Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

Prevalence and factors associated with extra-spousal partnerships among currently married individuals in Rakai, Uganda: A Cross-sectional study.

Joseph K.B Matovu[1,2*], Arnold Tigaiza[1]
[1]Department of Disease Control and Environmental Health, Makerere University School of Public Health, Kampala, Uganda
[2]Department of Community and Public Health, Busitema University Faculty of Health Sciences, Mbale, Uganda

Abstract

Introduction
While extra-marital relations have been associated with increased risk for HIV infection in previous studies, extant literature on the prevalence and factors associated with these sexual relationships remains largely limited. We assessed the prevalence and factors associated with extra-spousal partnerships among currently married individuals.

Methods
This secondary analysis uses data from a large cross-sectional study conducted among married individuals aged 15-49 years in Rakai, Uganda. We used a generic definition of marriage to include all individuals who considered themselves as "married" irrespective of category. Extra-spousal sexual partnerships were defined as concurrent sexual relationships between a married individual and another person (of the opposite sex) with whom they were not currently married. We determined the prevalence of extra-spousal partnerships and used a modified Poisson regression model to assess factors independently associated (at $P<0.05$) with extra-spousal partnerships, after adjusting for potential confounders. We used STATA (version 14.0) for data analysis.

Results
Of 2,103 currently married individuals, 51.5% (n=1,084) were females; 66.1% (n=1,391) were in their first marriage ever, while 83.3% (n=1,751) had been married for five or more (5+) years. Thirteen per cent (n=282) reported extra-spousal partnerships; 4.5% (n=49) among females and 22.9% (n=233) among males. Being HIV-positive, being in the third or higher marital order marriage, engagement in housework (among women), and being male were significantly associated with engaging in extra-spousal partnerships. Being 35 years or older was protective against engaging in extra-spousal partnerships.

Conclusion
One in ten currently married individuals engaged in extra-spousal partnerships. Extra-spousal partnerships were more common among men, individuals living with HIV, those with a higher number of previous marriages, and women engaged in housework than their counterparts.

Recommendations
Targeted HIV prevention interventions, including those that focus on men and previously married individuals, are urgently needed to protect married individuals from the risk of extra-spousal partnerships.

Keywords: *Extra-spousal partnerships, Married individuals, Rakai, Uganda*
Submitted: *2025-05-12* ***Accepted:*** *2025-06-20* ***Published:*** *2025-06-25*

Corresponding author: *Joseph K.B Matovu[*]*
Email: *matovujkb@gmail.com*
Department of Community and Public Health, Busitema University, Faculty of Health Sciences, P.O. Box 1460, Mbale, Uganda

Introduction

Human Immunodeficiency Virus (HIV) is, without a doubt, one of the most serious global epidemics affecting the human

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

population in the 21st century (WHO, 2024). There's a growing body of evidence suggesting that married/cohabiting couples in sub-Saharan Africa have an elevated risk of HIV infection (Mtenga et al., 2015; Guthrie et al., 2007; Dunkle et al., 2008; Nabukenya, Nambuusi & Matovu, 2020), with HIV incidence and prevalence in this population being substantially higher than in the general population (Mtenga et al., 2015; Kaiser et al., 2011). Across several sub-Saharan African countries, the proportion of married individuals who engage in sexual-risk behaviors, characterized by engagement in sexual relations with persons with whom they are not married to or live with, remains high (ranging between 1.2-13.3% among married women and 16.8-39.5% among married men) amidst limited condom use in such sexual encounters (Uganda Bureau of Statistics 2023; Ministry of Health [Lesotho] & ICF, 2024; Zimbabwe National Statistics Agency & ICF, 2024; Ghana Statistical Service & ICF, 2024). Given that married individuals form almost half of the adult population in most sub-Saharan African countries (Uganda Bureau of Statistics, 2023; Ministry of Health [Lesotho] & ICF, 2024; Zambia Statistics Agency, Ministry of Health & ICF, 2024), these observations suggest a need for assessing HIV risk-behaviors among married individuals to inform HIV prevention and control efforts in this important population sub-group.

The prevalence of HIV among married or cohabiting individuals can be shaped by a myriad of factors, including early marriage, condomless sex, living in a high-prevalence area, history of remarriage, or extra-spousal or concurrent sexual partnerships, among others (Nabukenya, Nambuusi & Matovu, 2020; Kasamba et al., 2011; Carpenter et al., 1999; Guthrie et al., 2007). However, extra-marital relationships tend to pose the greatest risk in marital unions since they can be the primary source of HIV infection into the union, particularly among concordant HIV-negative couples (Kasamba et al., 2011; Kwena et al, 2014; Beauclair et al., 2015). Extra-spousal partnerships are a form of sexual concurrency, defined as the overlap between two or more sexual partners, with sexual intercourse with one partner occurring between two acts of intercourse with another partner (UNAIDS, 2010). While these partnerships can increase the probability of acquiring and/or transmitting HIV from or to one's spouse and other sexual partners within the same sexual network, research on extra-spousal partnerships and their association with HIV infection seems to have dropped off the researchers' radars over the past decade.

Across sub-Saharan African countries, HIV prevalence among heterosexual couples remains a growing public health concern (Mtenga et al. 2015; Mtenga et al. 2018), with the risk of HIV infection exacerbated in unions where extra-spousal relationships have been previously reported (Genberg et al. 2008; Abdulazeez et al. 2008; Mishra et al. 2009; Mishra & Assche 2009; Nabukenya, Nambuusi & Matovu, 2020). For instance, in an analysis conducted by Mishra and Assche (2009) using data from 22 nationally representative surveys, HIV prevalence was 3.22 and 2.87 times higher among women and men, respectively, who reported extra-marital relations in the past year than those who did not. In another analysis conducted by Mishra et al. (2009) using national household surveys, HIV prevalence was 12.1% among women who reported extra-spousal sexual partnerships compared to 1.6% among those who did not. Mishra et al. (2009) reported similar results in Zimbabwe (39.2% vs. 20.3%) and Cambodia (6.2% vs. 0.6%). Collectively, these findings reaffirm previous findings which indicate that engaging in extra-spousal partnerships increases the likelihood of acquiring and/or transmitting HIV in established sexual relationships. However, despite its association with HIV infection among married couples (Kasamba et al. 2011; Auerbach et al. 2011; Shisana et al. 2014; Nabukenya, Nambuusi & Matovu, 2020), it is surprising that only a handful of studies have assessed the prevalence and factors associated with extra-spousal relationships among married individuals. This study aimed to contribute to this largely neglected body of literature by assessing the prevalence of extra-spousal partnerships and associated factors among married individuals living in communities with differing background HIV prevalence settings in Rakai, Uganda.

Methods

Study site, design, and population

This secondary analysis uses data from a large cross-sectional study conducted as part of a cluster-randomized demand-creation intervention for couples' HIV counseling and testing among married or cohabiting individuals in Rakai district, southwestern Uganda, between November 2013 and February 2014. The methods for the large study have been described previously (Matovu et al., 2015; Matovu et al., 2016; Nabukenya, Nambuusi & Matovu, 2020). In brief, data were collected from married or cohabiting individuals aged 15-49 years, resident in three study regions (*Katana*, *Buyamba*, and *Kasensero*) with differing background HIV prevalence within the Rakai Community Cohort Study (RCCS) enumeration area. The RCCS, implemented by the Rakai Health Sciences Program in Rakai and neighboring districts in south-western Uganda, has been described in previous publications (Wawer et al., 1998; Grabowski et al., 2018). Approximately 15,000 individuals aged 15-49 years, resident in 46 study communities across 12 study regions, have undergone continuous annual HIV surveillance since 1994.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

HIV prevalence in Rakai averages 12% (range 9-43%) among adults (15-49 years) with high variability across study regions (Chang et al., 2016). At the time of the large study, the lowest HIV prevalence in the RCCS study communities was 9% while the highest was 43% (Chang et al., 2016). The study regions were thus grouped into low HIV prevalence (9-11.2%), medium prevalence (11.4-20%), or high HIV prevalence strata (21-43%) based on this information. The grouping of study regions into the three strata was done in such a way as to ensure that each stratum had between 3-4 study regions. Within each stratum, one study region was selected to participate in the above-mentioned large cross-sectional study. Within each study region, four study communities were randomly selected using computer-generated random numbers for a total of 12 study communities/study clusters. The study communities were already demarcated for their participation in the RCCS; so, there was no need for further demarcation. Residents in the selected communities who were aged 15-49 years and who were currently married at the time of the study were eligible for inclusion in the study.

Data collection procedures

The data used in this analysis were collected within the RCCS study communities using interviewer-administered questionnaires (Matovu et al., 2015; Matovu et al., 2016). In brief, we used the RCCS database to identify individuals who were in a current marital union based on the latest RCCS data at the time. Working with a notifier, these individuals were contacted in person and invited to participate in the study. Participation in the study required the respondents to travel to a central venue in the community (also known as a 'hub'), and all those who turned up at the hub were asked to provide written informed consent before participation in the study. All consenting married individuals were separately interviewed face-to-face using paper-based questionnaires. Data were collected on socio-demographic (e.g., age, sex, education, religion) and behavioral characteristics. Behavioral data included questions on the number of sexual partners in the past 12 months, and whether or not the respondent was currently involved in a non-marital sexual relationship. Respondents' HIV status data were obtained from the most recent HIV testing records (based on the latest RCCS interview that the respondents had participated in). Interviews, on average, lasted between 45-60 minutes.

Measurement of variables

The primary outcome was extra-spousal partnerships defined as engaging in concurrent sexual partnerships with a member of the opposite sex to whom the respondent was neither married to nor lived with as a spouse. Extra-spousal partnerships were assessed by asking the respondent: *Are you currently involved in any other sexual relationship with someone else who is not your current spouse*? Individuals who responded in the affirmative were considered to have a current extra-spousal partnership. Currently married individuals were categorized as belonging to a first, second, or higher marital order based on whether or not they had ever been married to a partner of the opposite sex. Individuals whose marriage was the first ever (regardless of duration) were considered to be in their first marital order. If individuals reported that they had ever been married, we asked them about the number of previous marriages, and those with one such a marriage (in addition to their current marriage) were considered to be in their "second marital order" while those with two or more previous marriages (in addition to their current marriage) were considered to be in their "third or higher marital order". We did not, however, document reasons for remarriage or what led to the end of their previous marriages, among those in their second or higher marital order.

To be able to categorize the type of marriage in which a respondent was engaged, we asked men if they had more than one woman whom they considered as their spouse. We also asked women if their male partner had other women whom he considered to be his spouses. Women whose male partner had only one woman that he considered as his spouse, and men who reported being married to only one spouse, were categorized as being in a 'monogamous' marital union. On the other hand, women whose male partner had two or more women that he considered to be his spouses and men who reported that they had two or more women whom they considered as their spouses were categorized as being in a 'polygamous' marital union. Lastly, all currently married individuals were asked about how long they had been married to their spouses, and this was coded as '0' if one to two years, '1' if three to four years, or '2' if five or more years.

This analysis focused on married individuals who were in a heterosexual relationship; i.e., those who were currently married to an identifiable partner of the opposite sex. Individuals were considered to be 'married' if: a) they were officially wedded in the Church (among Christians) or the Mosque (among Muslims), or b) had ever had an "*introduction*" ceremony in which the family of the male partner took gifts to that of the female partner – a common practical in many African societies (Meekers, 1992), or c) they were living together as 'husband' and 'wife' (and the community considered them as such), even if they had never

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

wedded in the Church or Mosque or had an *introduction* ceremony.

Data analysis

We computed descriptive statistics and summarized the outputs in the form of frequencies and percentages. We determined the proportion of currently married individuals who reported extra-spousal partnerships and described the distribution of those reporting extra-spousal partnerships across background characteristics. Unadjusted prevalence ratios and their 95% confidence intervals were computed to determine the factors associated with extra-spousal partnerships in the bivariate analysis. Variables with a p-value less than 0.2 at the bivariate analysis (age-group, education level, occupation, marital status, marital order, HIV status, and HIV prevalence strata) were considered for the multivariable analysis. Using a modified Poisson regression model, we determined the factors associated with extra-spousal sexual partnerships (and their corresponding 95% confidence intervals), after accounting for potential confounders. Data were analyzed using STATA (version 14.1).

Ethical considerations

The large study from which the data used in this paper were drawn received ethical approval from the Makerere University School of Public Health Higher Degrees, Research and Ethics Committee on August 27th, 2013 as part of JKBM's doctoral research protocol and was cleared by the Uganda National Council for Science and Technology before data collection. All the respondents provided written informed consent before study participation.

Results

Population characteristics

Of the 2,103 currently married individuals, slightly more than half (51.5%, n=1,084) were females; 46.0% (n=972) were aged between 25 to 34 years, while 56.6% (n=1,190) were Catholics. Slightly more than two-thirds (67.3%, n=1,416) had primary education as their highest level of education, while 56.5% (n=1,189) were engaged in agriculture as their primary occupation. A majority of married individuals (79.0%, n=1,670) were in a monogamous union, while 21.0% (n=712) were in a polygamous union. Eighty-three per cent of all married individuals (83.3%, n=1,751) had been living together for five or more years; two-thirds (66.1%, n=1,391) were in their first marriage ever. A significantly higher proportion of males were in their second (33.1%, n=337 *vs.* 19.2%, n=208, $P<0.0001$) or third marital order (14.9%, n=152 *vs.* 1.4%, n=15, $P<0.0001$) than their female counterparts. Overall, 7.4% (n=156) were living with HIV; 7.7% (n=83) among females and 7.2% (n=73) among males, based on available RCCS data at the time.

Table 1. Characteristics of currently married or cohabiting individuals

Variable	Total (N, %)	Distribution by sex	
		Females (n, %)	Males (n, %)
All	2,103	1,084 (51.5)	1,019 (48.5)
Age-group			
15-24	314 (14.9)	261 (24.1)	53 (5.2)
25-34	972 (46.2)	524 (48.3)	448 (44.0)
35+	817 (38.9)	299 (27.6)	518 (50.8)
Religion			
Catholic	1,190 (56.6)	620 (57.2)	570 (55.9)
Anglican	312 (14.8)	148 (13.7)	164 (16.1)
Saved/Pentecostal	133 (6.3)	74 (6.8)	59 (5.8)
Muslim	413 (19.6)	215 (19.8)	198 (19.4)
Other religion	55 (2.6)	27 (2.5)	28 (2.8)
Highest level of education			
None	121 (5.8)	87 (8.0)	34 (3.3)
Primary	1,416 (67.3)	720 (66.4)	696 (68.3)
Secondary	472 (22.4)	249 (23.0)	223 (21.9)
Post-secondary	94 (4.5)	28 (2.6)	66 (6.5)
Occupation			
Agriculture	1,189 (56.5)	691 (63.8)	498 (48.9)
Trading/vending	230 (10.9)	88 (8.1)	142 (13.9)

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

Variable	Total (N, %)	Distribution by sex	
		Females (n, %)	Males (n, %)
Fishing	130 (6.2)	N/A	130 (12.8)
Housework in own home	100 (4.8)	100 (9.2)	N/A
Other occupation	454 (21.6)	205 (18.9)	249 (24.4)
Marital type			
Married monogamous	1670 (79.4)	826 (76.2)	844 (82.8)
Married polygamous (female)	258 (12.3)	258 (23.8)	N/A
Married polygamous (male)	175 (8.3)	N/A	175 (17.2)
Marital order			
First	1,391 (66.1)	861 (79.4)	530 (52.0)
Second	545 (25.9)	208 (19.2)	337 (33.1)
Third or higher	167 (7.9)	15 (1.4)	152 (14.9)
Marital duration			
1-2 years	132 (6.3)	60 (5.5)	72 (7.1)
3-4 years	220 (10.5)	107 (9.9)	113 (11.1)
5+ years	1,751 (83.3)	917 (84.6)	834 (81.8)
HIV prevalence strata			
Low	767 (36.5)	407 (37.6)	360 (36.3)
Medium	722 (34.3)	364 (33.6)	358 (35.1)
High	614 (29.2)	313 (28.9)	301 (29.5)
HIV status (based on RCCS records)			
HIV-negative	1,666 (79.2)	882 (81.4)	784 (76.9)
HIV-positive	156 (7.4)	83 (7.7)	73 (7.2)
Not available	281 (13.4)	119 (11.0)	162 (15.9)

N/A, not applicable

Self-reported extra-spousal partnerships by selected background characteristics

Table 2 shows the percentage of married individuals who reported extra-spousal partnerships stratified by background characteristics. Overall, 13.4% (n=282) reported extra-spousal partnerships; higher among males (22.9%, n=233) than females (4.5%, n=49). Extra-spousal partnerships increased with increased education levels from 9.9% (n=12) among those with no education to 20.2% (n=19) among those with post-secondary education. Also, the proportion of extra-spousal partnerships increased with increasing age from 10.2% (n=32) among those aged 15-24 years to 15.2% (n=124) among those aged 35+ years. Extra-spousal partnerships were lower among those in their first marriages (10.4%, n=145) but increased with the increasing number of previous marriages that individuals had ever had. A higher proportion of polygamous men reported extra-marital partnerships than those in monogamous relationships, but this difference was not statistically significant (28.0%, n=49 *vs.* 21.8%, n=184; *P*=0.076). Extra-spousal partnerships were also more prevalent among respondents who were HIV positive (23.1%, n=36) than those who were HIV-negative (12.7%, n=211).

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

Table 2. Distribution of extra-spousal partnerships and by selected background characteristics, overall and stratified by sex

Characteristics	Total	No. & % reporting extra-spousal partnerships	Extra-spousal partnerships by sex category			
			Total Females	No. & % reporting extra-spousal partnership	*Total Males*	No. & % reporting extra-spousal partnerships
All	2,103	282 (13.4%)	1,084	49 (4.5%)	1,019	233 (22.9%)
Age-group						
15-24	314	32 (10.2)	261	13 (5.0)	53	19 (35.9)
25-34	972	126 (13.0)	524	27 (5.2)	448	99 (22.1)
35+	817	124 (15.2)	299	9 (3.0)	518	115 (22.2)
Religion						
Catholic	1,190	160 (13.4)	620	30 (4.8)	570	130 (22.8)
Anglican	312	44 (14.1)	148	6 (4.1)	164	38 (23.2)
Saved/ Pentecostal	133	17 (12.8)	74	6 (8.1)	59	11 (18.6)
Muslim	413	54 (13.1)	215	5 (2.3)	198	49 (24.7)
Other religion	55	7 (12.7)	27	2 (7.4)	28	5 (17.9)
Highest level of education						
None	121	12 (9.9)	87	3 (3.4)	34	9 (26.5)
Primary	1,416	177 (12.5)	720	31 (4.3)	696	146 (21.0)
Secondary	472	74 (15.7)	249	14 (5.6)	223	60 (26.9)
Post-secondary	94	19 (20.2)	28	1 (3.6)	66	18 (27.3)
Occupation						
Agriculture	1,189	128 (10.8)	691	26 (3.8)	498	102 (20.5)
Trading/vending	230	45 (19.6)	88	4 (4.5)	142	41 (28.9)
Fishing	130	29 (22.3)	N/A	-	130	29 (22.3)
Housework in own home	100	11(11.0)	100	11 (11.0)	N/A	-
Other occupation	454	69 (15.2)	205	8 (3.9)	249	61 (24.5)
Marital type						
Married monogamous	1,670	219 (13.1)	826	35 (4.2)	844	184 (21.8)
Married polygamous (female)	258	14 (5.4)	258	14 (5.4)	N/A	-
Married polygamous (male)	175	49 (28.0)	N/A	-	175	49 (28.0)
Marital order						
First	1,391	145 (10.4)	861	32 (3.7)	530	113 (21.3)
Second	545	90 (16.5)	208	15 (7.2)	337	75 (22.3)
Third or higher	167	47 (28.1)	15	2 (13.3)	152	45 (29.6)
Marital duration						
1-2years	132	18 (13.6)	60	6 (10.0)	72	12 (16.7)
3-4 years	220	34 (15.4)	107	7 (6.5)	113	27 (23.9)
5+ years	1,751	230 (13.1)	917	917 (3.9)	834	194 (23.3)
HIV prevalence strata						

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

Characteristics	Total	No. & % reporting extra-spousal partnerships	Extra-spousal partnerships by sex category			
			Total Females	No. & % reporting extra-spousal partnership	*Total Males*	No. & % reporting extra-spousal partnerships
Low	767	87 (11.3)	407	12 (3.0)	360	75 (20.8)
Medium	722	103 (14.3)	364	20 (5.5)	358	83 (23.2)
High	614	92 (15.0)	313	17 (5.4)	301	75 (24.9)
HIV status (based on RCCS records)						
HIV-negative	1,666	211 (12.7)	882	32 (3.6)	784	179 (22.8)
HIV-positive	156	36 (23.1)	83	11 (13.2)	73	25 (34.2)
Not available	281	35 (12.5)	119	6 (5.0)	162	29 (17.9)

Factors associated with extra-spousal partnerships among married individuals

Table 3 shows the crude and adjusted prevalence ratios (PR) associated with extra-spousal partnerships among married individuals in Rakai, Uganda. At the bivariate analysis, age-group 35+ years, living in a high HIV prevalence strata, post-secondary education, engagement in trading/vending or fishing occupations, being in the second or higher marital order, and being HIV-positive were positively associated with engagement in extra-spousal sexual partnerships. The risk of engaging in extra-spousal sexual partnerships was five times higher among males than females (PR=5.06; 95% Confidence Interval [95%CI]: 3.76, 6.80). Compared to men in monogamous marital unions, men in polygamous marital unions were twice as likely to engage in extra-spousal partnerships (PR=2.13; 95%CI: 1.63, 2.79), but being in a polygamous marital union seemed to be protective among women (PR=0.41; 95%CI: 0.24, 0.70). When these results were adjusted for potential confounders, the factors that were significantly associated with extra-spousal partnerships were being male (adjusted [adj.] PR=6.45; 95%CI: 4.27, 9.75), engagement in housework (in the case of women) (adj. PR=2.42; 95%CI: 1.23, 4.78), being in the third/higher marital order (adj. PR=1.39; 95%CI: 1.01, 1.92) and being HIV-positive (adj. PR=1.75; 95%CI: 1.23, 2.50). Age 35+ years seemed to be protective against extra-spousal partnerships (adj. PR=0.42; 95%CI: 0.42, 0.96).

Table 3. Factors associated with extra-spousal partnerships among married individuals in Rakai, Uganda

Variable	Total (N)	Extra-spousal partnerships (n, %)	Crude Prevalence Ratios (95% CI)	Adjusted Prevalence Ratios (95% CI)
Sex				
Male	1,019	233 (22.9)	1.00	1.00
Female	1,084	49 (4.5)	5.06 (3.76, 6.80)	6.45 (4.27, 9.75)
Age-group				
15-24	314	32 (10.2)	1.00	1.00
25-34	972	126 (13.0)	1.27 (0.88, 1.83)	0.71 (0.48, 1.05)
35+	817	124 (15.2)	1.49 (1.03, 2.15)	0.63 (0.42, 0.96)
Highest level of education				
None	121	12 (9.9)	1.00	1.00
Primary	1,416	177 (12.5)	1.26 (0.72, 2.19)	0.89 (0.53, 1.50)
Secondary	472	74 (15.7)	1.58 (0.89, 2.81)	1.15 (0.67, 1.97)
Post-secondary	94	19 (20.2)	2.04 (1.04, 3.98)	1.23 (0.64, 2.38)
Occupation				
Agriculture	1,189	128 (10.8)	1.00	1.00
Trading/vending	230	45 (19.6)	1.82 (1.33, 2.47)	1.30 (0.95, 1.76)
Fishing	130	29 (22.3)	2.07 (1.44, 2.97)	0.86 (0.56, 1.32)
Housework in own home	100	11 (11.0)	1.02 (0.57, 1.83)	2.42 (1.23, 4.78)
Other occupation	454	69 (15.2)	1.41 (1.07, 1.85)	1.06 (0.80, 1.42)

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

Variable	Total (N)	Extra-spousal partnerships (n, %)	Crude Prevalence Ratios (95% CI)	Adjusted Prevalence Ratios (95% CI)
Marital type				
Married monogamous	1,670	219 (13.1)	1.00	1.00
Married polygamous (female)	258	14 (5.4)	0.41 (0.24, 0.70)	1.43 (0.78, 2.61)
Married polygamous (male)	175	49 (28.0)	2.13 (1.63, 2.79)	1.19 (0.89, 1.92)
Marital order				
First	1,391	145 (10.4)	1.00	1.00
Second	545	90 (16.5)	1.58 (1.24, 2.02)	1.10 (0.85, 1.43)
Third or higher	167	47 (28.1)	2.70 (2.02, 3.60)	1.39 (1.01, 1.92)
HIV prevalence strata				
Low	767	87 (11.3)	1.00	1.00
Medium	722	103 (14.3)	1.26 (0.96, 1.64)	1.27 (0.98, 1.64)
High	614	92 (15.0)	1.32 (1.00, 1.74)	1.06 (0.78, 1.44)
HIV status (based on RCCS records)				
HIV-negative	1,666	211 (12.7)	1.00	1.00
HIV-positive	156	36 (23.1)	1.82 (1.33, 2.49)	1.75 (1.23, 2.50)
Not available	281	35 (12.5)	0.98 (0.70, 1.37)	0.81 (0.58, 1.12)

Discussion

Overall, one in ten married individuals engaged in extra-spousal partnerships. Extra-spousal partnerships were more common among men, individuals in third or higher order marriages, HIV-positive individuals, and women engaged in housework than their counterparts. The prevalence of extra-spousal partnerships in this population (i.e., 22.9% among married men and 4.5% among married women) is higher than what has been reported in some studies in sub-Saharan Africa (Kasamba et al., 2011; Mtenga et al., 2018; McCreesh et al., 2012) but slightly lower than what was reported in others (e.g., Nnko et al., 2004; Ministry of Health [Lesotho] & ICF, 2024). In general, the observed differences are likely due to the populations studied rather than an indication of differences in extra-spousal partnerships between and across regions or countries in which those studies were conducted. Nevertheless, given the apparent association between extra-spousal partnerships and the risk of HIV infection (Mishra & Assche, 2009; Nabukenya, Nambuusi & Matovu, 2020), study findings call for target-specific interventions to dissuade married individuals from engaging in extra-spousal relationships, including, where appropriate, health education interventions to attenuate the risk associated with engaging in such behaviors (McCreesh et al., 2012).

The finding that men were significantly more likely to engage in extra-spousal relationships than women has been documented elsewhere (Nnko et al., 2004; Clark et al., 2011; Labrecque & Whisman, 2017; Zambia Statistics Agency, Ministry of Health & ICF, 2024). Evidence suggests that, unlike women who always consider their engagement in extra-spousal relationships as 'always wrong', men tend to justify their engagement in such relationships as something that is 'not wrong for all the time' or 'not wrong at all' (Labrecque & Whisman, 2017). Thus, although women may be more likely to under-report their engagement in extra-spousal relationships due to societal dictates (Nnko et al., 2004; Clark et al., 2011), our findings confirm the well-known fact that more males engage in extra-spousal relationships than women do, and this seems to be driven by men's attitudes towards such relationships. Evidence also indicates that men who engage in extra-spousal relationships do not always use condoms during these sexual encounters or when they return to have sex with their spouses (Smolak, 2014), thereby increasing the risk of HIV transmission or acquisition in their marital relationships. Indeed, one study in Rakai found that individuals in extra-spousal partnerships were almost twice as likely to be in a concordant HIV-positive couple relationship than those in single-partner relationships (Nabukenya, Nambuusi & Matovu, 2020). While this study did not show if the concordant HIV-positive status preceded marital formation or resulted from HIV infection introduced into the relationship after marital formation, HIV prevention interventions targeting married men are urgently needed since men are more likely to engage in extra-spousal partnerships, and, by implication, more likely to introduce HIV into the relationship.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

We cannot fully explain why individuals in the third or higher order marriages were more likely to report extra-spousal relationships than those in their first marriages. However, our data shows that men were more likely to be in the third or higher order marriages, yet evidence shows that men tend to engage in extra-spousal partnerships than women (Todd et al., 2009; Maher et al., 2011; Mitchell et al., 2019). Thus, it is likely that the higher proportion of men than women in this category may partly explain why individuals in the third or higher order marriages were more likely to engage in extra-spousal partnerships than those in their first marriages. Additional research is warranted to fully understand why married individuals, with a higher number of previous marriages, were more likely to engage in extramarital partnerships than their counterparts.

Surprisingly, individuals living with HIV were more likely to engage in extra-spousal partnerships than their HIV-negative counterparts, given that people living with HIV tend to benefit from follow-up risk-reduction counseling and support as part of their routine HIV care. However, findings from a study conducted among people living with HIV on antiretroviral therapy in India (63.4% of whom were married) found that nearly a quarter of 200 sexually active patients engaged in sexual risk-behaviors, including multiple sexual partners and unprotected sex with HIV-negative partners or partners of unknown HIV status (Shukla et al., 2016). While these observations may not fully explain why extra-spousal partnerships were common among people living with HIV than their HIV-negative counterparts, they point to the fact that, contrary to expectations, people living with HIV continue to engage in high-risk behaviors, including extra-spousal partnerships (Wondemagegn et al., 2020). These findings call for a need to intensify HIV risk-reduction counseling among people living with HIV, including the need to remind them that ongoing HIV risk behaviors not only expose others to the risk of HIV infection but can also lead them to acquire more virulent HIV strains that they may not be prepared to contend with.

Finally, the finding that women who engage in housework tend to engage more in extra-spousal partnerships than their counterparts may be explained by the fact that housework does not attract any salary, and thus, housewives tend to depend on their male spouses for money to meet their basic needs. This puts them in a precarious situation, whereby if they are approached by men who wish to have sex with them for money, they can rarely refuse. In a study conducted in southern Mozambique, Salia et al. (2020) reported that women traders with low-income levels were more likely to have sexual intercourse in exchange for money, goods, or services such as transportation of their merchandise than their counterparts, thereby increasing their risk for HIV infection. In fishing community settings, studies (Camlin et al. 2013; Kwena et al. 2017) have reported about "jaboya" relationships that involve exchanging sex for fish, which are more common among low-income women fish traders than their counterparts. These findings suggest a need to support women engaged in housework with enterprise development skills, including vocational skilling, to enable them to engage in economic activities from which they can obtain money to reduce their dependence on their spouses alone (Filippone, Hernandez Trejo & Witte, 2023).

Generalizability

The study was conducted in a district with higher than the national average HIV prevalence for Uganda. Thus, study findings may not be generalizable to all settings. However, the fact that data were collected from study communities with differing background HIV prevalence study findings can likely be generalizable to similar settings with variations in HIV prevalence. Study findings can thus help to inform the design of HIV strata-specific prevention interventions for married individuals in those settings.

Conclusion

One in ten married individuals engaged in extra-spousal partnerships. Extra-spousal partnerships were more common among men, individuals living with HIV, those in higher-order marriages, and women engaged in housework than their counterparts.

Study limitations

This study had several limitations that are worth noting. Firstly, as with most observational studies, the assessment of extra-spousal partnerships is prone to recall bias as well as under-reporting and exaggerations. However, as Nnko et al. (2004) reported, under-reporting of extra-spousal partnerships is more common among single than married women, and exaggerations are more common among single than married men. Thus, while under-reporting and exaggerations cannot be fully eliminated, this observation suggests that what was reported by respondents in this study is close to reality. In any case, evidence already exists showing that men are more likely to engage in extra-spousal partnerships than their female counterparts; a fact that we replicate in the findings reported in this paper.

Secondly, although we used data for married individuals, we were not able to link them to their marital partners to form "couples"; thus, data analysis was only conducted at the individual level. Thirdly, data were collected in Rakai district, an area where HIV cases were first identified in

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

Uganda in 1982, and several interventions targeting HIV prevention have been implemented in the area since then (Kagaayi et al., 2019). These interventions might have influenced the way individuals evaluated their sexual-risk behaviors and the extent to which they reported extra-spousal partnerships.

Lastly, the data analyzed for this paper were collected 11-12 years ago; so, it is likely that their potential applicability to inform current HIV prevention interventions among married individuals might be limited due to the passage of time. However, since men and women in heterosexual relationships continue to engage in extra-spousal relationships (Uganda Bureau of Statistics, 2023; Ministry of Health [Lesotho] & ICF, 2024; Zimbabwe National Statistics Agency & ICF, 2024), study findings still have implications for HIV prevention and control efforts among married couples. Moreover, these findings remain informative and valuable in guiding future research and policy decisions on a topic that seems to have received limited research attention over the past 5-10 years.

Recommendations

Study findings call for target-specific interventions targeting men and those in higher-order marriages to educate them about the risk of continued engagement in extra-spousal relationships. Interventions are also urgently needed to support women who engage in housework to earn money and become less dependent on money that they solicit from men who solicit sex from them.

List of abbreviations

Adj. PR: Adjusted Prevalence Ratio
CI: Confidence Interval
HIV: Human Immunodeficiency Virus
PR: Prevalence Ratio
RCCS: Rakai Community Cohort Study
UNAIDS: Joint UN Program on HIV/AIDS
WHO: World Health Organization

Acknowledgements

The authors would like to acknowledge the support from the Rakai Health Sciences Program during the conduct of this study, the research assistants who conducted the interviews, and the study participants for participating in this study.

Funding

The main study from which the data for this paper were drawn was supported by a training grant awarded to JKBM for his doctoral research at Makerere University, from the Training Health Researchers into Vocational Excellence (THRiVE) in East Africa under Grant No 087540 from the Wellcome Trust, UK.

Conflict of interest

The authors report there is no conflict of interest to declare.

Availability of data

The data used in this analysis are available from the corresponding author upon reasonable request.

Authors' contributions

JKBM conceptualized the study, did the analysis, participated in the interpretation of findings, and reviewed the paper for substantial intellectual content. AT participated in the analysis of data, interpretation of the findings, and drafting of the paper. JKBM approved the final version of the manuscript that was submitted for publication.

Author biography

Dr Matovu is a Social and Behavioral Epidemiologist with >25 years of experience in the design and implementation of social, behavioural, and epidemiologic research. He is a researcher, author, and peer reviewer with >130 papers published to date. He is an Associate Professor at Busitema University Faculty of Health Sciences (Mbale, Uganda) and a Senior Research Associate at Makerere University School of Public Health in Kampala, Uganda. Dr Matovu's **research interests include** evaluation of social network-based interventions, implementation science, and impact evaluation. Dr Matovu is passionate about the integration of social and behavioural sciences into epidemiological research. He has 4,892 Google Scholar citations, an h-index of 41, and an i10-index of 81. This paper uses data from a cluster-randomized, demand-creation intervention for couples' HIV counseling and testing among married or cohabiting individuals in Rakai district that Dr Matovu implemented as part of his doctoral studies at Makerere University. This is the fourth paper to be published out of this work.

Arnold Tigaiza is a PhD Fellow at Makerere University School of Public Health. He holds a Bachelor's degree in

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

Environmental Health Sciences and a Master's degree in Public Health. His broader academic interests include migration, health systems, and social determinants of health in low-resource settings. He is passionate about using evidence to inform policy and improve service delivery for marginalized communities. His PhD research focuses on the mental health impacts of climate change-induced youth migration in secondary cities of Uganda. He is particularly interested in understanding the differences or similarities in how common depression is among youth who migrate to cities as a result of climate shocks, youths who do not migrate despite climate shocks, and youths who are born and raised in the cities where the migrant youth move to. He is also studying how ecological stressors and mobility patterns affect depression and help-seeking behaviors among young people.

References

1. Abdulazeez, A., Alo, E. & Naphthali, R. (2008). Concurrent Infection Of HIV-1 and HIV-2 Serotypes in Adamawa State, Nigeria. *World Journal of Medical Science*, 3**,** 15-18
2. Auerbach, J. D., Parkhurst, J. O., & Cáceres, C. F. (2011). Addressing social drivers of HIV/AIDS for the long-term response: conceptual and methodological considerations. *Global Public Health*, *6 Suppl 3*, S293–S309. https://doi.org/10.1080/17441692.2011.594451
3. Beauclair, R., Hens, N., & Delva, W. (2015). Concurrent partnerships in Cape Town, South Africa: race and sex differences in prevalence and duration of overlap. *Journal of the International AIDS Society*, *18*(1), 19372. https://doi.org/10.7448/IAS.18.1.19372
4. Camlin, C.S., Kwena, Z.A., Dworkin, S.L. (2013). Jaboya vs. jakambi: Status, negotiation, and HIV risks among female migrants in the "sex for fish" economy in Nyanza Province, Kenya. *AIDS Education and Prevention*, 25(3), 216-31
5. Carpenter, L. M., Kamali, A., Ruberantwari, A., Malamba, S. S., & Whitworth, J. A. (1999). Rates of HIV-1 transmission within marriage in rural Uganda according to the HIV sero-status of the partners. *AIDS*, *13*(9), 1083–1089. https://doi.org/10.1097/00002030-199906180-00012
6. Chang, L. W., Grabowski, M. K., Ssekubugu, R., Nalugoda, F., Kigozi, G., Nantume, B., et al. (2016). Heterogeneity of the HIV epidemic in agrarian, trading, and fishing communities in Rakai, Uganda: an observational epidemiological study. *Lancet HIV*, *3*(8), e388–e396. https://doi.org/10.1016/S2352-3018(16)30034-0
7. Clark, S., Kabiru, C., & Zulu, E. (2011). Do men and women report their sexual partnerships differently? Evidence from Kisumu, Kenya. *International Perspectives on Sexual and Reproductive Health*, 37(4), 181–190. https://doi.org/10.1363/3718111
8. Dunkle, K. L., Stephenson, R., Karita, E., Chomba, E., Kayitenkore, K., Vwalika, C., et al. (2008). New heterosexually transmitted HIV infections in married or cohabiting couples in urban Zambia and Rwanda: an analysis of survey and clinical data. *Lancet*, *371*(9631), 2183–2191. https://doi.org/10.1016/S0140-6736(08)60953-8
9. Filippone, P. L., Hernandez Trejo, Y., & Witte, S. S. (2023). Demonstrating the Feasibility of an Economic Empowerment and Health Promotion Intervention among Low-Income Women Affected by HIV in New York City. *International Journal of Environmental Research and Public Health*, 20(8), 5511. https://doi.org/10.3390/ijerph20085511
10. Genberg, B. L., Kulich, M., Kawichai, S., Modiba, P., Chingono, A., Kilonzo, G. P., et al. (2008). HIV risk behaviors in sub-Saharan Africa and Northern Thailand: baseline behavioral data from Project Accept. *Journal of Acquired Immune Deficiency Syndromes*, *49*(3), 309–319. https://doi.org/10.1097/QAI.0b013e3181893ed0
11. Ghana Statistical Service (GSS) and ICF. 2024. Ghana Demographic and Health Survey 2022. Accra, Ghana, and Rockville, Maryland, USA: GSS and ICF. Available at: https://dhsprogram.com/pubs/pdf/FR387/FR387.pdf. Accessed on June 22, 2025.
12. Grabowski, M. K., Reynolds, S. J., Kagaayi, J., Gray, R. H., Clarke, W., Chang, L. W., et al. (2018). The validity of self-reported antiretroviral use in persons living with HIV: a population-based study. *AIDS*, *32*(3), 363–369. https://doi.org/10.1097/QAD.0000000000001706
13. Guthrie, B. L., de Bruyn, G., & Farquhar, C. (2007). HIV-1-discordant couples in sub-Saharan Africa: explanations and implications for high rates of discordancy. *Current HIV Research*, *5*(4), 416–429. https://doi.org/10.2174/157016207781023992
14. Kagaayi, J., Chang, L. W., Ssempijja, V., Grabowski, M. K., Ssekubugu, R., Nakigozi, G., et al. (2019). Impact of combination HIV interventions on HIV incidence in hyperendemic fishing communities in Uganda: a prospective cohort study. *Lancet HIV*, *6*(10), e680–e687. https://doi.org/10.1016/S2352-3018(19)30190-0

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

15. Kaiser, R., Bunnell, R., Hightower, A., Kim, A. A., Cherutich, P., Mwangi, M., et al. (2011). Factors associated with HIV infection in married or cohabiting couples in Kenya: results from a nationally representative study. *PLoS One*, 6(3), e17842. https://doi.org/10.1371/journal.pone.0017842
16. Kasamba, I., Sully, E., Weiss, H. A., Baisley, K., & Maher, D. (2011). Extraspousal partnerships in a community in rural Uganda with high HIV prevalence: a cross-sectional population-based study using linked spousal data. *Journal of Acquired Immune Deficiency Syndromes*, *58*(1), 108–114. https://doi.org/10.1097/QAI.0b013e318227af4d
17. Kwena, Z., Mwanzo, I., Shisanya, C., Camlin, C., Turan, J., Achiro, L., et al. (2014). Predictors of extra-marital partnerships among women married to fishermen along Lake Victoria in Kisumu County, Kenya. *PLoS One*, *9*(4), e95298. https://doi.org/10.1371/journal.pone.0095298
18. Kwena, Z. A., Shisanya, C. A., Bukusi, E. A., Turan, J. M., Dworkin, S. L., Rota, G. A., et al. (2017). Jaboya ("Sex for Fish"): A Qualitative Analysis of Contextual Risk Factors for Extramarital Partnerships in the Fishing Communities in Western Kenya. *Archives of Sexual Behavior*, *46*(7), 1877–1890. https://doi.org/10.1007/s10508-016-0930-0
19. Labrecque, L. T., & Whisman, M. A. (2017). Attitudes toward and prevalence of extramarital sex and descriptions of extramarital partners in the 21st century. *Journal of Family Psychology*: JFP: Journal of the Division of Family Psychology of the American Psychological Association (Division 43), 31(7), 952–957. https://doi.org/10.1037/fam0000280
20. Maher, D., Waswa, L., Karabarinde, A., & Baisley, K. (2011). Concurrent sexual partnerships and associated factors: a cross-sectional population-based survey in a rural community in Africa with a generalised HIV epidemic. *BMC Public Health*, 11, 651. https://doi.org/10.1186/1471-2458-11-651
21. Matovu, J. K., Todd, J., Wanyenze, R.K., Kairania, R., Serwadda, D., & Wabwire-Mangen, F. (2016). Evaluation of a demand-creation intervention for couples' HIV testing services among married or cohabiting individuals in Rakai, Uganda: a cluster-randomized intervention trial. *BMC Infectious Diseases*, *16*, 379. https://doi.org/10.1186/s12879-016-1720-y
22. Matovu, J. K., Todd, J., Wanyenze, R.K., Wabwire-Mangen, F., & Serwadda, D. (2015). Correlates of previous couples' HIV counseling and testing uptake among married individuals in three HIV prevalence strata in Rakai, Uganda. *Global Health Action*, *8*, 27935. https://doi.org/10.3402/gha.v8.27935
23. McCreesh, N., O'Brien, K., Nsubuga, R. N., Shafer, L. A., Bakker, R., Seeley, J., et al. (2012). Exploring the potential impact of a reduction in partnership concurrency on HIV incidence in rural Uganda: a modeling study. *Sexually Transmitted Diseases*, 39(6), 407–413. https://doi.org/10.1097/OLQ.0b013e318254c84a
24. Meekers, D. (1992). The process of marriage in African societies: A multiple indicator approach. *Population and Development Review*, 18(1), 61-78
25. Mishra, V. & Assche, S., B-V. (2009). Concurrent Sexual Partnerships and HIV Infection: Evidence from National Population-Based Surveys. DHS Working Papers No. 62. Calverton, Maryland: Macro International Inc. Available at: https://www.dhsprogram.com/pubs/pdf/wp62/wp62.pdf. Accessed on May 7, 2025.
26. Mishra, V., Medley, A., Hong, R., Gu, Y., Robey, B. (2009). Levels and Spread of HIV Seroprevalence and Associated Factors: Evidence from National Household Surveys. DHS Comparative Reports No. 22. Calverton, Maryland, USA: Macro International Inc. Available at: https://www.dhsprogram.com/pubs/pdf/CR22/CR22.pdf. Accessed May 8, 2025.
27. Mitchell, K. R., Mercer, C. H., Prah, P., Clifton, S., Tanton, C., Wellings, K., et al. (2019). Why Do Men Report More Opposite-Sex Sexual Partners Than Women? Analysis of the Gender Discrepancy in a British National Probability Survey. *Journal of Sex Research*, 56(1), 1–8. https://doi.org/10.1080/00224499.2018.1481193
28. Mtenga, S. M., Pfeiffer, C., Merten, S., Mamdani, M., Exavery, A., Haafkens, J., et al. (2015). Prevalence and social drivers of HIV among married and cohabiting heterosexual adults in south-eastern Tanzania: analysis of adult health community cohort data. *Global Health Action*, *8*, 28941. https://doi.org/10.3402/gha.v8.28941
29. Mtenga, S. M., Pfeiffer, C., Tanner, M., Geubbels, E., & Merten, S. (2018). Linking gender, extramarital affairs, and HIV: a mixed methods study on contextual determinants of extramarital affairs in rural Tanzania. *AIDS Research and Therapy*, *15*(1), 12. https://doi.org/10.1186/s12981-018-0199-6
30. Nabukenya, A. M., Nambuusi, A., & Matovu, J. K. B. (2020). Risk factors for HIV infection among

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

married couples in Rakai, Uganda: a cross-sectional study. *BMC Infectious Diseases*, *20*(1), 198. https://doi.org/10.1186/s12879-020-4924-0

31. Nnko, S., Boerma, J. T., Urassa, M., Mwaluko, G., & Zaba, B. (2004). Secretive females or swaggering males? An assessment of the quality of sexual partnership reporting in rural Tanzania. *Social Science & Medicine (1982)*, *59*(2), 299–310. https://doi.org/10.1016/j.socscimed.2003.10.031
32. Salia, J. G., Sidat, M., Dias, S. F., Martins, M. R. O., & Craveiro, I. (2020). High Mobility and STIs/HIV among Women Informal Cross-Border Traders in Southern Mozambique: Exploring Knowledge, Risk Perception, and Sexual Behaviors. *International journal of environmental research and public health*, *17*(13), 4724. https://doi.org/10.3390/ijerph17134724
33. Shisana, O., Rehle, T., Simbayi, L.C., Zuma, K., Jooste, S., Zungu, N., Labadarios, D., Onoya, D. et al. (2014). South African National HIV Prevalence, Incidence and Behaviour Survey, 2012. Cape Town, HSRC Press. Available at: https://hsrc.ac.za/uploads/pageContent/4565/SABSSM%20IV%20LEO%20final.pdf. Accessed on May 5, 2025.
34. Shukla, M., Agarwal, M., Singh, J. V., Tripathi, A. K., Srivastava, A. K., & Singh, V. K. (2016). High-risk sexual behavior among people living with HIV/AIDS attending tertiary care hospitals in the district of Northern India. *Indian Journal of Sexually Transmitted Diseases and AIDS*, 37(1), 46–51. https://doi.org/10.4103/0253-7184.176212
35. Smolak, A. (2014). A meta-analysis and systematic review of HIV risk behavior among fishermen. *AIDS Care*, *26*(3), 282–291. https://doi.org/10.1080/09540121.2013.824541
36. Todd, J., Cremin, I., McGrath, N., Bwanika, J. B., Wringe, A., Marston, M., et al. (2009). Reported number of sexual partners: comparison of data from four African longitudinal studies. *Sexually Transmitted Infections*, 85 Suppl 1(Suppl_1), i72–i80. https://doi.org/10.1136/sti.2008.033985
37. Uganda Bureau of Statistics (UBOS). (2023). Uganda Demographic and Health Survey 2022. Kampala, Uganda: UBOS. Available at: https://www.ubos.org/wp-content/uploads/publications/UDHS-2022-Report.pdf. Accessed on May 12, 2025.
38. UNAIDS Reference Group on Estimates, Modelling, and Projections: Working Group on Measuring Concurrent Sexual Partnerships. (2010). HIV: consensus indicators are needed for concurrency. *Lancet*, *375*(9715), 621–622. https://doi.org/10.1016/S0140-6736(09)62040-7
39. Wawer, M. J., Gray, R. H., Sewankambo, N. K., Serwadda, D., Paxton, L., Berkley, S., et al. (1998). A randomized, community trial of intensive sexually transmitted disease control for AIDS prevention, Rakai, Uganda. *AIDS*, *12*(10), 1211–1225. https://doi.org/10.1097/00002030-199810000-00014
40. WHO. 2024. *HIV and AIDS* [Online]. Geneva: Switzerland; World Health Organization. Available at: https://www.who.int/News-Room/Fact-Sheets/Detail/Hiv-Aids. Accessed May 9, 2025.
41. Wondemagegn, F., & Berkessa, T. (2020). High-level risky sexual behavior among persons living with HIV in the urban setting of the highest HIV prevalent areas in Ethiopia: Implications for interventions. *PLoS One*, 15(11), e0242701. https://doi.org/10.1371/journal.pone.0242701
42. Zambia Statistics Agency, Ministry of Health (MoH) [Zambia], and ICF. 2024. Zambia Demographic and Health Survey 2024: Key Indicators Report. Lusaka, Zambia, and Rockville, Maryland, USA: Zambia Statistics Agency, MoH, and ICF. Available at: https://dhsprogram.com/pubs/pdf/PR159/PR159.pdf. Accessed on June 22, 2025.
43. Zimbabwe National Statistics Agency (ZIMSTAT) and ICF. Zimbabwe Demographic and Health Survey 2023 24: Key Indicators Report. Harare, Zimbabwe, and Rockville, Maryland, USA: ZIMSTAT and ICF. Available at: https://dhsprogram.com/pubs/pdf/PR160/PR160.pdf. Accessed on June 22, 2025.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 6 (2025): June 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i6.1795
Original Article

PUBLISHER DETAILS

Student's Journal of Health Research (SJHR)
(ISSN 2709-9997) Online
(ISSN 3006-1059) Print
Category: Non-Governmental & Non-profit Organization
Email: studentsjournal2020@gmail.com
WhatsApp: +256 775 434 261
Location: Scholar's Summit Nakigalala, P. O. Box 701432, Entebbe Uganda, East Africa