

# The impact of the availability of antiretroviral therapy on personal and community fear of HIV/AIDS, and HIV prevention practices in Rwimi, Uganda: A mixed-method study

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## Key points:

- The impact of the widespread availability of highly active anti-retroviral (ART) therapy on HIV/AIDS prevention practices in Sub-Saharan Africa is understudied.
- In Rwimi, Uganda, the fear of human immunodeficiency virus and acquired immune deficiency syndrome (HIV/AIDS) persists; however, with the availability of life-prolonging ART, this fear is reduced.
- HIV/AIDS prevention practices in Rwimi are influenced by socio-cultural norms such as gender roles, relationship dynamics and trust which should be considered when designing HIV prevention programs.

## Abstract

The impact of the widespread availability of antiretroviral therapy (ART) on the human immunodeficiency virus and acquired immune deficiency syndrome (HIV/AIDS) related attitudes, behaviours and practices of the general population in Sub-Saharan Africa is understudied. We assessed the impact of ART availability on the fear of HIV/AIDS (measured at both community and personal levels) and HIV prevention practices in Rwimi, Uganda using a cross-sectional survey. The fear of HIV/AIDS was described as a perceived threat to either self and/or community regarding the risk of contracting the disease, whereby the higher the perception of the threat, the greater the fear. We assessed associations between the outcomes of the dependent variables on both the community and personal fear of HIV/AIDS, and the independent variables of HIV/AIDS-related knowledge and demographics. Qualitative data was also generated from focus group discussions (FGD) on the context of the fear of HIV/AIDS and HIV prevention practices. The majority of participants (89.4%; males - 86.8%; females - 90.8%) felt that ART availability has reduced the fear of HIV/AIDS in the community. In contrast, fewer participants (22.4%; males - 24.4%; females - 21.2%) mentioned that their personal fear of HIV/AIDS has been reduced with the availability of ART. From the qualitative study, factors identified as influencing the fear of HIV/AIDS included stigma, fear of infection, and the inconvenience of being on ART. Although fear of HIV/AIDS persists, the fear is reduced because of the availability of life-prolonging ART. HIV prevention practices are influenced by socio-cultural norms (gender roles, relationship dynamics, power and trust), which, we argue, should be considered when designing sustainable HIV/AIDS prevention programs.

**Key words:** Africa, anti-retroviral therapy, attitudes, knowledge, prevention

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# 1. Introduction

Antiretroviral therapy (ART) comprises a combination of drugs used to treat the human immunodeficiency virus (HIV) by suppressing the progression of the disease (World Health Organization 2017). Consequently, access to and proper use of ART results in a dramatic reduction in the incidence of acquired immune deficiency syndrome (AIDS) and death in individuals infected with HIV, thereby prolonging and improving quality of life (Apondi et al. 2011; The Antiretroviral Therapy Cohort Collaboration 2005; World Health Organization 2014). There is, however, a concern about the availability of ART producing a negative effect on sexual behaviour resulting in relapse back into or continued risky behaviours among people living with HIV/AIDS and their sexual partners (Demmer 2003; Luchters et al. 2008; Moatti et al. 2003). Such undesirable changes in sexual behaviour have been attributed to “treatment optimism” – the belief that ART mitigates the risk and consequences of HIV/AIDS infection (Kaye et al. 2013; Nachega et al. 2005). Studies in developed countries have shown an increase in unprotected sex with the availability of ART, particularly among homosexual males (Diabate et al. 2008; Ostrow et al. 2002; Stolte et al. 2004). In Sub-Saharan Africa, which bears the highest number of HIV/AIDS cases, some studies have found an association between ART availability and sexually risky behaviour among persons on ART (Diabate et al. 2008; Pearson et al. 2011). However, studies regarding the impact of ART availability on the general population (including people living without HIV/AIDS) are rare, especially in Sub-Saharan Africa. There is a growing need for more comprehensive studies, which include the general population, to provide a more complete assessment of the impact of ART on sexual behaviour and HIV preventive endeavours.

Uganda is one of the countries in Sub-Saharan Africa with long-standing HIV/AIDS intervention programs. In 2004, Uganda began to scale-up access to free ART medication to people living with HIV/AIDS; by 2013, 69.4% of eligible people living with HIV/AIDS in Uganda were receiving ART (Uganda AIDS Commission 2014). Subsequently, HIV/AIDS prevalence has increased as people living with HIV have gained access to treatment. However, risky sexual practices such as having multiple sexual partners and declining

condom use are prevalent (Uganda AIDS Commission 2014; UNAIDS 2013). This echoes the concerns of a disinhibiting effect of ART on sexual behaviour and has generated an interest in the impact of ART on attitudes, behaviours and HIV prevention practices. Therefore, we assessed the impact of the widespread availability of ART on attitudes (specifically, fear of HIV/AIDS), behaviours and HIV prevention practices in Rwimi, Uganda.

## 2. Methods

### 2.1 Study Population

The Uganda National Council of Science and Technology and the Institutional Review Boards of Makerere University, Uganda and the University of Alberta, Canada approved this study. Written consent was also obtained from participants.

We conducted a mixed-method study (a cross-sectional study with a qualitative description) among the general population in Rwimi, Uganda. Rwimi is a rural county in the Kabarole District of Uganda, where ART has been accessible since 2006 through a joint Ugandan government and Canadian university program. The first part of the study, a cross-sectional random cluster survey, was conducted between June to August 2013 with 639 participants enrolled from 32 villages in Rwimi. We systematically sampled 20 households in 31 villages and 19 households in 1 village. In each household, one individual aged between 18 to 49 years – who was present at the time of the survey – was randomly selected to participate. Participants were excluded if they mentioned they were on ART; however, we did not ask about the HIV/AIDS status of eligible participants due to ethical concerns. Participants were also excluded if they did not speak Rutooro or English and did not live in Rwimi.

The qualitative description study was included to enhance the description and understanding of our research findings (Morse and Niehaus 2009). Participants were purposefully sampled from the survey participants within the following four groups: a) males with a self-perceived low risk of HIV/AIDS, b) females with a self-perceived low risk of HIV/AIDS, c) males with a self-perceived high risk of HIV/AIDS and d) females with a self-perceived high risk of HIV/AIDS. There were 6 to 7 participants in each of the focus group dis-



cussions (FGD) totaling 26 participants.

## 2.2 Data Collection

### 2.2.1 Cross-Sectional Study

Survey questions were derived from studies conducted in Uganda and Kenya on HIV/AIDS-related knowledge, attitudes and practices (Aplin 2012; Smith et al. 2011). Additional questions were included to assess whether the availability of ART has reduced the fear of contracting HIV/AIDS at the community level and personal levels. Fear of HIV/AIDS was defined as a perceived threat to self or community with regard to the risk of contracting the disease, whereby the higher the perception of the threat, the greater the fear (Muthusamy et al. 2009). The questionnaire consisted of sections on (i) participant's demographic background, (ii) knowledge on HIV/AIDS, (iii) attitudes towards HIV/AIDS and ART and (iv) current HIV/AIDS preventive practices. Trained local research assistants administered the questionnaires in Rutooro but recorded the answers in English. After the survey, the data gathered was entered into an Epi Info 7 database and checked for completeness and accuracy.

Data from the survey was analyzed with STATA12 (StataCorp 2011). The data was weighted for the cluster sampling design. Means and frequencies were used to summarize the characteristics of the study population and to describe measures of HIV/AIDS-related knowledge, attitudes and practices. The measures, "Do you think the fear of HIV/AIDS has reduced now that ART is available?" and "Are you less fearful of HIV/AIDS now that ART is available?" were selected as dependent variables for multivariable logistic regression models. Demographic variables and selected knowledge measurements were used as independent variables.

### 2.2.2 Qualitative Description

Data was generated through FGD conducted in the local language of Rutooro. Verbal consent for participants' involvement, including audio-recording of the interviews, was obtained. Each FGD lasted approximately 60 to 75 minutes and was moderated by a research assistant who was fluent in both English and Rutooro. A second research assistant assisted in note taking. Although a topic guide was used, participants were encouraged to speak freely in order to have a participant-driven data collection. The interviews were transcribed verbatim and translated into English by the research assistant who moderated the FGD. Inter-

views were reviewed to ensure that saturation had been reached and there were no more leads to follow for further information. Transcription accuracy was verified and data was imported into Atlas.ti7 (ATLAS.ti7 Student Semester License).

Content analysis, which is appropriate for the qualitative description approach, was used for the analyses (Mayan 2009; Sandelowski 2000). Codes were grouped into categories which were reflected upon to create themes. The final stage of the analysis involved the integration of the categories and themes into a framework for understanding the concepts from the perspective of the participants. Excerpts from interview transcripts were integrated to illustrate concepts and to support each theme. Aside from interview data, detailed field notes, memos and personal journal helped triangulate the findings. Team debriefings occurred at several stages during the analysis.

## 3. Results

### 3.1 Cross-Sectional Study

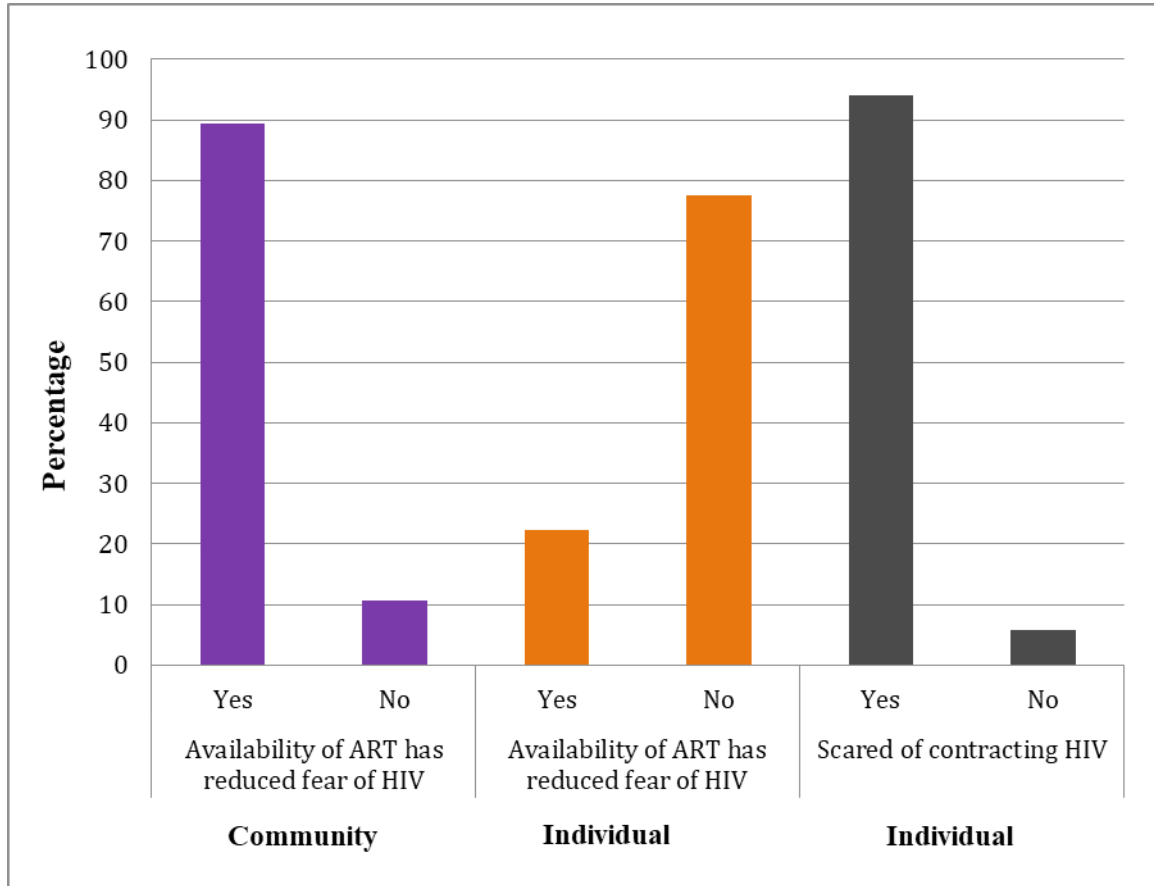
#### 3.1.1 Background Information

Of the 639 participants, there were more females (64.9%) than males (35.1%). The mean age for both groups was 29 years (Table S1).

#### 3.1.2 Fear of HIV/AIDS in the Era of ART

Most participants felt that the community's fear of HIV/AIDS was reduced with the availability of ART (89.4%; CI: 86.3-92.0%) (Figure 1). This proportion was similar for male (86.8%; CI: 80.4-91.3%) and female participants (90.8%; CI: 86.9-93.6%). No statistical difference was found between this outcome and any demographic or knowledge measures in the multivariable logistic regression model (Table S2). Most participants were fearful of contracting HIV/AIDS (94.1%, CI: 91.1-96.2%; males: 93.7%; CI: 88.3-96.7%; females: 94.4%; CI: 90.3-96.8%). Fewer participants reported that their personal fear of the disease had been reduced with the availability of ART (22.4%; CI: 18.2-27.2%; Figure 1), which included 24.4% of males (CI: 17.7-32.7%) and 21.2% of females (CI: 16.1-27.4%). Participants who had at least a secondary level education were less likely to report a reduced personal fear of HIV/AIDS (Odds ratio, OR=0.29, p=0.022), while those who were aware of the negative effects of ART were more likely to report a reduced personal fear of HIV/AIDS (OR= 1.72, p= 0.047) with the availability



**Figure 1.** Fear of HIV/AIDS among 18 to 49-year-old residents of Rwimi, Uganda.

of ART (Table S3).

### 3.1.3 HIV/AIDS-Related Attitudes and Practices

The majority of participants, 71.7% of males and 88.8% of females, had tested for HIV (Table S4). Most participants (87.3%) said they would inform their partners if they were HIV positive and would like to be informed (97.7%) if their partner was HIV positive. More females (53.8%) than males (42.8%) felt they were at risk of contracting HIV. “Distrustful of partner” (69.8%) made participants feel at risk while “fidelity” (60.2%) and “condom use” (39.8%) made them feel safe. “Faithfulness to partner” (71.3%) was the most common prevention practice among participants. Condoms had been used by only 25.3% of the sexually active participants during their last sexual encounter (for males and females, respectively: 31.7% and 22.1%).

## 3.2 Qualitative Description

### 3.2.1 Beliefs About ART

Participants believed that ART was successful in treating HIV/AIDS but knew that it did not cure HIV/AIDS. They also shared their perceptions on the limitations of ART, including the need to adhere to treatment.

*When you get infected with HIV/AIDS, you need to take good care of yourself so that the drugs are effective in your body. If you miss taking drugs at a specific time, you might fall sick and get problems. [Male]*

### 3.2.2 Fear of HIV/AIDS With the Availability of ART

Some participants reported that the availability of ART had reduced their fear of HIV/AIDS.

*Yes, I am less fearful because I know I can live for 30 – 40 years with [ART]. [Male]*





*I am less fearful because in the past before drugs, people would be recognized from HIV/AIDS signs. Those signs were so bad [...] but these days they are no longer there. [Female]*

However, participants mentioned that ART has not completely removed the fear of HIV/AIDS because it is not a cure.

*I still fear HIV/AIDS because it is an incurable disease; it cannot be treated for you to get healed. Even if you take ARTs, it is no cure. Drugs just treat it. [Male]*

Some participants felt that the ability of ART to make HIV/AIDS positive persons look healthy was contributing to the spread of the disease, which led to an increased fear of being infected.

*It is difficult to recognize someone on drugs. The person looks good and healthy, you end up having sex with them, and then later on you hear that you are HIV/AIDS positive. [Female]*

The stigma of being HIV/AIDS positive persisted in people's minds and contributed to the fear of HIV/AIDS.

*Everywhere you go, you would have to carry ARTs, yet you fear a person seeing you taking them; that is why I fear HIV/AIDS. [Male]*

### 3.2.3 Attitudes Towards HIV/AIDS Prevention Practices

Participants discussed their current prevention practices which revolved around common themes in the Ugandan context of abstinence, being faithful, using condoms and testing for HIV/AIDS (**Table S4**).

*I avoid having extra marital affairs. You stick to your husband and find time to test with your spouse. [Female]*

*I do have a girlfriend at the moment but I have told her to go for HIV/AIDS testing first before we do anything. [Until then], we are still abstaining from sex. [Male]*

*I also use condoms for fear of getting HIV/AIDS. [Male]*

There were differences in perceptions of socially accepted sexual behaviours between men and women. Most women perceived being unfaithful in their marriage as a taboo and were not open to discussing it. Instead, women tended to focus more on their own acts of abstinence and fidelity.

*I was abstaining from sex in the past as a way of protecting myself against HIV/AIDS before I got engaged. After getting married I decided to be faithful to my husband. [Female]*

Some men, on the other hand, appeared indifferent towards issues of infidelity in their relationships.

*Us businessmen, we cannot keep travelling with our wives. You may move from here to Kampala and spend a whole month there. You cannot spend a full month without having sex. It's not possible because men are sexually active. [Male]*

Condom use among married couples was not popular and it was seen as a sign of trust in the relationship not to use condoms. Thus, condoms were mainly used in relationships with people who were not their regular partners.

*With your official wife, you may not use condoms, but when you go outside you must protect yourself. [Male]*

Married women whose spouses travelled frequently and whose fidelity they were unsure of also requested condom use.

*I am protecting myself as a woman when my man is away. When he returns we first use condoms then go for check-up the following day. He already knows that. [Female]*

Both sexes agreed that women tested more often than men. This was attributed to the routine counselling and testing women undergo during antenatal services. ART availability was not a key motivator for testing. Several participants mentioned that they got tested just



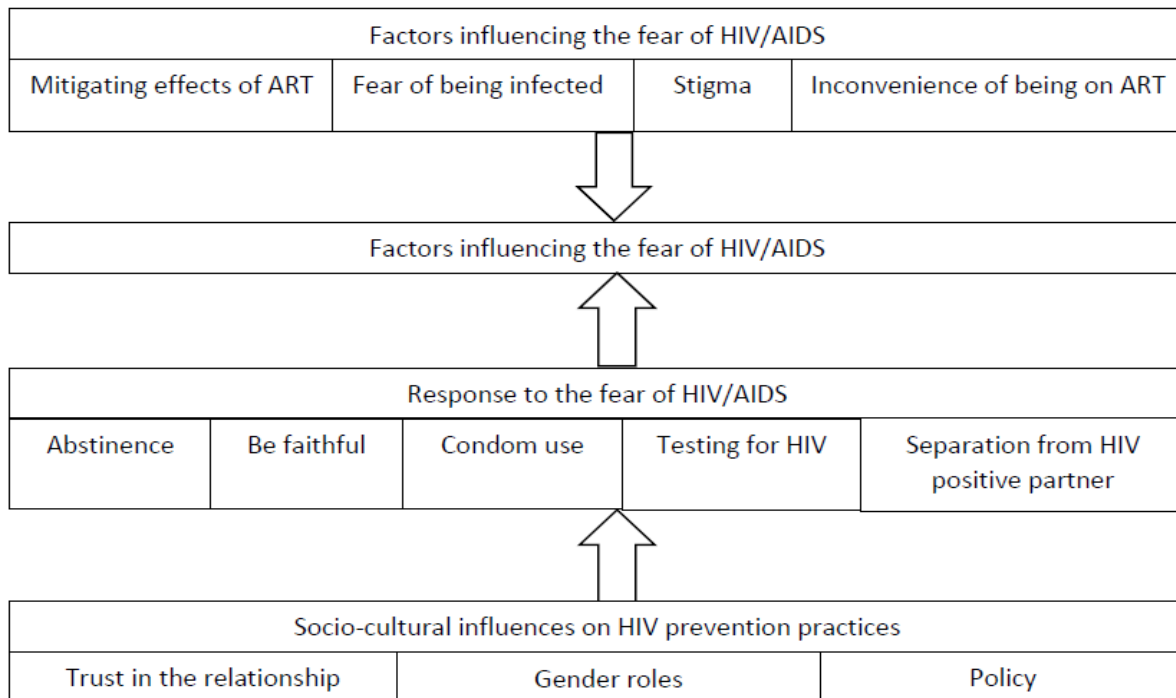
to know their status. Additionally, experiences with long illnesses or a partner who had contracted HIV/AIDS pushed people to get tested.

*What forced me to test? I saw that I was falling sick so often. I said maybe I have HIV/AIDS, let me go and test and if I am positive, I treat it early before it kills me. [Female]*

Among the male participants, distrust of their partner, insecurities about their own sexual behaviours and experiences with a partner diagnosed with HIV/AIDS were enablers for testing. Some men were waiting to see signs that they might be sick (e.g. feverishness) before getting tested for HIV/AIDS. Others also used the HIV/AIDS status of their partners as a measure for their own HIV/AIDS status.

*I have never been tested for HIV/AIDS. When my wife was expecting they tested her for HIV/AIDS. She was negative. She tested again and was negative. By seeing her results, I knew that my HIV/AIDS status was negative too. [Male]*

**Figure 2:** Framework for context of fear of HIV/AIDS in the era of HAART in Rwimi, Uganda.



We also found that the stigma associated with being HIV positive made the fear persist. This was consistent with the 2013 Ugandan stigma index, which reported experiences of both external and internal stigma (Uganda AIDS Commission 2014). Forms of external stigma identified included gossip, verbal harassment and sexual rejection, while the forms of internal stigma included self-blame, low self-esteem, shame, guilt and blaming others. Fear of HIV/AIDS has been associated with these forms of stigma mentioned (Ha et al. 2012; Herek et al. 2002). The sources of stigma include fear of illness, fear of contagion and fear of death. These tend to be common reactions among health workers, co-workers, caregivers and the general population (Brown et al. 2003; Walusimbi and Okonsky 2004).

Our assessments on HIV prevention practices showed that the fear of HIV/AIDS directed the use of the following preventative practices: abstinence, being faithful to one partner, condom use, testing for HIV and separating from an HIV positive partner (**Table S4**). However, how these practices were conducted was influenced by certain socio-cultural norms – gender expectations, expectations of trust in relationships and policy (**Figure 2**). Among women, for instance, the routine testing and counseling policy at antenatal services made it the norm for pregnant women to test for HIV to prevent mother-to-child HIV transmission. Most of our female participants expressed that they had been tested because they were pregnant. This policy is part of the norms that influence HIV testing in the community. We also found that trust in relationships influenced condom use as a preventative practice. There was an expectation of trust in long-term relationships. Therefore, these couples were not expected to use condoms. This could lead to the under-use of condoms for HIV prevention and an increased potential for the spread of HIV in cases of undisclosed infidelity. Prevention practices were also complicated by the fear of social stigma associated with disclosing one's HIV positive status and the fear of destabilizing the family unit. Larsson et al. found a similar sentiment of unwillingness to disrupt the family harmony even in an atmosphere of distrust between the couple (2010).

Societal expectations regarding gender roles (the man as the primary wage earner and the woman as the home-maker) backed by the power structure of relationships (the male as the head of the household) also influenced prevention practices. Therefore, women

in relationships in which there was infidelity tended to feel compelled to stay with men who were unfaithful because of the security offered by the marriage – financial, social, emotional, physical, etc. – as well as because of their children. As shown in our qualitative study, while some men perceived unfaithfulness in relationships as part of a natural male inclination, women often perceived abstinence and faithfulness as a societal expectation of themselves. This finding is reflected in the results of the 2011 Ugandan AIDS Indicator Survey which showed that the proportion of men who had two or more sexual partners in the past 12 months was more than six times higher than the proportion of women: 19% versus 3% (Uganda Ministry of Health and ICF International 2012).

Using a combination of quantitative and qualitative measures was a strength in our study. This study yields a deeper understanding of the factors that influence behaviours around prevention, which should be considered when designing HIV prevention programs. Our results also support previous research on how socio-cultural norms can influence health promotion (Courtenay 2000; Green and others 2013). Limitations may include the subjectivity involved in the definition of fear, the possibility of social desirability bias in some participants' responses and a potential gender bias. Since we had more females than males participate in our survey, we attempted to correct for the latter by weighting the data to reflect the Rwimi population. The socio-cultural factors such as gender roles and relationship dynamics (power structures and trust) that influence HIV/AIDS prevention practices are noteworthy and deserve further evaluation. However, our data was not sufficient to draw detailed conclusions on this topic. We encourage considering socio-cultural influences in designing HIV-related public health programs in communities such as Rwimi. For instance, incorporating entrepreneurial training and microcredit into HIV/AIDS education programs could empower women to make informed decisions about their health and well-being. We also encourage similar studies to be conducted in other Sub-Saharan countries, as such information is imperative to planning sustainable programs to promote adherence to HIV/AIDS prevention practices.

## 5. Conclusions

Personal fear of HIV/AIDS persists in Rwimi,



but with the availability of life-prolonging ART, this fear has been reduced. HIV/AIDS prevention practices are influenced by socio-cultural norms such as gender roles, relationship dynamics and trust, which should all be considered in designing sustainable HIV prevention programs. This change in programming could help to reduce the incidences of HIV cases and improve the quality of life of people already living with HIV/AIDS.

#### Disclosure Statement

The authors declare that they have no relevant or material financial interests that relate to the research described in this paper.

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## Supplementary Materials

Supplementary materials contain the interview questionnaires organized in: Table S1 to Table S4.

**Table S 1.** Background Information on survey participants aged from 18 to 49 years old in Rwimi, Kabarole District, Uganda.

Demographics		HIV/AIDS Knowledge	ART Knowledge
Variable	[%]	Variable	Variable
<b>Gender</b>		<b>How can HIV/AIDS be spread?<sup>††</sup></b>	<b>Have you heard about ART?</b>
Male	35.1	Unprotected sex	Yes
Female	64.9	Blood contact	What is ART used for? <sup>††</sup>
<b>Age</b>		Mother-to-child	For improving health
(mean ± standard deviation)		Unlikely answer	For reducing virus within the body
Male	29.4 ± 8.14	<b>How can a person avoid getting HIV/AIDS?<sup>††</sup></b>	For prolonging life
Female	28.9 ± 8.13	Abstinence	<b>Can ART restore a person to how they were before they had HIV/AIDS?</b>
<b>Age category</b>		Being faithful	Yes
18 – 29	57.1	Condom use	No
30 – 39	29.6	Avoiding blood contact	No idea
40 – 49	13.3	Unlikely answer	<b>If no, why not?<sup>††</sup></b>
<b>Marital Status</b>			ART is not a cure
Married/cohabiting	67.0		HIV/AIDS is irreversible
Single	25.8		ART worsen the conditions
Divorced/widowed	7.2		<b>If yes, why?<sup>††</sup></b>
<b>Religion</b>			Improves health
Catholic	46.6		Controls opportunistic infection
Non-Catholic/Christian*	46.0		Prolongs life
Muslim	7.0		Other <sup>†††</sup>
Other**	0.3		<b>How long should a person take ART? (for life)</b>
<b>Education</b>			<b>Are you aware of any negative effects of ART on those who take them? (yes)</b>
None	11.1		<b>If yes, what are they?<sup>††</sup></b>
Primary	62.3		Undesirable change in appearance
≥ Secondary	26.6		Weakness
<b>Occupation</b>			
Farmer	70.7		
Non-professional	21.6		
Professional***	7.7		

\*Includes Protestants, Pentecostals and Seventh Day Adventists; \*\*Cult; \*\*\*Includes students;

<sup>†</sup>Results weighted for cluster sampling design; <sup>††</sup> Answers were not mutually exclusive;

<sup>†††</sup>It depends on how the person's body reacts to the drugs



**Table S 2.** Odds ratios (OR) and 95% confidence intervals (CI) of reduced fear of HIV/AIDS (in the community) among survey participants aged from 18 to 49 years old in Rwimi, Kabarole District, Uganda.

Variable	Univariate Analysis*		Multivariable Analysis*	
	OR (95% CI)	p-value	OR (95% CI)	p-value
<b>Gender</b>				
Male	1.00			
Female	1.51 (0.82 – 2.77)	0.184	1.69 (0.91 – 3.14)	0.098
<b>Age Category</b>				
18 – 29	1.00			
30 – 39	0.95 (0.50 – 1.82)	0.882	1.03 (0.51 – 2.09)	0.934
40 – 49	1.44 (0.57 – 3.67)	0.444	1.65 (0.62 – 4.38)	0.318
<b>Marital Status</b>				
Married/cohabiting	1.00			
Single	0.73 (0.36 – 1.46)	0.370		
Divorced/widowed	1.39 (0.38 – 5.14)	0.622		
<b>Religion</b>				
Catholic	1.00			
Non-Catholic/Christian	1.55 (0.82 – 2.93)	0.181		
Muslim	1.12 (0.41 – 3.06)	0.831		
<b>Education</b>				
None	1.00			
Primary	1.63 (0.63 – 4.19)	0.309	1.96 (0.75 – 5.12)	0.171
≥ Secondary	1.56 (0.58 – 4.21)	0.379	2.00 (0.67 – 6.01)	0.216
<b>Occupation</b>				
Farmer	1.00			
Non-professional	1.04 (0.53 – 2.06)	0.910		
Professional	0.65 (0.25 – 1.69)	0.379		
<b>Can ART restore a person to how they were before they had HIV/AIDS?</b>				
No	1.00			
Yes	0.56 (0.23 – 1.38)	0.211		
<b>Are you aware of any negative effects of ART on those who take it?</b>				
No	1.00			
Yes	0.98 (0.54 – 1.78)	0.942		

\*Results weighted for cluster sampling design



**Table S 3.** Odds ratios (OR) and 95% confidence intervals (CI) of reduced personal fear of HIV/AIDS among survey participants aged from 18 to 49 years old in Rwimi, Kabarole District, Uganda.\*

Variable	Univariate Analysis**		Multivariable Analysis**	
	OR (95% CI)	p-value	OR (95% CI)	p-value
<b>Gender</b>				
Male	1.00			
Female	0.83 (0.49 – 1.41)	0.491	0.68 (0.39 – 1.21)	0.189
<b>Age Category</b>				
18 – 29	1.00			
30 – 39	0.68 (0.36 – 1.30)	0.245	0.67 (0.34 – 1.31)	0.240
40 – 49	1.20 (0.59 – 2.43)	0.620	0.89 (0.41 – 1.94)	0.777
<b>Marital Status</b>				
Married/cohabiting	1.00			
Single	0.93 (0.52 – 1.68)	0.818		
Divorced/widowed	1.04 (0.39 – 2.76)	0.941		
<b>Religion</b>				
Catholic	1.00			
Non-Catholic/Christian	0.97 (0.56 – 1.67)	0.907		
Muslim	1.01 (0.31 – 3.28)	0.981		
<b>Education</b>				
None	1.00			
Primary	1.13 (0.52 – 2.42)	0.760	0.99 (0.43 – 2.24)	0.974
≥ Secondary	0.40 (0.16 – 1.03)	0.057	0.29 (0.10 – 0.84)	0.022
<b>Occupation</b>				
Farmer	1.00			
Non-professional	0.51 (0.25 – 1.02)	0.059		
Professional	0.73 (0.25 – 2.16)	0.568		
<b>Can ART restore a person to how they were before they had HIV/AIDS?</b>				
No	1.00			
Yes	0.68 (0.29 – 1.59)	0.379		
<b>Are you aware of any negative effects of ART on those who take it?</b>				
No	1.00			
Yes	1.60 (0.94 – 2.71)	0.081	1.72 (1.00 – 2.95)	0.047

\*Based on 420 participants

\*\*Results weighted for cluster sampling design





**Table S 4.** Attitudes and HIV/AIDS-prevention practices among survey participants aged from 18 to 49 years old in Rwimi, Kabarole District, Uganda.

Variable	[%]*
<b>Tested for HIV/AIDS</b>	83.1
Males who had tested for HIV/AIDS	71.1
Females who had tested for HIV/AIDS	88.8
<b>If yes, why?</b>	
To know my status	100
<b>If no, why?</b>	
Confident of being HIV/AIDS negative	55.2
Fear of results	26.6
No reason	48.7
<b>Do you know your HIV status? (yes)</b>	77.8
Males who know their HIV status	65.1
Females who know their HIV status	84.0
<b>Would you want to be informed of your partner's HIV status? (yes)</b>	97.7
Males who would want to be informed	98.2
Females who would want to be informed	97.5
<b>If yes, why?***</b>	
To protect self	84.4
To plan for the future	13.6
To support partner to start treatment	32.8
To build trust	2.0
<b>If no, why not?</b>	
To prevent conflict	100
<b>Would your sexual practices change if you found out your partner was HIV/AIDS positive? (yes)</b>	95.0
Males whose sexual practices would change	96.9
Females whose sexual practices would change	94.1
<b>If yes, how?***</b>	
Condom use	71.5
Abstinence	9.1
Separation	30.6
Reduced sex	2.2
<b>Would you inform your partner if you were HIV/AIDS positive? (yes)</b>	87.3
Males who would inform partner	85.1
Females who would inform their partner	88.4
<b>If yes, why?***</b>	
To know each other's status	85.9
To prevent conflict	14.1
<b>If no, why not?</b>	
Fear of partner's response to the situation	100



Continuation of Table S4.	
<b>Do you think you are at risk of getting HIV/AIDS?</b> (yes)	50.2
Males who think they are at risk	42.8
Females who think they are at risk	53.8
<b>If yes, what makes you think so?*</b>	
Distrustful of partner	69.8
Lifestyle	19.2
Inconsistent use of condoms	10.2
Uncertainty of life	9.6
<b>If no, what makes you think so?*</b>	
Fidelity	60.2
Condom use	39.8
<b>Have you been sexually active in the past 6 months?'</b> (yes)	80.6
<b>What have you been doing to protect yourself from getting HIV/AIDS?*</b>	
Abstinence	3.4
Faithfulness to partner	71.3
Condom use	28.6
Avoiding blood contact	6.7
Regular testing with partner	2.8
Nothing	7.7
<b>Did you use a condom the last time you had intercourse?</b> (yes)	25.3
Males	31.7
Females	22.1
<b>If yes, why?*</b>	
To prevent pregnancy	38.8
For protection	84.4
<b>If no, why not?*</b>	
No need for condoms	36.5
We trust each other	31.5
Partner refused to use condom	27.5
Condom unavailable at the time	4.6
<b>Did you ever want to use a condom but did not use one?</b> (yes)	95.8
Males	96.2
Females	95.4
<b>If yes, why?*</b>	
Condom unavailable at the time	27.0
Partner refused to use condom	59.5
Other***	16.2

\*Results weighted for cluster sampling design; \*\*Answer are not mutually exclusive;

\*\*\*Did not know how to use condoms, allergy/pain from using condoms, fear of condom breaking; 'Only participants who answered 'yes' to this question went on to answer the subsequent questions

