

Sexual Behavior of Older Adults Living with HIV in Uganda

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Abstract Sexual behavior among older adults with HIV in Sub-Saharan Africa has been understudied despite the burgeoning of this population. We examined sexual behavior among older adults living with HIV in Uganda. Participants were eligible for the study if they were 50 years of age or older and living with HIV. Quantitative data were collected through face-to-face interviews, including demographic characteristics, health, sexual behavior and function, and mental health. Of respondents, 42 were men and 59 women. More than one-quarter of these HIV-positive older adults were sexually active. A greater proportion of older HIV-positive men reported being sexually active compared to women (54 vs. 15 %). Among those who are sexually active, a majority never use condoms. Sixty-one percent of men regarded sex as at least somewhat important (42 %), while few women shared this opinion (20 %). Multivariate logistic regression analyses revealed that odds of sexual activity in the past year were significantly increased by the availability of a partner (married/cohabitating), better physical functioning, and male gender. As more adults live longer with HIV, it is critical to understand their sexual behavior and related psychosocial variables in order to improve prevention efforts.

Keywords Sexual behavior · Older adults · HIV · Uganda

The HIV epidemic has led to increased focus on the most basic of human behaviors—sex. Most prevention messaging and research in Africa have focused on the sexual behavior of adolescents and women of child-bearing age (Kuteesa, Seeley, Cumming, & Negin, 2012; Negin et al., 2012). The expansion of access to antiretroviral treatment (ART), however, has turned HIV from a death sentence into a manageable, albeit serious, chronic illness—a change that has transformed the epidemic. Life expectancies of many people living with HIV and taking ART have increased and approach typical lifespans (Hogg et al., 2013; Mills et al., 2011; Nakagawa, May, & Phillips, 2013). With the increasing access to ART, the HIV cohort is demographically aging, a phenomena often described as the graying of the epidemic (UNAIDS, 2013a). That change is abundantly clear in the U.S., where the CDC predicts that 50 % of the HIV-positive population will be age 50 and older in 2015 (Vance, McGuinness, Musgrove, Orel, & Fazeli, 2011).

This phenomenon is occurring in Africa as well where increasing numbers of people living with HIV are aged 50 years and older (UNAIDS, 2013a). In Sub-Saharan Africa, it is estimated that there are 2–3 million adults aged 50 and older living with HIV, representing more than 13 % of that region’s HIV-positive population (Hontelez et al., 2012; Mahy, Autenrieth, Stanecki, & Wynd, 2014; Negin & Cumming, 2010). As access to treatment progresses, more people infected with HIV will survive and embrace older age living with HIV (UNAIDS, 2011, 2013b). In 2013, UNAIDS issued the first Supplementary Report on HIV and Aging (UNAIDS, 2013a) recognizing the growing population of older adults with HIV as well as the fact that older adults are at risk for HIV infection. This UNAIDS acknowledgement is accompanied by efforts to increase the HIV surveillance data beyond its current cap at age 49.

The sexual behavior and health of this growing population has important implications for HIV transmission. Older adults have been largely neglected by the prevention community (Mutevedzi & Newell, 2011; Negin et al., 2012), as their focus has

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been on reproductive health, mother-to-child transmission, and younger populations where known HIV incidence is high. In addition, there persists the ageist-driven myth that older adults are not sexually active (Ory, Zablotsky, & Crystal, 1998). For people of all ages, including older adults, sexuality is a significant contributor to well-being and quality of life (Gott & Hinchliff, 2003; Lindau et al., 2007; Lusti-Narasimhan & Beard, 2013). In fact, adults remain sexually active well into old age, with cessation of sexual activity typically resulting from physical health problems and/or the unavailability of a sexual partner which is particularly the case among older women (Lindau et al., 2007). Studies of HIV-positive older adults in the U.S. find that they too remain sexually active, but upwards of 40 % do not use condoms regularly highlighting the need for secondary HIV prevention with this population (Golub et al., 2010).

There are little data on the sexual behavior of older adults in Africa irrespective of HIV status. Studies from Uganda, Zimbabwe, and South Africa find that more than 80 % of men aged 50 and older reported having sex in the past year, while rates of sexual behavior are markedly lower among women at age 60 (Todd et al., 2009). A Malawian study also found high rates of sexual activity among older men with almost 84 % of men aged 50–64 and 74 % of men aged 65 and older having sex in the past year (Freeman & Anglewicz, 2012). Among women, half of 50–64 year olds and more than a quarter of those aged 65 and older were sexually active. These gender variances are important and how they might contribute to prevention and care strategies must be assessed with care (McCord, 2014).

Despite high rates of HIV prevalence in many Sub-Saharan African countries, where sexual transmission is the dominant mode of HIV infection, there has been very limited attention to studies on the sexual behavior specifically of older adults living with HIV (Richards, Zalwango, Seeley, Scholten, & Theobald, 2013). While some literature has emerged on this issue from the United States over the past few years (Cooperman, Amsten, & Klein, 2007; Golub et al., 2010, 2011; Lovejoy et al., 2008), research on the topic among older adults in high prevalence African settings remains neglected.

In order to address this gap, in this first systematic study of its kind in Africa, we examined sexual behavior of a sample of older adults living with HIV in Uganda using quantitative methods. The 2011 Uganda AIDS Indicator Survey found HIV prevalence of 6.6 % for those aged 50–59 years (Ministry of Health [Uganda], ICF International, Centers for Disease Control and Prevention [Uganda], U.S. Agency for International Development, & WHO Uganda, 2012). Other reports have highlighted a number of challenges among older adults with HIV including despondency, the additional burden of caregiving, and multi-morbidity (Mugisha et al., 2013; Nyirenda et al., 2013; Wright, Zalwango, Seeley, Mugisha, & Scholten, 2012). Our first research question considered how older Ugandan men and women with HIV differ with regard to sexual behavior, sexual problems, and risk behaviors. In addition, we hypothesized that sexual activity in older HIV-

positive Ugandans would be significantly related to physical and mental health (Lindau et al., 2007).

Method

The study was carried out in a rural area of Kalungu district in south-western Uganda, and peri-urban Wakiso district, located in and around the town of Entebbe near Kampala. Ethical approval for the study was provided by the Science and Ethics Committee of the Uganda Virus Research Institute. Approval was given by the Uganda National Council for Science and Technology. Written informed consent was obtained from all participants prior to data collection. Study participants were compensated with a bar of laundry soap (4000 Uganda shillings) which is a common practice in this population.

Participants and Procedure

The study enrollees were recruited from the WHO-supported Wellbeing of Older People Wave 2 (WOPS-II) Study participants (Nyirenda et al., 2013). Participants were eligible for the study if they were 50 years of age or older and self-identified as a person with HIV. Recruitment aimed for approximately equal numbers of men and women. Two-thirds of the participants were selected from the rural site and one-third from the semi-urban site. Interviewers approached potential participants to determine their willingness to take part in this study—101 people were interviewed.

The quantitative survey was conducted in Luganda through face-to-face one-on-one interviews that took between 1 and 1 1/2 h to complete. Surveys were administered in the individuals' homes or in a private room at a health facility. Since the respondents had prior knowledge of their HIV status and the study ran concurrently with WOPS II, the likelihood of involuntary HIV status disclosure was reduced. The primary interviewers, a man and a woman, were both in their late 50s. During the final 3 weeks of the field effort, three experienced interviewers in their 30s and 40s helped with data collection in order to achieve the target sample size.

Measures

Data were collected with paper questionnaires on a range of demographic, physical and mental health, social support, sexual behavior and function, and psychological well-being measures. For the data reported in this paper, single items were used to assess age, gender, marital status, living arrangement, and level of education.

Questions on sexual behavior and function were adapted from the National Social Life Health and Aging Project interview schedule (Suzman, 2009). These questions included the number of partners (open ended), frequency of sexual activity in past 12 months (0-not at all to 6-four or more times/week), importance of sex (1-not at all important to 5-extremely important), and reasons for sexual inactivity (16 items). For the multivariate analyses

on being sexually active and importance of sex, these variables were dichotomized into sexually active in the past 12 months (yes/no), and considering sex to be at least somewhat important (yes/no).

Questions on alcohol and substance use, self-rated health, HIV transmission history, and condom use were adapted from the Research on Older Adults with HIV (ROAH) study (Brennan, Karpiak, Shippy, & Cantor, 2009; Golub et al., 2010). Questions on alcohol substance use asked about current use and use during sex. HIV transmission history was assessed by time in months/years since HIV diagnosis and how the individual was infected with HIV (spouse, casual partner, other). Self-rated health was measured with the item “How would you rate your physical health at this time” using a 5-point Likert scale ranging from “excellent” to “very poor.”

Depression was assessed with the 10-item version of the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977). The CES-D is a widely used tool to measure levels of depressive symptoms experienced during the past week, and has been used in a wide variety of settings. The measure has been used in Africa (Chishinga et al., 2011; Farley et al., 2010) including Uganda (Kaharuzza et al., 2006; Nakasujja et al., 2010) but not specifically among older adults. Inter-item reliability of the 10-item CES-D with the current sample of older HIV-positive Ugandans was good; Cronbach’s $\alpha = .74$.

Health-related quality of life was assessed with selected subscales from the MOS-HIV. This instrument has been widely used on a variety of populations with HIV/AIDS. For this study, we used the following subscales: energy/fatigue (4 items), cognitive function (4 items), pain (2 items), physical function (6 items), and social function (1 item). Six-point Likert response formats are used for all subscales, with the exception of the physical function scale which has 3 response categories. Cronbach’s alpha for the multi-item subscales in the present sample were energy/fatigue ($\alpha = .90$), cognitive function ($\alpha = .72$), pain ($\alpha = .82$), and physical function ($\alpha = .79$). For the current study, these subscales were reversed scored so that higher scores indicated better health-related quality of life.

Design and Analysis

The study used a comparison group design by gender to examine differences between older Ugandan adults with HIV with regard to sexual behavior and functioning, including sexual risk behavior. A correlational design was used to examine covariates of sexual behavior and the importance of sex. Data were double entered using the Access program at the MRC offices. Data cleaning was done by the Statistics Section of the MRC/UVRI Uganda Research Unit on AIDS and ACRUA. Data analysis was done in SPSS and Stata. Initial descriptive statistics were performed to check for errors, outliers, and missing data. Differences on study variables based on gender variables were tested for statistical significance using *t*-tests for continuous variables and Fisher’s Exact Test

for categorical variables. To address our hypothesis on covariates of sexual activity in the past year, multivariate logistic regression was used to examine any sexual activity in the past 12 months (yes/no). Four additive models were tested that included: (1) age and being married/cohabitating; (2) physical health as assessed with the MOS-HIV health-related quality-of-life subscales; (3) mental health (CES-D depressive symptoms); and (4) female gender. Gender was added as the final step after controlling for other variables due to the sharp differential in reported sexual activity between men and women in this sample described below. No evidence of independent covariate multicollinearity was detected. Listwise deleting of missing data was employed and only 3–4 cases were lost due to missing data. Logistic regressions were evaluated by odd ratios (ORs) with associated 95 % confidence intervals.

Results

Demographic and Health Characteristics

The sample of 101 Ugandan older adults comprised 42 men (42 %) and 59 women (58 %) (see Table 1). The sample ranged in age from 50 to 83 years, and the average age was 61. Women were significantly younger than men on average (59 and 63 years, respectively). Twenty-two percent of respondents were between 50 and 54, 29 % between 55 and 59, 24 % between 60 and 64, and the remaining 26 % were age 65 and older.

With regard to marital status, compared to men, a significantly larger proportion of women were widowed (29 vs. 58 %) and, compared to women, a larger proportion of men were currently married or cohabitating (14 vs. 60 %). A greater proportion of men lived alone compared to women (19 vs. 2 %).

On average, respondents had been diagnosed with HIV for 9 years, ranging from the past year to 23 years; 25 % had been diagnosed within the past 5 years. When asked how they had become infected with HIV, 56 % reported being infected through sex with their spouse, while 30 % reported infection through sex with a casual partner. Only two respondents were not taking any medication for HIV (antiretrovirals or cotrimoxazole).

Sexual Activity and Sexual Risk

Nearly three-quarters of the sample reported that they were not sexually active, but this differed significantly by gender (see Table 2). Thirty-nine percent of men reported one sexual partner, 10 % reported more than one partner, while half were not sexually active. In contrast, 86 % of women were not sexually active, and of the 14 % who were, all reported only one sexual partner. Among the 24 women aged 60 years and older, not one was sexually active; among men, both those younger and older than 60 had similar rates of sexual activity.

Table 1 Demographic and health characteristics of respondents in quantitative survey

| Variable | Total | | Men | | Women | | Statistic |
|------------------------|----------|-----------|----------|-----------|----------|-----------|------------------------|
| | <i>N</i> | % | <i>N</i> | % | <i>N</i> | % | |
| Gender | 101 | 100.0 | 42 | 41.6 | 59 | 58.4 | |
| Marital status | | | | | | | <i>p</i> = .001 |
| Married/cohabitating | 33 | 32.7 | 25 | 59.5 | 8 | 13.6 | |
| Widowed | 46 | 45.5 | 12 | 28.6 | 34 | 57.6 | |
| Divorced/separated | 22 | 21.8 | 5 | 11.9 | 17 | 28.8 | |
| Education | | | | | | | ns |
| None | 15 | 14.9 | 3 | 7.1 | 12 | 20.3 | |
| Primary 1–7 | 66 | 65.4 | 29 | 69.1 | 37 | 62.7 | |
| Secondary or higher | 20 | 19.8 | 10 | 23.8 | 10 | 17.0 | |
| Self-rated health | | | | | | | ns |
| Excellent | 14 | 13.9 | 6 | 14.3 | 8 | 13.6 | |
| Good | 46 | 45.5 | 21 | 50.0 | 25 | 42.4 | |
| Fair | 26 | 25.7 | 8 | 19.1 | 18 | 30.5 | |
| Poor/very poor | 15 | 14.9 | 7 | 16.7 | 8 | 13.6 | |
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>t</i> (<i>df</i>) |
| Age* | 61.0 | 7.8 | 63.4 | 8.6 | 59.3 | 6.8 | 2.68 (99)** |
| MOS-HIV pain QoL | 6.8 | 2.6 | 7.1 | 2.9 | 6.7 | 2.4 | <1 (97) |
| MOS-HIV function QoL | 14.0 | 3.2 | 14.9 | 3.1 | 13.3 | 3.1 | 2.61 (99)** |
| MOS-HIV social QoL | 4.8 | 1.7 | 5.2 | 1.4 | 4.5 | 1.9 | 2.22 (98)* |
| MOS-HIV energy QoL | 16.8 | 5.9 | 17.5 | 5.5 | 16.4 | 6.2 | <1 (99) |
| MOS-HIV cognitive QoL | 17.0 | 5.7 | 17.6 | 5.9 | 16.5 | 5.6 | <1 (99) |
| CES-D depression scale | 12.3 | 6.9 | 11.2 | 7.0 | 13.0 | 6.9 | −1.28 (99) |

* *p* < .05; ** *p* < .01; *** *p* < .001

A higher proportion of men rated sex as being extremely or very important (41 %) as compared with women (5 %). Overall, half reported never using a condom when having sex with their spouse, while 9 % said they usually used a condom and 27 % always used a condom. Among men, over half reported never or rarely using a condom with a casual partner; none of the older women reported having sex with a casual partner.

The survey included questions on alcohol consumption. While 30 % of respondents stated that they drank alcohol, only 3 (10 %) stated that they had sex under the influence of alcohol. No respondents reported sexual activity while under the influence of drugs.

Survey respondents were asked what interfered with their ability to be sexually active (Table 3). Level of interest in sex and HIV status were the most common factors for both men and women limiting their sexual activity. In addition, among men, their partner's lack of interest limited sexual activity.

Multivariate Analysis on Sexual Activity and Importance of Sex

Sexual Activity in the Past 12 Months

The odds of having engaged in sexual activity in the past year among older Ugandans with HIV were examined using hierarchical multivariate logistic regression analysis. In the first block of covariates, age did not significantly affect the odds of sexual activity in the past year. However, those who were cohabitating with another individual had over five times the odds of reporting sexual activity in the past year (see Table 4). In the second block with the addition of the health variables, those who were cohabitating had seven times the odds of having engaged in sex. In addition, every one unit increase in physical function quality-of-life scores was associated with nearly two-fold greater odds of

Table 2 Sexual behavior by gender

| Variable | Total | | Men | | Women | | Statistic Fisher's exact test |
|----------------------------------|-------|------|-----|-------|-------|------|----------------------------------|
| | N | % | N | % | N | % | |
| Sexual situation | | | | | | | <i>p</i> = .001 |
| Has one partner | 23 | 23.7 | 15 | 38.5 | 8 | 13.8 | |
| More than one partner | 4 | 4.1 | 4 | 10.3 | 0 | – | |
| Not sexually active | 70 | 72.2 | 20 | 51.3 | 50 | 86.2 | |
| Sex in past 12 months | | | | | | | <i>p</i> = .001 |
| Not at all | 68 | 68.7 | 19 | 46.3 | 49 | 84.5 | |
| Once or twice per year | 6 | 6.1 | 4 | 9.8 | 2 | 3.5 | |
| Once per month | 2 | 2.0 | 2 | 4.9 | 0 | 0.0 | |
| 2–3 times per month | 8 | 8.1 | 4 | 9.8 | 4 | 6.9 | |
| Once per week | 7 | 7.1 | 5 | 12.2 | 2 | 3.5 | |
| 2–3 times per week | 5 | 5.1 | 4 | 9.8 | 1 | 1.7 | |
| 4 or more times per week | 3 | 3.0 | 3 | 7.3 | 0 | 0.0 | |
| Importance of sex | | | | | | | <i>p</i> = .001 |
| Not at all | 63 | 63.0 | 16 | 39.0 | 47 | 79.7 | |
| Somewhat | 9 | 9.0 | 2 | 4.9 | 7 | 11.9 | |
| Moderately | 8 | 8.0 | 6 | 14.6 | 2 | 3.4 | |
| Very | 8 | 8.0 | 7 | 17.1 | 1 | 1.7 | |
| Extremely | 12 | 12.0 | 10 | 24.4 | 2 | 3.4 | |
| How infected | | | | | | | ns |
| Sex with spouse | 56 | 57.1 | 19 | 47.5 | 37 | 63.8 | |
| Sex with casual partner | 30 | 30.6 | 13 | 32.5 | 17 | 29.3 | |
| Sex with multiple partners/wives | 9 | 9.2 | 6 | 15.0 | 3 | 5.2 | |
| Not sure | 3 | 3.1 | 2 | 5.0 | 1 | 1.7 | |
| Partner knows you have HIV | | | | | | | ns |
| No | 1 | 3.6 | 0 | 0.0 | 1 | 11.1 | |
| Yes | 27 | 96.4 | 19 | 100.0 | 8 | 29.6 | |
| Know if partner is HIV-positive | | | | | | | ns |
| No | 2 | 7.14 | 1 | 5.3 | 1 | 11.1 | |
| Yes | 26 | 92.9 | 18 | 94.7 | 8 | 88.9 | |
| Condom use with spouse | | | | | | | ns |
| Never | 19 | 57.6 | 13 | 56.5 | 6 | 60.0 | |
| Rarely | 2 | 6.1 | 1 | 4.4 | 1 | 10.0 | |
| Sometimes | 1 | 3.0 | 1 | 4.4 | 0 | 0.0 | |
| Usually | 2 | 6.1 | 2 | 8.7 | 0 | 0.0 | |
| Always | 9 | 27.3 | 6 | 26.1 | 3 | 30.0 | |
| Condom use with casual partner | | | | | | | Not applicable |
| Never | 2 | 33.3 | 2 | 33.3 | – | – | |
| Rarely | 1 | 16.7 | 1 | 16.7 | – | – | |
| Sometimes | 0 | 0.0 | 0 | 0.0 | – | – | |
| Usually | 2 | 33.3 | 2 | 33.3 | – | – | |
| Always | 1 | 16.7 | 1 | 16.7 | – | – | |

being sexually active. None of the other health quality-of-life variables significantly affected the odds of sexual activity. The addition of the mental health variable (CES-D) in the third block did not change the pattern in Block 2, and CES-D was not significantly related to odds of sexual activity. In the fourth and

inal block, female gender was significantly associated with 80 % reduced odds of being sexually active in the prior year. With all the variables in the equation, cohabitation was associated with four times greater odds of being sexually active, and higher physical function quality-of-life scores also significantly increased the

Table 3 Factors that interfere with sexual activity by gender

| Factors | Total | | Male | | Female | | Statistic |
|--|-------|------|------|------|--------|------|------------|
| | N | % | N | % | N | % | |
| You are not interested | 65 | 65.0 | 19 | 46.3 | 46 | 78.0 | $p = .001$ |
| Your partner is not interested | 10 | 10.0 | 9 | 22.0 | 1 | 1.7 | $p = .001$ |
| Your HIV status | 45 | 45.0 | 20 | 48.8 | 25 | 42.4 | ns |
| Physical health problems or limitations you have | 9 | 9.0 | 5 | 12.2 | 4 | 6.8 | ns |
| Emotional problems you have | 9 | 9.0 | 3 | 7.3 | 6 | 10.2 | ns |
| Your children or family wouldn't approve | 6 | 6.0 | 0 | 0.0 | 6 | 10.2 | $p = .079$ |

Note Only factors with more than five affirmative responses included

Table 4 Logistic regression on sexual activity in the past year: HIV-positive older Ugandans

| Covariate | <i>r</i> | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|---------------|----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | | OR | 95 % CI | OR | 95 % CI | OR | 95 % CI | OR | 95 % CI |
| Age | -.12 | 0.97 | 0.91–1.03 | 0.96 | 0.88–1.04 | 0.96 | 0.88–1.04 | 0.91 | 0.83–1.01 |
| Cohabiting | .35*** | 5.19*** | 2.05–13.1 | 7.24*** | 2.14–24.4 | 7.49*** | 2.19–25.6 | 4.02* | 1.02–15.7 |
| Pain QoL | .03 | | | 0.89 | 0.67–1.18 | 0.89 | 0.68–1.18 | 0.93 | 0.70–1.25 |
| Function QoL | .17 | | | 1.86*** | 1.29–2.68 | 1.88*** | 1.30–2.71 | 1.84** | 1.26–2.71 |
| Social QoL | .31*** | | | 1.22 | 0.70–2.13 | 1.25 | 0.70–2.25 | 1.18 | 0.66–2.13 |
| Energy QoL | .13 | | | 0.91 | 0.78–1.05 | 0.91 | 0.78–1.06 | 0.92 | 0.78–1.08 |
| Cognitive QoL | .14 | | | 1.04 | 0.93–1.17 | 1.05 | 0.93–1.19 | 1.03 | 0.92–1.17 |
| CES-D | -.17 | | | | | 1.02 | 0.92–1.13 | 1.01 | 0.91–1.12 |
| Female | -.39** | | | | | | | 0.19* | 0.05–0.79 |
| Variance | | Pseudo R^2 | | Pseudo R^2 | | Pseudo R^2 | | Pseudo R^2 | |
| | | 0.11 | | 0.36 | | 0.37 | | 0.41 | |

Note $N = 97$. Not sexually active in the past 12 months = 0; sexually active in the past 12 months = 1

Pain QoL MOS-HIV pain, Function QoL MOS-HIV physical function, Social QoL MOS-HIV social function, Energy QoL MOS-HIV energy, Cognitive QoL MOS-HIV cognitive function, CES-D Center for Epidemiological Studies 10-item Depression Scale

* $p < .05$; ** $p < .01$; *** $p < .001$

odds of sexual activity. The full model explained 41 % of the variance in sexual activity in the past 12 months.

Importance of Sex

We dichotomized the rating of sexual importance into “not important” versus “at least somewhat important.” The same regression model used to examine odds of sexual activity in the past year was employed to examine if similar covariates would be related to considering sex to be important (see Table 5). In the first block, cohabitation was associated with over two and a half times greater odds of considering sex to be important; age was not significant. With the addition of the health variables in the second block, cohabitation increased the odds of considering sex to be important, and every unit increase in physical function was associated with one and one-half greater odds of considering sex to be important. Better pain quality-of-life scores were associated with decreased odds of rating sex as being important. However, in the third

block with the addition of CES-D scores, pain was no longer a significant covariate, while the relationship of the cohabitation and physical function factors was virtually unchanged. In the final block, female gender was associated with 90 % reduced odds of feeling that sex was important, while better physical function remained associated with greater odds of endorsing the importance of sex. Cohabitation was no longer a significant covariate in the full model on the importance of sex, which explained 34 % of the variance on this factor.

Discussion

The sexual behavior of older adults living with HIV in Uganda has not been examined quantitatively. Our findings reveal that more than a quarter of older adults living with HIV were still sexually active. There were significant differences in sexual behavior by gender with almost half of older HIV-positive men still sexually

Table 5 Logistic regression on importance of sex: HIV-positive older Ugandans

| Covariate | <i>r</i> | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|---------------|----------|------------------------------|-----------|------------------------------|-----------|------------------------------|-----------|------------------------------|-----------|
| | | OR | 95 % CI | OR | 95 % CI | OR | 95 % CI | OR | 95 % CI |
| Age | −.09 | 0.98 | 0.93–1.04 | 0.97 | 0.90–1.04 | 0.97 | 0.91–1.04 | 0.92 | 0.84–1.00 |
| Cohabiting | .22* | 2.66* | 1.11–6.37 | 3.17* | 1.08–9.33 | 3.36* | 1.14–9.92 | 1.22 | 0.33–4.46 |
| Pain QoL | .06 | | | 0.76* | 0.58–0.99 | 0.76 | 0.58–1.18 | 0.77 | 0.57–1.22 |
| Function QoL | .40*** | | | 1.51** | 1.16–1.97 | 1.53** | 1.17–2.00 | 1.48** | 1.11–1.99 |
| Social QoL | .30** | | | 1.29 | 0.84–1.11 | 1.34 | 0.85–2.11 | 1.24 | 0.78–1.98 |
| Energy QoL | .15 | | | 0.91 | 0.78–1.05 | 0.98 | 0.85–1.12 | 1.00 | 0.85–1.15 |
| Cognitive QoL | .20* | | | 1.08 | 0.98–1.20 | 1.10 | 0.99–1.23 | 1.09 | 0.97–1.13 |
| CES-D | −.12 | | | | | 1.03 | 0.95–1.14 | 1.01 | 0.91–1.12 |
| Female | −.42*** | | | | | | | 0.11** | 0.00–543 |
| Variance | | Pseudo <i>R</i> ² | | Pseudo <i>R</i> ² | | Pseudo <i>R</i> ² | | Pseudo <i>R</i> ² | |
| | | 0.04 | | 0.25 | | 0.26 | | 0.34 | |

Note *N* = 98. Not considering sex to be at least somewhat important = 0; considering sex to be at least somewhat important = 1

Pain QoL MOS-HIV pain, *Function QoL* MOS-HIV physical function, *Social QoL* MOS-HIV social function, *Energy QoL* MOS-HIV energy, *Cognitive QoL* MOS-HIV cognitive function, *CES-D* Center for Epidemiological Studies 10-item Depression Scale

* *p* < .05; ** *p* < .01; *** *p* < .001

active compared to only 15 % of women. Of those who are sexually active, a majority never use condoms. Men regarded sex as important to them, while very few women did, even when controlling for other significant covariates in a multivariate model. This finding may also account, in part, for the lower reported sexual activity of the older women in this sample compared with their male peers. Alternatively, the lack of sexual activity may lead to perceptions of diminished importance of sex.

Similar to the findings in this study, U.S. research studies show that between 33 and 42 % of sexually active HIV-positive adults report condomless sex (Cooperman et al., 2007; Lovejoy et al., 2008). Golub et al. (2011) found that 58 % of sexually active HIV-positive older adults in a U.S. sample reported using condoms during every sex act in the past 90 days. Parallel to current findings, a U.S. study also revealed that physical health and the availability of a partner were more highly associated with sexual functioning than age (Lindau et al., 2007). Additionally, the rates of sexual activity in our study were lower than among HIV-negative older adults in comparable African settings (Freeman & Anglewicz, 2012; Todd et al., 2009).

The level of condomless sexual activity among HIV-positive older men found in this study puts them at heightened risk for transmitting HIV—as well as sexually transmitted infections—to their sero-negative partners. Even where their partners might be HIV positive, condom use is encouraged to prevent superinfection (Redd et al., 2012), as well as providing protection from other sexually transmitted infections.

Despite this, many older people do not see themselves as at risk for HIV. A Kenyan study found that 72 % of respondents over 50 years of age—women in particular—felt they had no risk at all of contracting HIV (Chepngeno-Langat, 2011). Along

with low levels of risk perception, many older adults associate condom use with pregnancy avoidance and do not see the need for protection at older ages (Nguyen & Holodniy, 2008). A U.S. study found that many older women regarded condom use as unnecessary “if you can no longer get pregnant” (Lindau, Leitsch, Lundberg, & Jerome, 2006).

Limitations

The 101 quantitative interviews represent a large sample of older adults living with HIV compared to what has come before in the African context but certainly brings with it some limitations in terms of analysis. For example, comparisons between the rural respondents and the peri-urban respondents might not have sufficient sample size for statistical significance. Differences between men and women, as well as those related to sexual activity and believing sex was important, may have also been misestimated due to small sample size.

Furthermore, all the respondents were linked to care in established, high-functioning, high-quality treatment programs. In that way, the respondents might not be representative of all older adults living with HIV in Uganda and where many might not have access to services of the same quality. This would likely have an impact on quality of life, mental health, and other factors.

While this study has yielded important data, replication with larger samples of Ugandan and Sub-Saharan older adults with HIV should be undertaken in order to validate current findings. Larger sample sizes would permit a better examination of gender differences, as well as differences based on age, economic status, and tribal affiliation which could not be performed with the current dataset. Inclusion of other Sub-Saharan countries in this work

would allow for cross-national comparisons to better assess the impact of cultural and societal factors on the sexual functioning of older Sub-Saharan African adults with HIV.

Conclusions

Sex remains an important part of overall health and life satisfaction regardless of age—particularly for men. In Malawi, for example, a lack of desire for sex was associated with illness or death with one interviewee noting: “There are two types of old age: the first one is where you do not have a desire for a woman, that’s being old, then you are finished. There is another type where you still have a desire for a woman, it means you are not old yet” (Freeman & Coast, 2014).

The 2014 UNAIDS Gap Report declared that older adults were a group being left behind by the HIV response (UNAIDS, 2014) and as long as older men and women are neglected by HIV prevention messaging, infections will continue in this cohort. South Africa has already added men over age 50 to its list of “most at-risk populations” acknowledging similar realities as found in this study (Shisana, 2009). The lack of information being provided to older adults and the low levels of HIV-related knowledge lead to late testing and poor treatment outcomes (Longo, Camoni, Boros, & Suligoi, 2008). More emphasis on developing and disseminating targeted HIV prevention for older adults is imperative with a particular focus on older men. In addition, prevention messaging is needed as part of routine checkups for older HIV-positive individuals to prevent onward transmission.

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