

Factors Associated with Knowledge of Transmission and Prevention of HIV/AIDS among Men and Women in Uganda: Evidence from Demographic Health Survey of Uganda 2016

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Received Date: July 03, 2019 Accepted Date: August 13, 2019 Published Date: August 16, 2019

Citation: Twinomugisha Fred (2019) Factors Associated With Knowledge of Transmission and Prevention of HIV/AIDS among Men and Women in Uganda: Evidence from Demographic Health Survey of Uganda. J HIV AIDS Infect Dis 5: 1-13.

Back ground

HIV/AIDS has become a major public health concern globally with majority of those affected found in Sub-Saharan Africa. Knowledge regarding transmission and prevention of HIV/AIDS in Uganda is still low making most persons not to disclose their HIV status due to fear of public judgement and isolation and this makes prevention and treatment very difficult.

Aim: This study aims to examine factors associated with knowledge of HIV/AIDS transmission and prevention among men and women in Uganda.

Method: We analysed data from a nationally-representative population-based cross-sectional survey, the 2016 Uganda demographic and health survey (UDHS), which included all the consenting women aged 15-49 years who were present in sampled households the night before the survey with a sample size of 18,506 women and 5,336 men.

Results: Around 99% of respondents had heard about HIV/AIDS but only a proportion of 58% and 54 % of women and men had high knowledge regarding transmission and prevention of HIV/AIDS. After adjusting for socio-demographic factors, women and men in the age group 25-29 years were more likely to have high knowledge regarding transmission and prevention of HIV/AIDS as compared to women and men respectively in 15-19 years (COR: 1.849; 95% CI: 1.681-2.033, AOR: 1.489; 95% CI: 1.323-1.676, (COR: 1.417; 95% CI: 1.180-1.702).

Conclusion: Continuous supply of antiretroviral therapy (ART) and male circumcision as best ways of reducing HIV transmission, further more health promotion with community involvement can yield a success story.

Keywords: HIV/AIDS; Uganda; Condom use; health education; male circumcision.

Introduction

According to global HIV statistics 2017, 36.9 million people were living with HIV globally including 1.8 million children. Around 25% of these same people do not know that they have the virus [1] Since the start of the epidemic, an estimated 77.3 million people have become infected with HIV and 35.4 million people have died of AIDS-related illnesses and approximately 25.7 million people were living with HIV in sub-Saharan Africa by 2017 which is almost 66% [1] According to Uganda AIDS indicator survey of 2016, around 1.2 million people are living with HIV in Uganda with a prevalence of 6% of which women are having highest prevalence 7.5% compared to men 4.3%. Prevention of HIV-1 infection with Early Antiretroviral Therapy (ART), HIV pre and post exposure prophylaxis (PrEP) (PEP), condom use has been a successful story in sub-saharan Africa and throughout the continent. Antiretroviral therapy that reduces viral replication could limit the transmission of human immunodeficiency virus type 1 (HIV-1) in serodiscordant couples [2-7]. Many studies has shown that sexuality education is key in prevention of HIV and related sexually transmitted diseases especially if given to adolescents, schools and many people those that receive sex education are likely not to indulge in risky sexual behaviours [8, 9]. HIV testing and counselling is so important because it helps to identify those having HIV making it easier for treatment especially home based HIV counselling and testing and also prevent mother-to-child transmission (MTCT) this should also be coupled with counselling about family planning methods other than condom use alone [10-13] and which lowers transmission to others however some studies found that people are scared to find out their status, shy, fear what people might say about them in case they are positive and above all fear of death [14]. There is much evidence that a higher level of education is correlated with having more knowledge about HIV risk when compared with populations of lower education and in such categories transmission of HIV is lower in highly educated as compared to the counterparts [15]. In addition to those peer-education-based interventions, social gatherings, trainings appear to be particularly effective in facilitating the uptake of HIV-related knowledge, particularly pertaining to transmission routes [16-17]. However, some studies have found that despite the knowledge levels about HIV seem high, misconception about routes of transmission, HIV/AIDS cure and condom use is still very common [18-19]. Some other studies conducted in Uganda suggested continuous supply of ART and male circumcision as best ways for HIV prevention coupled with community involvement [20-23]. However studies have shown that male circumcision is only effective when the male partner is sero negative so even

when the male partner is circumcised when is already positive, this does not reduce transmission of HIV [24]. Another study done in Kenya suggested that exclusive breastfeeding (EBF) (breast milk feeding without additional food or drink, except medicine is likely to reduce the risk of postnatal transmission of HIV from mother to child [25]. It is also much important to create HIV awareness and safe sexual behaviours among female sex workers as one way to prevent the transmission of HIV and this would increase their knowledge about HIV like consistent use of condoms with regular clients and non paying partners hence increasing safe sexual practices aimed at curbing transmission of HIV/AIDS [26]. Other studies have revealed that partnership dissolution in HIV status aware serodiscordant couples reduce the spread of HIV and this is majorly achieved through couple HIV testing and counselling [27, 28]. However, interactions among poverty, low knowledge gender, and health systems affect women's participation in services to prevent HIV transmission from mother to child (PMTCT) also challenges faced by outreach workers for PMTCT in addition stigma, financial costs of travelling to ART centres, non-affordability of infant formula, disclosure, ART use, service design and quality, spouse/partner influence, lack of awareness of the baby's needs, decision-making autonomy in turn affects women's participation in PMTCT services [29-30]. Also some studies have suggested that specific interventions are needed to improve the utilisation of HIV testing amongst heterosexual drug users, particularly amongst non-injection drug users since they are at very high risk of HIV transmission [31]. A study carried out in Congo about male students' perspectives on condom use and concurrent sexual partnerships revealed low knowledge about prevention of sexually transmitted infection since majority of students said that they prefer flesh to flesh sex than using condom and this seems prevalent among school students [32].

Method

We analysed data from a nationally-representative population-based cross-sectional survey, the 2016 Uganda demographic and health survey (UDHS), which included all the consenting women aged 15-49 years who were present in sampled households the night before the survey. The detailed methods are described elsewhere in UBOS & ICF international 2016.

Sampling

The sampling frame used for the 2016 UDHS is the frame of the Uganda National Population and Housing Census

(NPHC), conducted in 2014; the sampling frame was provided by the Uganda Bureau of Statistics. The census frame is a complete list of all census enumeration areas (EAs) created for the 2014 NPHC. The 2016 UDHS sample was stratified and selected in two stages (NPHC). In the first stage, 697 EAs were selected from the 2014 Uganda NPHC: 162 EAs in urban areas and 535 in rural areas. One cluster from Acholi sub region was eliminated because of land disputes. Households constituted the second stage of sampling.

Variables and measurement

Independent variables

Age (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49),

Education (no education, primary, secondary, higher)

Residence (rural, urban)

Ethnicity (baganda, banyankore, bakiga, basoga, iteso, lango, others)

Wealth index (poorest, poorer, middle, richer, richest)

Religion (Anglican, catholic, Muslim, seventh day Adventist, Pentecostal/born again, others)

Occupation (not working, skilled work, agric/house hold domestic work, unskilled work)

Media exposure (never, frequently, sometimes)

Marital status (never in union, married, living with partner, widowed, divorced, separated) according to DHS 2016.

Dependent variable

Knowledge of HIV/AIDS

Measurement of knowledge

Study measured knowledge regarding transmission and prevention of HIV/AIDS using questions 1-15 below which were positively and negatively framed.1) Ever heard of AIDS 2) Reduce risk of getting HIV: always use condoms during sex 2) Reduce risk of getting HIV: have 1 sex partner only, who has no other partners 3) Can get HIV from mosquito bites 4) Can get HIV by sharing food with person who has AIDS 5) A healthy looking person can have HIV 6) Condom used during last sex with most recent partner 7) Condom used during last sex with 2nd to most recent partner 8) Condom used during last sex with

3rd to most recent partner 9) Can HIV be transmitted during pregnancy 10) Can HIV be transmitted during pregnancy 11) Can HIV be transmitted during delivery 12) Can HIV be transmitted by breastfeeding 13) Would be ashamed if someone in the family had HIV 14) Can get HIV by witchcraft or supernatural means 15) Drugs to avoid HIV transmission to baby during pregnancy

With these questions we created a composite index of knowledge and this was categorized as high and low knowledge in a dichotomous variable. We adopted the scoring procedure from previous published study of shone [33]. That is, a score of 1 was assigned for correct and 0 for incorrect answers (including refused or don't know) and means were categorized as low knowledge ≤ 7.66 and high knowledge as >7.66 for men while for women means were categorized as low knowledge ≤ 8.4 and high knowledge as >8.4 this was translated as low knowledge for scores $\leq 50\%$ and high knowledge for scores $\geq 51\%$.

Statistical analysis

Descriptive and bivariate analysis were conducted to determine association between socio-demographic variables and knowledge of transmission and prevention of HIV/AIDS, we employed survey -weighted logistic regression. For bivariate analysis, we used a Pearson chi-square test to assess significance. Multi-variate adjusted model included with all variables. Any p-value <0.05 was considered significant. All statistical analyses were performed using SPSS version 20.

Results

Descriptive statistics

Table 1 shows the background characteristics of the respondents of a total of 18,506 women and 5,336 men Majority of respondents were in the age group 15-19 years with 23.0% followed by 20-24 years with 20.7% and the least was 45-49 years with 6.5%. 39.2% of the respondents were Catholics, 31% were Anglicans and Muslims were 12.9%, 13.3 were born again, 1.6 seventh day Adventists and rest were 1.3%. Majority of the respondents completed only primary 57.4% followed by secondary 25.1% and those who completed higher education were 7.9% and those completely with no education 9.6%. Majority of the respondents were Baganda 16.8% followed by Banyankore and Bakiga while lango only 5.7% participated and others 44.8%. 73.3 % were residing in rural and only 26.7% in urban. Around 45% of the respondents were involved in agriculture / house hold domestic work while 22.8 % were not involved in any form of work

Table 1. Background characteristics of the respondents

Variable	%	N	%	N
Age				
15-19	23.0	4276	24.1	1270
20-24	20.7	3782	17.8	944
25-29	16.5	3014	13.9	740
30-34	13.7	4276	13.8	737
35-39	10.9	3784	9.2	497
40-44	8.7	3014	9.6	492
45-49	6.5	2600	6.0	363
Religion				
Anglican	31.2	5799	33.7	1831
Catholic	39.6	7552	40.4	2201
Muslim	12.9	2166	13.5	644
Seventh Day Adventist	1.6	292	1.4	68
Pentecost/ Born again	13.3	2436	9.4	497
Others	1.3	2697	1.6	95
Education				
No Education	9.6	2071	4.2	231
Primary	57.4	10893	55.3	3047
Secondary	25.1	4213	28.0	1449
More than a secondary	7.9	1329	12.5	609
Ethnicity				
Baganda	16.8	2436	17.9	729
Banyankore	10.8	1687	10.9	479
Bakiga	6.8	1419	6.9	398
Basoga	7.6	1161	7.5	356
Iteso	7.5	1637	7.6	468
Lango	5.7	1298	6.5	431
Others	44.8	8868	42.7	2475
Residence				
Urban	26.7	4379	24.9	1150
Rural	73.3	14127	75.1	4186
Occupation				
Not Working	22.8	4077	5.8	298
Skilled work	17.2	2968	15.8	704
Agriculture/ hse hold domestic work	45.4	8489	48.0	2416
Unskilled work	14.5	2936	30.4	1375
Wealth Index				
Poorest	17.5	3884	16.9	1057
Poorer	18.4	3640	17.7	1047
Middle	18.7	3485	19.6	1049
Richer	19.9	3454	22.0	1083
Richest	25.5	4043	23.7	1100
Marital Status				
Never in union	25.8	4738	39.0	2029
Married	30.3	5813	36.1	2052
Living with partner	30.3	5566	19.3	960
Widowed	2.8	523	.4	22
Divorced	0.8	139	0.6	34
Separated	9.9	1727	4.6	239

while 17.2 % skilled work and 14.5 % are involved in unskilled work. Approximately 25 % of the respondents were richest while 17.5 % were poorest rest of the respondents lie in the middle of these two categories. Around 30.3% of respondents were either married or living with partner while 25.8% were never in union and 2.8% and 0.8% were widowed and divorced respectively and 9.9 separated.

Table 2 shows distribution of HIV/AIDS knowledge among women in relation to socio-demographic factors. There was a strong association between age and knowledge regarding transmission and prevention of HIV/AIDS with $p=0.00$. It was shown that in the age group of 25-29 years 63.3% have high knowledge while 15-19 years 48.3% have low knowledge also those between 45-49 years 58 % had low knowledge. Religion was associated with knowledge regarding transmission and prevention of HIV/AIDS with $p=0.01$. Around 61.1 % of Muslims were found to have high knowledge while seventh day Adventists had the lowest knowledge. There was association between education and knowledge regarding transmission and prevention of HIV/AIDS with $p=0.01$. It was seen that 60.0% of respondents with secondary education had high knowledge as compared to primary and higher education while 44.8 % of respondents with no education had low knowledge. There was a strong association between residence, wealth index, marital status, occupation, ethnicity, and media exposure with $p<0.05$ and knowledge regarding transmission and prevention of HIV/AIDS.

Table 3 shows distribution of HIV/AIDS knowledge among men in relation to socio-demographic factors. Around 60.1% of men had high knowledge in age group 25-29 years and was strongly associated with knowledge regarding transmission and prevention of HIV/AIDS. There was no any association between religion, education, residence and knowledge regarding transmission and prevention of HIV/AIDS ($P=0.55, 0.31, 0.91$) respectively. Association was also seen in wealth index, marital status, occupation, ethnicity and media exposure.

Table 4 shows Unadjusted and adjusted odds ratios for factors associated with knowledge regarding transmission and prevention of HIV/AIDS among women with socio-demographic factors. Age was statistically significant and women in the age group 25-29 years were more likely to have more knowledge regarding transmission and prevention of HIV/AIDS as compared to women in 15-19 years (OR: 1.85; 95% CI: 1.68-2.03, aOR: 1.49; 95% CI: 1.32-1.68). Being Pentecost/born again were less likely to have knowledge regarding transmission and prevention of HIV/AIDS as compared to Anglican aOR: 0.90:

95% CI: 0.82-0.99. Ethnicity was statistically significant and Banyankore were 0.69 times less likely to have knowledge regarding transmission and prevention of HIV/AIDS (aOR: 0.69; 95% CI: 0.62-0.79) while Iteso was 0.46 times less likely to have knowledge regarding transmission and prevention of HIV/AIDS (OR: 0.46; 95% CI: 0.40-0.52). According to education those having primary were 1.12 times more likely to have knowledge compared to those with no education (aOR: 1.12; 95% CI: 1.06-1.32). According to wealth index, those who are in middle, richer and richest were 1.23, 1.37 and 1.38 times more likely than poorest to have more knowledge regarding transmission and prevention of HIV/AIDS. Those who are widowed are more likely to have high knowledge regarding transmission and prevention of HIV/AIDS (OR: 1.79; 95% CI: 1.48-2.16) after adjusting (aOR: 1.59; 95% CI: 1.29-1.96). According to occupation, those with skilled work and agriculture were 1.37 and 1.20 respectively more likely to have knowledge regarding transmission and prevention of HIV/AIDS. (OR: 1.37; 95% CI: 1.25-1.51), (OR: 1.20 95% CI: 1.12-1.29) respectively. Media exposure was statistically significant with those frequently exposed to media were more likely to have more knowledge compared to those never exposed to media (OR: 0.82; 95% CI: 0.76-0.88).

Table 5 shows unadjusted and adjusted odds ratios for factors associated with knowledge regarding transmission and prevention of HIV/AIDS among men Age group 25-29 years was statistically significant and they were likely to have more knowledge as compared to the reference category (COR: 1.42; 95% CI: 1.18-1.70) while those in age group 45-49 years were less likely to have knowledge (aOR: 0.69; 95% CI: 0.50-0.97). According to wealth index, those who are in the middle and richest were more likely to have knowledge regarding transmission and prevention of HIV/AIDS (COR: 1.32; 95% CI: 1.09-1.57) and (COR: 1.21; 95% CI: 1.02-1.43) respectively. According to occupation, those with unskilled work were more likely to have knowledge (COR: 1.59; 95% CI: 1.24-2.06).

Table 2 percentage distribution of knowledge by background characteristics among women

Variables	Low	High	Total	P-Value
	%	%	N	
Age				
15-19	51.7	48.3	4276	
20-24	39.9	60.1	3782	
25-29	36.7	63.3	3014	
30-34	37.1	62.9	2600	0.00
35-39	39.4	60.6	2029	
40-44	39	61	1621	
45-49	41.7	58.3	1184	
Religion				
Anglican	41	59	5799	
Catholic	42.4	57.6	7552	
Muslim	38.9	61.1	2166	0.01
Seventh Day Adventist	43.8	56.2	292	
Pentecostal/ born again	43.6	56.4	2436	
Others	41.3	58.7	261	
Education				
No Education	44.8	55.2	2071	
Primary	41.8	58.2	10893	
Secondary	40	60.0	4213	0.01
higher	42.6	57.4	1329	
Residence				
Urban	38.9	61.1	4379	
Rural	42.7	57.3	14127	0.00
Wealth Index				
Poorest	49.1	50.9	3884	
Poorer	43.8	56.2	3640	
Middle	40.2	59.8	3485	0.00
Richer	38.7	61.3	3454	
Richest	38.5	61.5	4043	
Marital Status				
Never in union	50.7	49.3	4738	
Married	42.3	57.7	5813	
Living with partner	36	64	5566	
Widowed	36.5	63.5	523	0.00
Divorced	42.8	57.2	139	
No longer living together/separated	35.1	64.9	1727	
Occupation				
Not working	45.7	54.3	4077	
Skilled Work	38.0	62.0	2968	
Agriculture/Hse Hold Domestic Work	41.1	58.9	8489	0.00
Unskilled Work	41.4	58.6	2936	

Variables	Low	High	Total	P-Value
	%	%	N	
Ethnicity				
Baganda	33.5	66.5	2436	
Banyankore	42.6	57.4	1687	
Bakiga	34.3	65.7	1419	
Basoga	36.3	63.7	1161	0.00
Iteso	52.5	47.5	1637	
Lango	48.1	51.9	1298	
Others	43.9	56.1	8868	
Media Exposure				
Never	45.7	54.3	4188	
Frequently	39.9	60.1	794	0.00
Some times	40.7	59.3	13524	
TOTAL	41.7	58.3	18506	

Table 3 percentage distribution of knowledge by background characteristics among men

Variables	Low	High	Total	P-Value
	%	%	N	
Age				
15-19	48.5	51.5	1270	
20-24	41.8	58.2	944	
25-29	39.9	60.1	740	
30-34	41.1	58.9	737	0.00
35-39	49.2	50.8	497	
40-44	43.2	56.2	492	
45-49	52.9	47.1	363	
50-54	53.5	46.5	293	
Religion				
Anglican	45.1	54.9	1831	
Catholic	44.0	56.0	2201	
Muslim	47.0	53.0	644	
Seventh Day Adventist	47.1	52.9	68	0.55
Pentecostal/ born again	48.0	52.0	497	
Others	43.5	56.5	95	
Education				
No Education	46.4	53.6	231	
Primary	45.2	54.3	3047	
Secondary	43.7	56.3	1449	0.31
higher	48	52	609	
Residence				
Urban	45.1	54.9	1150	
Rural	45.2	54.8	4186	0.91
Wealth Index				
Poorest	49.2	50.8	1057	

Variables	Low	High	Total	P-Value
	%	%	N	
Poorer	45.5	54.5	1047	
Middle	45.4	57.6	1049	
Richer	45.2	54.8	1083	0.05
Richest	44.5	55.5	1100	
Marital Status				
Never in union	46.9	53.1	2029	
Married	48.3	51.7	2052	
Living with partner	37.6	62.4	960	
Widowed	30.2	69.8	22	0.00
Divorced	51.0	49.0	34	
No longer living together/separated	38.9	61.1	239	
Occupation				
Not working	52.6	47.4	298	
Skilled Work	48.2	51.8	704	
Agriculture/Household domestic Work	46.7	53.3	2416	0.00
Unskilled Work	41.0	59.0	1375	
Ethnicity				
Baganda	41.7	58.3	729	
Banyankore	39.5	60.5	479	
Bakiga	38.9	61.1	398	0.00
Basoga	43.2	56.8	356	
Iteso	61.0	39.0	468	
Lango	42.9	57.1	431	
Others	47.0	53.0	2475	
Media Exposure				
Never	47.7	52.3	525	
Frequently	44.2	55.8	4294	0.01
Some times	51.4	48.6	517	
Total	56	54	5336	

Table 4. Unadjusted and adjusted odds ratios for factors associated with knowledge regarding transmission and prevention of HIV/AIDS among women.

Variables	Crude (Un adjusted odds) (95% C.I)	Adjusted odds ratio (95% C.I)
Age		
15-19 Ref		
20-24	1.62 (1.48-1.77)***	1.36 (1.23-1.51)***
25-29	1.85 (1.68-2.03)***	1.49 (1.32-1.68)***
30-34	1.82 (1.65-2.01)***	1.47 (1.29-1.67)***
35-39	1.65 (1.48-1.84)***	1.32 (1.15-1.51)***
40-44	1.67 (1.49-1.88)***	1.35 (1.17-1.56)***
45-49	1.51 (1.33-1.72)***	1.22 (1.04-1.43)**
Residence		
Urban Ref		
Rural	0.85 (0.79-0.91)	0.96 (0.88-1.04)
Religion		
Anglican Ref		
Catholic	0.94 (0.88-1.01)	0.97 (0.91-1.05)
Muslim	1.09 (0.99-1.20)	0.97 (0.87-1.07)
Seventh Day Adventist	0.89 (0.70-1.12)	0.82 (0.64-1.04)
Pentecost/ born again	0.89 (0.81-0.98)*	0.90 (0.81-0.99)*
Others	0.98 (0.75-1.28)	1.02 (0.78-1.34)
Ethnicity		
Baganda Ref		
Banyankore	0.67 (0.60-0.76)***	0.69 (0.61-0.78)***
Bakiga	0.96 (0.84-1.10)	1.03 (0.89-1.19)
Basoga	0.88 (0.77-1.01)	0.96 (0.84-1.10)
Iteso	0.45 (0.40-0.51)***	0.55 (0.47-0.63)***
Lango	0.54 (0.47-0.63)***	0.66 (0.57-0.77)***
Others	0.64 (0.59-0.70)***	0.72 (0.65-0.79)***
Education		
No Education Ref		
Primary	0.92 (0.79-1.06)	1.18 (1.06-1.32)*
Secondary	1.04 (0.93-1.16)	1.13 (0.99-1.29)
higher	1.11 (0.99-1.26)	0.89 (0.75-1.05)
Wealth Index		
Poorest Ref		
Poorer	1.24 (1.12-1.36)***	1.17 (1.06-1.29)*
Middle	1.43 (1.30-1.58)***	1.29 (1.17-1.44)***
Richer	1.53 (1.39-1.68)***	1.37 (1.23-1.53)***
Richest	1.54 (1.41-1.69)***	1.38 (1.22-1.56)***
Marital Status		
Never in union Ref		
Married	1.40 (1.29-1.52)***	1.22 (1.09-1.36)***
Living with partner	1.83 (1.69-1.98)***	1.50 (1.36-1.66)***

Widowed	1.79 (1.49-2.16)***	1.59 (1.29-1.96)***
Divorced	1.38 (0.98-1.93)	1.12 (0.78-1.59)
No longer living together	1.90 (1.70-2.13)***	1.55 (1.36-1.76)***
Occupation		
Not working Ref		
Skilled Work	1.37 (1.25-1.51)***	1.08 (0.98-1.20)
Agriculture/Hse Hold Domestic Work	1.20 (1.12-1.29)***	1.08 (0.99-1.17)
Unskilled Work	1.19 (1.08-1.31)**	1.05 (0.95-1.17)
Media Exposure		
Never Ref		
Frequently	0.82 (0.76-0.88)***	1.05 (0.89-1.25)
Sometimes	1.03 (0.89-1.18)	1.07 (0.99-1.15)

Note: Ref is the reference category, level of significance * p-value of <0.05, **p-value of <0.01, ***p-value of <0.001

Table 5. Unadjusted and adjusted odds ratios for factors associated with knowledge regarding transmission and prevention of HIV/AIDS among men.

Variables	Crude(Unadjusted odds ratio) (95% C.I)	Adjusted odds ratio (95% C.I)
Age		
15-19 Ref		
20-24	1.31 (1.11-1.55)*	1.23 (1.00-1.49)*
25-29	1.42 (1.18-1.70)***	1.22 (0.94-1.57)
30-34	1.35 (1.12-1.62)**	1.15 (0.87-1.51)
35-39	0.97 (0.79-1.19)	0.82 (0.61-1.11)
40-44	1.24 (1.01-1.52)*	1.09 (0.81-1.48)
45-49	0.84 (0.66-1.07)	0.69 (0.50-0.97)*
Ethnicity		
Baganda Ref		
Banyankore	1.09 (0.89-1.35)	1.15 (0.90-1.46)
Bakiga	1.12 (0.88-1.44)	1.13 (0.87-1.48)
Basoga	0.94 (0.74-1.19)	0.99 (0.76-1.27)
Iteso	0.45 (0.36-0.58)***	0.49 (0.38-0.65)***
Lango	0.95 (0.74-1.22)	1.06 (0.79-1.40)
Others	0.81 (0.69-0.94)	0.87 (0.72-1.04)
Wealth Index		
Poorest Ref		
Poorer	1.16 (0.96-1.39)	1.02 (0.83-1.24)
Middle	1.32 (1.09-1.57)*	1.15 (0.98-1.41)
Richer	1.17 (0.98-1.39)	0.99 (0.81-1.23)
Richest	1.21 (1.02-1.43)*	1.14 (0.89-1.46)
Marital Status		
Never in union Ref		
Married	0.95 (0.83-1.07)	1.09 (0.88-1.36)

Living with partner	1.46 (1.26-1.70)***	1.44 (1.15-1.79)*
Widowed	2.04 (0.77-5.39)	2.83 (1.02-7.84)*
Divorced	0.85 (0.43-1.67)	0.99 (0.48-2.07)
No longer living together/separated	1.39 (1.06-1.82)**	1.47 (1.05-2.06)*
Occupation		
Not working Ref		
Skilled Work	1.19 (0.90-1.56)	1.05 (0.77-1.42)
Agriculture/House Hold Domestic Work	1.26 (0.99-1.62)	1.19 (0.92-1.56)
Unskilled Work	1.59 (1.24-2.06)***	1.34 (1.02-1.76)*
Media Exposure		
Never Ref		
Frequently	1.15 (0.95-1.39)	1.13 (0.83-1.54)
Sometimes	0.86 (0.67-1.11)	1.19 (0.87-1.66)

Note: Ref is the reference category, level of significance * p-value of <0.05, **p-value of <0.01, ***p-value of <0.001

Discussion

Our study examined the factors associated with knowledge regarding transmission and prevention of HIV/AIDS in Uganda. The present study examined both men and women knowledge. The results show that there is improved HIV knowledge and similar study by Shona and kadengye [33] support this finding. The study from the national population based survey found out that over 99% of both women and men ever heard of AIDS but only 58% and 54% had high knowledge about transmission and prevention of HIV, this means health education need to be scaled up to achieve 90-90-90 of UNAIDS 2020 target. According to kadengye and shone [33] 40% of the women had high knowledge which means there is slight increase in the knowledge regarding transmission and discrimination. These results were consistent with peltzer [14].

Previous studies have showed that education play a big role in curbing HIV/AIDS and this is consistent with this study as we found education statistically associated with HIV knowledge [14, 34]. Many studies showed that Early Antiretroviral Therapy (ART) and condom use can prevent transmission of HIV/AIDS and this can lower the incidence of the infection hence controlling the spread of the disease [2-5]. Previous studies revealed that testing and counselling have shown a successful story since this helps in early case detection and early treatment which has played a major role in preventing mother to child transmission (MTCT) therefore this should continue to be scaled up as a public health strategy to prevent transmission of HIV/AIDS [10], [11]. However, some studies have found that despite the knowledge levels about HIV seem improving, misconception about routes of transmission, HIV/AIDS cure

and condom use is still very common in our study we found that 24% of respondents who still believe HIV can be transmitted by mosquito bites [18-19]. A limitation to our analysis is that we analysed knowledge of HIV/AIDS but were not able to assess actual HIV status.

Conclusion

Women and men who are residing in urban with higher education, richest and having skilled work were less likely to express stigma and discriminatory attitudes towards PLWHA and have high knowledge. Around 58% and 54% of women and men respectively had high knowledge about transmission and prevention of HIV/AIDS. Continuous supply of ART and male circumcision as best ways for HIV prevention coupled with community involvement. Scale up voluntary counselling and testing and increasing condom use as one way of preventing the transmission of HIV and health education need to be scaled up to achieve 90-90-90 of UNAIDS 2020 target. Sex education should be included in the school syllabus this will reduce misconceptions surrounding HIV/AIDS transmission and improve early interventions (primary intervention) such as abstinence. Government should not enact laws that criminalise gays, sex workers, injecting drug users because these are high risk groups that are highly responsible for increase of the infection. Criminalising them makes prevention efforts very difficult since they will not show up for treatment.

Notes

Compliance with ethical standards

Ethical considerations

This article is based on the secondary analysis of data which is available to all on demand for research purposes. Hence no compliance with ethical standards was required but we obtained permission from DHS division at ICF international from where data was downloaded.

References

- (2018) U.S department of Health & Human services. Global statistics (Web article).
- Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N & Godbole SV (2011) Prevention of HIV-1 infection with early antiretroviral therapy. *New England journal of medicine* 365: 493-505.
- Attia S, Egger M, Müller M, Zwahlen M, & Low N (2009) Sexual transmission of HIV according to viral load and antiretroviral therapy: systematic review and meta-analysis. *Aids* 23: 1397-1404.
- Jain A, Tobey E, Ismail H, & Erulkar A (2018) Condom use at last sex by young men in Ethiopia: the effect of descriptive and injunctive norms. *Reproductive Health* 15:164
- Bareki P, & Tenego T (2018) Assessment of knowledge, attitudes and practices of HIV post exposure prophylaxis among the doctors and nurses in Princess Marina Hospital, Gaborone: a cross-sectional study. *Pan African Medical Journal* 30: 233.10556.
- Kambutse I, Igiraneza G, & Ogbuagu O (2018) Perceptions of HIV transmission and pre-exposure prophylaxis among health care workers and community members in Rwanda. *PLOS ONE* 13: e0207650.
- Chibawara T, Mbuagbaw L, Kitenge M, & Nyasulu P (2019) Effects of antiretroviral therapy in HIV-positive adults on new HIV infections among young women: a systematic review protocol. *Systematic Reviews* 8.
- Haberland N, & Rogow D (2015). Sexuality education: emerging trends in evidence and practice. *Journal of adolescent health* 56: S15-S21.
- Sekirime W K, Tamale J, Lule JC, & Wabwire-Mangen F (2001) Knowledge, attitude and practice about sexually transmitted diseases among University students in Kampala 1: 7.
- Haruna T S, Assenga E, & Shayo J (2018) A qualitative study on the voluntariness of counselling and testing for HIV amongst antenatal clinic attendees: do women have a choice? *BMC Medical Ethics* 19: 92.
- Pokharel R, Bhattarai G, Shrestha N, & Onta S (2018) Knowledge and utilization of family planning methods among people living with HIV in Kathmandu, Nepal. *BMC Health Services Research* 18: 836.
- Goggin K, Finocchiaro-Kessler S, Staggs V, Woldetsadik MA, Wanyenze RK, et al. (2015) Attitudes, Knowledge, and Correlates of Self-Efficacy for the Provision of Safer Conception Counseling Among Ugandan HIV Providers. *AIDS Patient Care and STDs* 29: 651–660.
- Dieffenbach C W, & Fauci AS (2009) Universal voluntary testing and treatment for prevention of HIV transmission *Jama* 301: 2380-2382.
- Mohlabane N, Peltzer K, Mwisongo A, Ntsepe Y, Tutshana B, Rooyen HV, & Knight L (2015) Quality of HIV counseling in South Africa. *Journal of Psychology* 6: 19-31.
- Sidhu A, Kakkar R, & Alenezi O (2019) The Management of Newly Diagnosed HIV in a Sudanese Refugee in Canada: Commentary and Review of Literature. *Reviews on Recent Clinical Trials* 14: 61–65.
- Hoang C D, Tran BX, Pham MD, Nguyen LH, Do HN, Vuong QH, et al. (2019) HIV- and AIDS-related knowledge and attitude of residents in border regions of Vietnam. *Harm Reduction Journal* 16.
- Nguyen TMT, Tran BX, Fleming M, Pham MD, Nguyen LT, et al. (2019) HIV knowledge and risk behaviors among drug users in three Vietnamese mountainous provinces. *Substance Abuse Treatment, Prevention, and Policy* 14.
- Rukundo A, Muwonge MM, Mugisha D, Aturwanaho D, Kasangaki A, et al. (2016) Knowledge, Attitudes and Perceptions of Secondary School Teenagers towards HIV Transmission and Prevention in Rural and Urban Areas of Central Uganda. *Health* 08: 937–952.
- Tavoosi A, Zaferani A, Enzevaei A, Tajik P, & Ahmadi-ezhad Z (2004) Knowledge and attitude towards HIV/AIDS among Iranian students. *BMC Public Health* 4.
- Mukudu H, Dietrich J, Otwombe K, Manentsa M, Hlongwane K, Haas-Kogan M, Martinson N (2019) Voluntary medical male circumcision (VMMC) for prevention of heterosexual transmission of HIV and risk compensation in adult males in Soweto: Findings from a programmatic setting *PLOS ONE* 14.
- Mati K, Adegokke KK, & Salihu H M (2016) Factors associated with married women's support of male circumcision for HIV prevention in Uganda: a population based cross-sectional study. *BMC Public Health* 16.

22. Lubega M, Nakyaanjo N, Nansubuga S, Hiire E, Kigozi G, et al. (2015) Understanding the socio-structural context of high HIV transmission in kasensero fishing community, South Western Uganda. *BMC Public Health* 15.
23. Chang LW, Mbabali I, Kong X, Hutton H, Amico KR, et al. (2017) Impact of a community health worker HIV treatment and prevention intervention in an HIV hotspot fishing community in Rakai, Uganda (mLAKE): study protocol for a randomized controlled trial. *Trials* 18.
24. Wawer MJ, Makumbi F, Kigozi G, Serwadda D, Watya S, et al. (2009) Circumcision in HIV-infected men and its effect on HIV transmission to female partners in Rakai, Uganda: a randomised controlled trial. *The Lancet* 374: 229–237.
25. Okanda J, Otieno G, Kinuthia J, Kohler P. & John-Stewart G (2018) Higher likelihood of 6-months exclusive breastfeeding among HIV infected than uninfected mothers: a household survey in Kenya. *International Breastfeeding Journal* 13.
26. Kakchapati S, Gautam N, Kc K, & Rawal BB (2018) HIV awareness and safe sexual behaviors among female sex workers in Kathmandu valley of Nepal. *HIV/AIDS - Research and Palliative Care* 10: 157–166.
27. Reniers G, & Armbruster B (2012) HIV Status Awareness, Partnership Dissolution and HIV Transmission in Generalized Epidemics. *PLoS ONE* 7.
28. Ramlagan S, Matseke G, Rodriguez VJ, Jones DL, Peltzer K, Ruiters RAC, et al. (2018) Determinants of disclosure and non-disclosure of HIV-positive status, by pregnant women in rural South Africa. *SAHARA-J: Journal of Social Aspects of HIV/AIDS* 15:155–163.
29. Yourkavitch J, Hassmiller Lich K, Flax V L, Okello ES, Kadzandira J, Katahoire AR, et al. (2018) Interactions among poverty, gender, and health systems affect women's participation in services to prevent HIV transmission from mother to child: A causal loop analysis. *PLOS ONE* 13: e0197239.
30. Alemu YM, Habtewold TD, & Alemu SM (2018) Mother's knowledge on prevention of mother-to-child transmission of HIV, Ethiopia: A cross sectional study. *PLOS ONE* 13:e0203043.
31. Jiang Z, Xiu C, Yang J, Zhang X, Liu M, Chen X, & Liu D (2018) HIV test uptake and related factors amongst heterosexual drug users in Shandong province, China. *PLOS ONE* 13:e0204489.
32. Mulumeoderhwa M (2018) 'It's not good to eat a candy in a wrapper': male students' perspectives on condom use and concurrent sexual partnerships in the eastern Democratic Republic of Congo. *SAHARA-J: Journal of Social Aspects of HIV/AIDS* 15: 89–102.
33. Kadengye DT, & Dalal S (2019) Social intolerance, risky sexual behaviors and their association with HIV knowledge among Ugandan adults: results from a national survey. *AIDS care* 31: 250-254.
34. Yaya S, Bishwajit G, Danhouno G, ShahV, & Ekholuenetale M (2016) Trends and determinants of HIV/AIDS knowledge among women in Bangladesh. *BMC Public Health* 16: 812.

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