side effects of the different methods of birth control?

Interview questions for the secondary school in Sagara village
Do schools teach youth about birth control?
At what age do they first learn?
What methods of birth control are they taught?
Is there certain methods of birth control are better than others?
Do you think the students respond well to the teachings?
Does the school have contraception available for the students?
Why do you think many women have begun to switch from using traditional methods to using medication?
When did these teachings first start being used in schools?

Appendix D.

ANOVA Results – Differences Desired Number of Children Between Ages Classes

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	155.0016667	2	77.50083333	33.10129894	**1.09943E-11**	3.090186675
Within Groups	227.1083333	97	2.341323024			
Total	382.11	99				

T-Test: Two-Sample Assuming Equal Variances
Age Classes one and two

	Variable 1	*Variable 2*
Mean	5.025	3.666666667
Variance	2.383974359	1.402298851
Observations	40	30
Pooled Variance	1.965318627	
Hypothesized Mean Difference	0	
df	68	
t Stat	4.011727968	
P(T<=t) one-tail	7.62495E-05	
t Critical one-tail	1.667572281	
P(T<=t) two-tail	**0.000152499**	
t Critical two-tail	1.995468907	

Age Classes one and three

	Variable 1	*Variable 2*
Mean	6.866666667	3.666666667
Variance	3.222988506	1.402298851
Observations	30	30
Pooled Variance	2.312643678	
Hypothesized Mean Difference	0	
df	58	
t Stat	8.149692941	
P(T<=t) one-tail	1.71933E-11	
t Critical one-tail	1.671552763	
P(T<=t) two-tail	**3.43867E-11**	
t Critical two-tail	2.001717468	

Age Classes two and three

	Variable 1	*Variable 2*
Mean	6.866666667	5.025
Variance	3.222988506	2.383974359
Observations	30	40
Pooled Variance	2.741789216	
Hypothesized Mean Difference	0	
df	68	
t Stat	4.605063241	
P(T<=t) one-tail	9.30614E-06	
t Critical one-tail	1.667572281	

P(T<=t) two-tail	**1.86123E-05**
t Critical two-tail	1.995468907