

ABSTRACT

She said, he said: Discrepancies between Females and Males in Reproductive Health Knowledge, Attitudes, and Behavior in a Traditional Community in Rural Western Kenya

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East Africa carries the highest burden of unplanned pregnancy worldwide. The Luo tribe of western Kenya additionally faces the highest rates of adolescent pregnancy, infant mortality, maternal mortality, and HIV transmission in Kenya. This region also claims the highest unmet need for family planning globally, and, even where family planning services are available, they remain underutilized. Though numerous studies have been conducted regarding women's views and behaviors in regards to the poor maternal and child health in this region, the male perspective has been nearly entirely absent from this dialogue until recently. There is a particular dearth of research regarding the similarities and differences between male and female knowledge, attitudes, and behaviors regarding reproductive health. This study is a secondary analysis of data from two prior cross-sectional studies of the self-report of 112 Luo women and 50 Luo men from rural Kenya regarding reproductive health, family planning, and sexually transmitted diseases. Despite Luo women being regarded as the essential source of all health information for their community, results showed that only 8% of women had even a basic knowledge of reproductive health, in surprising contrast to 36% of the men. In addition, both men and women stated that husbands and wives primarily consult one another in order to make family planning decisions, however they were also found to have discordant cultural beliefs regarding appropriate family size, family planning methods, forced sex, and HIV/AIDS prevention. These findings highlight the complexity of implementing change in sexual and reproductive health behavior in traditional, resource-poor communities, and future initiatives will need to address both a lack of knowledge and differing cultural beliefs between men and women.

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SHE SAID, HE SAID: DISCREPANCIES BETWEEN FEMALES AND MALES IN
REPRODUCTIVE HEALTH KNOWLEDGE, ATTITUDES, AND BEHAVIOR IN A
TRADITIONAL COMMUNITY IN RURAL WESTERN KENYA

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DEDICATION

This thesis is dedicated to the women and men of the Nyakach Plateau who have granted me the indescribable privilege of bearing witness to their lives and to their stories.



CHAPTER ONE

Introduction

With the target date of the Millennium Development Goals fast approaching in 2015, Kenya is not on track to meet a single one, according to the 2011 MDG Progress Report. While there are a number of factors that have influenced this lack of progress, many measures of progress could potentially be accelerated through the development of reproductive health policies and programs that better integrate males and females, specifically those regarding the promotion of gender equality (Goal 3), reduction of child mortality (Goal 4), improvement of maternal health (Goal 5), and combatting of HIV/AIDS (Goal 6).

In addition, the need for community-based and culturally sensitive programs is due to the fact that interventions can be even more effective when they reflect a comprehensive ethnographic understanding of the reproductive health knowledge, attitudes, and behaviors of specific communities. Such an effort has been made among the Luo tribe in rural Western Kenya, where two recent studies have examined reproductive knowledge, beliefs, and behaviors from a female sample and from a male sample, performed for the purpose of informing future program development. The present study compares these two sets of responses, highlighting the similarities and differences between male and female viewpoints. This information can serve as a context for better understanding unplanned pregnancy, the spread of HIV, and other reproductive health-related problems in that community.

CHAPTER TWO

Review of Literature

Priority of Sexual and Reproductive Health Education in Kenya

Overpopulation is currently a major issue in many parts of the world, especially within Sub-Saharan Africa. Although having many children can be a source of pride in traditional communities, for families struggling to survive, too many children can create a burden. In addition, high fertility rates and close spacing of births are partially responsible for the worst maternal and child health outcomes, with Sub-Saharan Africa claiming the highest rates of maternal, infant, and child mortality in the world. This region also claims the highest unmet need for family planning worldwide, the lowest rate of contraception use, the highest adolescent birth rate, and the highest HIV prevalence rate globally (Kenya DHS, 2009).

Kenya is a country in East Africa that has had some improvements, but there is still enormous suffering there. The country's National Bureau of Statistics carries out an extensive demographic and health survey every five years concerning reproductive health, the latest being done in 2014. The report of the 2014 data is not yet available, but the 2007-2008 survey (reported in 2009), provides a wealth of data. Overall fertility rates are declining across Kenya, but a large differential remains between urban and rural areas, with 2.9 children born per woman in urban areas compared to 5.2 in rural areas (Kenya DHS, 2009). In the Nyanza Province of Kenya, the rural region in which this study is based, the average woman will become sexually active at the age of 16, marry at

the age of 18, and have her first child at the age of 19. Throughout her reproductive years, she will have 5 or 6 children, with each pregnancy being spaced approximately 33 months apart (Kenya DHS 2009). Studies have shown that children born fewer than 24 months after a previous sibling are at greater risk of having poor health and that such births threaten maternal health (Kenya DHS, 2009).

Fertility rates have failed to decrease among young people, with the fertility rate actually having increased from 111 to 114 per 1,000 women between 1998 and 2003 (Schueller, 2006). Adolescents in Kenya are, however, waiting longer to have sex, as the median age of first sex has risen from 16.7 years in 1988 and 17.8 years in 2003 to 18.2 in 2008 (Kenya DHS, 2009, Schueller, 2006). The median age of first marriage is also slowly increasing overall, from 19.2 years in 1998 and 19.8 years in 2003 to 20.0 years in 2008 (Kenya DHS, 2009, Schueller, 2006). These data are lower in rural areas as of 2008, where the ages of first sex and marriage were 17.6 and 19.4 respectively (Kenya DHS, 2009).

A woman's access to education has been shown to be strongly associated with lower fertility in Kenya. The total fertility rate decreases dramatically from 6.7 for women with no education to 3.1 for women with at least some secondary education. Over time, fertility has actually increased among women with no education (Kenya DHS, 2009). Although some sexual education is provided in schools and contraceptive use increases with years of education, simply attending school is associated with less sexual activity in Sub-Saharan Africa (Schueller, 2006). The largest source of reproductive and sexual health knowledge among Kenyan adolescents is within schools (Ajayi, Ayo A., et al, 1991), however the fact remains that only 75% of children attend even primary school

in Kenya (UNICEF, 2013) and for those that do attend, there is no standardized reproductive and sexual health curriculum.

Studies of formal sex education have not been done in Kenya, but 93% of 15-19 year olds in Ghana, a similarly traditional, tribal culture, believe that sex education should be taught in school, while only 52% have ever attended these classes, either because they do not attend school or because sex education is not offered (Boonstra 2007). When sex education is not available in schools, adolescents seek information from their equally uneducated peers. A study conducted in rural Kenya hypothesized that this is due to the fact that modernization among adolescents in rural areas has created a separation from family elders, who were the traditional sources of sex education within rural communities (Barker and Rich, 1992).

Overall, high fertility rates persist despite efforts to increase knowledge of reproductive health, showing that while knowledge may be helpful, other confounding factors may exist. In combination with the generational gaps previously described, a lack of communication or culturally-based misunderstandings between partners may explain why knowledge does not necessarily translate into increased family planning utilization (Ajayi, et al, 1991). All things considered, social changes must be implemented alongside reproductive and sexual health education programs in order to decrease fertility rates and protect the health of women and their children worldwide.

Priority of Women's Health

Women in low and middle-income countries are at a distinct disadvantage in terms of sexual and reproductive health and therefore must be made a priority. Women are biologically at risk for conditions such as iron deficiency anemia, vaginal fistulas, complications of pregnancy, and sexually transmitted infections (STI's) (Skolnik, 2008). STI's are more common in women because women expose a greater mucosal area during sexual relations than men do (Skolnik, 2008). Compared to men, women also display fewer symptoms for STI's and therefore wait longer to receive treatment, leading to pelvic inflammatory disease (PID), ectopic pregnancies, infertility, infant congenital abnormalities, cervical cancer, and death (Skolnik, 2008). In addition, one in four pregnancies worldwide end in abortion (Sharma, 2010),

The amount of maternal mortality is staggering,, as 530,000 deaths from pregnancy or delivery complications occur each year throughout the world (Skolnik, 2008). Maternal mortality is defined as a death that occurs during pregnancy, childbirth, or less than 42 days after the baby is born (Skolnik, 2008). Sub-Saharan Africa has the highest maternal mortality ratios (the ratio of maternal deaths to number of live births) globally, with a 1 in 16 chance of dying a maternal death (Skolnik, 2008). Although skilled nursing care at birth can greatly decrease risk of maternal mortality, due to the limited availability of such skilled personnel in this region, a more effective solution is to increase access to family planning. Decreasing the number of unplanned pregnancies by increasing contraceptive use could save the lives of many women globally.

Socially, women in low and middle-income countries are often regarded as being inferior to men due to men's role in providing financial support for the family. This self-

fulfilling prophecy of inferiority begins at a young age, as girls are often fed less than boys, leading to poor growth and to illness at later ages (Burns, 2010). In addition, in many traditional societies, men pay a bride price for a woman, or a family gives a dowry to attract a man to marry a daughter. This culture of treating women as inferior puts women at an increased risk for forced sex with its physically and psychologically damaging effects. A 2004 study conducted in Nyeri, Kenya, found that 21% of females ages 10-24 had been coerced into sex (Erulkar 2004). If culture is organized around the idea of a wife as property, this sets up a context with lack of recourse for a woman who experiences rape or other kinds of domestic violence (Sharma, 2010). Surprisingly, this same study found that forced sex had also occurred in this age group among 11% of males. The cultural context to explain forced sex among boys and young men is a very different set of issues than females face, and this phenomenon has not been studied nearly as much as female forced sex.

All of these factors contribute to the previously discussed high fertility rates, overpopulation, and the high HIV transmission that pervades Sub-Saharan Africa, where the population is rising even in the face of increased cases of AIDS (WHO, 2008), causing a crisis of resources. This may primarily be through HIV/AIDS' associations with elevated child mortality and reduced duration of breast-feeding (Magadi and Agwanda, 2010). Moreover, due to treatment that has transformed HIV into a chronic illness instead of a more rapid killer, there is a rise not only in population, but also in the number of unhealthy people within these populations. Multiple unplanned pregnancies, vertical transmission of HIV, and inadequate birth spacing cause bad outcomes for mothers and for their children (WHO, 2005). There is a dire need for all women to have

knowledge of reproductive health, access to effective means of birth control and the information to use it correctly, as well as the support to make societal changes that will reduce rape and domestic violence. This requires encouraging male participation in women's health initiatives, as well as encouraging both women and men to take ownership of their own sexual and reproductive health needs.

Importance of Men's Role in Reproductive Health

Men's health issues are often overshadowed by efforts aimed at promoting women's health care. This can be attributed to men's perceived indifference towards health care in many cultures, causing them to delay seeking care or advice out of fear of appearing weak (Varga, 2001). However, studies conducted across African countries including Zimbabwe, Zambia, and Kenya have shown that "men take a keen interest in sexual and reproductive services, articulate their sexual and reproductive health needs, and have very specific recommendations for improving male [sexual and reproductive health] services" (Varga, 2001).

Men's desire for improving sexual and reproductive health, however, does not necessarily translate into increased knowledge compared to women. Because of established gender norms found in many parts of the world, men often attempt to appear more knowledgeable and sexually experienced than women and are less likely to admit to ignorance regarding sexual matters (Varga, 2001). Therefore, while men typically have higher rates of school attendance compared to women (UNICEF, 2013), they are not necessarily more knowledgeable regarding sexual and reproductive health and may not seek out the information that they need.

In addition to a lack of knowledge among men, a lack of communication with their partners can create a large barrier to the reproductive health of both parties. Though men have often unfairly been characterized as the main barrier to women's utilization and knowledge of reproductive health care services, in several areas, this characterization is actually apt (Dudgeon and Inhorn, 2004). In Kenya, it is estimated that more than 90% of men approve of contraception use, but more than half believe that it is the woman's responsibility to use it (Onyango, 2008). Therefore, the more than 20% of women that report that their husbands disapprove of family planning use whether or not they have discussed it explicitly are likely overestimating the disapproval and underestimating the expectations of their husbands (DeRose, et al., 2004). Contraception is more likely to be used among couples that have discussed family planning at least once, but use is highly correlated with male preferences, despite the fact that that male and female preferences are generally concordant (Dodoo, 1998). Approval rate of family planning use is much higher than the rate of actual use, so this fundamental miscommunication could be the source of this discrepancy (DeRose, et al., 2004).

In addition, Kenyan men surveyed in a 2008 study described how men do not often disclose whether or not they have acquired a sexually-transmitted disease with their partners. Instead, men seek care secretly independent of their partner (Onyango, 2008). Men in western Kenya often do not want to associate themselves with reproductive health clinics and as a result, rarely accompany their partners to reproductive health clinics (Onyango, 2008). This fact is attributed to gender norms, low awareness, and a general lack of reproductive health education programs designed to serve the needs of men (Onyango, 2008). Due to the patriarchal structure of rural, traditional Kenya, men have a

great impact on women's sexual and reproductive health. Therefore, effective social change in a given community must be grounded in a comprehensive understanding and comparison of men's and women's knowledge, attitudes, and behaviors regarding family planning and pregnancy, HIV/AIDS, and forced sex.

Family Planning & Pregnancy: Knowledge, Attitudes, and Behaviors

Knowledge of family planning is nearly universal, with 95% of all women and 97% of men age 15 to 49 knowing at least one modern method of family planning (Kenya DHS, 2009). Among all women, the most widely known methods of family planning are injectables, male condoms, and pills, with about 89% of all women saying that they know these methods. There was little change in this knowledge in the 5 years between the most recent DHS surveys (Kenya DHS 2009). In spite of this knowledge, slightly less than half of married women in Kenya are currently using a method of family planning, with around 40% of women using a modern method. Injectables are by far the most commonly used contraceptive method, both due to their convenience and the fact that their use can be concealed from a spouse or partner when necessary (Ross and Agwanda, 2012).

Though knowledge of contraceptives is high, knowledge regarding fertility is low among women. The data show that only one in four women understands that a woman is most likely to conceive halfway between her menstrual periods (Kenya DHS, 2009). Almost one-third wrongly believe that the fertile period is right after a woman's period has ended, fewer than one in five women say they do not know when the fertile period

falls, and 11% of women believe that there is no specific fertile time (Kenya DHS, 2009). Few data are available regarding men's knowledge of female fertility.

One quarter of currently married women in Kenya have an unmet need for family planning, which remains unchanged since 2003 (Guttmacher Institute, 2008, Kenya DHS, 2009). Though the proportion of unwanted births is declining overall, 17% of births in Kenya are unwanted, while 26% are mistimed, i.e. wanted later (Kenya DHS, 2009). This is possibly explained by the fact that 28% of Kenyan women do not use any form of family planning until after their fourth child. Though the ideal family size for men and women is about 4 children overall, the fact remains that more than a quarter of women do not have these 4 children *when* they intend to.

Attitudes of Kenyan adolescents towards contraception are also not necessarily concordant with their practices. Many more Kenyan adolescents are sexually active than approve of premarital experiences, and many more adolescents approve of contraceptive use than actually use them to prevent unintended pregnancy. (Ajayi, Ayo A., et al, 1991) Access may play a large part in this gap between beliefs and behaviors, with a large barrier to access being the stigma associated with providing or receiving contraception for unmarried adolescents (Ajayi, Ayo A., et al, 1991), though public facilities currently provide contraceptives to more than half of all married modern method users (Kenya DHS, 2009).

Many men in Kenya also share skewed beliefs regarding contraceptives, which contribute to their low use. In the sample surveyed for the last Kenya DHS, 81% of men in the Nyanza province report knowing about their wives' contraception use, while 12% said that it was the woman's business only (Kenya DHS, 2009). Thirty-four percent of

men surveyed believed that women who use contraception might become promiscuous and were thus wary of its use (Kenya DHS, 2009). A 1987 study of men in the rural Machakos District of Kenya found that over 32% of the men surveyed believed contraceptives would weaken their partner, causing her to be more likely to fall ill (Were, 1994). Over 53% of participants shared a willingness to use contraceptives if they were properly equipped to choose the proper method. With the proper education regarding contraceptive methods, men would likely be less hesitant and more willing to encourage their wife to use methods of contraceptives.

Among Kenyan men and women, the data show that method-related reasons—especially fear of side effects and health concerns—were the most commonly cited reasons for not intending to use family planning in the future. Other reasons for not using it, such as religious prohibitions, opposition to use, menopause, infecundity, desire for many children, and infrequent sex were each cited by between 6 and 9% of women as the main reason for not intending to use a family planning method in the future (Kenya DHS 2009). Overall, men believe that they should share in the family planning process. The 1987 Machakos study found that 93.2% of male participants approved of family planning. Of this group, 63.9% of the men believed that the family size decision should be a joint decision made in conjunction with his partner (Were, 1994).

HIV/AIDS: Knowledge, Attitudes, and Behaviors

The HIV epidemic in Kenya is heterogeneous, with certain rural regions carrying a disproportionately high amount of the disease burden. The Nyanza Province, in which this study is based, has an overall prevalence of 14%, double the level of the next highest provinces—Nairobi and Western, at 7% each (Kenya DHS, 2009). Interestingly, the majority of reported new HIV infections occur within long-term unions rather than in instances of casual sex. The rate of new infections increases with number of partners in men, but this is not true in women, which is worrisome because men not only have slightly more knowledge of HIV/AIDS prevention (Kenya DHS, 2009), they are also less biologically susceptible to the virus. Due to increased mucosal surfaces in women, women have a greater risk of contracting the disease (Pettifor, 2008).

Almost all Kenyan women and men (more than 99%) have heard of AIDS (Kenya DHS, 2009). More than 90% of women and men indicate that the chances of getting the AIDS virus can be reduced by limiting sex to one faithful partner. Similarly, 75% of women and 81% of men age 15-49 know that using condoms can reduce the risk of contracting the HIV virus (Kenya DHS, 2009). As expected, the proportion of both women and men who know that abstaining from sex reduces the chances of getting the AIDS virus is high—88% among women and 90% among men (Kenya DHS, 2009).

The percentage of men and women in the Nyanza Province who believe some of the most common misconceptions about AIDS is generally low, but not low enough to constitute universal knowledge. These incorrect suppositions include the idea that all HIV-infected people always appear ill (6% agree), and the belief that the virus can be transmitted through mosquito or other insect bites (almost 27% agree), by sharing food

with someone who is infected (13%), or by witchcraft or other supernatural means (11%) (Kenya DHS, 2009).

The results also show that comprehensive knowledge about HIV/AIDS is lower among the youngest and oldest age groups (i.e., 15-19 and 40-49). Increased education could be a valid approach to addressing this problem in adolescents in Kenya, as 61% of women and 72% of men age 18-49 agree that children age 12-14 should be taught about using condoms to avoid AIDS (Kenya DHS, 2009). The data further indicate that knowledge is lowest among women and men who have never had sex and highest among those who have never married but who have had sexual intercourse. Knowledge regarding AIDS increases with age and is greater in urban compared to rural areas (Kenya DHS, 2009).

Though knowledge regarding HIV/AIDS is generally high, some stigma still surrounds a positive HIV status. Though 90% of Kenyan men and women in the Nyanza Province say they would take care of an HIV-infected person in their home, almost 50% of women and 30% of men say that, if a member of their family got infected with the virus that causes AIDS, they would want it to remain a secret.

Violence and Forced Sex: Knowledge, Attitudes, and Behaviors

Violence against women has serious consequences for their mental and physical well-being, including their reproductive and sexual health (WHO, 1999). The data show that 39% of women have experienced violence since they were fifteen, and one in four reported experiencing violence in the twelve months preceding the survey (Kenya DHS, 2009). The main perpetrators are husbands, and to a lesser extent, teachers, mothers,

fathers, and brothers. Thirty percent of ever-married women report having experienced emotional violence by husbands, 37% report physical violence, and 17% report sexual violence. Almost half of ever-married women report suffering emotional, physical, or sexual violence, while 10% have experienced all three forms of violence by their current or most recent husband (Kenya DHS, 2009). Seventeen percent report having experienced sexual violence at some time. Involvement with prostitution is relatively low in this region, as only 2% of men in the Nyanza province had paid for sex in the last year at the time of the study (Kenya DHS, 2009).

Forty-two percent of men in the Nyanza Province believe that it is okay for a husband to get angry and reprimand his wife for refusing to have sex with him, 10% believe that is okay for a husband to beat his wife, 13% state that they would refuse her financial support, 4% would use force to have sex, and 10% would have sex with another woman. Twenty-two percent of men in the Nyanza province have more than one wife (Kenya DHS, 2009). The 2008-09 KDHS data show that only 1% of women and 9% of men report having had more than one sexual partner in the 12 months prior to the survey. Women in the Nyanza province are the most likely in Kenya to have experienced emotional, physical, or sexual violence by their husbands, at a rate of 60% (Kenya DHS, 2009).

Current Study

An understanding of the complicated interdependence between male and female reproductive health knowledge, beliefs, attitudes, and behaviors is essential for the reduction of unplanned pregnancy and HIV/AIDS transmission in the resource-poor areas of the world, particularly in Sub-Saharan Africa.. Rural Kenya has already been shown to have a significant need for interventions that will avert more mortality and morbidity, and this study is an attempt to contribute to such an effort. Ideally, sexual and reproductive health promotion programs should be designed as evidence-based interventions after the conduction of baseline assessments within a community serving, collecting pretest data as a basis for long-range outcome studies (Bowling 2002; Brakefield-Caldwell and Parker 2000).

Such baseline studies have been conducted in a specific sub-group of the Luo population of the Nyanza province, a poorer and more isolated community living on the Nyakach Plateau. These men and women suffer from high levels of malnutrition, devastation from HIV and other diseases, and lack of resources, even compared to their Luo counterparts in other parts of the province. They live on small plots of land connected by dirt paths and scattered over a high plateau, which is accessed by only one road, which is rocky and unpaved. With a dependence on subsistence farming, their lack of employment opportunities, transportation, education, healthcare infrastructure keep these people away from knowledge and resources that others in this region have who live closer to cities and towns. Dire poverty is combined with a degree of cultural isolation to reinforce a traditional, tribal organization, with complex kinship ties and lines of authority. It is suspected that this group's reproductive knowledge, behavior, and values

will reflect a different profile than that documented by the Kenya DHS survey of the Nyanza province and the Luo tribe members who live there. It is likely that they will lag behind others in the transition to more gender equality and its impact on family planning.

In an effort to meet the reproductive health needs of this population, a 501(c)(3) non-profit organization, Straw to Bread, is endeavoring to provide resources to help meet community-identified needs in reproductive health. In the context of this effort, two studies have been conducted to gain information about this particular group and their knowledge, behaviors, and values. The current study analyzes these results by comparing the two data sets, one from males and one from females, in order to yield a richer baseline understanding of the gender dynamics.

With this essential baseline understanding of the reality of male and female knowledge, behaviors, and attitudes regarding sexual and reproductive health, efforts can begin to accurately address the high, unmet family planning need and high HIV transmission rate in this community.

CHAPTER THREE

Hypothesis

Research Question 1

In a traditional, rural Luo community, will men or women possess more reproductive health knowledge?

Hypothesis 1: Women will have more overall knowledge as well as knowledge on all individual questions except for those regarding HIV/AIDS compared to men, while adjusting for age and education level.

Null Hypothesis: There will be no difference in the level of knowledge between males and females.

Research Question 2

Do men and women in a traditional, rural Luo community agree on issues related to family planning?

Hypothesis 2A: Men will more frequently report that her husband helps a woman plan her family compared to women.

Hypothesis 2B: More men will report more unplanned pregnancies than women, and those with unplanned pregnancies will report a greater number.

Hypothesis 2C: More women than men will report knowing a woman with more children than she wanted to have.

Null Hypothesis: There will be no difference in the responses of men and women regarding family planning.

Research Question 3

Do men and women in a traditional, rural Luo community agree on which pregnancy outcomes are typical for their community?

Hypothesis 3A: There will be no significant difference in the average number of babies per woman reported by men compared to women.

Hypothesis 3B: There will be no significant difference in the average spacing of per woman reported by men compared to women.

Hypothesis 3C: Men and women will report miscarriages as well as infant and child deaths with equal frequency.

Null Hypothesis: There will be a significant difference in the responses of men and women regarding pregnancy outcomes.

Research Question 4

Do men and women in a traditional, rural Luo community agree on issues related to forced sex?

Hypothesis 4A: More men than women will report that it is acceptable for a man to have sex with his wife whether or not she wants to.

Hypothesis 4B: More men than women will report that forced sex is an acceptable practice.

Hypothesis 4C: More women will report being forced to have sex than men admitting to forcing a woman to have sex.

Null Hypothesis: There will be no significant difference in the responses between men and women regarding forced sex.

CHAPTER FOUR

Methods

Introduction

Members of the Luo tribe living on the Nyakach Plateau are the focus of aid from a non-profit group called Straw to Bread based in the U.S. The efforts of this group span a wide array of medical and public health interventions, including education, healthcare, agriculture, safe water, and small business development, and are guided by the wishes and goals of the community itself in a partnership. The current study is a secondary analysis of data collected from two previous cross-sectional studies. These studies sought to better understand the knowledge, behaviors, and attitudes of women and men, conducted in 2011 and 2012 respectively, in rural Kenya regarding reproductive health, family planning, and sexually transmitted diseases. This study will seek to compare these two sets of responses and further analyze the results.

Background

In 2009, a health care assessment was carried out through informal conversations with members of the Luo community who were familiar with life in the Luo villages and the health issues that affect them. The information gained through these conversations revealed that women are often seen as the essential sources for all health information. However, further dialogue between team members and community women revealed that women lacked crucial information regarding health.

This finding prompted a study in 2010 (Wood, 2011) regarding the knowledge of reproductive health among Luo women. Data were collected through interviews with 112 women, ages 18-80, of the Luo tribe who resided on the Nyakach Plateau (see Appendix). The women's study found inadequate levels of the knowledge of reproductive health and reports of a significant amount of forced sex. In an effort to improve knowledge levels, the principal investigator of the study, Shannon Wood, developed a reproductive health curriculum.

During the 2011 annual two-week visit by a team of university students and medical professionals, the curriculum was presented to a female representative from each village. Additional surveys were also obtained to gain further information about knowledge, attitudes, and behavior regarding reproductive health, with the added goal of better understanding the occurrence and context of forced sex in the Luo community of the Nyakach Plateau (Singh, 2012). These interviews were conducted from May 20 to May 27, 2011. The interviews were guided by a questionnaire (see Appendix) compiled by principal investigators, Dr. Lisa Baker and Shannon Wood. The women who were interviewed made up a convenience sample that was recruited by the local women's health educators and by word-of-mouth.

A total of 112 questionnaires were completed through structured interviews with women, ages 18 to 80, in central locations in six different villages. They were each invited to participate and signed an informed consent form before the interview began. The questions included in the questionnaire were adapted from the World Health Organization (WHO), the DHS violence section, and the research team's 2010 survey. The DHS, or Demographic and Health Survey, is program responsible for collecting

nationally representative health data in low and middle-income countries in the areas of population, health, and nutrition. All the information and questions gathered from the aforementioned sources were then adapted to fit the particular community of study.

The following year, in May of 2012, a study regarding the knowledge of reproductive health among Luo men was conducted (Guidangen, 2013; Smith, 2014) using a questionnaire (see Appendix) developed by Luke Smith and Robert Guidangen, modeled closely after the questionnaire used in the survey of Luo women. These interviews were conducted across the Nyakach Plateau among a convenience sample of fifty men from numerous villages across the Upper Nyakach Plateau. Men aged fourteen and older were interviewed, and their responses were analyzed. The survey contained questions about knowledge, behavior, and attitudes regarding reproductive and sexual health. Additionally, men were questioned about their HIV status, sexually transmitted infections, and their attitudes and behavior related to voluntary male circumcision for HIV prevention.

Current Study

For the 2010 and 2011 studies, data were double entered into Microsoft Excel, and subsequent analyses and statistical testing were performed using SAS Version 9.3 (SAS Institute Inc., Cary, North Carolina, USA). The 2012 data were entered into Excel by Captricity, a company specializing in data entry with protocols to identify errors. Univariate analysis included frequencies and percentages for discrete variables, and the mean, standard deviation, and range was calculated for continuous variables. These frequencies were compared and further analyzed in the current study. In addition, a series

of eight identical questions were asked in both the 2011 and 2012 surveys. These data were used to establish a knowledge score for comparison between males and females. Bivariate analysis was done using the t-test to compare continuous variables between males and females, and Chi-square analysis was used for discrete variables.

IRB Approval

The prior studies upon which the present secondary analysis is based were both approved by the IRB of Baylor University, and informed consent was obtained before any information was gathered. The current study analyzed data that had no names or personal identifiers attached to it.

CHAPTER FIVE

Results

Sample Demographics

This study compares information gathered from women in May of 2011 and from men in May of 2012 (see Table 1). The first sample was comprised of 44 men between the ages of 15 and 51, with a mean age of 26.5 years old. Over three-fourths of these men had completed primary education, and slightly more than half were married at the time of the study. Though 50 men were surveyed in the original study, 6 were removed due to incomplete data. The larger female sample was comprised of 112 women with a wider age range, making the average woman in the study about 10 years older than the average man in the other sample. Two-thirds of these women had completed primary education, and almost 75% were married at the time of the study. Overall in our sample, women were older, more likely to be married, and slightly better educated than their male counterparts (*Table 1*).

Overall in our sample, women were significantly older and slightly better educated than their male counterparts, though more women (11.6%) never attended school compared to 0% of men (*Table 1*). None of these factors were found to have a statistically significant impact on knowledge scores between genders.

Table 1: Comparative Demographic Data of Males and Females

	Males	Females	Comparisons
Age	26.5 (SD = 10.49) Range 15-51	35.5 (SD = 13.7) Range 18.80	t = 4.06, p = 0.0001
Education	78% primary or below	67% primary or below	t = 0.42, p = 0.6722

Reproductive Health Knowledge Scores

In both studies, the same eight questions were used in assessing the participant's actual level of knowledge. These questions were selected to represent commonly faced reproductive health issues for the region. The results for men and for women are listed below in Table 2. Following a discussion of overall knowledge, specific differences are highlighted below and are grouped together in the categories of family planning, pregnancy and its outcome, HIV, and forced sex. In addition to knowledge, answers are also included in these categories that reflect men's and women's behaviors, values, and beliefs in each area.

Table 2: Reproductive Health Knowledge Score Percentiles by Individual Question

	Males		Females	
	Correct (%)	Incorrect (%)	Correct (%)	Incorrect (%)
How many times per month does a woman normally get her (menstrual) period?	44.00	56.00	92.86	7.14
Can a woman get pregnant during her period?	56.00	44.00	27.68	72.32
Can a woman get pregnant the first time she has sex?	46.00	54.00	62.50	37.50
How long does a normal pregnancy usually last?	90.00	10.00	87.50	12.50
Is it bad for the baby if a pregnant woman drinks alcohol during pregnancy?	80.00	20.00	66.96	33.04
Is it bad for the baby if a pregnant woman smokes during pregnancy?	82.00	18.00	74.11	25.89
Name some ways that people can get HIV/AIDS.	86.00	14.00	17.86	82.14
Name some ways that people can protect themselves from getting HIV/AIDS.	86.00	14.00	8.04	91.96

Overall Knowledge

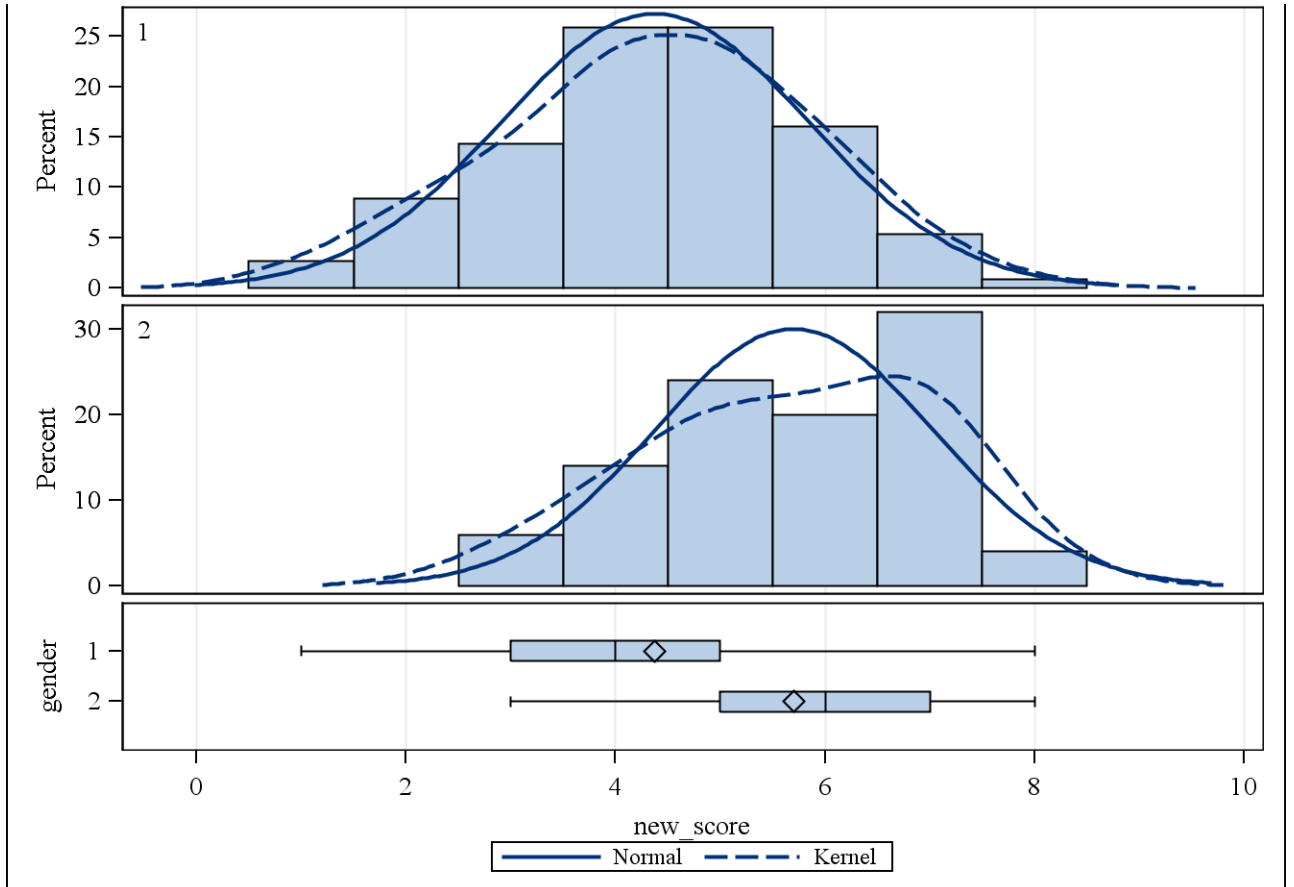
Mean overall knowledge scores were found to be 5.70 (SD = 1.329, range 3-8) for males and 4.375 (SD = 1.465, range 1-8) for females (*Table 3*). Men's higher level of knowledge was statistically significant ($t = -5.47$, $p = .0001$). To look at the findings another way, the score was dichotomized into "adequate" (score of 7 or 8, representing 87.5% of questions answered correctly) would be classified as 'adequate knowledge'. Viewed in that way, men's overall knowledge scores were still significantly greater than women's scores. Of the men surveyed, 36.36% were found to have adequate knowledge, compared to 8.04% of women.

To test whether this association was due to age, the samples were restricted to males and females between 18-57 years of age. This excluded 10 women and 7 men. The finding that men's knowledge scores were higher than women's scores was still significant ($t = -4.71$, $p = 0.0001$). The mean women's score was 4.4 and the mean men's was 5.6. When age is used to explain the variance in knowledge score using analysis of variance, the relationship is non-significant, therefore age is not the reason men's scores are higher ($F = 2.77$, $p = 0.0978$, adjusted $R^2 = 0.0111$). Education was not the significant factor that explained men's higher knowledge score.

Table 3: Male and Female Knowledge Score Percentiles Below Adequate

	Males (%)	Females (%)
0	0.00	0.00
1	0.00	2.68
2	0.00	8.04
3	6.82	15.18
4	13.64	22.32
5	22.73	26.79
6	20.45	16.96

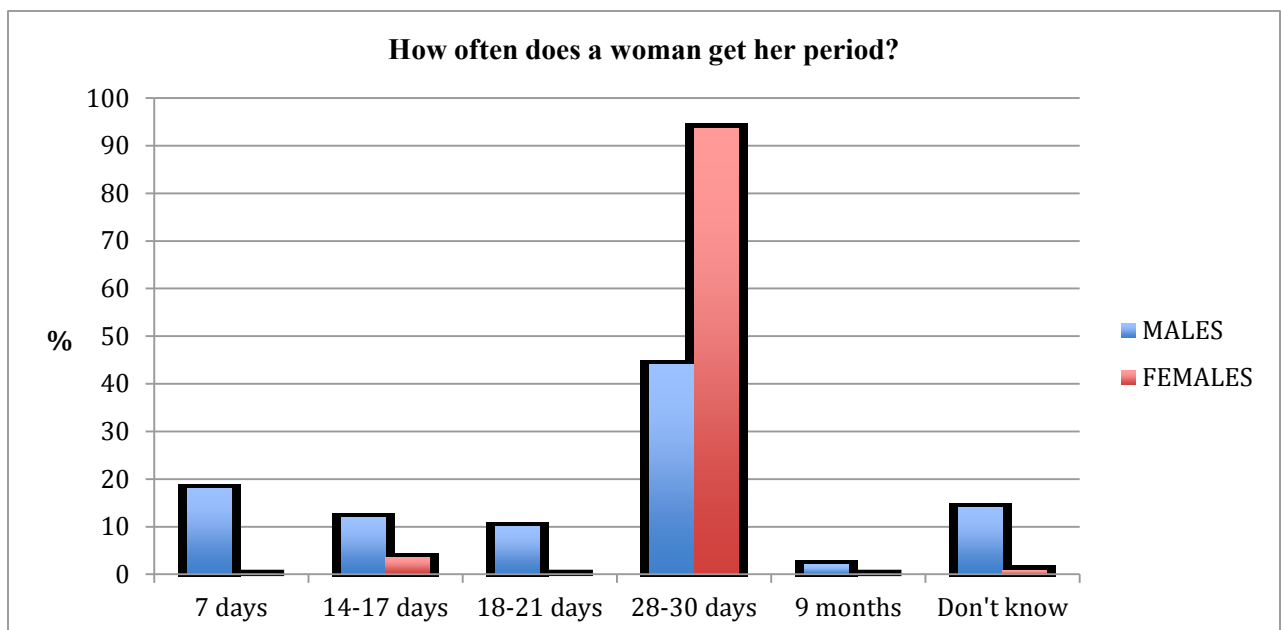
Figure 1: Total Knowledge Score Comparison between Men and Women for Total Sample



Family Planning and Pregnancy

More men than women (56% vs. 28%) know that a woman can get pregnant on her period, though both responded "don't know" approximately equally often. More women than men (63% vs. 46%) know that a woman can get pregnant the first time she has sex. Women also responded "don't know" more frequently (16% vs. 10%). More men (80%) than women (67%) know that alcohol is harmful for a fetus, though women responded "don't know" more frequently (10% vs. 2%). Slightly more men (82%) than women (74%) know that smoking is harmful for a fetus, though women responded "don't know" more frequently (5% vs. 0%). 93.7% of women correctly reported the length of a woman's menstrual cycle compared to 44% of men, with 14% of men responding "don't know" (*Figure 2*). Men and women correctly reported the length of a normal pregnancy with approximately equal frequency, with the mean response for men being 8.96 months compared to 8.82 months for women.

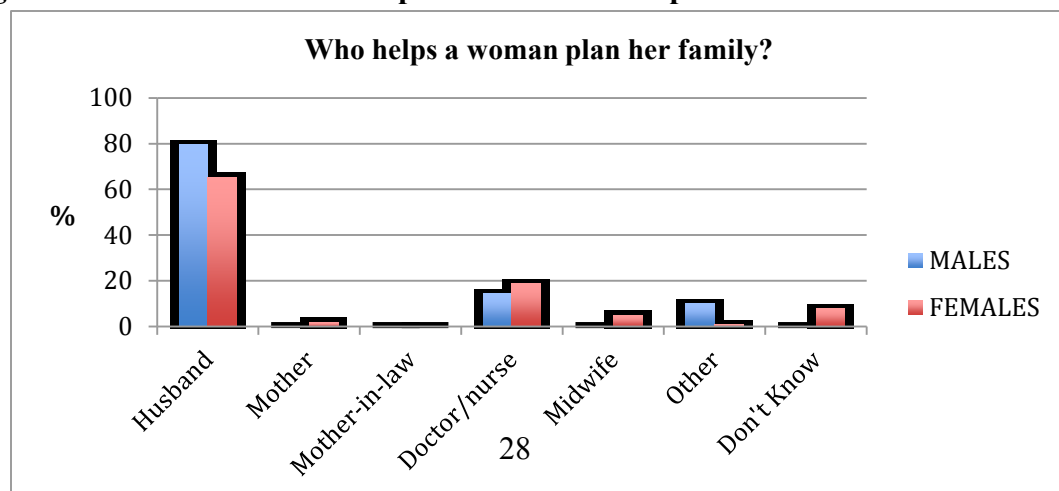
**Figure 2: Male and Female Responses to
“How Often Does a Woman Get Her Period?”**



More men than women (67.35% vs. 48.65%) reported that couples plan the number of children they will have, though 19.8% of women responded "don't know" compared to 2.0% of men. Men also more frequently reported that the husband helps a woman plan, while more women than men reported help from doctors, nurses, and midwives, though this result was not statistically significant. Men and women reported knowing enough about family planning methods with approximately equal frequency (64 vs. 68%). More men than women (86% vs. 73%) reported that their community needs more family planning knowledge, though 17% of women responded "don't know" compared to 4% of men.

Of the women surveyed, 44% reported having had at least 1 unplanned pregnancy, with the average number of unplanned pregnancy being 1.63. Notably, men rarely answered this question at all. Of the 6 men who answered this question, 4 reported having at least 1 unplanned pregnancy. More males than females reported contraceptive use at the time of the study, with 73.47% of men reporting that they currently use condoms and 4.08% reporting that they have used them in the past. 54.63% of the women surveyed reported current contraception use. 65.35% of women and 73.47% of men surveyed reported that a woman's husband is the person who most helps her plan her family, which was not statistically significant ($X^2 = 1.0004$, $p = 0.3172$)

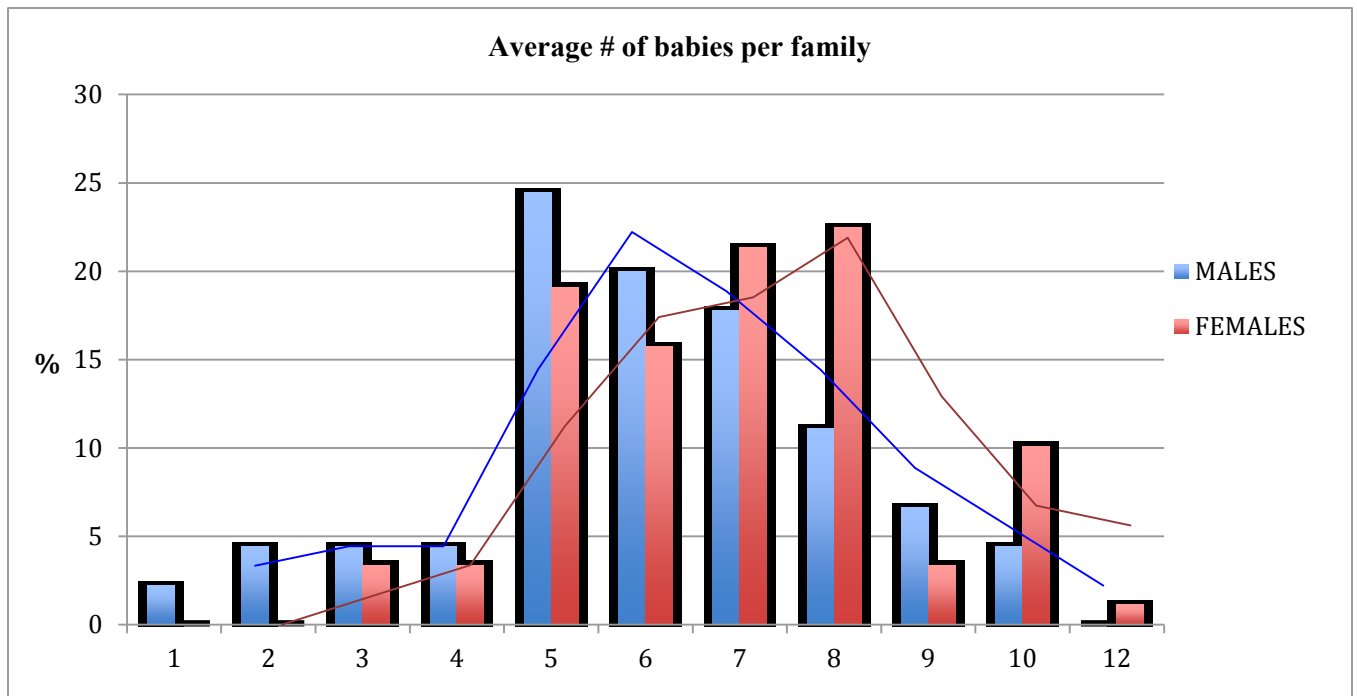
Figure 3: Male and Female Responses to “Who Helps a Woman Plan Her Family?”



Pregnancy Outcomes

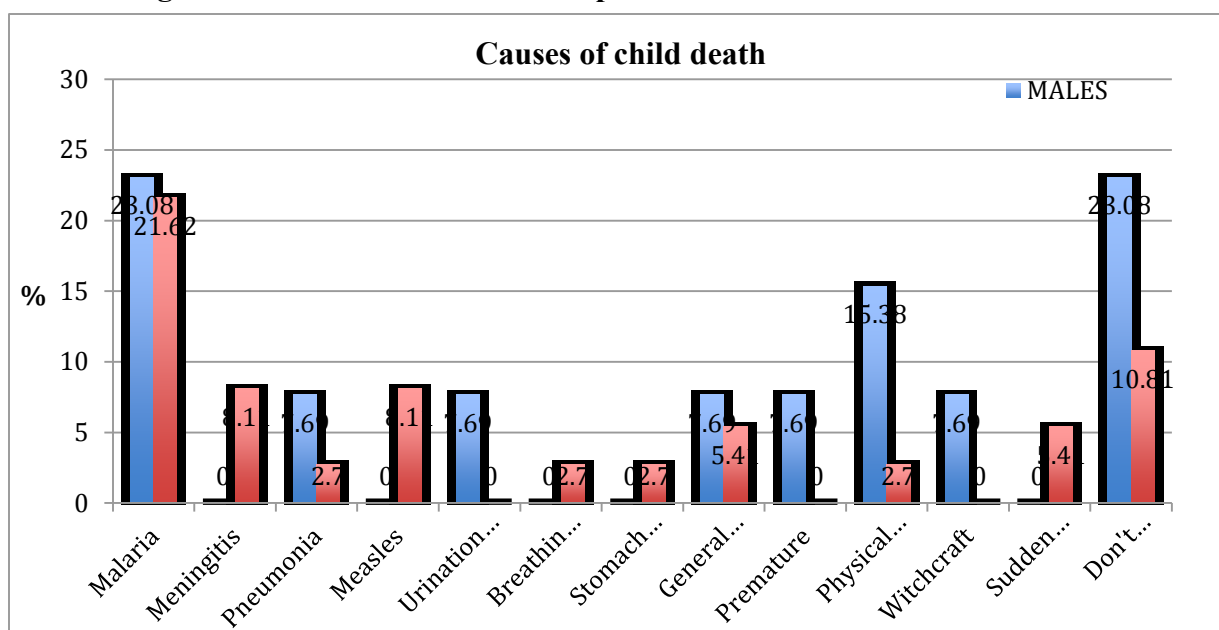
When males and females were asked to estimate the number of children born to the average woman in his or her community, men reported an average of 5.93 (SD = 1.99, range 1-10) children per family, while women reported an average of 6.88 (SD = 1.83, range 3-12), a difference that was statistically significant ($t = 2.74$, $p = 0.0070$). Women also responded "don't know" more frequently, approximately 19.8% of the time compared to 0% of male respondents (*Figure 4*). 77.50% of the total sample reported that women have babies every 1-2 years. Women and men reported that women in their village have children every 1-2 years with approximately equal frequency, 81% of the time compared to 72% of men surveyed ($X^2 = 2.0517$, $p = 0.1520$). No woman claimed that normal spacing was greater than every 3-4 years, while 2% of men did. Both males and females reported "don't know" with approximately equal frequency. Slightly more men than women (50% compared to 43%) reported that they knew a woman who had more babies than she wanted, ($X^2 = 1.0761$, $p = 0.5839$).

Figure 4: Average Number of Babies per Family by Male and Female



Many more women reported pregnancy problems than males, with 59% of women reporting problems during their own pregnancies. Only 13.64% of men, however, reported that their wives had experienced problems during pregnancy, with an additional 4.55% reporting "don't know". 15.44% of the sample reported having babies die before they were born, of which 76.19% of the respondents were female compared to 23.81% of men (with only 2/3 of the men responding to this question). An additional 6.9% of men responded "don't know", while none of the women surveyed reported that they were unsure about previous miscarriages. More men than women also reported that previously have had lost a baby after birth.. Only 60% of the men responded to this question, but of that number, 46.67% of men reported having lost a child, vs. 36.19% of women. Given the number of men who did not respond to this question, the results must be considered only in general terms. The notable finding is that in the combined sample of men and women, 38.52% reported having lost babies after they were born. The most commonly reported cause of death for both men and women was malaria (23.08% and 21.62%), though men responded "don't know" with the same frequency (23.08%) (*Figure 5*).

Figure 5: Causes of Child Deaths per Males and Females



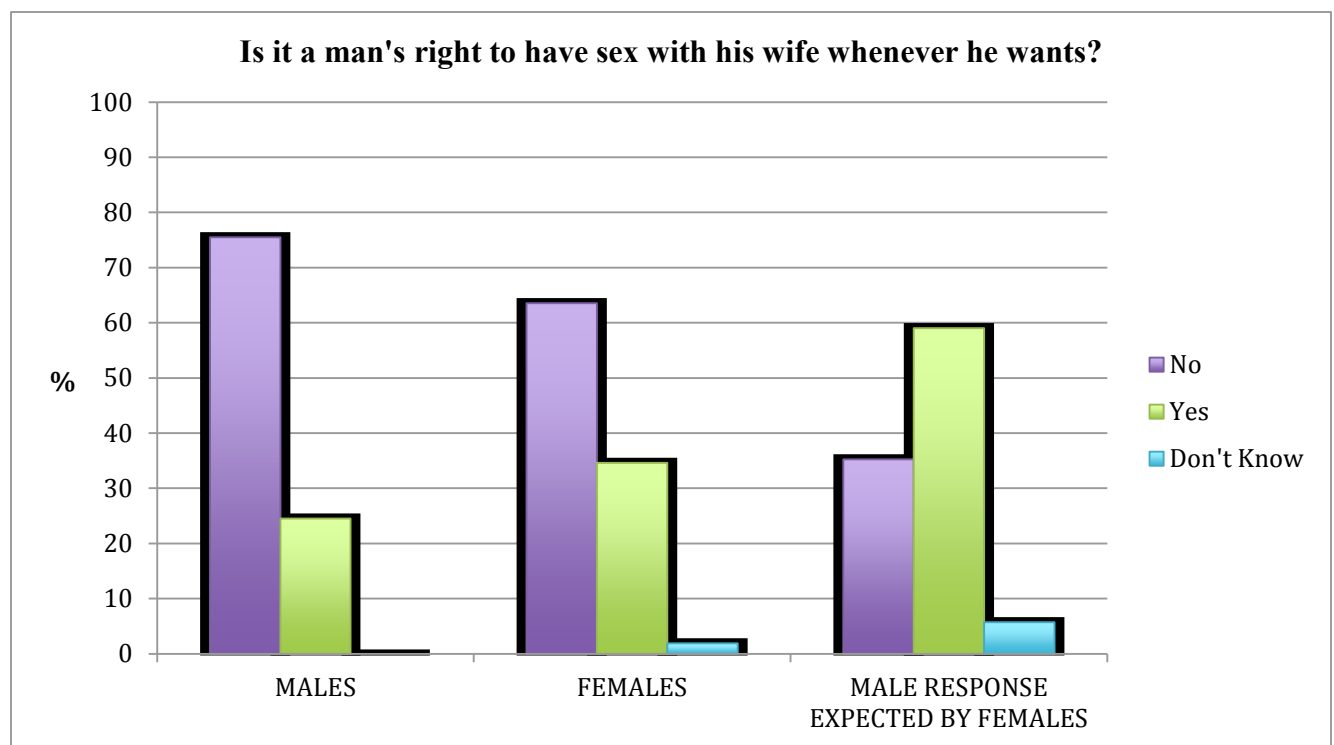
HIV/AIDS Transmission and Prostitution

When asked to list ways that a person could possibly contract HIV, 84.09% of men correctly listed a method of transmission. Only 17.86% of women, however, correctly listed a way in which HIV is transmitted. The most common means of transmission reported by both males and females was a sexual encounter with an infected person. The next most commonly modes of transmission mentioned by men were razor blades and syringes. Women, on the other hand, mentioned breastfeeding, followed by razor blades and blood transfusions. Similarly, 86.36% of men could correctly list a means of HIV prevention compared to 8.04% of women. Both men and women most commonly listed protected sex or condom usage as the best means of HIV prevention, followed by abstinence. Men's next most common response was monogamy, while women listed avoiding sharp objects and/or razorblades next most often. Some men but no women listed prostitution as a means of contracting HIV as well as avoiding prostitution as a means of preventing HIV infection.

Forced Sex

When asked the question, “Have you ever given or received money/goods in exchange for sex?”, 4.95% of women responded yes compared to 14.58% of men. 100% of men surveyed say that forced sex is not okay, while 5% of women say that it is okay and 4% replied don't know. 73% of women reported that attitudes differ regarding forced sex. More women than men reported that it is a man's right to have sex with his wife whenever he wants (35% vs. 25%), though women anticipated that men would be more likely (59%) to claim it *is* his right (*Figure 6*). Only 2.4% of men reported ever having forced a woman to have sex, while 22.73% of women reported that they have been forced to have sex in the past.

Figure 6: Male and Female Responses to “Is it a Man’s Right to Have Sex with His Wife Whenever He Wants?”



CHAPTER SIX

Discussion

Reproductive Health Knowledge Scores

This self-report of 112 Luo women and 50 Luo men found that, though Luo women are regarded as the essential source of all health information for their community, only 8% of women had even a basic knowledge of reproductive health, in surprising contrast to 36% of the men. Mean knowledge scores were found to be 5.70 (SD = 1.329, range 3-8) for males and 4.375 (SD = 1.465, range 1-8) for females. This finding does not support the primary hypothesis that women have more overall knowledge of reproductive health. A secondary findings that was particularly surprising is that many more men than women (56% vs. 28%) knew that a woman can get pregnant on her period. However, many more women than men (93% vs. 41%) knew how many times a month a women gets her period. It is unclear, therefore, whether or not the men's knowledge that a woman can get pregnant on her period would lead to better family planning.

The largest part of the gap in knowledge scores is related to the discrepancy in knowledge regarding HIV prevention and treatment. Regarding individual knowledge questions, this was the one area in which men were anticipated to have slightly more knowledge, according to the Kenya Demographic and Health Survey (DHS) of 2008-2009. This was also the area in which the greatest discrepancy between male and female knowledge exists (86% v. 8%), although this difference is much greater than what was

suggested by the literature. A possible explanation for this gap in knowledge is the emphasis on condoms as a means of HIV/AIDS prevention, placing the greatest burden of HIV/AIDS prevention on men. This is an area of great concern in light of Kenya's extremely high HIV prevalence, 13.9% in the Nyanza province in which this study was conducted.

Family Planning

Approximately half of all women and men reported that they knew a woman who had more children than she wanted, and 55% of our sample reported having one or more unintended pregnancies. This finding highlights the large unmet need for family planning in this community. More men than women (67% vs. 49%) reported planning their families, which is contrary to our hypothesis. Though this study did not assess which kind of family planning method was most used, the literature does suggest that slightly more women than men use family planning, with injectable birth control being the most commonly used method among these women. A possible explanation for the results of this study differing from what was anticipated is a lack of access to injectable birth control among women in this community. Injectable birth control is often preferred by women in communities in which they wish to keep their birth control use a secret from spouses or partners who do not approve of family planning, due to a desire to have more children or other cultural reasons.

When asked to estimate the average number of children per family, men reported a mean number of children of 5.93 (SD=1.99, range 1-10) while women reported a mean of 6.88 (SD=1.83, range 3-12), a difference that was statistically significant. Women also

reported slightly less spacing between children than men, though 77% of our entire sample stated that a woman gives birth every 1-2 years. This differs from our hypotheses that men and women will report an equal average number of children and average spacing of pregnancies. The true mean births per woman in Kenya is 5.2 in rural areas, with the median birth interval being thirty-three months. Studies have shown that women with a greater number of pregnancies as well as those with spacing of less than twenty-four months have a greater risk of complications. Indeed 15% of women surveyed reported having had at least one miscarriage, and a third reported having lost at least one child. According to the DHS, the average desired number of children is four for both men and women, but this was not something we assessed in these data and could be a topic for future studies.

Forced Sex

This study produced somewhat conflicting results regarding what is considered forced sex in the community. All of the men surveyed stated that forced sex is not okay, however 25% reported that it is okay for a husband to have sex his wife whenever he wants, along with 35% of women. In addition, only 2% of men reported having ever forced a woman to have sex, while 23% of women report having been forced to have sex. This is possibly explained by the stigma associated with forced sex causing men to underreport their involvement. This evidence of a breakdown in communication could be a potential barrier to promoting sexual health and family planning.

Limitations of Study

A potential source of error in this study is the stigma associated with the discussion of many of these sensitive topics. Men and women may especially underreport HIV/AIDS, contraception usage, and involvement in forced sex. An additional source of bias is that the data were self-reported through the use of an interpreter. Sample size was likely the greatest limitation of this study, particularly in assessing the male data.

Conclusion

East Africa carries a high burden of unplanned pregnancy compared to the rest of the world. The Luo tribe of western Kenya additionally faces the highest rates of adolescent pregnancy, infant mortality, maternal mortality, and HIV transmission in Kenya. This region also claims the highest unmet need for family planning globally, and, even where family planning services are available, they remain underutilized. Both men and women stated that husbands and wives primarily consult one another in order to make family planning decisions, however they were also found to have discordant cultural beliefs regarding appropriate family size, family planning methods, forced sex, and HIV/AIDS prevention.

This study identified a lack of communication between men and women as a potential explanation for the lack of knowledge, as it was not affected when stratified by level of education. Among women, educational initiatives heavily targeting HIV/AIDS prevention and treatment would be the most beneficial, with basic reproductive knowledge about her body being important as well. Overall, these findings highlight the

complexity of implementing change in sexual and reproductive health behavior in traditional, resource-poor communities, and future initiatives will need to address both a lack of knowledge and differing cultural beliefs among men and women. With an integration of men and women in reproductive health education, we can anticipate direct, positive effects on the population as a whole for decades to come.

APPENDIX

ADDITIONAL METHODOLOGY

Males

Sample Size

Sample size was calculated using statistical information and an effect size was approximated. Alpha was set at 0.05 while beta was set at 0.20 in order to minimize the chance of random error. The study was conducted with a slightly lower number of participants than expected. However, the data collected still proves useful as a pilot study in the community.

Training Protocol

Numerous documents were prepared to assist and train the researchers in providing strong interview technique. Tips for the Interviewer, a fact sheet detailing the objectives of the study, a document detailed tips for Beginning the Interview, and a guide for properly conducting the interview were included in the Interview Guide (see Appendix). These documents assisted in training students to participate as researchers in the study and gave them the required knowledge to collect reliable data, to obtain the necessary consent, and to ensure a welcoming atmosphere for those participating in the study

The Interview

Fifty interviews were conducted in homes or in public locations over approximately a one-week period from May 17 to May 25, 2012. Interviews were 20 conducted by trained researchers and lasted approximately 30-45 minutes each. Researchers travelled with a translator to various predetermined villages. The translator, in collaboration with the researchers, invited men to participate whom they encountered as they traveled by walking throughout the Plateau, continuing until they had interviewed fifty men. After informed consent was obtained, a nearby private location was located where information could be collected in a confidential manner. All questions were asked through the translator, and the interviewer recorded answers.

Data Analysis

Data was entered into Microsoft Excel by Captricity, Inc., a company specializing in data entry. All variables underwent a thorough check for errors and were corrected, if necessary. Data management, descriptive analyses, and statistical testing were performed using SAS Version 9.3 (SAS Institute Inc., Cary, North Carolina, USA). Univariate analysis included frequencies and percentages for discrete variables and mean, standard deviation, and range for continuous variables. Bivariate analysis 21 included chi-square testing for associations between discrete variables and t-tests for normally distributed continuous variables. Multivariate analysis consisted of logistic regression analysis, multiple regression, and analysis of

variance. Alpha (α) was set at 0.05. Odds ratio values were given with a 95% confidence interval.

IRB

This study was approved by the Baylor University Institutional Review Board in April 2012. Data obtained by the survey included no personal identifiers. Age, gender, education status, and family information did not uniquely identify any of the participants.

Females

Conducting the Interviews

Baylor University students taking part in the Straw to Bread annual medical/public health mission trip conducted the interviews for this study. The students communicated with the Kenyan women through the use of female translators. Each translator was chosen by the on-site project coordinator for her level of education and ability to communicate in English. The on-site project coordinator for this study was Habil Ogola, a local leader and member of the Luo community on the Nyakach Plateau. A total of 112 questionnaires were completed through interviews with women in central locations in six different villages. The following villages were included in this study: Kadero, Katieno, Komoro, Naki, Ramogi, and Soko. Surveys were also completed through interviews conducted at the temporary clinic, which is set up by Dr. Lisa Baker and the medical mission team.

Each village has a different number of surveys completed for this study due to weather and the number of consenting women. Before students were approved for the interview process, they were trained using an Interview Guide, which included tips for the interviewer (Appendix). These materials, put together by the principal investigators, were used to relay to the interviewers ways in which to develop comfortable settings for the participants. In addition, interviewers were taught the importance of separating the signed consent forms from the completed surveys. In order to work well with village officials and translators, a schedule was determined ahead of time in regards to when and where the interviewers would meet with the participants. Interviewers and participants were paired into groups of two and relocated to a secluded area in order to maintain the confidentiality of the participant's responses.

Before beginning an interview, the interviewer explained the purpose of the survey and consent form. If the individual did not decide to participate in the interview, the interviewer thanked her and moved on to another woman in the village. However, if the individual did consent to participate in the interview, the consent form was signed and placed in a separate folder. At any time during the interview, which was approximately 30 minutes in duration, the participant was given the option to skip questions she did not want to answer. In addition, she was also able to bring the interview to a complete stop. Once the interview was complete, the survey was placed in an unmarked folder in order to preserve the anonymity of the participant. Each participant was also encouraged to contact the on-site project coordinator if questions arose following the interview. The women

who participated in the surveys were thanked for their time and responses. The project was approved by the Baylor University Institutional Review Board.

The Survey

The instruments, or surveys, utilized for data collection in this study employed questions that were based on the questions in the Kenya 2010 survey. This previous survey was developed with Dr. Eva Doyle and the work of Ami Bouassa Semalon, *Healthcare in Sub-Saharan Africa: A Needs Assessment for a Medical Clinic in Rural Kenya* (2010). Information regarding violence was gathered from WHO and the 2006 Kenya DHS. These sources helped to guide the surveys into gathering more information involving sexual violence in the form of forced sex. The survey used to gather data presented many questions to the participating women in a straightforward manner. These questions resulted in yes or no answers. Other questions provided room for open-ended responses in that the women were able to describe thoughts or situations. While certain questions were geared toward each participant's private life, others attempted to gain insight into the viewpoints the participant had regarding her community as a whole. Such questions helped to provide a basic summary of the common outlook on reproductive health held by members of the community. As a whole, the survey questions addressed the following topics: demographics, general health, knowledge of reproductive health, family planning, and forced sex.

Data Analysis

Each trained interviewer used the Interview Chart to conduct each individual interview and to fill in the corresponding responses on the surveys (Appendix). In addition, open-ended questions were analyzed to identify themes and common responses. Each survey response was double entered into Excel, using a codebook created by the principal investigator. The database was then checked for discrepancies and transferred into SAS version 9.3, which was then used for the quantitative analysis. Descriptive statistics were based on frequencies of all the variables that were calculated with univariate analysis to determine the central tendency, range, and standard deviation of each distribution. In order to conduct data analysis, the study used the results of the survey questions to create specific variables using the following methods:

Knowledge of Reproductive Health: This variable was based on nine separate questions in the original survey regarding reproductive health. If a woman answered a question correctly, one point was given. The points were totaled for a possible score ranging from 0 to 9.

Forced Sex: Several questions were asked to determine the extent, perpetrator, and context in which women perceived themselves to have been forced to have sex. This self-reporting hinges on a woman's own definition of whether she has been forced and does not specify particular behaviors. In addition to asking a woman if she has been forced, another question was included that asks if a woman has been physically forced in order to distinguish between threats other than physical that a woman might perceive as forcing her to comply. All of the questions

regarding behaviors and attitudes surrounding the concept of forced sex can be found in the Appendix, questions 52-71.

Bivariate and multivariate analysis was done to test relationships between variables. The Chi square statistic was used for discrete variables, and Pearson's correlation was used for continuous variables. The t test and analysis of variance was used to test differences between means in groups of two or more variables, respectively. Logistic regression was used to analyze the relative contribution of variables to the "forced sex" variable and to control for confounders. Alpha was set at .05.

Interview Guide

Kenya 2011/2012

Interviewer's Introduction

1. Hello, my name is....
2. I am with Baylor University.
3. We want to learn more about your health and the health of the village. We interviewed many women last year and now need to know some more information to be better able to understand your health.
4. May we ask you a few questions?
5. This should only take about 30 minutes of your time.

Informed Consent Form

1. I brought a copy of a form that explains why I am interviewing you today. It is called a "consent form."
2. I am going to read the form to you so that you can ask questions.
3. Then, if you are willing to let me interview you, I will ask you to sign the form.
4. [Cover informed consent form with the participant. Answer questions that arise. Get their signature on the form. Place it in a folder that is separate from the *Interview Chart* you will complete.]
5. Thank you for signing the consent form.

Explain Interview Process

1. I have a form or paper guide (*Interview Chart*) that I will use to ask you questions and record your answers.
2. I will not place your name on this paper. It will only have my name on it and today's date.
3. But I do need to ask you a few questions (for example, your age, the number of people in your household) so that we can understand more about the group of women we are interviewing.
4. Let's begin with those questions.
5. Don't forget that, for any question, you can say "I don't know" or just ask me to skip that question and I will skip it. And, we can stop this interview at any point if you wish to do that.
6. Are you ready? Let's begin.

[Use *Interview Chart* to ask and record answers. When finished, thank participant, and leave. See "*Tips for the Interviewer*" on the next page for useful tips to use during the interview.]

Individual Interview Guide

Tips for the Interviewer

1. *Body language matters!*
 - a. Relax. Breathe deeply. (It will help you relax.)
 - b. Adopt an “open stance” in body posture
 - i. Feet flat on floor, shoulders “relaxed-but-squared,” arms to side
 - ii. Avoid crossing arms, covering mouth, etc. (conveys disagreement).
 - c. Make appropriate eye contact. Include the whole group with eyes/stance.
 - d. Work on your facial expressions!
 - i. Smile and laugh when appropriate. But only laugh when *they* do.
 - ii. Convey interest and respect for what is being said.
 - iii. Encourage people to speak with appropriate head nods, eye contact, etc. But do not “over-do it.” (Nodding your head constantly can make you appear to be insincere.)
 - iv. Use open, pleasant, relatively-neutral facial expressions.
 1. Avoid looking surprised or judgmental as they speak.
 2. Breathe! A tense face may *appear* to be disapproving.
 3. Express empathy when appropriate, but avoid *all* strongly emotional expressions. (You can inadvertently influence responses.)
2. *Use an active listening process.*
 - a. Ask a question.
 - b. Turn toward/look at the person(s) speaking.
 - c. Listen first! (No writing yet! Use body language tips.)
 - d. Repeat back to them what you just heard *as* you begin to record it.
 - i. Example: “So, women in your village....(insert what they said)”
 - ii. Conveys that you value what they said and want to get it right. Also enhances data validity!
 - e. Record (write down) their response as they confirm it.
 - f. Then, ask the next question.
3. *Continually assure the participant(s).*
 - a. Treat participants as though they are partnering with you to gather important and interesting information about women in the village.
 - b. Insert occasional words of encouragement where they naturally fit throughout the interview. Examples:
 - i. This is useful/helpful information.
 - ii. Thank you for bringing that up.
 - iii. Very interesting! Thank you. This is important information.

Female Survey

INTERVIEW CHART

Date: _____ Interview #: _____		Interviewer: _____	Village: _____
I-Demographics: I'd like to begin with a few simple questions about you and others who live in your household.			
1-How old are you? (Write in) Age (years): _____	2- Are you married, single...? (check one) ___ single/ never married(1) ___ married(2) ___ divorced/separated(3) ___ widowed(4)	3-Are you currently living with your husband/partner? (check) ___no(0) ___yes(1)	
4-Do you have children? ___no (0) ___yes(1)→ ↓	5-How many children do you <u>have</u>? total number: _____	6-How many of your children <u>live</u> with you in your household? number: _____	
7-Did you <u>ever</u> study in a school? ___no (0) ___yes(1)→ ↓	8-Are you studying in a school <u>now</u>? ___no(0) ___yes(1)	9-What is the <u>highest</u> level of schooling you have completed? ___primary/elementary school(1) ___technical training(2) ___secondary school(3) ___university or trade school(4)	
II-General Health: Now, I would like to ask you some questions about your health.			
10-How is your health in general? Would you say it is...(read choices and check one) ___very good(5) ___bad(2) ___good(4) ___very bad(1) ___fair(3)	11-Have you had any of the following health problems over the past 12 months? (Read choices and check all that apply) ___breathing problems(1) ___diarrhea(2) ___pain when urinating(3) ___typhoid(4) ___vaginal discharge(5) ___malaria (6) ___worms or amoebas(7) ___sickle cell(8)	12-Have you ever had vaginal discharge? ___no(0) ___yes(1) ___not sure(99) If so, how long did you have this problem? Number of days: _____ If so, how often have you had this problem in the past year? ___once (1) ___twice (2) ___three or more times (3)	
13- Have you ever had sores in your genital area? ___no(0) ___yes(1) ___not sure(99) If so, how long did you have this problem? Number of days: _____ If so, how often have you had this problem in the past year? ___once (1) ___twice (2) ___three or more times (3)	14-Have you ever had warts in your genital area? ___no(0) ___yes(1) ___not sure(99) If so, how long did you have this problem? Number of days: _____ If so, how often have you had this problem in the past year? ___once (1) ___twice (2) ___three or more times (3)	15- Have you ever had pelvic pain while you were pregnant? ___no(0) ___yes(1) ___not sure(99) If so, how long did you have this problem? Number of days: _____ If so, how often have you had this problem in the past year? ___once (1) ___twice (2) ___three or more times (3)	
16- Have you ever had pelvic pain while you were not pregnant? ___no(0) ___yes(2) ___not sure(99) If so, how long did you have this problem? Number of days: _____ If so, how often have you had this problem in the past year? ___once (1) ___twice (2) ___three or more times (3)	17-Have you ever been tested for HIV/AIDS? ___no(0) ___yes(1) ___not sure(99) Have you ever tested positive for HIV/AIDS? ___no(0) ___yes(1) ___not sure(99) If you have tested positive, have you ever received treatment? ___no(0) ___yes(1) ___not sure(99)	18-Has your husband/partner ever tested positive for HIV/AIDS? ___no(0) ___yes(1) ___not sure(99) If he tested positive, has he received any treatment? ___no(0) ___yes(1) ___not sure(99)	
19-In What month and year was your last HIV test? Write in: _____	20-Have you ever used intravenous drugs? ___no (0) ___yes(1) ___not sure(99)	21-Have you ever eaten things that weren't food? ___no (0) ___yes(1) ___not sure(99)	
22-How many times have you been to the local clinic in the last year? Number: _____	23-Did you go to the church last summer when the group came and set up a clinic with Mama Lisa? ___no (0) ___yes(2) ___not sure(99)	24- Did you participate in the survey last year about reproductive health? ___no (0) ___yes(1) ___not sure(99)	

III-Knowledge: I'd like to learn more about the things you know about health. I'm going to ask you some questions. If you don't know the answer, it is okay to say so. We hope to find ways to help people in the village know more about this information in future. But it is still okay to say "I don't know."

25-How many times per month does a woman normally get her (menstrual) period? <i>Write in:</i>	26-Can a woman get pregnant during her period? __no(0) __yes(1) __don't know (99)	27-Can a woman get pregnant the first time she has sex? __no (0) __yes(1) __don't know (99)
28-During which part of a woman's menstrual cycle is she most fertile (more likely to get pregnant)? during her period (1) right before her period (2) right after her period (3) in the middle of her cycle/ ovulation (4)	29-How long does a normal pregnancy usually last? <i>Number of months:</i>	30-Is it bad for the baby if a pregnant woman drinks alcohol during pregnancy? __no(0) __yes(1) __don't know (99)
31-Is it bad for the baby if a pregnant woman smokes during pregnancy? __no(0) __yes(1) __don't know (99)	32-Name some ways that people can get HIV/AIDS. <i>Write in:</i>	33-Name some ways that people can protect themselves from getting HIV/AIDS. <i>Write in:</i>
IV-Family Planning: We would like to know more about how women in your village plan their families. If you don't know the answer you can say you don't know. And you can skip the question if you don't want to answer it.		
34-At what age did you marry? <i>Ages :</i>	35- At what age did you have each of your babies? <i>Ages:</i>	36- Have you ever wanted to get pregnant but were unable to? __no(0) __yes(1) __don't know (99)
37-Have you ever had problems with a pregnancy? __no(0) __yes(1) __don't know (99)	38-If you had any problems during pregnancy, what were they? <i>Write in:</i>	39-Have you ever had babies die before they were born? __no(0) __yes(1) __don't know (99)
40-If you have lost any babies (before they were born), what caused their deaths? <i>Write in:</i>	41- Have you ever had any children die after they were born? __no(0) __yes(1) __don't know (99)	42- If so, how old were they? <i>Ages:</i>
43-If so, what were the causes of their deaths? <i>Write in:</i>	44-How many total children have you lost? <i>Write in:</i>	45-Do women in the village usually plan the number of babies they want to have? __no(0) __yes(1) __don't know (99)
46-Who usually helps a woman in your village decide how many babies she will have? (check all that apply) husband(1) mother-in-law(2) mother(3) doctor/nurse(4) in-law(5) don't know(99) other(5)→	47-How many babies do women in the village usually have? <i>Write in:</i> don't know(99)	48-How often do they have babies? every 1-2 years(1) every 3-4 years(2) every 5 or more years(3) don't know(99) other(5)→
49-Do you know someone who has had more babies than she wanted? __no(0) __yes(1) __don't know (99)	50-Have you had any unplanned pregnancies? no(0) __yes(1) __don't know(99)	51- If so, how many unplanned pregnancies have you had? <i>Number:</i>
52-Have you ever been forced to have sex? __no(0) __yes(1) __don't know (99)	53- If so, how many times have you been forced to have sex? <i>Number:</i>	54- How often are you forced to have sex? daily (1) weekly (2) monthly (3) rarely (4)
55- How many people have forced you to have sex? <i>Number:</i>	56- What is your relationship to the person who is forcing you to have sex? (check all that apply) husband (1) father/brother (2) someone you know (3) someone you don't know (4)	57- How many of your pregnancies have resulted from forced sex? <i>Number:</i>

58- When was the first time you were forced to have sex? Age: _____	59- Can you describe the situation in which you were first forced to have sex? <i>Write in:</i>	60-Did someone ever physically overpower you and force you to have sex? ___no(0) ___yes(1) ___don't know (99) If yes, were you injured? ___no(0) ___yes(1) ___don't know (99)
61-Has anyone ever made you feel you had sex without physically making you? ___no(0) ___yes(1) ___don't know (99)	62- How common of a problem do you think forced sex is? ___ not common (0) ___ very common (1) ___ don't know (99)	63-Would you like forced sex to end? ___no(0) ___yes(1) ___don't know (99)
64-Are there differing opinions about forced sex? ___no(0) ___yes(1) ___don't know (99)	65- Do you feel it is your husband's right to have sex with you whenever he wants? ___no(0) ___yes(1) ___don't know (99)	66- Does your husband feel it is his right to have sex with you whenever he wants? ___no(0) ___yes(1) ___don't know (99)
67-Do you know anyone else who has been forced to have sex? ___no(0) ___yes(1) ___don't know (99)	68-Do you know if your mother was ever forced to have sex? ___no(0) ___yes(1) ___don't know (99)	69-Is there anything you think we can do to help prevent forced sex? ___no(0) ___yes(1) ___don't know (99) If so, what? <i>Write in:</i>
70- Do you tell anyone that you have been forced to have sex? ___no(0) ___yes(1) ___don't know (99)	71- If so, who did you tell? ___ mother (1) ___ friend (2) ___ sibling (3) ___ adult you trust (4) ___ other (5) <i>Write in :</i>	72- Have you given or received money or goods in exchange for sex? ___no(0) ___yes(1) ___don't know (99)
73- Have you ever used a scientific method of birth control? ___no(0) ___yes(1) ___don't know (99)	74- If so, which methods?(check all that apply) ___ pill (1) ___ shot (2) ___ condom (3) ___ patch (4) ___ coil/IUD (5)	75- Are you currently using birth control? ___no(0) ___yes(1) ___don't know (99)
76- If so, which method? (check all that apply) ___ pill (1) ___ shot (2) ___ condom (3) ___ patch (4) ___ coil/IUD (5)	77-Do you think women in your village know enough about family planning methods to be able to take care of themselves? ___no(0) ___yes(1) ___don't know (99)	78-Is there anything women in the village need to know to be able to better plan their families? ___no(0) ___yes(1) ___don't know (99)
79- If so, what? <i>Write in:</i>	80- Can you name all the methods you've heard about for preventing pregnancy? <i>Write in:</i>	81- Of the ones you' named (in #65), which ones would you be most comfortable using? Rank them from most to least comfortable. <i>Write in:</i>

Interviewer Comments

That's all the questions I have for you. Thank you for answering them.

[Note from researcher: insert statement here about next steps or ways in which the participant can get more information. For example: "We will be using this information to learn more about how to help people in the village with their health. If you have any questions about this, please come visit us at the clinic."]

Male Survey

QUESTIONS FOR MALES 14 YEARS OR OLDER:

Date: _____ Village: _____ Interviewer: _____ ID : _____

I- Community Health Assessment Profile (CHAP) Form

II-General Health

1-Have you ever had pain when urinating? ___ Yes (1) ___ No(0) ___ Don't Know(99) 1a-If so, how long did you have this problem? Number of days: _____ 1b-If so, how often have you had this problem in the past year? ___ once (1) ___ twice (2) ___ three or more times (3)	2-Have you ever had penile discharge? ___ Yes (1) ___ No(0) ___ Don't Know(99) 2a-If so, how long did you have this problem? Number of days: _____ 2b-If so, how often have you had this problem in the past year? ___ once (1) ___ twice (2) ___ three or more times (3)	
3- Have you ever had sores in your genital area? ___ Yes (1) ___ No(0) ___ Don't Know(99) 3a-If so, how long did you have this problem? Number of days: _____ 3b-If so, how often have you had this problem in the past year? ___ once (1) ___ twice (2) ___ three or more times (3)	4-Have you ever had warts in your genital area? ___ Yes (1) ___ No(0) ___ Don't Know(99) 4a-If so, how long did you have this problem? Number of days: _____ 4b-If so, how often have you had this problem in the past year? ___ once (1) ___ twice (2) ___ three or more times (3)	5-Have you ever used intravenous drugs? ___ Yes (1) ___ No(0) ___ Don't Know(99) 5b-If so, how often have you used them in the past year? ___ once (1) ___ twice (2) ___ three or more times (3)

III-Knowledge and Viewpoints

6-Can a woman get pregnant during her period? ___ Yes (1) ___ No(0) ___ Don't Know(99)	7-Can a woman get pregnant the first time she has sex? ___ Yes (1) ___ No(0) ___ Don't Know(99)	8-Is it bad for the baby if a pregnant woman drinks alcohol during pregnancy? ___ Yes (1) ___ No(0) ___ Don't Know(99)
9-Is it bad for the baby if a pregnant woman smokes during pregnancy? ___ Yes (1) ___ No(0) ___ Don't Know(99)	10-How often does a woman normally get her (menstrual) period? <i>Write in:</i> _____	11-During which part of a woman's menstrual cycle is she most likely to get pregnant? <i>Write in:</i> _____
12-Name some ways that people can get HIV/AIDS. <i>Write in:</i> _____	13-What are some ways that people can protect themselves from getting HIV/AIDS. <i>Write in:</i> _____	14-How long does a normal pregnancy usually last? <i>Write in:</i> _____ months
15-At what age do men usually marry? <i>Age :</i> _____	16-Do men in the village usually wait until after they are married to have a baby? ___ Yes (1) ___ No(0) ___ Don't Know(99)	17-At what age do women in the village usually start having babies? <i>Age :</i> _____
18-How many babies do families in the village usually have? <i>Write in:</i> _____ don't know(99)	19-How often do they have babies? ___ every 1-2 years(1) ___ every 3-4 years(2) ___ every 5 or more years(3) ___ don't know(99) ___ other(9)→	20-Do men in the village usually plan the number of babies they want to have? ___ Yes (1) ___ No(0) ___ Don't Know(99)
21-Who usually helps a woman in your village decide how many babies she will have? (check all that apply) ___ husband(1) ___ mother-in-law(2) ___ mother(3) ___ doctor/nurse(4) ___ midwife(5) ___ don't know(99) ___ other(9)→	22-Do you know someone who has had more babies than she wanted? ___ Yes (1) ___ No(0) ___ Don't Know(99)	23-Do men and women usually agree about how many babies they should have? ___ Yes (1) ___ No(0) ___ Don't Know(99)

24-Have you had any unplanned pregnancies? If so, how many? ___Yes (1) ___No(0) ___Don't Know(99) 24a-Number: _____	25-When a woman becomes pregnant and doesn't want to have the baby, what usually happens? ___Has abortion(1) ___Has baby anyway(2) ___Women always want the baby (3) ___don't know(99)	26-How often do women in the village have abortions? ___never(1) ___don't know(99) Every: ___1-2 years(2) ___3-4 years(3) ___5 or more years(4)
27-Where do they go to have abortions? ___hospital (1) ___do it at home (2) ___don't know(99) ___other(9)→ _____	28-Who helps them with the abortions? ___husband(1) ___mother-in-law(2) ___mother(3) ___doctor/nurse(4) ___midwife(5) ___don't know(99) ___other(9)→ _____	29--Do you think the abortions are generally safe? ___Yes (1) ___No(0) ___Don't Know(99)
30-Do you know someone who had problems because of or after an abortion? ___Yes (1) ___No(0) ___Don't Know(99)	31-If so, what type of problems did she have? <i>Write in:</i> _____	32-Is it common for women in the village who have abortions to have problems? ___Yes (1) ___No(0) ___Don't Know(99)
33-What do people in the village think about a woman having an abortion? ___accept it(1) ___disapprove(2) ___Other(3)→ _____	34-Would you consider encouraging your wife/partner to have an abortion? ___Yes (1) ___No(0) ___Don't Know(99)	35- Do women in the village have a lot of knowledge about what happens inside their bodies when they menstruate or get pregnant? ___Yes (1) ___No(0) ___Don't Know(99)
36- How do men in the village usually learn about how their bodies work? ___do not learn(1) ___school/teachers(2) ___other men(3) ___doctors/nurses(4) ___wives(5) ___I don't know(99) ___other(9)→ _____	37-Is it common for men in the village to talk about these things? ___Yes (1) ___No(0) ___Don't Know(99)	38-What do you think would happen if men in the village knew more about how their bodies work? Would it change anything about their lives? ___Yes (1) ___No(0) ___Don't Know(99) <i>OR write in:</i> _____
39-Would having a greater knowledge about their bodies affect men's health in any way? ___Yes (1) ___No(0) ___Don't Know(99)	40-Do you think you know enough about family planning methods to be able to use them to prevent pregnancy? ___Yes (1) ___No(0) ___Don't Know(99)	50-Is there anything men in the village need to know to be able to better plan their families? ___Yes (1) ___No(0) ___Don't Know(99)
51-If so, what? <i>Write in:</i> _____	52-Do you believe circumcision can reduce HIV spread? ___Yes (1) ___No(0) ___Don't Know(99)	53-If you believe circumcision will reduce HIV, how effective do you think circumcision is? ___Help prevent HIV/AIDS but not completely(1) ___Will help prevent HIV/AIDS completely(2) ___don't know(99)
54-Do you believe circumcision is desirable for men? ___Yes (1) ___No(0) ___Don't Know(99)	55-In your opinion, is HIV a problem in your community/village? ___Yes (1) ___No(0) ___Don't Know(99)	56-Do you think HIV can be passed through having sex with someone? ___Yes (1) ___No(0) ___Don't Know(99)

57- Please name all the methods you've heard about for preventing pregnancy:

Write in:

V-Habits/Practices/Realities

58a- Are you circumcised?

___ Yes (1) ___ No(0) ___ Don't Know(99)

58b-Did you have any problems healing afterwards?

___ Yes (1) ___ No(0) ___ Not Circumcised(2)

If YES →

59-Why did you get circumcised? (Check all that apply)

- ___ Protect against HIV(1)
 ___ Protect against disease (Other than HIV) (2)
 ___ Custom/Tradition(3)
 ___ Other(9): _____

60- Did you have sex before you were circumcised?

___ Yes (1) ___ No(0)

If YES →

61-Before you were circumcised, did you use condoms during sex?

___ Yes (1) ___ No(0)

If YES →

62-Why did you use condoms during sex before you were circumcised?

- ___ Protect from HIV(1)
 ___ Protect from pregnancy(2)
 ___ Both(3)
 ___ Protect from disease other than HIV(4)
 ___ Other(9): _____

If NO →

63-Why did you not use condoms during sex before you were circumcised?

- ___ Do not like to use(1)
 ___ Do not have any(2)
 ___ Unable to get condoms(3)
 ___ Do not know how to use(4)
 ___ Do not believe in us(5)
 ___ Other(9): _____

If NO →

64- Why are you not circumcised? (Check all that apply)

- ___ Do not want to be circumcised(1)
 ___ Not allowed (family, culture, etc. are against it)(2)
 ___ No one available nearby to do it(3)
 ___ Other(9): _____

65a-Have you ever had sex? ☐ Yes (1) ☐ No(0) 65b-How many people have you had sex with? <i>(Write in)</i> _____	66a- If yes, about how many times a month do you have sex with your wife? <i>(Write in)</i> _____ ☐ Not married(99)	67- What do you believe condoms should be used for? ☐ Prevent HIV(1) ☐ Prevent pregnancy(2) ☐ Both(3) ☐ Prevent disease (non-HIV) (4) ☐ Other(9): _____
68- Do you currently use condoms during sex? ☐ Yes (1) ☐ No(0) ☐ Sometimes(2)	69- If yes, why do you currently use condoms? ☐ Prevent HIV(1) ☐ Prevent pregnancy (2) ☐ Both (3) ☐ Prevent disease (other than HIV) (4) ☐ Other(9): _____	70- (If patient uses condoms) Where do you get your condoms? Location: _____
71-Has your wife ever had problems with a pregnancy? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99)	72- If your wife had any problems during pregnancy, what were they? <i>Write in:</i> _____	73-Have you ever had any babies die before they were born? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99)
74-If you have lost any babies (before they were born), what caused their deaths? <i>Write in:</i> _____	75-Have you ever had any children die after they were born? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99)	76-If so, what were the causes of their deaths? <i>Write in:</i> _____
77-How many total children have you lost? <i>Write in:</i> _____	78-What do you use your money for? (Read choices and check all that apply) ☐ Food (1) ☐ Prostitutes(2) ☐ Alcohol(3) ☐ Healthcare(4) ☐ Housing(5) ☐ Cigarettes(6) Other(9): _____	79- Have you given or received money or goods in exchange for sex? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99)
80-Is it okay for a woman to refuse sex? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99)	81-Do you think it is a man's right to have sex with his wife whether she wants to have sex or not? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99)	82-Do you believe it is OK to physically force a woman to have sex if she doesn't want to? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99)
83-Have you ever physically forced a woman to have sex? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99)	84a-Have you ever had sex with another person who is not your wife? ☐ Yes (1) ☐ No(0) ☐ Don't Know(99) 84b-If yes, how often? ☐ several times a week(1) ☐ several times a month(2) ☐ several times a year(3) ☐ did often in the past, but not now(4) ☐ did rarely in the past, but not now(5)	85-Who is financially responsible for children born to women who are not married but become pregnant? ☐ Woman herself (1) ☐ Partner (2) ☐ Woman's family (3) ☐ Woman's parents (4) ☐ Government (5) ☐ Don't know (6) ☐ Other(9)-> _____

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