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Examining Cultural and Behavior difference and their Association with HIV Seropositive Prevalence among the Luo and Somali in Kenya, Africa.

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EXAMINING CULTURAL AND BEHAVIOR DIFFERENCE AND THEIR ASSOCIATION WITH HIV SEROPOSITIVE PREVALENCE AMONG THE LUO AND SOMALI IN KENYA(AFRICA)

By

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ABSTRACT

Introduction

The purpose of this analysis was to identify social, behavioral and cultural factors associated with HIV infection among the Luo people residing on the southern part of Kenya and Somali in the Eastern part of Kenya. Previous studies have linked higher prevalence of HIV in the Luo community to cultural practice such as widow inheritance, and lack of circumcision among men. Analysis was conducted to determine the difference cultural and behavior practice between the Luo and Somali using Kenya demographic health survey (DHS) data, collected between 2008 and 2009, and used statistical computing Software program(SAS) for analysis.

Results

There were 6906 participants in this survey, 3023 were males and 3811 females. The minimum age was 15 and the maximum age was 54. About 73% of the Luo were Christian and 25% were Catholic, compared to the Somali who were 99% Muslim. 98% of Somali were circumcised and 99% of the Luo were not circumcised. About 60% of the Luo used condoms compared to the 25% of Somali. Multivariate analysis comparing Luo and Somali showed the Luo were at high risk of getting HIV infection compared to Somali adjusted odds ratio (OR= 13.34;95% Cl 2.19 – 81.11).

Conclusion

Different risk factors were contributing to higher prevalence of HIV among the Luo community. This study was an observation study, hence the cultural and behavior difference observed cannot be used to established causality due to study design limitation. This study finding can be used to develop future study examining the cultural and behavioral risk factors associated with HIV transmission in Africa.

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INTRODUCTION

Background

Kenya is a country in sub-Saharan Africa located in the eastern part of the continent. The population has rapidly grown and in many parts of the country the population has been affected by the human immunodeficiency virus (HIV) epidemic. The Kenya AIDS indicator survey (KAIS) observed a national decline of HIV/AIDS prevalence from 7.8% in 2007 to 5.6% in 2012. The survey indicated that the Nyanza region has been heavily burdened by the HIV/ AIDS pandemic. Nyanza is in the southern part of Kenya and is predominantly inhabited by the Luo community. HIV/AIDS prevalence in women is 17.6 % and 13.4% for men (NASCOP 2014).

There are different theories explaining the prevalence of HIV in Africa. One of the explanation lies on the social network paradigm of HIV; this theory states that social system and risky behavior may lead to HIV transmission. HIV infection is not an equal opportunity disease, meaning that it is not evenly distributed in the population. Thus, location in social networks of sexually interacting persons in combination with risky behaviors determines the rates of disease transmission (Schneider JA et al. 2007). Some studies have supported the social network theory (the study of how people, organizations or groups interact with others inside their network) showed that female sex workers and their male clients had played a role in HIV epidemic some parts of the sub-Saharan African countries.

Although the dynamics of HIV spread in Africa population is complex, risky sexual behavior, such as multiple sexual partners, have been associated with HIV transmission in women (Schneider JA et al. 2007). Other factors responsible for the rapid diffusion of HIV in Africa are cultural practice in communities that do not practice male circumcision. It is believed

lack of circumcision increases the probability of contracting HIV during sexual intercourse. Interventions among high-risk groups are needed urgently, to induce behavior change among men and women in the general population (Schneider JA et al. 2007). According to Agot, K. E., et al. (2010) cultural practice such as Widow Inheritance, also contribute to the widespread of HIV transmission in Africa.

Fewer studies have examined the relationship between cultural practices and HIV prevalence, therefore to fulfil the gap in the research effects of cultural practice on HIV prevalence I conducted analysis to examine the association between cultural practice and the increasing prevalence of HIV among the Luo. The focus of the study was to examine cultural practice, which enables the spread of HIV among Luo who live around the lake region of Kenya. Among the practice investigated were religion, circumcision, marriage practice, and sexual behavior. The Luo do not practice circumcision, and this increases their risk acquiring HIV (Fiorella et al. 2015).

Luo often practice wife inheritance, this is cultural and social practice where a widow is required to marry her late husband brother or relative. Widow inheritance is done to support the widow and ensure the wealth of the late husband stay in the family. Most Luo are Christians, however many uphold traditional customs. The analysis was comparing the Luo cultural practices to the Somali. The Somali practice Islam. Their culture originates from Islamic belief. The Somali live in the Northeastern region of Kenya and practice pastoralist way of life (A, 2008).

LITERATURE REVIEW

Several studies have suggested that cultural practices such as widow inheritance and lack of circumcision maybe influencing HIV prevalence among the Luo (Bailey et al. 2007). Other factors that are believed to increase HIV/AIDS prevalence are women who offer sex to the fishermen in exchange for fish (Nyambedha 2006) and having multiple sexual partners (NACC and NASCOP 2012). Widow Inheritance is a widespread cultural practice in sub-Saharan Africa that has contributed to HIV transmission. A cross-sectional analysis from a prospective cohort study showed that the widow inheritance is a significant factor in the spread of HIV (Agot et al. 2010).

Agot et al. 2010 investigated the association between widow inheritance and HIV transmission. The survey interviewed 1,987 widows on their inheritance status and sexual behavior profile and tested them for HIV. Of these participants, 56.3% widows were inherited. HIV prevalence was 63%, for inherited widows. The study stratified exposure status by the relationship of the widow to the inheritor and the reason for inheritance and examined HIV status of four subgroups (Agot et al. 2010). The study adjusted for age and level of formal education. Widows who were inherited by non-relatives and had sex were more likely become infected than widows who were not inherited (OR=2.07; 95%CI 1.49–2.86).

Widows who were inherited by relatives and had sex also had elevated odds of HIV infection (OR=1.34; 95%CI=1.07–1.70). Widows who were inherited by relatives for companionship were less likely to be infected with HIV than women who were not inherited (OR=0.85; 95%CI 0.63–1.14). The study revealed that HIV prevalence among inherited widows varied depending upon why and by whom they were inherited. This analysis provided evidence linking HIV prevalence among the Luo to the cultural practice of widow inheritance.

Another study conducted by Shetty, Divakar et al. 2016 investigated fishermen knowledge about HIV and revealed that fishermen were among the most vulnerable groups for human immunodeficiency virus (HIV). The study demonstrated that fishermen had inadequate knowledge of HIV transmission due lack of access to information about HIV. The study used structured interview schedules with 12 questions and obtained information on socio-demographic characteristics. They performed Chi-square test and multivariate logistic regression analysis for statistical analysis.The confidence level and level of significance were fixed at 95% and 5%. The study showed that 57.2% of participants had no access to information about HIV/AIDS and some were not aware of prevention methods (Shetty, Divakar et al. 2016).

Another study conducted also explored community perceptions of cultural beliefs and risky sexual behavior. The study focused on the adolescents' understanding of cultural practices and how those practices expose them to HIV (Juma et al. 2014). Using a qualitative descriptive cross-sectional design, 14 focus group discussions were conducted with 78 adolescents and 68 parents. Three informative interviews were carried out with welfare workers, community leaders, and with teenagers. This study explored cultural beliefs and practices that predispose adolescents to risky sexual behaviors and indicated that some cultural practices may increase risky sexual behavior in teenagers. Cultural practice, such as replacing a deceased wife with her younger sister in marriage, early marriage of among girls and preference for boy child were associated with increased HIV prevalence (Juma et al. 2014).

Another study investigated the relationship between socioeconomic status and HIV progression in Kenyan adult population. They analyzed data from 312 infected individuals, drawn from randomized controlled trial investigating the effectiveness of Acyclovir therapy among serodiscordant couples. Participants in the study were people with CD4 protein counts ≥

350 cells/mm3 and World Health Organization (WHO), clinical stage one or two (Gitahi-Kamau et al. 2015). They measured daily household income available for expenditure, age, gender, housing type and level of formal education. The outcome to disease progression was measured by laboratory count of CD4 if below 350 cells/mm3 after two years of follow-up (Gitahi-Kamau et al. 2015).

They used logistic regression to determine significant associations between variables. The result showed that about 25 % of individuals who reported HIV disease were female. 93.6 % had attained a primary level of education, and the median age was 30 years. Household income available for daily expenditure was associated with their rate of infection with HIV disease progression. The result indicated that disease progression was five times more likely to occur in subjects with daily income expenditure of less than US $1 compared to those with more than five dollars daily expenditure [adjusted Odds Ratio 4.6 (95 % Confidence Interval 1.4–14.4 (Gitahi-Kamau et al. 2015)]. Disease progression was not associated with age, gender, type of housing or level of education attained $p<0.05$ (Gitahi-Kamau et al. 2015).

In Nyanza region, men often fish and women are traders. Women's access to food and shelter played a significant role in their HIV infection. Women fishmongers in the fishing communities frequently have sexual relationships with fishermen. This system is known as the jaboya system, wherein women who hope to sell fish in the market attain the rights to purchase the fish caught by the fishermen. A sexual relationship usually takes place quickly, often without preparation or protection. This web of sexual engagement compromises the ability to perform safe sex practices and increase the risk for HIV fishing communities (Gitahi-Kamau et al. 2015). A study conducted near the Lake Victoria region used mixed methods (in-depth interviews, n = 30; cross-sectional survey, n = 303) to analyze the influence of fish declines on fish-for-sex

relationships (Fiorella et al. 2015). They found that the availability of fish affected the relationship duration and women's bargaining power. The result, in general, supported the general dynamics of economies dependent on increasingly scarce resources worldwide (Fiorella et al. 2015).

One study has also suggested that fishermen mobility around the Lake Victoria maybe contributing to HIV epidemic in the region. A study investigating the association between migration and HIV infection between migrant and non-migrant indicated that migrant male workers were at risk for HIV when they lived in four or more places during their lifetime. The study recruited 196 migrant men and 130 rural partners. They also had 64 non-migrant men and 98 rural women whose partners were non-migrant. Inclusion criteria for participants were defined as male migrant's workers, working in two urban centers, 700km from their rural homes. The partners of Male migrants' worker were recruited in the study by tracing to their rural (Shetty, Divakar et al. 2016) Non-migrant couples were recruited for comparison. The study administered a detailed questionnaire and collected blood for HIV testing. The result showed that 25.9% of migrant men and 12.7% of non-migrant men were infected with HIV (P= 0.029; odds ratio = 2.4; 95% CI = 1.1-5.3). The study also indicated that being a partner of a migrant was not a significant risk factor for HIV infection among women. You were at risk for HIV if you had more than one current regular partner and if you were younger than 35 years, and had STD symptoms (Shetty, Divakar et al. 2016). This study indicates that migrating men were at risk for HIV infection, however, migration status of the partner was not a major risk factor for HIV (Shetty, Divakar et al. 2016).

The practice of polygyny has been considered as a high-risk factor for HIV transmission. Some theoretical models pose that sexual partnership which overlaps in time also known as

Concurrent partnerships (CPs) can increase the spread of HIV because it increases the size of the sexual networks of individuals in a population at a given point in time (Neal 2015). CPs may enhance the chance of a seronegative individual to get infected when a recent infected person comes contact with non-infected person. However, this does occur in a serial relationship (consecutive relationship separated by time gap) because serial partnership take a long time to begin, so even if an individual was infected the disease may have progressed into chronic infection phase thus less infectious (Eaton, Hallett, and Garnett 2011). Although there is plausible causal pathway between CPs and HIV, empirical investigation of Concurrent partnership paradigm has solicited mix reactions. Some studies have found the association and others have not. A survey carried out in 4 cities in the Sub-Saharan African, which showed that cities with the lowest level of HIV prevalence had the highest rates of CPs (Lagarde et al. 2001). The relationship between HIV prevalence and the practice of polygyny was negative in two studies, one ecological study (Reniers and Watkins 2010) and another on individual level study (Kasamba et al. 2011).

A study was conducted in India which examine sexual behavior and HIV transmission. The location southern region in the place known as Andhra Pradesh(AP). This region has the highest rates of HIV-1 infection in India. This study examined risk factors for HIV transmission in a sample collected from the AP region, and used sexual network analysis survey to investigate. The survey was conducted by Indian Health and Family Life Survey (IHFLS) and had a sample 20 HIV-positive and 40 HIV-negative controls who were randomly selected from the population of people living in the AP region. The study participants were provided voluntary testing and counselling programs. Oral rapid was performed to identify the HIV-1 status then confirmed by Western Blot. The study observed that there were no significant social or

behavioral associations with HIV infection for female respondents who were not commercial sex workers (CSWs). However, the study showed that there was associated of HIV infection with male who bought sex and had more than one lifetime partner (p0.002 and p0.017). The study showed that men who buy sex and had multiple lifetime female partners did not use condoms and were at high risk of acquiring HIV infection (Schneider JA et al. 2007).

Some studies have observed that population reporting using condom had higher that prevalence of HIV than others which did not use condoms. Condom use has proposed to effective in preventing HIV spread, therefore investigation was conducted to examine why it was not effective certain population. The investigation on the spread of HIV in Sub-Saharan Africa and condoms use revealed that within married couple where condom use was being reported higher prevalence of HIV was observed in married individuals. This contradicts the common knowledge about condom use, therefore further probe was conducted (Gelmon, Kenya, Oguya, Cheluget, & Haile,2009). A study conducted in Malawi investigating the influence of fidelity norm and the traditional association between marriage and reproduction on condom use among spouse using latent class analysis, estimate true measure of condom use by couples based on husbands and wives reporting on condom use. They explore discrepancy reasons as to why individuals may misreport their condoms use. The study showed that married individuals with many children were more likely to report condom use and that having been informed by experts about AIDS prevention at home induced men and women to
overreport condom use within marriage in surveys, However, the information provide was not accurate. Hence condom use was effective in reducing HIV infection (Cordero-Coma and Breen 2012).

METHODS AND PROCEDURES

For this thesis,secondary data collected by the International Demographic and Health Survey (DHS) program year 2008-09 was used to examine different cultural practice between the Luo and the Somali. The outcome of interest was HIV serostatus, determined by a confirmatory HIV-positive antibody blood serum result. Sex of the respondent was male or female, as defined in the DHS. The key explanatory variable was ethnicity. Other covariates included socio-demographic characteristics, sexual behaviors, and cultural practices. The study focused on the cultural difference between the Luo and Somali. I analyzed the women's data, the men's data, and HIV test results datasets. These three datasets were merged using a caseid variable. This caseid variable was created using cluster, line number, and household variables.

The instruction to merge the dataset was obtained from DHS website. Common identifiers (identification variables), were determined for both data files, then sorted by casied variable. Socio-demographic characteristics included the following variable; respondent's age at the time of survey, educational attainment (none, incomplete primary, complete primary, secondary and above), marital status (never married, living together, married, widowed separated/divorced), and occupation (agricultural, unemployed, domestic, trade, manual, office/service, or professional/manager). For poverty, I applied a relative approach using household wealth, which was measured by a composite index created by using information on household assets (ownership of radio, television, refrigerator, bicycle, motorcycle/ scooter, car/truck, and telephone), housing quality, and environmental conditions (electricity, source of drinking water, type of toilet facility, floor material). Sexual behaviors included sexual behavior risk such as condom use at last sexual intercourse or when having sex and having multiple sex partners in the past year.

Analysis

The frequency distributions of age, education level, religion, circumcision, wealth index marital status for descriptive statistic of the sample were computed. Ethnicity was associated with HIV prevalence, therefore, I explored the sources of inequalities between the Luo and Somali by sub setting ethnicity into Luo and Somali, then used statistical software to calculate frequencies of variables associated with rapid spread of HIV in the sub Saharan Africa. Factors associated with increased risk for HIV were unevenly distributed among the two communities.

RESULTS

Sample characteristics

A total 6834 participants were observed, 44.2% were male and 55.8% were female. The age range among participants were 15 to 54.(Table 1). On average the sample comprised of 44% male and 56% females. 10% of the sample had no education, 52% had some formal education and 38% had higher level of education Table 1. Of the two ethnic communities, there were 943 Luo and 432 Somali. Approximately 20% of Somali had low wealth index, about 6% were in the middle and only 4% wealthier. 60% did not report their wealth. On the other hand, 15% of the Luo were in the lowest wealth index and 55% in the middle and about 30 % were in the highest wealth index. 56% of the Luo did not report their wealth index Table 1. 74% of the Luo were Christian, 25% Catholic, 0.7% were Muslim and the Somali were 99% Muslim.

The key difference between the Somali and the Luo were observed in the sexual practice and Culture. About 60% of the Luo used condoms compared with 25% of Somali. Over 80% of both Somali and Luo were missing information on condom use Table 2. The cultural practice difference observed between the Luo and Somali was in the practice of circumcision. 98% of

Somali were circumcised while 99% of the Luo were not circumcised. There was missing information on their circumcision status for both communities Table 1 and Figure 1. Another different cultural practice observed among the Luo and Somali was in the number of wives. Almost 20% of Somali had multiple wives compared to Luo 90% of the Luo who had one wife figure 3. We also observed that a greater proportion of the Luo and Somali missing information on the number wives figure 3.

The two communities also differed on sexual behavior associated with the spread of spread of HIV. Approximately 90% of Somali had one sex partners compared to the Luo had less than 30%. About 75% of the Luo had multiple sex partners compared to Somali who had only 10 % Figure 5. Another difference between the Luo and Somali was observed on the proportion of people who willing to wait until marriage to have sex. When the respondent was asked if they would wait until marriage to have sex, 97% of the Somali answered yes compared 66% of the Luo. Only 3% of the Somali answered no waiting to have sex compared to 33% of the Luo figure 4.

Another difference between the two communities was observed in their marital status, 51% of the Luo were married, and 36% compared to 65% of Somali who were married only 21% were single. HIV prevalence varied by marital status, 24% of the Luo and 0.9% Somali married couples were HIV positive. Somali had no widows with HIV, However, 15% of widows in the Luo community had HIV.

Regression analysis

The univariate analysis indicated the crude odds getting HIV for Luo was 32.25 odds of Somali being infected by HIV (OR= 32.25;95% Cl 7.7- 13.5) p<. 0001 Table 9. The multivariate

analysis considering all the risk for HIV indicated the odds of getting HIV for Luo was 13.34 the odds of Somali (OR=13.34;95%Cl 2.19-81.11) P<.0001 Table 3.

For marital status comparing singles and married, univariate analysis showed that odds of getting HIV was (OR=0.33;95Cl 0.17-0.6) p<.0001while multivariate indicated (OR=0.9; 95%Cl (0.44-1.86)) p=0.005. For people living together vs married, univariate analysis indicated the odds of getting HIV was (OR=0.87;95%Cl 0.47-1.60) p=0.683, multivariate comparing people living together vs married showed the odds getting HIV was (OR=0.906; 95% 0.42-1.94) P=0.007. Comparing widow vs married the crude odds were (OR=11.01;95%Cl 5.18-23.4) P<.0001 and the adjusted prevalence within the two groups indicated (OR=13.036;95% 6.65-2.557) P<.0001 Table 3.

For Religion comparing Catholics vs Christians univariate analysis showed that odds of getting HIV was (OR=1.664;95Cl 0.67-4.12) p<.0001while multivariate indicated (OR=0.969;95%Cl .64-1.46) p<.0001. For Muslims vs Christians, univariate analysis indicated the odds of getting HIV was (OR=1.717;95%Cl 0.77-3.83) p=<.0001, multivariate comparing Muslim vs Christians showed the odds getting HIV was (OR=0.882; 95% 0.26-1.3) P=0.003 Table 3. The crude odds for using condom compared to no use was (OR=1.096;95%Cl 0.58-2.01) P=0.777 and the adjusted odds were (OR=1.74 95%Cl 0.61-5.02) P=0.3001 Table 3.

Comparing those who were circumcised vs not the crude odds getting HIV was (OR=0.52;95%Cl 0.32-0.86) P=0.011 and the adjusted odds was (OR=1.74 95%Cl 0.61-5.02) P=0.3001 Table 3. For number of sex partners comparing those with one vs multiple the crude odds were (OR=3.28;95%Cl 1.71-6.09) P=0.0002 and the adjusted odds was (OR=2.279 95%Cl 1.11-4.67) P=0.0245 Table 3.

DISCUSSION AND CONCLUSION

The goal of the study was to observe how cultural and sexual practice differ between the Luo and the Somali and how those differences associate with HIV prevalence. Different risk factors were observed and the most interesting observation was seen on sexual practice. One of the sexual practice examined was condom use. Community that utilized condoms during sexual intercourse were the most affected with HIV infection than the one which did not. This defy the common knowledge since it is believed that condom use protects against HIV transmission. Regression analysis indicated that condom use protected against HIV transmission. There are different factors which may be contributing to this unusual result. One of the factors that maybe influencing condom use as observed could be higher number of the Luo respondents in this survey that did not report condom use. Literature review on condom use in Africa have showed that only consistent use of condom use offer protection (Bankole, Ahmed, Neema, Ouedraogo, & Konyani, 2007; Chimbiri, 2007; Cleland & Ali, 2006). Judging from the number that did not provided information on condom use, about three quarter the Luo respondent that did not give information on condom use. This could be a factor influencing the condom use. It may imply that majority were not using condoms or it was not being used often, therefore respondents could not remember, therefore not providing information on condom use. More investigation should be conducted to find why we observed the inconsistence in condom use and HIV prevalence among the Luo.

Another significant sexual practice difference between the Luo and Somali was in the proportion of Somali who were waiting to have sex until marriage compared to the Luo. Many Somali were waiting to have sex until after marriage, therefore late sexual initiation could be

protecting them from HIV infection. This can be supported by Neal 2015 studies which shown that increased sexual networks in a population increase the rate of HIV infection.

The analysis also observed that many Somali were married, and fewer were single compared to the Luo. Examining marital status between the two communities produced very interesting results. We observed that greater proportion of the married Luo were infected by HIV compared to their counterparts the Somali. This higher level of HIV infection among the married Luo could be increasing the risk of HIV infection among the Luo population. Dunkled et al., 2008 showed that approximately two thirds or more of the HIV-infected couples in five sub-Saharan countries were serodiscordant, since we know married couple are engaging in sex and they may not be using condoms, this would increase the rate of HIV transmissions especially among the Luo.

Another difference between the Luo and Somali was observed in the number of people who reported having multiple sex partners. Having multiple sex partners has been associated with increased of HIV infection and since the analysis indicated that a greater proportion of the Luo had multiple sex partners compared to Somali, then multiple sex partner may be contributing to higher prevalence of HIV among the Luo. This assumption is supported study conducted by Neal 2015 which showed that HIV transmission rate are higher in population that engage in risk sexual behavior such as having multiple sex partners.

Overall this analysis indicating that ethnicity plays a significant role in acquiring HIV. The Luo were at higher risk for HIV than the Somali. Cultural and Behavior practice such as lack circumcision among the Luo men, and early sex initiation are some of the factors contributing the higher rate of HIV infections among the Luo. Other cultural practice which may be aiding the

spread of HIV among the Luo community could be the practice of widow inheritance (Agot et al. 2010).

Study Strengths and Limitations

The findings of this analysis should be considered preliminary and caution should be taken when interpreting the findings. Most importantly, the findings cannot be generalized because our analyses were computed in small samples with substantial missing data. The data is also older and most of the information gathered self-reported. As such, there are numerous biases and limitations. Moreover, The DHS. Data are composed of individual-level data and cluster sampling method and may not be entirely random. In addition, HIV tests were only conducted for those who volunteered and had substantial missing data . However, despite the study limitation, this analysis provided tentative information to guide future research, particularly as to the counterintuitive findings related to marital status, number of sex partners, condom use and self-0disclosed HIV. Future research that examines the role of cultural practices and HIV prevalence is needed to better examine what factors may exacerbate or protect against HIV transmission.

Conclusions

Although our study was small and the findings preliminary, there were some notable factors which were likely contributing to higher levels of HIV infection among the Luo compared to the Somali. The difference between this two communities were observed the number of individuals that were not circumcised, and the number multiple sex partners as well as proportion that were married. This study analysis provides some intriguing new findings that

seek to elucidate cultural and sexual practice information that can be used to developed future studies. In particular, it is recommended that a cohort study be conducted to examine the effect of cultural and sexual behavior on the rate of HIV infection among the Luo in order to develop targeted and culturally appropriate interventions for HIV prevention. Clearly, research that specifically examines cultural factors are lacking in the literature but may provide much needed information to better prevent and reduce HIV transmission in populations with high levels of HIV.

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TABLE 1 DESCRIPTIVE STATISTIC OF PARTICIPANT’S KENYA DEMOGRAPHIC HEALTH SURVEY 2008-9

Variable	**N**	**Min**	**Max**	**(Median)**

Age	**6834**	**15**	**54**	**26.8**

Variable	N	percent
Age group		
0-19	344	(31.7)
20-29	512	(47.2)
30-39	311	(22.3)
40-49	187	(13.4)
50-54	43	(3.1)
Gender		
Male	3023	(44.2)
Female	3811	(55.8)
Ethnic		
Luo	943	(12.8)
Somali	432	(2.6)
Others	5459	(84.6)
Religion		
Catholic	1556	(22.6)
Protestant	4135	(59.9)
Muslim	956	(13.9)
Education		
No education	696	(10.1)
Incomplete primary	636	(52.1)
Secondary +	657	(9.5)
Circumcised		
No	3026	(44.9)
Yes	3712	(55.1)
Wealth Index		
Lowest	1307	(18.9)
second	1141	(16.5)
Middle	1148	(16.6)
Fourth	1393	(20.2)
Highest	1917	(27.8)

Ethnic	Luo	(Somali)
	N percent	(N percent)
Age group		
15-19	53(3.9)	20(1.6)
20-24	243(18.1)	115(8.5)
25-29	208(15.4)	68(5.1)
30-39	135(10.1)	74(5.5)
40-49	177(13.1)	91(6.8)
50-54	107(7.9)	56(4.2)
Sex Partner		
One	172(18.2)	84(19.4)
Multiple	5(0.5)	2(0.5)
Missing	766(81.2)	346(80.1)

TABLE 1 DESCRIPTIVE STATISTIC OF PARTICIPANT'S KENYA DEMOGRAPHIC HEALTH SURVEY 2008-9 Cont'

Variable	**N**	**Min**	**Max**	**(Median)**

Religion		
Catholic	236(25.1)	1(0.2)
Christian	694(73.8)	0
Muslim	7(0.7)	428(99.1)
Other	2(0.2)	3(0.7)
Unknow	3(.3)	1
Education Level		
No Education	17(1.8)	274(63.4)
Incomplete primary	583(61.8)	102(23.6)
Complete primary	262(27.8)	47(10.9)
Secondary	81(8.6)	9(2)
Circumcised		
No	474(99.8)	3(1.8)
Yes	2(0.2)	252(98.2)
Missing	467	177
Condom use		
No	67(38.2)	3(75)
Yes	107(61.8)	1(25)
missing	770	428
Marital Status		
Never Married	338(35.8)	116(26.9)
Married	480(50.9)	280(64.8)
Living Together	51(5.4)	18(4.2)
Widow	55(5.8)	5(1.2)
Divorce	5(0.5)	12(2.8)
Separated	14(1.5)	1(0.2)
Wealth Index		
Lowest	49(11.8)	292(20.9)
Second	78(18.8)	35(2.5)
Middle	60(14.4)	27(1.9)
Fourth	82(19.7)	24(1.7)
Highest	147(35.3)	58(4.2())
missing	527(56)	256(60)

Descriptive statistic was performed to describe the sample. Large number of participants did Not provided important information condom use, number of sex partners and wealth information.

TABLE 2 FREQUENCY DISTRIBUTION OF HIGH RISK VARIABLE AMONG ETHNIC GROUPS

Variable	Somali N=432	Luo N=943
Variable	N(percent)	N(percent)
Circumcised		
No	3(1.8)	474(99.8)
Yes	252(98.2)	2(0.2)
Missing	181	485
Condom use		
No	3(76.8)	67(35.2)
Yes	1(23.2)	108(64.8)
missing	432	786
Number of wives/partners		
1	87(78.2)	188(84.5)
2	20(20.2)	28(13.4)
3	2(1.5)	3(1)
missing	327	740
Number of union		
1	71(64.5)	166(69.5)
2	40(35.5)	70(30.5)
missing	325	725
Wait for Sex until married		
No	1(2.7)	11(21.5)
Yes	52(97.3)	40(72.5)
Don't know		4(6.1)
missing	383	906
Condom access		
No	18(23.9)	21(5.4)
Yes	79(76.1)	380(94)
missing	339	560
Total number of life sex partner		
Multiple	7(18.9)	110(72)
one	68(81)	39(28)
missing	361	812

Variables with high number of missing are circumcision, number of wives/partner's condom access, total number of lifetime sex partners and waiting for sex until marriage. This table highlight difference between the two communities sexual practice and cultural practice.

TABLE 3 ODDS RATIO ESTIMATE

	Univariate				**Multivariate**		
Variable	Crude	Crude	Crude		Adjusted	Adjusted	Adjusted

	OR	(95% CI)	P-value		OR	(95% CI)	P-value
Age group							
15-19 vs 50-54	0.19	(0.19- 0.05)	0.0065		0.089	(0.01-2.80)	0.0964
20-24 vs 50-54	0.18	(0.10- 0.33)	<.0001		0.003	(0.01-2.79)	0.0843
25-29 vs 50-54	0.68	(0.41- 1.10)	0.1170		0.189	(0.07-6.02)	0.4842
30-39 vs 50-54	1.10	(0.65- 1.85)	0.7241		0.626	(0.19-7.15)	0.0004
40-49 vs 50-54	1.05	(0.66 -1.65)	0.8443		1.154	(0.31-3.60)	0.0476
Luo vs Somali	32.25	(7.7- 135.1)	<.0001		13.34	(2.19- 81.11)	<.0001
Marital status							
Never married Vs Married	0.33	(0.17-0.64)	0.001		0.907	(0.44-1.86)	0.0056
Living together Vs Married	0.87	(0.47-1.65)	0.683		0.906	(0.42-1.94)	0.0077
Widowed Vs Married	11.01	(5.18-23.40)	<.0001		13.036	(6.65-25.57)	<.0001
Separated Vs Married	2.03	(0.79-5.23)	0.1340		3.228	(0.97-10.74)	0.4421
Divorced Vs Married	2.21	(1.05-4.68)	0.0377		3.135	(1.74-5.64)	0.1923
Educational level							
No education vs Educated	0.906	(0.42- 1.94)	0.7982		2.296	(0.21- 25.50)	0.5713
Incomplete PVs Educated	1.254	(0.71- 2.21)	0.4349		1.733	(0.45- 6.70)	0.6346
Complete P Vs Educated	0.785	(0.44- 1.40)	0.4126		1.049	(0.25- 4.46)	0.5034
Religion							
Catholic vs Christian	1.664	(0.67-4.12)	<.0001		0.969	(0.64-1.46)	<.0001
Muslim vs Christian	1.717	(0.77-3.83)	<.0001		0.582	(0.26-1.30)	0.0003
Others vs Christian	6.604	(1.04-14.99)	<.0001		3.846	(0.71-20.99)	<.0001
Condom use							
No vs Yes	1.096	(0.58- 2.07)	0.7770		1.744	(0.61- 5.02)	0.3001
Circumcision							
No vs yes	0.525	(0.32- 0.86)	0.011		0.584	(0.15- 2.26)	0.433
Sex partner							
Multiple Vs One	3.287	(1.78- 6.09)	0.0002		2.279	(1.11- 4.67)	0.0245
Wealth index							
Second vs lowest	1.666	(0.79- 3.54)	0.1829		1.995	(0.87- 4.57)	0.8669
Middle vs lowest	1.942	(0.97- 3.88)	0.0601		2.274	(1.05- 4.95)	0.3822
Fourth vs lowest	2.394	1.05- 5.45	0.0375		2.59	1.15- 5.86	0.1817
Highest vs lowest	2.031	0.92- 4.49	0.0799		2.214	0.90- 5.44	0.5478

This table compared the crude odds and adjusted odds for the entire sample