
Modelling the Effects of Relationship Between Gender and Condom Usage on Comprehensive HIV Knowledge among the Youths in Kenya

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Abstract: Globally, the spread of HIV/AIDS epidemic has turned out to be a major health challenge due to its vast undesirable effects. In 2018, Kenya joint the third largest HIV epidemic in the world alongside Mozambique and Uganda with 1.6 million people living with HIV. Even though individuals of all ages are susceptible to HIV infection, youths remain the most exposed to HIV transmission due to their lifestyle sexual behavior. The youth population imparts 51% of the grown up population among the HIV infections in 2015. Given these scenario, this study sought to ascertain the association between condom usage and gender on comprehensive HIV knowledge among the youths in Kenya. Secondary data for this study was drawn from KDHS 2014. Data cleaning and analysis was carried out using SPSS version 21. Descriptive statistics and multiple logistic regression were used during analysis. Results indicate that widespread knowledge about HIV among the youths was 55.5%. Significant association was revealed between gender and comprehensive HIV knowledge among the youths ($P=0.016$). In addition, findings showed that 53.9% of females and 61.5% of males had comprehensive knowledge about HIV. Moreover, condom usage and comprehensive HIV knowledge were significant (P -value <0.05). Further, it was found that majority of the youths were aware of HIV prevention by use of condoms (79.8% of youths against 20.2% who do not always use condoms). Impressively, multiple logistic regression analysis, showed that condom usage have no effects on relationship with comprehensive HIV knowledge with p -values ($P>0.05$). Gender was found to have significant relationship with comprehensive HIV knowledge ($P>0.05$). Findings of this research is of important in understanding the comprehensive HIV knowledge on the use of preventive methods and awareness on the mode of HIV transmission among male and female youths. The government health sector can utilize this findings in focusing on sexual education among the youths.

Keywords: HIV/AIDS, Comprehensive, HIV, Knowledge, Logistic Regression, Youth

1. Background Information

Globally, HIV epidemic has evolved since its first case was diagnosed in 1984, to become one of the major cause of mortality and has placed tremendous demands on the health sector and the economy. In the Sub-Saharan African countries, female youths appeared to be the highest group living with HIV compared to their male counterparts. Young people represent 45% of the adults living with HIV globally. The youths in this age group make up to nearly half of all the new HIV infection annually. In Kenya, HIV prevalence

appears to have stabilized at about 6% with the new HIV infections estimated at 88,620 every year. The future cause of Kenya's HIV epidemic majorly concerns the mode of HIV transmission and prevention HIV knowledge. Several studies conducted have made it possible to obtain the vast information on health status on HIV at the national level. Subsequently, prevention programs often use this information on the group who are vulnerable and at risk of HIV infection [3, 5, 6].

Latest Kenya demographic health survey 2014 highlighted on various factors associated with HIV/AIDS, attitudes and

behavior which was carried out among individuals between the ages 15-49 years in Kenya. This survey found that AIDS awareness is universal even though level of comprehensive HIV knowledge is lower [4]. In particular, a study in Central Uganda among the people living with HIV regarding their sexual exposure revealed that, youths are the most vulnerable to HIV infection in the country. They are among the highest proportion of people living with HIV and contributes 40% of the new HIV infections. This high rate of HIV infection among the youths is mainly related dearth, sexual recklessness, lack of sexual education and use of drugs which exposes them to unexpected HIV infection [1].

Accordingly, research in Malaysia on awareness and vulnerability to HIV among young girls documented that, AIDS understanding is universal in spite of the extent of comprehensive knowledge about how HIV is spread that could place them in high risk group who are vulnerable to HIV infection. This study resolved that sexual education plays a vital role in stabilizing HIV transmission [13]. Further, a study in Kuwait on assessing HIV/AIDS knowledge, awareness and attitudes revealed that most students were knowledgeable with regard to nature and mode of HIV transmission but more realization of the epidemic is required to eradicate stigmatization and discrimination of the infected persons [9].

Accordingly, research in Kenya on HIV/AIDS awareness among the youths revealed that despite the positive response on the knowledge on HIV/AIDS among the respondents, there is lack of knowledge on HIV status when enrolling to the university. The main source of HIV information being social media and educational institution [11]. In particular, research conducted in Nairobi showed that the level of understanding of HIV/AIDS among the university and high school students is related to education level. University students had higher HIV/AIDS knowledge than the high school students. Education was found to be a major factor with respect to the level of knowledge on HIV/AIDS among the students [8].

The comprehensive HIV knowledge, which is a proportion of how far one knows about transmission and prevention of HIV. It means knowing that; consistent use of condoms during sex and having only one uninfected faithful partner can decrease the possibility of contracting HIV, that a healthy looking individual can have HIV, that HIV is not transmitted by mosquito bites, and that HIV cannot be acquired by sharing food with an individual who has HIV. KDHS 2014 revealed that that 63% of male and 54% of female had comprehensive knowledge about HIV transmission and prevention. There was a significant increase in comprehensive HIV knowledge from 2008-2009 KDHS report [4].

A research in Ghana on the extent of knowledge about HIV/AIDS found that majority of the respondents had knowledge about HIV/AIDS. Their major source of information was through radio and TV. Methods of HIV transmission and prevention were common yet interpretations about the HIV transmission exists. About half (48%) of the

respondents accepted that HIV could be spread by mosquito bites, while 34% said the virus could be spread by spiritual means. Level of education, residence, religion and ethnicity were the key factors related to HIV knowledge. Their study resolved that access to formal education to eliminate false perceptions and beliefs, the requirement for continued HIV/AIDS training and communication and HIV/AIDS education in health settings [2]. By utilizing the data for National Family Health Survey (2005-2006) in India for men and women found that, comprehensive knowledge about HIV transmission and prevention approaches was lower among females and males in slum areas compared to those in non-slum areas. Females had minimal HIV knowledge compared to men. Scale up in health programs should be improved on knowledge of HIV transmission and prevention methods by use of social media platforms, education and communication programs to uplift the level of comprehensive HIV knowledge [14]. In addition, an assessment of an in depth knowledge of HIV among the adolescents in schools in Ethiopia found that, major interrelation was found on comprehensive HIV knowledge and level of wealth, literacy and access to sexual information and education. Broad knowledge on HIV was higher among the females compared to their male counterparts. Access to sexual education and information and wealth is related expansive knowledge on HIV. In addition, a research in Lagos found that, the key correlates of extensive knowledge about HIV were age, literacy, having gone for VCT services, able to recognize someone with HIV and able to avoid activities which are exposures to HIV infection. Educated women were well informed about HIV. Further, great scope in HIV was related to age, (Those aged 20 – 24 had more information on HIV than aged 15-19). A great number of females and males respondents do not know where to access condoms,(29.1% females and 9.4% males) despite the availability of condoms in Lagos [7, 15].

Several research studies have considered numerous aspects of widespread knowledge about HIV which include age, education, gender, residence, wealth, risk behaviors and screening for HIV. Major contributing factors of all inclusive knowledge about HIV were age, education, HIV screening , ability to recognize someone with HIV and having small or moderate to great risk sexual exposures. Women who had tested for HIV and those who had children had more knowledge than those with no children. The young people who can have access to education and information from their parents concerning sexual matters and age had more comprehensive HIV knowledge than those who had no access to such education [7, 10]. Despite the concerted effort by the government to create HIV/AIDS awareness, reports still indicate that youths remain the most susceptible population to new HIV infection due to their lifestyle sexual behavior. This therefore reveals that relevant sectors in charge of prevention programs have inadequate information to these target group at risk of infection. This study therefore sought to address this problem by constructing the composite, comprehensive HIV knowledge indicator to provide detailed information on the relationship between gender and condom

use on the general knowledge about HIV/AIDS among the youths in Kenya.

2. Data and Method of Analysis

This study utilized secondary data from the Kenya Demographic Health Survey (KDHS) 2014. The main variables in the study were comprehensive knowledge about HIV transmission and prevention, gender and condom use. During the analysis, dependent variable was produced out of the five assertions and therefore, the individual who had all the assertions correctly responded were deemed to possessed comprehensive knowledge while those who were not successful in some assertions were considered not to be having comprehensive HIV knowledge. The assertions which were used were; HIV infection can be avoided by having sex with one faithful uninfected person, condoms may be utilized to avert HIV transmission, an individual can be infected with HIV by serving meals with someone with HIV, an individual can get infected with HIV from insect bites (mosquitos) and an all right individual might be living with HIV. The respondents answered these assertions based on either they agreed or disagreed on them.

In each of the above assertions the respondents agreed or disagreed by responding based on whether it is "No", "Yes" or "Do not know" respectively. The independent variables were condom usage and gender. Condoms usage was measured by asking the respondents present during the survey if or not use condom during sex in their period of time before the survey. The response was ciphered either "Yes" or else "No" based on the respondent's responses. Both male and female respondents were sampled according to the 5-year groups respectively between the age 15-19 and 20-24. The distribution of both male and female tend to decrease with advancing age which demonstrated a comparatively age structure of the Kenyan population. According to KDHS 2014, 37% of women and 39% of men were in the age 15-24. Both male and female youths were asked the same assertions.

Data cleaning and analysis was done using SPSS version 21. Descriptive statistics and chi-square test was used for comparison between male and female youths regarding their comprehensive HIV knowledge. Multiple logistic regression analysis was carried out to ascertain the result of relationship of gender and condom usage on comprehensive HIV knowledge among the youths. P-Value ≤ 0.05 considered statistically significant.

3. Results

This study sought to determine the relationship between condom usage and gender on comprehensive HIV knowledge among the youths in Kenya. This section therefore provides detailed tabulated results for the research data analysis 2019 and discussions for each of the objectives. The 95% confidence level was assumed during analysis. Descriptive statistics were obtained to get the picture on how male and female youths differ in relation to their comprehensive HIV

knowledge about HIV transmission and prevention as shown in Table 1.

Table 1. Comprehensive HIV knowledge among the youths in Kenya.

Comprehensive HIV Knowledge	(Frequency)			
	Sex of the respondent	No	Yes	Total
Male		562	658	1220
Female		120	192	312
Total		682	850	1532

There were 1532 youths in this research. Table 1 shown 658 of the females had comprehensive knowledge about HIV transmission and prevention compared to 192 males who had similar knowledge.

Significant association between gender and comprehensive knowledge about HIV transmission and prevention among these youths was revealed, ($P=0.016$). Further, from the above information, gender and comprehensive knowledge are associated and therefore there was need to provide more evidence against the null hypothesis. The standardized cell residuals was obtained to determine which cell contributes to the null hypothesis as shown in Table 2.

Table 2. Standardized Residuals for testing independence.

(Standardized Residual values)		
Sex of the respondent	No	Yes
Female	2.35	-2.41
Male	-2.41	2.38

Table 2 showed that r_{ij} is greater than ± 2 . Therefore the null hypothesis should not be rejected. There is a relationship between Comprehensive HIV knowledge and gender. More than expected males reported to be having comprehensive knowledge about HIV transmission and prevention and fewer than expected females reported to be having comprehensive knowledge about HIV transmission and prevention.

The use of condoms with respect to comprehensive HIV knowledge was obtained to determine the percentage of youths who usually use condoms every time they had sexual intercourse. Table 3 provides these information on condoms use.

Table 3. Number of youths who always use condom during sexual intercourse.

Response	Frequency	Percent (%)
No	309	20.2
Yes	1223	79.8
Total	1532	100.0

The result in Table 3 showed that majority of the youths are aware of HIV prevention by use of condoms (79.8% of youths against 20.2% who do not always use condoms). Further, condom usage and comprehensive HIV knowledge were significant ($P\text{-value}<0.05$).

Further, Multiple logistic regression analysis was done to determine the relationship between gender and condom usage

on comprehensive HIV knowledge in the model. Each of the independent variables were added to the model to assess its

effect. Evaluation of the results were tabulated below;

Table 4. Logistic regression on comprehensive HIV Knowledge for Gender.

Variables in the equation						
	β	S.E(β)	Wald	Df	Sig.	Exp(β)
Step1 ^a GENDER(1)	-0.312	0.130	5.791	1	0.016	0.732
Constant	0.470	0.116	16.313	1	0.000	1.600

Variable(s) entered on step 1: GENDER

Under variables in the equation, the intercept only model is $\ln(\text{odds})=0.220$. The $\exp(\beta)$ is equivalent to 1.246. This is the predicted odds of deciding whether to continue with the research analysis. In block 1 output, the addition of gender as a predictor, Omnibus test of model coefficients (Table 5) gives a chi square of 5.868 and a p-value=0.015(5% significance level).

Table 5. Omnibus Test of Model coefficients.

Omnibus Test of Model Coefficients			
Step	Chi- square	Df	Sig.
Step 1 Block	5.686	1	0.015
Model	5.868	1	0.015

This means that the null hypothesis that comprehensive HIV knowledge is independent on gender should be rejected.

Table 6. Logistic regression on comprehensive HIV Knowledge for Condom usage.

Variables in the equation						
	β	S. E (β)	Wald	Df	Sig.	Exp(β)
Step1 ^a CONDOM(1)	-22.027	2286.5	0.000	1	0.992	0.000
Constant	0.824	0.062	175.9	1	0.000	2.279

In block 1 output, addition of condom use as a predictor, Omnibus test of model coefficients gives a chi square of 600.976 and a p-value=0.000 (5% significance level).

Table 7. Omnibus test of Model Coefficients.

Omnibus Test of Model Coefficients			
Step	Chi square	Df	Sig.
Step 1 Block	600.976	1	0.000
Model	600.976	1	0.000

This means that the null hypothesis that condom usage have no relationship with comprehensive HIV knowledge among the youths in Kenya should not be rejected. There is insignificant relationship between condom usage and comprehensive HIV knowledge among the youths in Kenya. In addition, the inclusion of the predictor yields a $\beta = -22.027$ and a $P>0.05$.

Results showed that gender contributes to the model fit of the data unlike condom usage. The null hypothesis that gender have no relationship on comprehensive HIV knowledge among youths in Kenya should be rejected. Gender is related to comprehensive knowledge about HIV transmission and prevention unlike the condom usage among the youths in Kenya. The above results on logistic regression indicates that based on KDHS 2014, comprehensive HIV knowledge does not contributes much to the use of condoms during sexual intercourse among the youths

That is, the model with gender is better than the model with just the constant term. There is a significant relationship between gender and comprehensive HIV knowledge among the youths in Kenya. The addition of gender to the model reduced the 2log likelihood statistic by 5.868 which is a χ^2 statistic in the Omnibus test of model coefficients. The addition of gender yields the following equations for both “Yes” and “No” response.

$$\ln(\text{odds}) = 0.47 - 0.312 \text{ Gender}(\text{Response} = \text{Yes})$$

$$\ln(\text{odds}) = 0.47(\text{Response} = \text{No})$$

In the second equation, the estimated probability decreases by 0.312 for each unit increase in the predictor value. If the response value is “No”.

4. Conclusion

Research showed that the overall level of comprehensive HIV knowledge was about 56% among the youths in Kenya. There was a significant relationship between comprehensive HIV knowledge and gender with 53.9% of the females and 61.5% of males had comprehensive HIV knowledge about transmission and prevention. A significant association between gender and comprehensive knowledge about HIV among the youths was found ($P<0.05$). Male and female differ on the level of comprehensive HIV knowledge. It was found that 61.5% males had comprehensive HIV knowledge compared to 53.9% females. Similar studies among three countries Ivory Coast, Cameroon and Cabon found that comprehensive HIV knowledge, age, residence, education level and wealth are significantly related. According to their research, the widespread HIV knowledge increases with advancement in age, education and level of wealth [12]. Further, findings indicate existence of general knowledge on the use of condoms among the youths in Kenya. Significant association was found between condom usage and comprehensive HIV knowledge ($P\text{-Value}<0.05$).

Interestingly, multiple logistic regression analysis HIV prevention by use of condoms does not reveal any result on the association with comprehensive HIV knowledge. Gender

had $\beta=-0.312$ and a p value=0.016. Also condom use had $\beta=-22.022$ and a p value=0.992. The p value of condom usage is greater than 0.05(5% significance level) which showed that condom usage had no effect on any association with comprehensive HIV knowledge among the youths in Kenya.

Response to HIV/AIDS among the youths in Kenya can only be successful if individuals adopt behaviors that protect them from infection. However, there has been a little increase in the level of comprehensive HIV knowledge among the youth based on the demographic health survey conducted in every five year period. As shown from the results, comprehensive HIV knowledge among the youths was on average for both male and female. Males had higher comprehensive HIV knowledge than their female counterparts. Despite this improvement, a lot need to be done to realize the sustainable development goals (SDGs) of ensuring healthy lives and promotion of well-being for all at all ages. Much interventions should be done for both male and female youths on HIV education on prevention methods and modes of transmission as they continue to get infected due to low comprehensive HIV knowledge.

5. Recommendations

Despite the progress made across the countries which have witnessed a decrease in the HIV infection rate, eradication of HIV transmission is still no happening to meet the global targets. Therefore, based on the findings of this research, the following recommendations were made,

- a) Male youths should be sensitized more on comprehensive HIV knowledge.
- b) Other than condom usage and gender, there might be other superior factors correlated to comprehensive HIV knowledge among the youths in Kenya that needs to be researched.
- c) Concerns should be directed towards youths as they continue to be infected regardless of the advancement made by the government.

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