Factors Associated with Low Uptake of HIV Testing Among Middle-Aged 15-17 Years Old Adolescent Girls in Uganda

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Abstract

Background: There are significant gaps in the HIV clinical cascade among young people in terms of reaching the 90–90–90 targets set by Joint United Nations Programme on HIV and AIDS. The impact of recent interventions on uptake of HIV testing among women 15-24 years is unknown. To inform efforts in the implementation of "test-and-treat", we draw on data collected by the Uganda Demographic Health Survey 2016 to assess rate of HIV testing uptake and associated factors among young women aged 15–24 years in Uganda.

Methods: The analysis used the UDHS 2016 survey data. Univariate analysis was used summarize rate of HIV testing uptake among women 15-25 years. Bivariate analysis to examine associations between socio-demographic factors, HIV knowledge, socio-cultural factors and outcome variable. A complete case analysis was used and missing observations for women were disregarded. All variable with p< 0.2 were included in the multivariate analysis. Using the backward elimination strategy, a set of variables significant at p <0.05 were identified and included in the final model. Statistical analyses where be performed using the Stata version 14.

Results: The overall mean age of the study participants was19.3 ± 2.88 years and a median of 19 (IQR: 17- 22) years. Uptake of HIV testing was observed to be associated with age group, secondary/higher education, marital status, being employed year-round, media exposure, and age at sexual debut, number of lifetime sexual partners and level of HIV knowledge. Young women with a high level of HIV knowledge were 3.65 (95% CI: 1.68, 7.96) times more likely to uptake HIV testing when compared to those with a low level of HIV knowledge. Compared to those with no lifetime sexual partners, young with one reported lifetime sexual partner were 3.76 (95%CI: 2.88, 4.90) times more likely to uptake HIV testing; those with two partners 3.89(2.86, 5.28) times more likely and 5.53(4.13, 7.39) times more likely to uptake HIV testing among those with 3 or more lifetime sexual partners.

Conclusion: There was significant improvement in HIV testing uptake among women 15-24 years, uptake among middle adolescents remained very low. Local and international implementing partners should focus their efforts to promoting HIV testing uptake among middle adolescents.

Keywords: Uptake, HIV Testing, HIV Knowledge, Adolescents, Young Women.

Background

Sub-Saharan Africa is home to more than 80% women aged 15 years and above living with HIV [1]. In 2018, 37% of young people newly infected with HIV were adolescents aged 15-19 years. Disproportionately, two in every three new HIV infection is among young Sub Saharan African women aged 15-24 years and 73% of these new infections are young women 10-19 from Eastern and Southern Africa [2]. In Uganda, the incidence of

HIV incidence among young women is estimated to be 3.7% and the corresponding prevalence is 9.1% compared to 7.3% national prevalence [3]. By the time adolescent girls 15-19 years are 24 years of age, the cohort HIV prevalence has doubled and infection is in a specific age groups and populations that includes adolescents and young women [4]. Whereas early global AIDS response neglected adolescents, recent times have seen urgent scaling up of effective adolescent HIV/AIDS prevention, treatment and care interventions [5]. Worrying is the decimal 19 to 23 percent HIV testing uptake among adolescent girls aged 15-19 in Eastern and Southern Africa [6, 7].

Early diagnosis and awareness about HIV status are key in reduction of HIV transmission and timely access to lifelong antiretroviral treatment (ART) in adolescent population. Smart targeting of key undiagnosed and not-in-care adolescents living with HIV is likely to provide critical and potentially life-saving opportunities for immediate diagnosis and linkage to care. In 2015, an All-in to End the Adolescent AIDS Epidemic (All In) campaign aimed at reducing new HIV infections among adolescents by at least 75% and AIDS-related deaths by at least 65% for adolescents living with HIV was launched [8]. In many African governments, policies lowering age of consent to permit independent access to HIV testing and counselling services as early as 12 years of age have been enacted [9]. Uptake of HIV testing has also been enforced through family-based care and provider-initiated testing and counseling (PITC), supported through better community and family engagement, to build treatment literacy and support for HIV testing across board [10]. These and many other research models based on clinical or operational research methods have played a central role in informing programmed improvement.

There are gaps in the clinical cascade of HIV care and treatment of young people in terms of reaching the 90–90–90 targets as set by Joint United Nations Programmed on HIV and AIDS (UNAIDS) [11]. In addition to the low HTS utilization among adolescents, the impact of recent interventions to achieve the first 90 of UNAIDS among women 15-17 years in Uganda is unknown. Young women's ability to form relationship with men 5 to 10 years older increases their risk of acquiring HIV 5-7 years earlier than their corresponding male counterparts [12]. This age-sex difference in HIV acquisition is a major driver of new HIV infections that is worsened by gaps in women-initiated HIV prevention technologies such as ability to negotiate current HIV prevention options of abstinence, behavior change, condoms and early treatment initiation [13]. This knowledge gap in women-initiated HIV prevention technologies and interventions remains a big challenge for young women 15-24 years. Using data collected by Uganda Demographic Health Survey 2016, this study assessed factors associated with low uptake of HIV testing among young women aged 15–17 years in Uganda.

Statistical Methods
Data Source
Permission to use the sixth Uganda Demographic and Health Survey (UDHS) data was obtained from The Demographic and Health Surveys (DHS) Program ICF. The 2016 UDHS contained nationally representative sample of over 20,000 households. The 2016 UDHS sample was stratified and selected in two stages. In the first stage, 697 enumeration areas (EAs) were selected from the 2014 Uganda NPHC with 62 EAs in urban areas and 535 in rural areas. The second stage involved systematic sampling of households from each of the 696 accessible selected EAs. The UGHR7HDT Individual Recode (IR) dataset for women and household variables was used in the study analysis.

Measures
The outcome variable was uptake of HIV testing among young women 15-24 years defined as proportion of women who tested and received their HIV results. The numerator was all women 15-24 who tested for HIV and received their results and the denominator was all women 15-24 years who met the inclusion criteria for the survey. Our working assumption was that uptake of HIV testing only occurs when a woman undergoes HIV testing and receives results of her HIV status. Independent variables included socio-demographical, economical and behavioral, as well as knowledge and attitudes toward HIV/AIDS.

Socio-demographical covariates of interests were age, age group, education level, marital status, religion, occupation, place of residence, wealth index, number of lifetime partners, and age at sexual debut. The women's current age was categorized into "15-17" and "18-24" based on age transitions mark relevant thresholds for age of consent for HIV testing and for partnered sex. The "15-17" are middle adolescents who require functional competencies in place to manage their health. Although not of legal age and lack skills to negotiate complex systems, many live on their own and routinely engage in unprotected sex for survival which disadvantages their decision making due to power differentials. The "18-24" are late adolescents often considered to be adulthood, however significant brain development such as prefrontal cortex responsible for decision-making is known not to have actually mature fully until age 25, hence exposure to vulnerability and resilience in terms of HIV risk and testing decisions.

Sexual behavior was assessed based on age at sexual debut and self-reported lifetime number of sexual partners. HIV/AIDS knowledge was assessed by creating an index of correct responses to nine questions related to HIV transmission summarized using principal component analysis.

Socio-cultural factors included Stigma, socio-cultural support, behavioral and decision-making abilities by young women. Stigma towards PLWH was assessed using a set of two questions in the UDHS: 1) Being ashamed if someone in the family had HIV and 2) Willing to buy food from an HIV positive vendor. Socio-cultural support was assessed using 1) Permission to take HIV is a big problem, 2) Social support and protection to take HIV testing is a big problem and 3) Getting money needed for treatment is a big problem. Whereas access to services was based on Know a place to get tested and Distance to health facility is a problem.

Statistical Analysis
Exploratory data analysis was carried out on the 2016 UDHS UGIR7HFL dataset for women. Variables of interest and found to exist were documented on paper. A list of selected variables was examined to establish their storage type, display format, value and variable labels. Variables of interest were also examined to determine the range, number of unique values, number miss-

ing observations, variable numeric codes and label on the values existence, determine the type and values captured by variables of interests for the names.

Univariate analysis was used to describe participants' characteristics and also summarize rate of HIV testing uptake among women 15-25 years. For categorical variables Chi-square tests was used to test the goodness of fit for the data and the likeliness that the observed distribution is due to chance. To address the issue of missing data, a complete cases analysis was employed and missing observations for women before proceeding to bivariate and multivariate analysis.

Prevalence ratios (PR) were obtained using a modified Poisson regression model that used Generalized Estimating Equation to consider clustering of observations and perform the unbiased variance estimation. Bivariate analysis was performed to examine associations between socio-demographic factors, HIV knowledge/perception, health services socio-cultural factors and outcome variable i.e. Uptake of HIV testing. Multivariate analysis was performed to identify factors associated with uptake of HIV testing. A complete case analysis was used and missing observations for women were disregarded. All variable with p< 0.2 were included in the multivariate analysis. A multilevel

model was fitted adjusting for individual level covariates of age, education, marital status, religion, wealth index, place of residence, media exposure, HIV/AIDS knowledge, lifetime number of sexual partners, and HIV related stigma, distance, cost, decision and support. Using the backward elimination strategy, a set of variables significant at p <0.05 were identified and included in the final model. Confounding was considered present if introducing a variable changes the magnitude of the existing variable(s) odds ratio by 10% or more. Interaction was assessed using likelihood ratio test. Collinearity among the independent variables was assessed by using a correlation matrix and those found to be collinear removed from the final model. The final model was checked to see if it fits the data well using the Hosmer-Lemeshow goodness of fit test. Statistical analyses where be performed using the Stata version 14.

Results

In Figure 1, we present summary information on the process leading to selection of study participants. The sample of the UDHS 2016 UGIR7HFL.DTA dataset consisted of 18,506 women of which 8,058 were women 15 to 24 years of age. Study final analysis is thus made up of 7,895 women 15-24 years whose records are without missing observations.
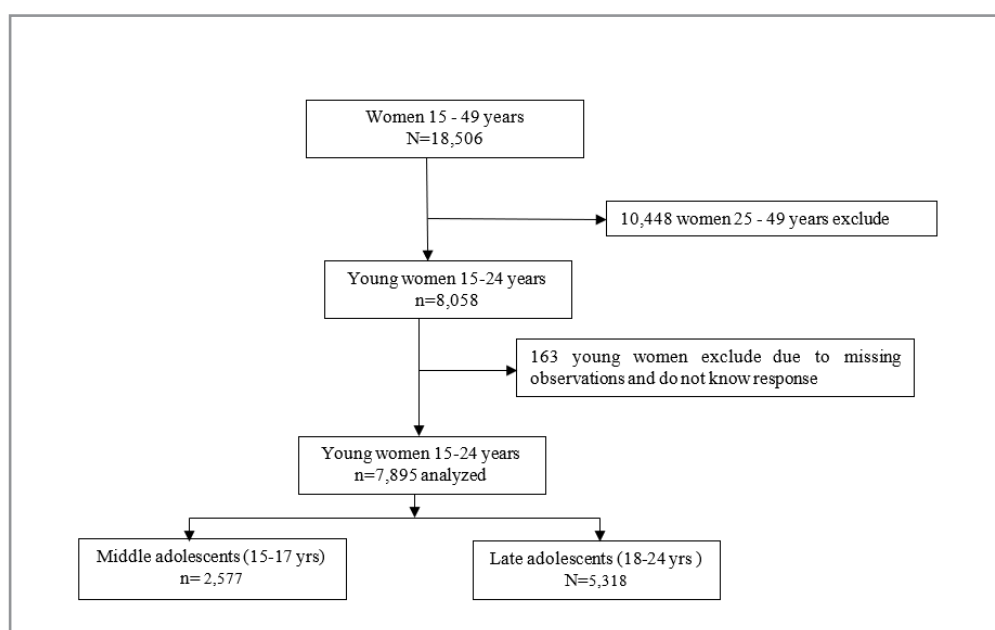
Figure 1: Flow Chart of Eligible Young Women 15-25 years Included in the Study

The socio-demographic characteristics of young women are presented in Table 1. The overall mean age of the study participants was 15.9 ± 0.79 years. To test whether there was an age difference among middle adolescent girls with good HIV testing uptake against poor testing uptake, a two-sample t-test was applied. Results indicated the mean age of young women with HIV

testing uptake. The mean age for middle adolescents with good uptake was 16.20 ± 0.755 while that with poor uptake was 15.8 ± 0.77 and the difference was statistically significant ($p < 0.001$). The mean age between good HIV testing uptake and those poor uptakes is different from zero, allowing for differences in variances across groups

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
no	1479	15.80595	.0201018	.7730699	15.76652	15.84538

yes	1098	16.20036	.0227958	.0227958	16.15564	16.24509
combined	2577	15.974	.0155601	.7898959	15.94349	16.00451
diff	-.3944143	.0304973		-.454216	-.3346127

diff = mean(no) - mean(yes)   t = -12.9328
Ho: diff = 0   degrees of freedom =   2575

Ha: diff < 0   Ha: diff != 0   Ha: diff > 0
Pr(T < t) = 0.0000   Pr(|T| > |t|) = 0.0000   Pr(T > t) = 1.0000

More than half of the participants (67.36%, n = 5,318) were between 18 and 24 years; 44% of the young women reported having their sexual debut at an age of being less than 15 years; majority i.e. (60.52%, n=4,778) reporting to having a primary level of education. 33% of the respondents reported to having only one lifetime sexual partners. 75.8% being from a rural setting and 45% having access to middle media exposure.

Table 1: Socio-demographic Characteristics of Young Women in the Uganda Demographic and Health Survey 2016

Variables			Number	Proportion (%)
Age				
Mean(SD)	19(2.88)			
Median (IQR)	19(17- 22)			
Categories				
18-24			5,318	67.36
15-17			2,577	32.64
Education				
no education			276	3.50
Primary			4,778	60.52
Secondary/higher			2,841	35.98
Marital status				
Single			4,606	58.34
Married/in union			3,289	41.66
Religion				
Muslim			1,012	12.82
Catholic			2,427	30.74
Anglican			3,175	40.22
Evangelical			1,065	13.49
Other religions			216	02.74
Place of residence				
Urban			1,913	24.23
Rural			5,982	75.77
Wealth index				
poorest			1,655	20.96
poorer			1,613	20.43
middle			1,399	17.72
richer			1,446	18.32
richest			1,782	22.57
Media exposure				

Low (0–1)		2,537	32.13
Middle (2–3)		3,556	45.04
High (4–6)		1,802	22.82
Age at Sexual Debut			
Less than 15 years		3,485	44.14
15–16 years		2,027	25.67
17 & above		2,383	30.18
Number of lifetime sexual partners			
no partner		2,507	31.75
one partner		2,611	33.07
two partners		1,555	19.70
3 or more		1,222	15.48

Table 2. presents knowledge of access to HIV testing service, HIV knowledge, and socio-cultural characteristics (such as sex behaviors, and HIV stigma) among women aged 15-24 years that affect uptake of HIV testing.

Table2: Knowledge of Access to HIV Testing Service, HIV Knowledge, Sex Behaviors, and HIV Stigma Among Young Women.

Characteristics	n	Proportion (%)
HIV knowledge		
Level of HIV knowledge		
Low	68	0.86
Medium	884	11.20
High	6,943	87.94
Willing to buy food from an HIV positive vendor		
No (stigma)	2,540	32.17
Yes	5,355	67.83
Being ashamed if someone in the family had HIV		
No (stigma)	5,229	66.23
Yes	2,666	33.77
Permission to take HIV is a big problem		
No	7,363	93.26
Yes	532	6.74
Social support and protection to take HIV testing is a big problem		
No	6,150	77.90
Yes	1,745	22.10
Know a place to get tested		
No	421	5.33
Yes	7,474	94.67
Getting money needed for treatment is a big problem		
No	4,519	57.24
Yes	3,376	42.72
Distance to health facility is a problem		
No	4,989	63.19
Yes	2,906	36.81

HIV Testing Uptake

Figure 2 presents uptake of HIV testing. The proportion of HIV testing uptake among young women was 71.89%, 42.6% of which was contributed to by women aged 15-17 and 80.66% by women 18-24. This represented an 8-percentage point increase in HIV testing uptake among women 15-24 years. HIV testing uptake was lowest among adolescents compared to young adults. HIV testing uptake was found very low among women with low level of HIV Knowledge i.e. 19.12% and relatively lower i.e. 42.6% among those aged 15-17 years compared to women 18-24 years of age who had 86.1%.
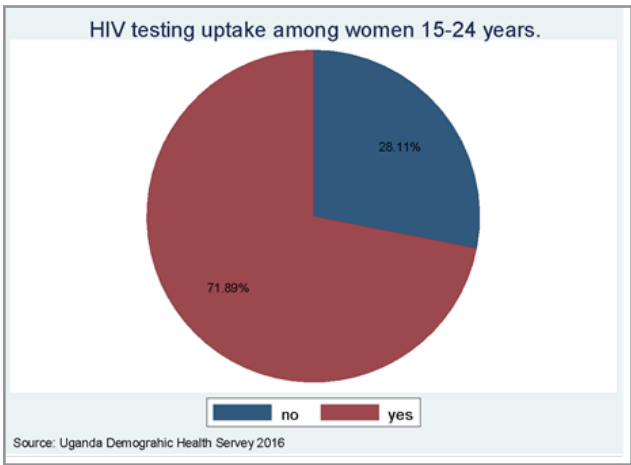

Figure 2: Uptake of HIV Testing Among Women 15-24 years of age

Determinants of HIV Testing Uptake

Uptake of HIV testing was observed to be associated with age group, secondary/higher education, marital status, being employed year-round, media exposure, and age at sexual debut, number of lifetime sexual partners and level of HIV knowledge Table 4. Study results also indicate that the more the number of lifetime sexual partners the more times young women are likely to uptake HIV testing. Likewise, the higher the age at sexual debut and the higher the level of knowledge the more likely for young women to uptake HIV test i.e. Young women with a high level of HIV knowledge were 3.65 (95% CI:1.68,7.96) times more likely to uptake HIV testing when compared to those with a low level of HIV knowledge. The results were statistically significant. Compared to those with no lifetime sexual partners, young with one reported lifetime sexual partner were 3.76 (95%CI: 2.88, 4.90) times more likely to uptake HIV testing; those with two partners 3.89(2.86, 5.28) times more likely and 5.53(4.13, 7.39) times more likely to uptake HIV testing among those with 3 or more lifetime sexual partners. All these results were statistically significant.

Table 3: Bivariate Analyses of Young Women's Characteristics with HIV Testing Uptake

Characteristics	HIV testing uptake		Bivariate	
	No n=2,219	Yes n=5,676	COR (95% CI)	p-value
Age groups				
18-24	740 (13.92)	4,578 (86.08)	Reference	
15-17	1,479 (57.39)	1,098 (42.61)	0.12(0.10,0.13)	0.000
Education				
No school	81 (29.35)	195 (70.65)	Reference	
Primary	1,586 (33.19)	3,192 (66.81)	0.69(0.48,1.00)	0.055
Secondary/higher	552 (19.43)	2,289 (80.57)	1.40(0.95,2.06)	0.088
Marital status				
Married/in-union	287 (8.73)	3,002 (91.27)	Reference	
Single	1,932 (41.95)	2,674 (58.05)	0.13(0.11,0.15)	0.000
Place of residence				
Urban	21 (1.41)	1,467 (76.69)	Reference	
Rural	148(3.38)	4,209 (70.36)	0.68(0.57,0.81)	0.000
Media exposure				
Low exposure	887 (34.96)	1,650 (65.04)	Reference	

Medium exposure	958 (26.94)	2,598 (73.06)	1.45(1.28,1.64)	0.000
High exposure	374 (20.75)	1,428 (79.25)	2.05(1.73,2.44)	0.000
Age at Sexual Debut				
< 15	1,704(48.90)	1,781 (51.10)	Reference	
15 - 16	295 (14.55)	1,732 (85.45)	5.92(5.01,7.00)	0.000
17 above	220 (9.23)	2,163 (90.77)	10.18(8.47,12.23)	0.000
Number of lifetime sexual partners				
no partner	1,538 (61.35)	969 (38.65)	Reference	
one partner	385 (14.75)	2,226 (85.25)	9.38(8.01,10.98)	0.000
two partners	186 (11.96)	1,369 (88.04)	12.24(9.81,15.29)	0.000
3 or more	110 (9.00)	1,112 (91.00)	16.64(12.98,21.34)	0.000
Level of HIV knowledge				
Low	55 (80.88)	13 (19.12)	Reference	
Medium	393 (44.46)	491 (55.54)	5.54(2.74,11.19)	0.000
High	1,771 (25.51)	5,172 (74.49)	13.04(6.53,26.04)	0.000
Being ashamed if someone in the family had HIV				
No (stigma)	1,013 (39.88)	1,527 (60.12)	Reference	
Yes	1,206 (22.52)	4,149 (77.48)	0.58(0.51,0.65)	0.000
Willing to buy food from an HIV positive vendor				
No (stigma)	1,259 (24.08)	3,970 (75.92)	Reference	
Yes	960 (36.01)	1,706 (63.99)	2.24(1.99,2.52)	0.000
Permission to take HIV is a big problem				
No	2,021 (27.45)	5,342 (72.55)	Reference	
Yes	198 (37.22)	334 (62.78)	0.62(0.50,0.77)	0.000
Social support and protection to take HIV testing is a big problem				
No	1,637 (26.62)	4,513 (73.38)	Reference	
Yes	582 (33.35)	1,163 (66.65)	0.71(0.61,0.82)	0.000
Getting money needed for treatment is a big problem				
No	1,260 (27.88)	3,259 (72.12)	Reference	
Yes	959 (28.41)	2,417 (71.59)	0.95(0.83,1.08)	0.418
Distance to health facility is a problem				
No	1,402 (28.10)	3,587 (71.90)	Reference	
Yes	817 (28.11)	2,089 (71.89)	1.02 (0.90,1.16)	0.735

Table 4: Bivariate and Multivariable Analyses of Participant Characteristic and HIV Testing Uptake

	Bivariate		Multivariate	
Characteristics	COR (95% CI)	p-value	COR (95% CI)	p-value
Age groups				
18-24	Reference		Reference	

15-17	0.12(0.10,0.13)	0.000	0.45(0.38,0.53)	0.000
Education				
No school	Reference		Reference	
Primary	0.69(0.48,1.00)	0.055	1.04(0.62,1.73)	0.883
Secondary/higher	1.40(0.95,2.06)	0.088	1.74(1.01,2.98)	0.044
Marital status				
Married/in-union	Reference			
Single	0.13(0.11,0.15)	0.000	0.39(0.32,0.49)	0.000
Religion				
Muslim	Reference		Reference	
Anglican	0.81(0.67,0.99)	0.044	1.09(0.84,1.40)	0.523
Catholic	0.95(0.78,1.15)	0.593	1.31(1.03,1.66)	0.027
Evangelical	0.90(0.70,1.15)	0.394	1.23(0.92,1.64)	0.160
Other religions	0.73(0.50,1.07)	0.112	0.94(0.57,1.56)	0.827
Place of residence				
Urban	Reference		Reference	
Rural	0.68(0.57,0.81)	0.000	0.84(0.67,1.05)	0.135
Wealth index				
Poorest	Reference		Reference	
Poor	0.93(0.78,1.11)	0.452	0.90(0.72,1.13)	0.360
Middle	0.83(0.70,0.98)	0.024	0.84(0.66,1.06)	0.147
Richer	0.97(0.80,1.19)	0.803	0.79(0.61,1.04)	0.092
Richest	1.42(1.17,1.72)	0.000	0.95(0.71,1.28)	0.725
Media exposure				
Low exposure	Reference		Reference	
Medium exposure	1.45(1.28,1.64)	0.000	1.28(1.09,1.50)	0.002
High exposure	2.05(1.73,2.44)	0.000	1.67(1.34,2.09)	0.000
Age at Sexual Debut				
< 15	Reference		Reference	
15 - 18	5.92(5.01,7.00)	0.000	1.24(0.98,1.57)	0.070
19 - 24	10.18(8.47,12.23)	0.000	1.37(1.04,1.81)	0.024
Number of lifetime sexual partners				
no partner	Reference		Reference	
one partner	9.38(8.01,10.98)	0.000	3.76(2.88,4.90)	0.000
two partners	12.24(9.81,15.29)	0.000	3.89(2.86,5.28)	0.000
3 or more	16.64(12.98,21.34)	0.000	5.53(4.13,7.39)	0.000
Level of HIV Knowledge				
Low	Reference		Reference	

Medium	5.54(2.74,11.19)	0.000	2.73(1.22,6.11)	0.015
High	13.04(6.53,26.04)	0.000	3.65(1.68,7.96)	0.001
Willing to buy food from an HIV positive vendor				
No (stigma)	Reference		Reference	
Yes	2.24(1.99,2.52)	0.000	1.70(1.46,1.98)	0.000
Being ashamed if someone in the family had HIV				
No (stigma)	Reference		Reference	
Yes	0.58(0.51,0.65)	0.000	0.86(0.74,1.00)	0.059
Permission to take HIV is a big problem				
No	Reference		Reference	
Yes	0.62(0.50,0.77)	0.000	0.84(0.64,1.12)	0.234
Social support and protection to take HIV testing is a big problem				
No	Reference		Reference	
Yes	0.71(0.61,0.82)	0.000	0.84 (0.70, 1.02)	0.077

Discussion

We performed a secondary data analysis of UDHS 2016 to assess the rate uptake of HIV testing and its associated factors among young women 15-24 years. Overall, a two third increase in uptake of HIV testing among young women 15-24 years was observed compared to the 2010 HIV testing uptake. Factors associated with uptake of HIV testing were level of education, marital status, multiple sexual partners and level of HIV knowledge.

To identify and link greater numbers of young women living with HIV to early treatment and care and to reach 90% of the HIV positive knowing their HIV sero-status by 2020, Uganda Ministry of Health adopted UNAIDS 90-90-90 strategy as a supplement for provider-initiated testing and counseling (PITC) introduced in 2012. As a result, the overall population HIV testing uptake experienced an approximate two third increase among women 15-24 year compared to 2010 UDHS uptake. Whereas our results for overall population are inferior to Kenya's 99.7% HIV testing uptake findings, at subpopulation level (age group), they are similar to those observed in Durban South Africa study for adolescents (15-17 years) women who only reached an uptake of 42.61% [14, 15]. The low adolescent HIV testing uptake may be attributed to the perceived perception of not being at risk for HIV infection simply because they are not sexually active.

Factors Associated with Uptake of HIV Testing Among Young Women

The results from our study indicated various factors which were associated with HIV testing uptake among our study population. We observed high odds of HIV testing uptake among women with primary and secondary education or higher as compared to those without formal education. These findings are similar to those reported in other studies conducted elsewhere among young women [16, 17].The fact that having a higher education provides clear opportunities to understand HIV infection, those with secondary/higher education are more likely to better HIV testing uptake.

Marital status was associated with HIV testing uptake in our study. Not married (single) was associated with having less odds of HIV testing uptake compared to being married. The results are similar to those reported in others studies in which the not married women were less likely to be tested for HIV7. Contrary to other studies, our study did not find wealth index to be associated with HIV testing uptake. This might due to the fact that HIV testing services are provided for free at all public health facilities across the country. The study also highlights the significant association of number of lifetime sexual partners.

Higher odds of HIV testing uptake were observed among women with one or more lifetime sexual partners compared to women without sexual partners. The findings resonate with findings in Tanzania and Burkina Faso [18, 17].Women aged 15-17 years had low odds of HIV testing uptake compared to those who were 18-24 years. This is partly because older women are more likely to be married and economically empowered than younger ones. But also, women 18 years and above are emancipated to take decision without the intervention of parents/legal guardian.

Like studies conducted in other parts of Africa, high level of HIV-related knowledge and access to broader information channels, through media exposure was associated with HIV testing

uptake [18]. This underscores the importance of sensitizing key high risk populations through health educations so as increase the level of HIV testing knowledge among low HIV testing uptake settings. Age at first sex is an important indicator of sexual risk. In our study young women who had sexual debut at the age of 19 or more years were 1.37 times more likely to uptake HIV testing when compared to those who debuted at less than 15 years.

Limitations of the Study

Since the study results are based on self-reported data, there is a likelihood of recall biases which could have resulted in underreporting of HIV testing uptake. It should also be noted that due to the fact that the study design is cross-sectional in nature, the data used in the analysis makes the temporal sequences between some covariates and testing uptake unknowns. The dataset used never had results of HIV tests carried at the time of the survey. The fact that we based our study on observations with complete data used a complete case, it is possible that the study power was reduced

Conclusion

Although, there was significant improvement in HIV testing uptake among women 15-24 years, uptake among middle adolescents (i.e. 15-17 years) remained very low. Local and international implementing partners should focus their efforts to promoting HIV testing uptake among middle adolescents. There is need to assess the impact of reducing age for consent on HIV testing uptake among middle adolescents.

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