

https://dspace.org/

Decolonising the TheologicoPolitical Problem Reading African NeoPentecostalism through Mbembes Improvisation

Siphiwe Dube

BRILL ACADEMIC PUBLISHERS
https://hdl.handle.net/10539/39053
WOS

Downloaded from a DSpace repository. https://dspace.org/

AIDS and Behavior (2023) 27:1469–1477
https://doi.org/10.1007/s10461-022-03882-4

ORIGINAL PAPER

HIV Related Behaviors Among Male Partners of Adolescent Girls and Young Women in Rural South Africa

Nivedita L. Bhushan[1] · Nosipho Shangase[2] · Linda Jepkoech Kimaru[3,4] · F. Xavier Gomez-Olive[4] · Kathleen Kahn[4] · Audrey E. Pettifor[2,4]

Accepted: 27 September 2022 / Published online: 1 November 2022
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2022

Abstract

Improving men's engagement in HIV prevention is not only essential for reducing their own HIV risk but also the risk of transmitting HIV to their female partners. We conducted a cross-sectional survey using a population-based sample of men (age 18–30) who reported being a partner of an adolescent girls and young women (AGYW) in South Africa (N = 2827). We used logit-binomial regression models to examine associations among men's partnership characteristics, HIV risk perceptions, and HIV-related behaviors and examine differences by male partner age (younger men (18–24) vs. older men (25–30)) and age difference between partners (age-concordant (< 5 years) vs. age-disparate (≥ 5 years)). Most men reported inconsistent condom use (85%) and nearly half reported engaging in transactional sex (48%). Older men were just as likely as younger men, and men with age-disparate and age-concordant partners, to inconsistently use condoms, engage in transactional sex, and perpetrate intimate partner violence. Most men also reported a very high interest in pre-exposure prophylaxis (PrEP) (77%) and half reported having an HIV test in the past year (50%). There were no differences by male partner age or age difference between partners in PrEP interest but older men and men in age-discordant relationships were more likely than younger men and men in age-concordant relationships to have an HIV test in the past year. Male partners of AGYW in South Africa are engaging in HIV-related behaviors and need HIV prevention interventions to reduce risk for themselves and their female partners.

Keywords Adolescents · HIV prevention · Transactional sex · Condom use · Partners

Introduction

HIV incidence is substantially higher among young women than young men in sub-Saharan Africa (SSA), but males are twice as likely to die of HIV-related causes than their age-matched female counterparts [1, 2]. Studies have attributed this disparity in HIV-related mortality to the gendered nature of health service delivery in SSA and subsequent low male engagement in all stages of the HIV care continuum [3–10]. Across SSA, young men are less likely than young women to receive an HIV test, link to HIV care, initiate antiretroviral therapy (ART), and stay on ART [11–17]. This is particularly the case in South Africa where studies evaluating the country's 90-90-90 target progress found considerable heterogeneity by gender and age. Men under the age of 30 were less likely than older men and their age-matched female counterparts to have had an HIV test and if positive, receive and adhere to an ART regimen [18–21]. Improving young men's engagement in HIV prevention and care is not only essential for reducing their own HIV risk and HIV-related mortality but also the risk of transmitting HIV to their female sexual partners.

Existing adolescent HIV prevention efforts in South Africa have largely focused on the needs of young women due to their heightened biological and social vulnerability

✉ Nivedita L. Bhushan
nbhushan@rti.org

1 RTI International, 3040 Cornwallis Road, 27709 Research Triangle Park, NC, USA

2 University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

3 University of Arizona, Tucson, AZ, USA

4 MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, Gauteng, South Africa

to HIV infection. A large part of this vulnerability has been linked to the characteristics of an adolescent girl or young women's (AGYW) male partner, specifically having a male partner who is five or more years older [22–26]. Compared to younger men, older men have a higher prevalence of HIV. For example in South Africa, HIV prevalence among males age 15–24 is 3.4% while among those 25–29 it is 9.5% [27]. The age difference in prevalence has been attributed to older men's more frequent engagement in HIV-related sexual behaviors such as inconsistent condom use, concurrent sexual partnerships, and transactional sex [23, 28–30]. Given that AGYW's sexual relationships with older men are frequently characterized by inequitable gender norms and power dynamics, AGYW are often unable to negotiate condom use or refuse sex, which in turn increases their risk for HIV [3, 31–34].

While we know that the characteristics of AGYW's male partners increase their HIV risk, there is little empirical data elicited directly from individuals who might be the partners of AGYW [35]. Existing data on AGYW's partners are largely reported by AGYW through surveys or health services that engage sero-discordant couples and often in urban or peri urban settings [30]. These data collection mechanisms may not comprehensively reflect the age range, characteristics, and behaviors of AGYW's male partners. First, AGYW may be biased in their reporting or not have full information on their male partner's lives. Second, AGYW who are part of a sero-discordant couple or a formal relationship where they seek health services with an established male partner are not representative of the larger, sexually active population of AGYW. Third, data elicited primarily from men in urban or peri-urban settings misses individuals in rural areas where HIV prevalence amongst men is increasing [36].

Despite men's low engagement across the HIV prevention and care cascade, recent evidence suggests that men do care about their health and are willing to participate in HIV prevention and treatment interventions when they are accessible and integrated into the community [9, 10, 37–41]. Designing effective interventions and appropriately targeting men, particularly male partners of AGYW, requires an understanding of their HIV risk perceptions and HIV related behaviors and how these perceptions vary by older men vs. younger men as well as men in age-discordant and age-concordant relationships. Data for the present analysis came from a population-based household survey of young men (18–30 years) living in rural South Africa who reported having AGYW sexual partners (15–24 years). First, we examined the difference in partnership characteristics (age difference, concurrency, intimate partner violence) and HIV risk perceptions (ART effectiveness, lifetime risk, PrEP interest) by male partner age (younger men (18–24) vs. older men (25–30) and age difference between partners (age concordant (< 5 years) vs. age disparate (≥ 5 years)). Second, we examined the associations among partnership characteristics, HIV risk perceptions, and HIV related behaviors (HIV testing, inconsistent condom use, transactional sex).

Methods

Study Setting and Population

The study took place in the Agincourt Health and Socio-Demographic Surveillance System (ADHSS), which includes 30 villages located in the sub-district of Bushbuckridge, Mpumalanga, South Africa. The ADHSS area is largely rural with high levels of poverty, unemployment, migration for work, and social protection (80% of households receiving the child support grant) [42]. Household census and vital events data for the area are collected annually and the population of ADHSS is estimated to be over 100,000 [43].

Data Collection and Ethics Approval

Data for this analysis came from a cross-sectional study conducted between June 2019 and November 2019. The ADHSS household census was used to sample young men between the age of 18 and 30. Trained field workers called sampled individuals to schedule a data collection visit at their home with a maximum of five contact attempts. Individuals were eligible if they were age 18–30 and living in the ADHSS area. Those who were intoxicated, mentally disabled, unable to answer questions, violent or hostile, or did not speak the local language (Shangaan) were excluded. Enrolled individuals completed a behavioral survey via a Computer Assisted Personal Interviewing tool in either English or Shangaan. The survey collected information on sexual partnerships, sexual behaviors, and HIV testing behaviors. The response rate for participants included in the sample was 54%.

Since we were primarily interested in examining young men with sexual partners who were AGYW, we excluded individuals who only had female sexual partners over the age of 24 for our analytical sample (8%). Identification of young men with AGYW partners was based on a set of survey items which asked participants to name their 3 most recent sex partners in the past 12 months starting with their most recent partner. If a participant named any partner who was under the age of 24, they were considered to have had an AGYW partner.

Institutional Review Board approval for this study was obtained from the University of North Carolina at

Chapel Hill and the University of the Witwatersrand Human Research Ethics Committee. All participation was voluntary and written informed consent was sought prior to study participation.

Measures

Our analysis included three dependent variables: inconsistent condom use, transactional sex, and having had an HIV test. Inconsistent condom use was a binary variable defined as having reported not always (never, rarely, sometimes frequently vs. always) using a condom with any named partner. Transactional sex was a binary variable and defined as having given money, gifts, or financial assistance to any named partner to start or continue a sexual relationship. HIV testing was a binary variable and defined as having had at least one HIV test in the past year.

We also included six independent variables related to sexual partnership characteristics and HIV risk perceptions. Age difference between partners (binary) was defined as being five or more years older than at least one named female partner (age-disparate) or being less than five years older than all named female partners (age-concordant). Concurrent sexual partnership (binary) was defined as engaging in multiple overlapping sexual partnerships. Perpetrating intimate partner violence (IPV) in the past year was measured using a previously validated 7-item WHO scale and a binary variable was created to represent any perpetration of IPV in the past year [44]. HIV risk perception variables included no perceived lifetime HIV risk, believing that ART can reduce the risk of HIV infection, and having a high interest in pre-exposure prophylaxis (PrEP). For no perceived lifetime HIV risk, a binary variable was created where no chance of lifetime HIV was coded as 1 and some or a high chance of lifetime HIV was coded as 0. For "believing ART can reduce the risk of HIV infection", a binary variable was created where answers of yes to the item "can taking ART reduce the risk of transmitting HIV to another person?" were coded as 1 and answers of no to the item were coded as 0. For "having a high interest in PrEP", a binary variable was created where answers of very high interest and high interest to the item "if there were a pill that you could take every day to significantly reduce your chance of getting HIV when having sex without a condom, how interested would you be to take pills?" were coded as 1 and answers of medium or low interest to the item were coded as 0.

Our covariates of interest included age (continuous), marriage (binary), completion of high school (binary), employment (binary), experiencing food insecurity in the past year (binary), and every witnessing violence (binary). These variables were selected a priori and have been shown to be associated with incident HIV infection and HIV-related sexual behaviors among adolescents and young adults in Southern Africa [26, 30, 36, 45].

Data Analysis

Our data were weighted to represent the age distribution of men across the ADHSS site.

We then used descriptive statistics to characterize the study population overall. Second, we compared participant characteristics, HIV-related behaviors, partnership characteristics, and risk perceptions across age and age-disparate partnership categories using Chi-square tests. Third, we used separate logit binomial regression models to estimate the unadjusted and adjusted associations between partnership characteristics, HIV risk perceptions, and HIV-related behaviors. For adjusted models, covariates were retained if they were statistically associated with the outcome in a bivariate model where the p value < 0.05. All analyses were conducted using the svy command in StataSE, version 14.2 (College Station, TX).

Results

Participant Characteristics

Among the 2827 men included in our analysis, the majority were between the age of 18 and 24 (N = 2255, 80%). The mean age was 22 with a standard deviation of 0.03. When comparing older men (age 25–30) and young younger men (18–24), older men were more likely to cohabitate with a partner (29% vs. 11%, p < 000.1), be married (24% vs. 5%, p < 0.001), completed high school (57% vs. 43%, p < 0.001), and be employed (55% vs. 31%, p < 0.001). There were no substantial differences between older men and younger men regarding food insecurity (p = 0.664) and witnessing violence in their communities (p = 0.114) (Table 1).

Among the 2827 men included in our analysis, less than a quarter had age-disparate (≥ 5 years) AGYW partners (N = 531, 19%). When comparing men with age-disparate partners and men with age-concordant partners, men with age-disparate partners were more likely to cohabitate with a partner (24% vs. 13%, p < 000.1), be married (18% vs. 7%, p < 0.001), be employed (52% vs. 32%, p < 0.001), and have ever witnessed violence (55% vs. 52%, p = 0.046). There were no substantial differences between men with age-disparate partners and men with age-concordant partners regarding high school completion (p = 0.082) or food insecurity (p = 0.664) (Table 2).

Table 1 Characteristics of Young Men by Age Group

	Total (N = 2827)		Age 18–24 (n = 2255)		Age 25–30 (n = 572)		Chi-Square
	N	%	n	%	n	%	p-value
Demographics							
Age (Mean, SD)	22	0.03	20	0.03	27	0.06	
Cohabitation	419	15%	253	11%	166	29%	< 0.001
Married	250	9%	115	5%	136	24%	< 0.001
Completed High School	1293	46%	965	43%	328	57%	< 0.001
Unemployment	1002	35%	688	31%	314	55%	< 0.001
Food Insecurity	258	9%	200	9%	58	10%	0.664
Ever Witnessed Violence	1475	52%	1187	53%	287	50%	0.116
Partnership Characteristics							
Age Discordant (≥ 5 Years Older Than Any Partner)	531	19%	214	9%	317	55%	< 0.001
Concurrent Partnerships	895	32%	696	31%	199	35%	0.156
Perpetrate IPV	510	18%	406	18%	103	18%	0.864
HIV Risk Perceptions							
No Chance of Getting HIV in Lifetime	1317	47%	1070	47%	247	43%	0.023
ART Can Reduce Risk of HIV Transmission	1342	47%	1069	47%	273	48%	0.150
Very Interested in PrEP	2173	77%	1726	77%	447	78%	0.067
HIV Related Behaviors							
HIV Test in Last Year	1411	50%	1091	48%	320	56%	< 0.001
Inconsistent Condom Use	2397	85%	1889	84%	507	89%	0.079
Transactional Sex	1352	48%	1081	48%	271	47%	0.680

Table 2 Characteristics of Young Men by Age Disparate Partnership

	Total (N = 2827)		Age Discordant (≥ 5 Years Older Than Partner) (n = 531)		Age Concordant (< 5 Years Older Than Partner) (n = 2297)		Chi-Square
	N	%	n	%	n	%	p-value
Demographics							
Age (Mean, SD)	22	0.03	25	0.06	21	0.03	
Cohabitation	419	15%	130	24%	289	13%	< 0.001
Married	250	9%	94	18%	156	7%	< 0.001
Completed High School	1293	46%	270	51%	1024	45%	0.082
Unemployment	1002	35%	276	52%	726	32%	< 0.001
Food Insecurity	258	9%	57	11%	201	9%	0.664
Ever Witnessed Violence	1475	52%	290	55%	1185	52%	0.046
Partnership Characteristics							
Concurrent Partnerships	895	32%	241	45%	653	28%	< 0.001
Perpetrate IPV	510	18%	120	23%	389	17%	0.179
Risk Perceptions and Beliefs							
No Chance of Getting HIV in Lifetime	1317	47%	199	37%	1118	49%	0.015
ART Can Reduce Risk of HIV Transmission	1342	47%	255	48%	1133	49%	0.150
Very Interested in PrEP	2173	77%	392	74%	1781	78%	0.067
HIV Related Behaviors							
HIV Test in Last Year	1411	50%	293	55%	1118	49%	0.037
Inconsistent Condom Use	2397	85%	472	89%	1925	84%	0.071
Transactional Sex	1352	48%	283	53%	1069	47%	0.089

Partner Characteristics and HIV Risk Perceptions

A third of participants were in concurrent sexual partnerships (32%) and 18% had perpetuated IPV in the last twelve months. Men 25–30 were more likely than men 18–24 years to be in an age-disparate partnership in the last twelve months (55% vs. 9%, $p < 0.001$) but there were no differences between the two groups in concurrent sexual partnerships (35% vs. 31%, $p = 0.156$) and IPV perpetration (18% vs. 18%, $p = 0.864$). Men with age-disparate partners were

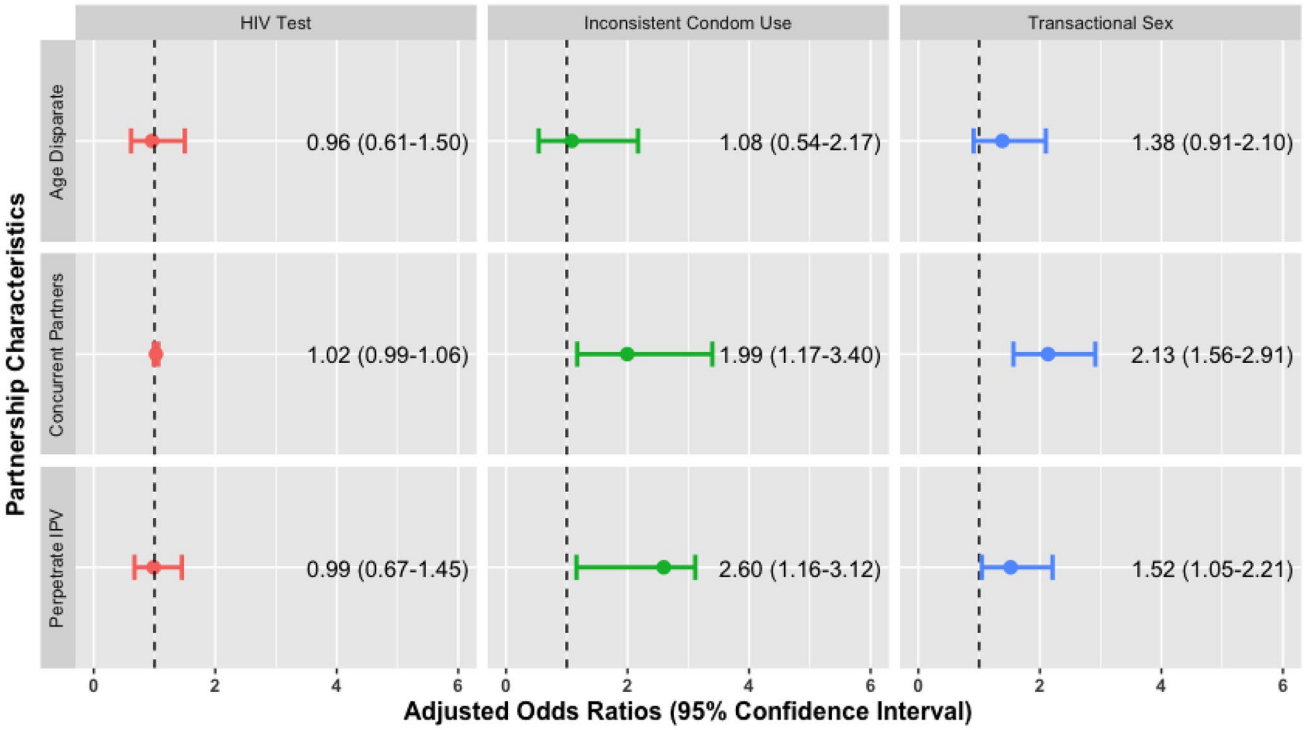

Fig. 1 Partnership Characteristics and HIV Related Behaviors Among Young Men (Age 18-30). (Models adjusted for age, marital status, high school completion, and employment)

more likely than men with age-concordant partners to have concurrent partners (45% vs. 28%, $p < 0.001$).

Almost half of all participants reported perceiving no chance of getting HIV in their lifetime (47%) but older men were less likely to perceive they had no chance of getting HIV as compared to younger men (43% vs. 47%, $p = 0.023$) as were men with age-disparate partners compared to men with age-concordant partners (37% vs. 49%, $p = 0.015$). Nearly half of all participants reported believing that "ART can reduce risk of HIV transmission" (47%) but there were no differences between older men and younger men (48% vs. 47%, $p = 0.150$) or men with age-disparate partners and men with age-concordant (48% vs. 49%, $p = 0.289$). A large majority (77%) of men reported interest in taking a pill every day that could reduce their risk of HIV (Pre-exposure Prophylaxis (PrEP) but there were no differences comparing older men and younger men (78% vs. 77%, $p = 0.067$) or men with age-disparate partners and men with age-concordant partners (74% vs. 78%, $p = 0.078$). Despite finding no differences by age or age-disparate partnerships in PrEP interest, individuals who reported no perceived chance of lifetime HIV had a lower odds of PrEP interest (aOR: 0.67, 95% CI: 0.49, 0.91).

HIV-Related Behaviors

50% of all participants reported having had an HIV test in the past year and older men were more likely than younger men to have had a test (56% vs. 48%, $p < 0.001$) and men with age-disparate partners were more likely that men with age-concordant partners to have had a test (55% vs. 49%, $p = 0.037$). Having an HIV test in the past year was not associated with any partner characteristic or HIV risk perception variable (Fig. 1).

Many participants reported inconsistent condom use (85%) but inconsistent condom use did not differ between older men and younger men (89% vs. 84%, $p = 0.079$) or between men with age-disparate partners and men with age-concordant partners (89% vs. 84%, = 0.071). For partnership characteristics (Fig. 1), the odds of inconsistent condom use was higher among individuals who had perpetrated IPV in the past year (aOR: 2.60, 95% CI: 1.16, 3.12) and among those in concurrent sexual partnerships (aOR: 1.99, 95%: 1.17, 3.40). However, the odds of inconsistent condom use did not vary by age-disparate relationships (aOR: 1.08, 95% CI: 0.54, 2.17). For HIV risk perceptions (Fig. 2), inconsistent condom use was higher among those who believed they had no chance of getting HIV in their lifetime (aOR: 1.52, 95% CI: 1.33, 1.82), and who were very interested in PrEP (aOR: 1.67, 95% CI: 1.10, 2.53). There was no difference for inconsistent condom use by "ART reduces risk"

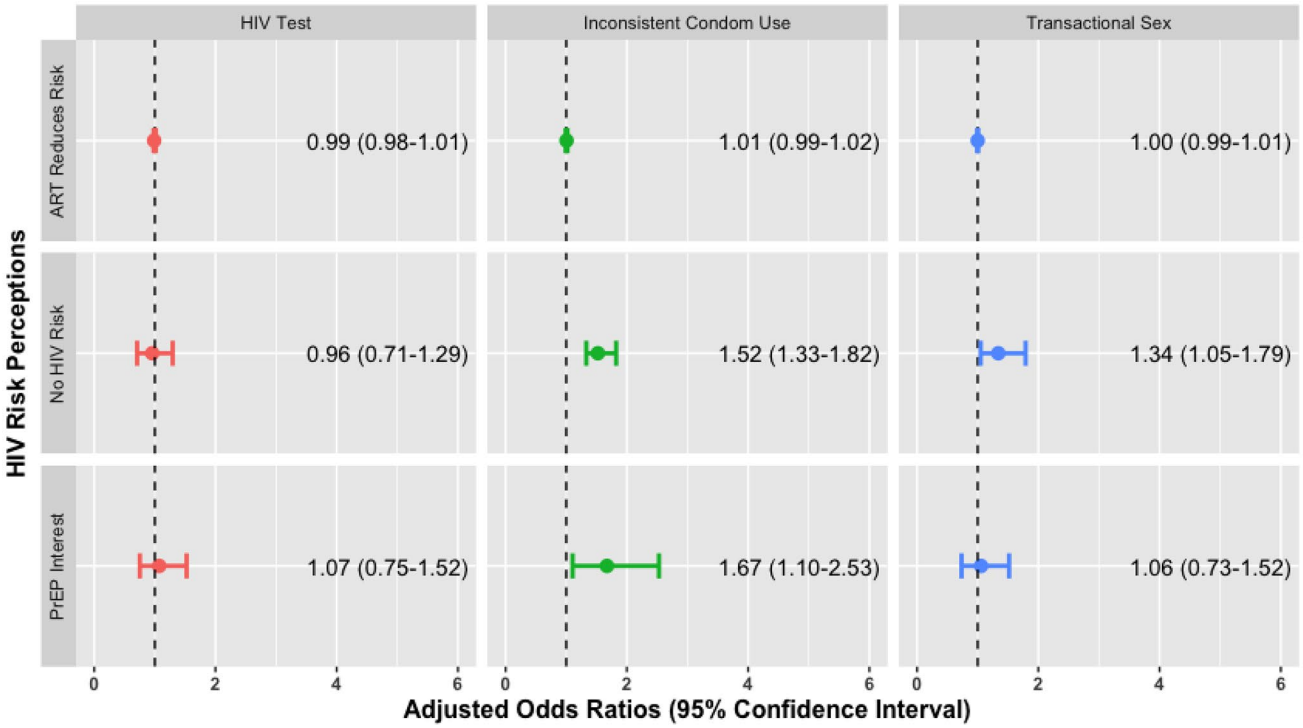

Fig. 2 HIV Risk Perceptions and HIV Related Behaviors Among Young Men (Age 18-30). (Models adjusted for age, marital status, high school completion, and employment)

across older and younger men or men with age-concordant and age-discordant partners.

Similar to inconsistent condom use, many participants reported engaging in transactional sex (48%) but transactional sex did not differ between older men and younger men (47% vs. 48%, p = 0.680) or between men with age-disparate partners and men with age-concordant partners (53% vs. 47%, = 0.089). For partnership characteristics, the odds of transactional sex was higher among individuals who had perpetrated IPV in the past 12 months (aOR: 1.52, 95% CI: 1.05, 2.21), and who were in concurrent sexual partnerships (aOR: 2.13, 95% CI: 1.56, 2.91), but not more common among those with age-disparate relationships (aOR: 1.38, 95% CI: 0.91, 2.10). For HIV risk perceptions, the odds of transactional sex was higher among those who believed they had no chance of getting HIV in their lifetime (aOR: 1.34, 95% CI: 1.05, 1.79), however there were no differences by "ART reduces risk" (aOR: 1.00, 95% CI: 0.99, 1.01) and PrEP interest (aOR: 1.06, 95% CI: 0.73, 1.52). All presented odds ratios were adjusted for age, marital status, high school completion, and employment.

Discussion

The present study examined partnership characteristics, HIV risk perceptions, and HIV-related behaviors among young men who were the partners of AGYW ages 15–24 years in rural South Africa. The vast majority of men in our sample reported inconsistent condom use and were interested in daily oral PrEP. Nearly half engaged in transactional sex and had an HIV test in the past year. Men who engaged in inconsistent condom use and transactional sex were more likely to have concurrent sexual partnerships, perpetrate IPV, and believe they had no chance of acquiring HIV in their lifetime. Though HIV testing in the past year was more common among older men compared to younger men and men with age-disparate partners compared to men with age-concordant partners, HIV testing was not associated with partner characteristics and HIV risk perceptions. Taken together, our results suggest the importance of prevention interventions focused on young men to keep them safe and to reduce risk in their AGYW partners.

Overall, most men age 18–30 had partners close in age (< 5 years apart), thus 81% had a partner 18–24 years of age. Men 25–30 were more likely than those 18–24 to be in age disparate partnerships but being in an age disparate partnership was not associated with inconsistent condom use or transactional sex. Furthermore, older men were just

as likely as younger men, and men with age-disparate and age-concordant partners, to inconsistently use condoms, engage in transactional sex, have concurrent sexual partnerships, and perpetrate IPV. These findings do not necessarily align with literature from SSA demonstrating that AGYW with older partners are at greater sexual risk for HIV given that HIV-related sexual behaviors among men 18–24 and men 25–30 were similar [23, 46–48]. Other studies among AGYW suggest that the relationship between age-disparate partnerships and HIV infection may be explained by increased exposure to infection from men in a higher HIV prevalence pool rather than differences in sexual behavior within these partnerships [25, 49]. Given that HIV prevalence increases with male age, it is possible that our findings are reflective of our sample's age range (18–30) and cap of 30 years. Thus, our results represent this specific age group and may not be representative of older men with younger partners.

Transactional sex was reported to be common among men in this sample (47%) and there was no difference in prevalence by male age. The prevalence reported here was similar to observations of transactional sex among adult men in South Africa (16-66%) but was much higher than reports of transactional sex from AGYW in the same area as well as across the country [35, 50, 51]. Estimates of transactional sex among AGYW in AHDSS range from 10 to 26% while estimates among AGYW in the Eastern Cape, Western Cape, Gauteng, and KwaZulu-Natal range from 2 to 10% [51–56]. The difference in reports between AGYW's male partners and from AGYW themselves is potentially due gender differences in the interpretation of transactional sex partner (main partner, casual partner, sex worker, etc.), reasons for engaging in transactional sex, or social desirability bias [29, 50, 57–59]. Other studies suggest that the high prevalence of transactional sex among males could be explained by masculinity norms which emphasize that men are meant to be providers for all of their sexual partners and are then entitled to, or rewarded with, sex [35, 50, 57, 59, 60]. Transactional sex may be also higher in areas where men are experiencing unemployment and poverty, such as the ADHSS, and utilize transactional sex as a way to exert power and control or assert their masculinity [50, 61–63]. In contrast, documented motivations for transactional sex among AGYW include financial need, romantic love, improved status, or supporting a "modern lifestyle" [52, 55, 64].

Most men in this study reported a low perceived risk of HIV infection and nearly half reported no chance of getting HIV in their lifetime despite a high prevalence of HIV in the surrounding area as well as high levels of engagement in behaviors associated with HIV infection. This disconnect between HIV risk perception and HIV-related behaviors was surprising given that the majority of men also expressed interest in daily oral PrEP which was described as "a pill that you could take every day to significantly reduce your chance of getting HIV when having sex without a condom". However, we did find individuals who believed they had some chance of getting HIV in their lifetime, and used condoms inconsistently, had a higher odds of being interested in PrEP. Studies examining PrEP access in South Africa have found that young men who engage in HIV-related sexual behaviors do perceive themselves to be at high risk for HIV and this risk perception contributes to their interest in PrEP [65–67]. One concern about PrEP is that it might facilitate risk compensation, where individuals who take PrEP subsequently increase their engagement in sexual behaviors, like condomless sex or concurrent partnerships, that increase their risk for STIs [68, 69]. Existing PrEP services in SSA have largely focused on AGYW but our results suggest that there is also a need to expand PrEP awareness and access for interested young men. Further research is necessary to disentangle risk perception, risk compensation, and interest in HIV prevention in this population.

Despite utilizing a representative sample of young men from the AHDSS who were partners of AGYW, there are a number of study limitations that warrant discussion. First, our study relied upon the men's report their female partners' ages. It is possible that men in our study underestimated age differences between themselves and their sexual partners, which would lead to conservative estimates of the impact of partner age discordance on HIV-related behaviors, as well as underestimations of the differences in characteristics of those reporting age disparate partnerships. Second, given that our results are based on cross-sectional data, we were unable to determine causal relationships and investigate patterns over time. Third, our study was conducted in a relatively small geographic region, which creates uncertainty about the external validity of the results. Fourth, given that HIV testing results were not available for this analysis, it was not possible to assess whether an older male partner's age poses a risk to their AGYW partner because they are more likely to be HIV positive.

Conclusion

Our results provide evidence that young men who are the partners of AGYW in rural South Africa are engaging in behaviors that place them at risk of HIV infection and need HIV prevention interventions. There were no significant differences between men 18–24 and those 25–30 across sexual behaviors but younger men were more likely than older men to believe they had no chance of getting HIV in their lifetime. The success of the future HIV prevention

interventions, both socio-behavioral and biomedical, requires understanding how HIV related risk perceptions translates into behavior and then utilizing this information to thoughtfully engage young men in programs that benefit their health and the health of their partners [40, 41, 70].

Declarations NLB was supported by the National Institute of Allergy and Infectious Diseases (T32 AI00700140).

References

1. Bor J, et al. Mass HIV Treatment and Sex Disparities in Life Expectancy: Demographic Surveillance in Rural South Africa. PLoS Med 12, e1001905; discussion e1001905 (2015).
2. Naidoo P, Chirinda W, Mchunu G, Swartz S, Anderson J. Social and structural factors associated with vulnerability to HIV infection among young adults in South Africa. Psychol Health Med. 2015;20:369–79.
3. Jewkes R, Morrell R. Gender and sexuality: emerging perspectives from the heterosexual epidemic in South Africa and implications for HIV risk and prevention. J Int AIDS Soc. 2010;13:6.
4. Varga CA. The forgotten fifty per cent: a review of sexual and reproductive health research and programs focused on boys and young men in sub-Saharan Africa. Afr J Reprod Health. 2001;5:175–95.
5. Makusha T, van Rooyen H, Cornell M. Reframing the approach to heterosexual men in the HIV epidemic in sub-Saharan Africa. J Int AIDS Soc. 2020;23:e25510.
6. Dovel K, Yeatman S, Watkins S, Poulin M. Men's heightened risk of AIDS-related death: the legacy of gendered HIV testing and treatment strategies. AIDS. 2015;29:1123–5.
7. Cornell M, Cox V, Wilkinson L. Public health blindness towards men in HIV programmes in Africa. Trop Med Int Health. 2015;20:1634–5.
8. Higgins JA, Hoffman S, Dworkin SL, Rethinking, Gender. Heterosexual Men, and Women's Vulnerability to HIV/AIDS. Am J Public Health. 2010;100:435–45.
9. Fleming PJ, Colvin C, Peacock D, Dworkin SL. What role can gender-transformative programming for men play in increasing South African men's HIV testing and engagement in HIV care and treatment? Cult Health Sex. 2016;18:1251–64.
10. Nardell MF, et al. Men missing from the HIV care continuum in sub-Saharan Africa: a meta-analysis and meta-synthesis. J Int AIDS Soc. 2022;25:e25889.
11. Clouse K, et al. Patient retention from HIV diagnosis through one year on antiretroviral therapy at a primary health care clinic in Johannesburg, South Africa. J Acquir Immune Defic Syndr. 2013;62:e39–46.
12. Asaolu IO, et al. Predictors of HIV Testing among Youth in Sub-Saharan Africa: A Cross-Sectional Study. PLoS ONE. 2016;11:e0164052.
13. Arnesen R, Moll AP, Shenoi SV. Predictors of loss to follow-up among patients on ART at a rural hospital in KwaZulu-Natal, South Africa. PLoS ONE. 2017;12:e0177168.
14. Musheke M, et al. A systematic review of qualitative findings on factors enabling and deterring uptake of HIV testing in Sub-Saharan Africa. BMC Public Health. 2013;13:220.
15. Iwuji CC, et al. Uptake of Home-Based HIV Testing, Linkage to Care, and Community Attitudes about ART in Rural KwaZulu-Natal, South Africa: Descriptive Results from the First Phase of the ANRS 12249 TasP Cluster-Randomised Trial. PLoS Med. 2016;13:e1002107.
16. Govindasamy D, Ford N, Kranzer K. Risk factors, barriers and facilitators for linkage to antiretroviral therapy care: a systematic review. AIDS. 2012;26:2059–67.
17. Plazy M, Dray-Spira R, Orne-Gliemann J, Dabis F, Newell M-L. Continuum in HIV care from entry to ART initiation in rural KwaZulu-Natal, South Africa. Trop Med Int Health. 2014;19:680–9.
18. Green D, et al. Evidence of sociodemographic heterogeneity across the HIV treatment cascade and progress towards 90-90-90 in sub-Saharan Africa – a systematic review and meta-analysis. J Int AIDS Soc. 2020;23:e25470.
19. Marinda E, et al. Towards achieving the 90-90-90 HIV targets: results from the south African 2017 national HIV survey. BMC Public Health. 2020;20:1375.
20. Lippman SA, et al. Improvements in the South African HIV care cascade: findings on 90-90-90 targets from successive population-representative surveys in North West Province. J Int AIDS Soc. 2019;22:e25295.
21. Huerga H, et al. Progress towards the UNAIDS 90-90-90 goals by age and gender in a rural area of KwaZulu-Natal, South Africa: a household-based community cross-sectional survey. BMC Public Health. 2018;18:303.
22. MacPhail C, Williams BG, Campbell C. Relative risk of HIV infection among young men and women in a South African township. Int J STD AIDS. 2002;13:331–42.
23. Maughan-Brown B, Evans M, George G. Sexual Behaviour of Men and Women within Age-Disparate Partnerships in South Africa: Implications for Young Women's HIV Risk. PLoS ONE. 2016;11:e0159162.
24. Leclerc-Madlala S. Age-disparate and intergenerational sex in southern Africa: the dynamics of hypervulnerability. AIDS. 2008;22(Suppl 4):17–25.
25. Stoner MCD, et al. Age-disparate partnerships and incident HIV infection in adolescent girls and young women in rural South Africa. AIDS. 2019;33:83–91.
26. Pettifor AE, et al. Young people's sexual health in South Africa: HIV prevalence and sexual behaviors from a nationally representative household survey. AIDS. 2005;19:1525–34.
27. UNAIDS. Global HIV. & AIDS Statistics Factsheet. http://www.unaids.org/en/resources/fact-sheet (2019).
28. Nguyen N, et al. Sexual Partner Types and Incident HIV Infection Among Rural South African Adolescent Girls and Young Women Enrolled in HPTN 068: A Latent Class Analysis. JAIDS J Acquir Immune Defic Syndr. 2019;82:24–33.
29. Wamoyi J, Stobeanau K, Bobrova N, Abramsky T, Watts C. Transactional sex and risk for HIV infection in sub-Saharan Africa: a systematic review and meta-analysis. Journal of the International AIDS Society 19, (2016).
30. Okafor CN, et al. Understanding HIV Risk Behaviors Among Young Men in South Africa: A Syndemic Approach. AIDS Behav. 2018;22:3962–70.
31. Pettifor AE, et al. Young people's sexual health in South Africa: HIV prevalence and sexual behaviors from a nationally representative household survey. AIDS. 2005;19:1525–34.
32. Teitelman AM, et al. Partner violence, power and gender differences in South African adolescents' HIV/STI behaviors. Health Psychol. 2016;35:751–60.
33. Dunkle KL, Decker MR. Gender-based violence and HIV: reviewing the evidence for links and causal pathways in the general population and high-risk groups. Am J Reprod Immunol. 2013;69(Suppl 1):20–6.
34. Varga CA. How gender roles influence sexual and reproductive health among South African adolescents. Stud Fam Plann. 2003;34:160–72.
35. Dunkle KL, et al. Transactional sex and economic exchange with partners among young South African men in the rural Eastern

Cape: prevalence, predictors, and associations with gender-based violence. Soc Sci Med. 2007;65:1235–48.
36. Gibbs A, Reddy T, Dunkle K, Jewkes R. HIV-Prevalence in South Africa by settlement type: A repeat population-based cross-sectional analysis of men and women. PLoS ONE. 2020;15:e0230105.
37. van Rooyen H, et al. Zwakala Ndoda: a cluster and individually randomized trial aimed at improving testing, linkage, and adherence to treatment for hard-to reach men in KwaZulu-Natal, South Africa. Trials. 2019;20:798.
38. Sharma M, Barnabas RV, Celum C. Community-based strategies to strengthen men's engagement in the HIV care cascade in sub-Saharan Africa. PLoS Med. 2017;14:e1002262.
39. van Rooyen H, et al. Mobile VCT: reaching men and young people in urban and rural South African pilot studies (NIMH Project Accept, HPTN 043). AIDS Behav. 2013;17:2946–53.
40. Leddy AM, et al. Community collective efficacy is associated with reduced physical intimate partner violence (IPV) incidence in the rural province of Mpumalanga, South Africa: findings from HPTN 068. J Epidemiol Community Health. 2019;73:176–81.
41. Mukumbang FC. Leaving No Man Behind: How Differentiated Service Delivery Models Increase Men's Engagement in HIV Care. Int J Health Policy Manag. 2021;10:129–40.
42. Kahn K, et al. Profile: Agincourt Health and Socio-demographic Surveillance System. Int J Epidemiol. 2012;41:988–1001.
43. Kahn K, et al. Profile: Agincourt Health and Socio-demographic Surveillance System. Int J Epidemiol. 2012;41:988–1001.
44. García-Moreno C, Jansen HA, Ellsberg M, Heise L, Watts C. WHO multi-country study on women's health and domestic violence against women. World Health Organization; 2005.
45. Mavedzenge SMN, Doyle AM, Ross DA. HIV prevention in young people in sub-Saharan Africa: a systematic review. J Adolesc Health. 2011;49:568–86.
46. Maughan-Brown B, et al. HIV risk among adolescent girls and young women in age-disparate partnerships: Evidence from KwaZulu-Natal, South Africa. J Acquir Immune Defic Syndr. 2018;78:155–62.
47. MAUGHAN-BROWN B, et al. Recently formed age-disparate partnerships are associated with elevated HIV-incidence among young women in South Africa. AIDS. 2020;34:149–54.
48. Ritchwood TD, et al. Characteristics of Age-discordant Partnerships Associated with HIV Risk Among Young South African Women (HPTN 068). J Acquir Immune Defic Syndr. 2016;72:423–9.
49. Maughan-Brown B, Kenyon C, Lurie MN. Partner age differences and concurrency in South Africa: Implications for HIV-infection risk among young women. AIDS Behav. 2014;18:2469–76.
50. Magni S, Hatcher A, Wamoyi J, Christofides N. Predictors and Patterns of Transactional Sex with Casual Partners Among Adult Men Living in an Informal Urban Area, South Africa. AIDS Behav. 2020;24:2616–23.
51. Jewkes R, Dunkle K, Nduna M, Shai NJ. Transactional sex and HIV incidence in a cohort of young women in the stepping stones trial. Journal of AIDS and Clinical research 3, (2012).
52. Ranganathan M, et al. Transactional sex among young women in rural South Africa: prevalence, mediators and association with HIV infection. J Int AIDS Soc. 2016;19:20749.
53. Pettifor AE, et al. A community-based study to examine the effect of a youth HIV prevention intervention on young people aged 15–24 in South Africa: results of the baseline survey. Tropical Med Int Health. 2005;10:971–80.
54. Pettifor A, et al. The effect of a conditional cash transfer on HIV incidence in young women in rural South Africa (HPTN 068): a phase 3, randomised controlled trial. The Lancet Global Health. 2016;4:e978–88.
55. Kilburn K, et al. Transactional sex and incident HIV infection in a cohort of young women from rural South Africa. AIDS. 2018;32:1669.
56. Duby Z, et al. From Survival to Glamour: Motivations for Engaging in Transactional Sex and Relationships Among Adolescent Girls and Young Women in South Africa. AIDS Behav. 2021. doi:https://doi.org/10.1007/s10461-021-03291-z.
57. Jewkes R, Morrell R, Sikweyiya Y, Dunkle K. & Penn-Kekana, L. Transactional relationships and sex with a woman in prostitution: prevalence and patterns in a representative sample of South African men. BMC Public Health. 2012;12:325.
58. Wamoyi J, Ranganathan M, Kyegombe N, Stoebenau K. Improving the Measurement of Transactional Sex in Sub-Saharan Africa: A Critical Review. J Acquir Immune Defic Syndr. 2019;80:367–74.
59. Stoebenau K, Heise L, Wamoyi J, Bobrova N. Revisiting the understanding of "transactional sex" in sub-Saharan Africa: A review and synthesis of the literature. Soc Sci Med. 2016;168:186–97.
60. Hunter M. Love in the time of AIDS: inequality, gender, and rights in South Africa. Indiana University Press; 2010.
61. Fleming PJ, DiClemente RJ, Barrington C, Masculinity. and HIV: Dimensions of masculine norms that contribute to men's HIV-related sexual behaviors. AIDS Behav. 2016;20:788–98.
62. Hatcher AM, Colvin CJ, Ndlovu N, Dworkin SL. Intimate partner violence among rural South African men: Alcohol use, sexual decision-making, and partner communication. Cult Health Sex. 2014;16:1023–39.
63. Bowleg L, et al. 'What does it take to be a man? What is a real man?': ideologies of masculinity and HIV sexual risk among Black heterosexual men. Cult Health Sex. 2011;13:545–59.
64. Ranganathan M, et al. 'It's because I like things… it's a status and he buys me airtime': exploring the role of transactional sex in young women's consumption patterns in rural South Africa (secondary findings from HPTN 068). Reproductive Health. 2018;15:102.
65. Hannaford A, Lim J, Moll AP, Khoza B, Shenoi SV. 'PrEP should be for men only': Young heterosexual men's views on PrEP in rural South Africa. Glob Public Health. 2020;15:1337–48.
66. Cheng C-Y, et al. Determinants of heterosexual men's demand for long-acting injectable pre-exposure prophylaxis (PrEP) for HIV in urban South Africa. BMC Public Health. 2019;19:996.
67. Shamu S, et al. Pre-exposure prophylaxis (PrEP) awareness, attitudes and uptake willingness among young people: gender differences and associated factors in two South African districts. Glob Health Action. 2021;14:1886455.
68. Hogben M, Liddon N. Disinhibition and risk compensation: scope, definitions, and perspective. Sex Transm Dis. 2008;35:1009–10.
69. Rojas Castro D, Delabre RM, Molina J-M. Give PrEP a chance: moving on from the 'risk compensation' concept. J Int AIDS Soc. 2019;22 **Suppl**(6):e25351.
70. Hill LM, et al. Understanding men's networks and perceptions of leadership to promote HIV testing and treatment in Agincourt, South Africa. Glob Public Health. 2018;13:1296–306.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.