

Prevalence and correlates of anal sex among secondary school students in Cape Town, South Africa

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Abstract

Research efforts have overlooked anal sex as a risk factor for adolescents' acquisition of HIV despite the high rates of HIV among South African youth. Here, we report findings from a survey conducted in 2012 among secondary school youth, ages 16–24, in Cape Town. 937 adolescents completed a pencil-and-paper survey. Eleven and 31% of female and male youth, respectively, reported ever having anal sex. By comparison, 59% and 78% of female and male youth reported ever having vaginal sex. The percentage of youth reporting lifetime rates of anal sex increased with age: 32% of 20-to-24 year olds had anal sex compared to 16% of 16-to-17-year olds. When the sample was stratified by sex, this difference appeared to be driven by older male, but not female, sexual behavior. Despite noted differences in prevalence rates by sex, both boys and girls who had anal sex were more likely than their same-sex peers who had vaginal sex to report sexual coercion victimization and perpetration experiences and inconsistent condom use. Interestingly, some differences in HIV motivation, information, and behavioral skills were noted for youth who had vaginal sex versus youth who had never had sex; scores were largely similar for youth who had anal sex versus youth who had never had sex however. Together, these findings suggest that anal sex is not uncommon and may be an important marker for other HIV risk behaviors in at least one lower income South African community. Anal sex needs to be explicitly discussed in adolescent HIV prevention and healthy sexuality programing, incorporating age-relevant scenarios about negotiating condoms and other healthy relationship behaviors (e.g., refusing sex when it is not wanted).

One in five people (UNAIDS, 2017), including 7% of youth (Shisana et al., 2014), in South Africa are HIV positive. Adolescent HIV prevention research has largely focused on early sexual debut (Pettifor, O'Brien, Macphail, Miller, & Rees, 2009; Shisana et al., 2005), age differences between sexual partners (Pettifor et al., 2004; Shisana et al., 2009), multiple sexual partners (Shisana et al., 2009), condom use (Hendriksen, Pettifor, Lee, Coates, & Rees, 2007; Moyo, Levandowski, MacPhail, Rees, & Pettifor, 2008), substance use (Simbayi et al., 2005; Taylor, Dlamini, Kaogoro, Jinabhai, & de Vries, 2003), and attitudinal and behavioral factors (Aboussalam, Naude, Lens, & Esterhuysen, 2016; Brook, Morojele, Zhang, & Brook, 2006; MacPhail & Campbell, 2001; Moyo et al., 2008; Thurston et al., 2014; Zambuko & Mturi, 2005). In contrast, despite nationally representative research suggesting that one in twenty South African youth have had anal sex (Lane, Pettifor, Pascoe, Fiamma, & Rees, 2006), the role that anal sex may play in contextualizing adolescent HIV risk behavior has largely been

ignored (Hartell, 2005; Shisana et al., 2014). One potential reason for this may be that penile-vaginal intercourse is the presumed mode of HIV transmission in South Africa (Shisana et al., 2014), largely due to a cultural denial of the existence of anal sex (Brody & Potterat, 2003), with some not considering it to be “real” sex (Ndinda, Chimbwete, McGrath, & Pool, 2008). Given the elevated risk for transmission associated with anal sex however (Baggaley, White, & Boily, 2010; Levy, 1993), emerging research is examining the role of anal sex in HIV incidence among special populations (Kalichman et al., 2011; Kalichman, Simbayi, Cain, & Jooste, 2009), including South African men who have sex with men (Baral et al., 2011; Lane et al., 2011), female sex workers (Morar, Ramjee, & Abdool Karim, 1998), truck drivers (Ramjee & Gouws, 2002), and HIV positive adults (Kiene et al., 2008). Understanding the role that anal sex may play in affecting adolescent HIV risk is a critical epidemiological endeavor as well.

The current study aims to fill noted gaps in the literature by examining the attitudinal and behavioral differences between secondary school youth 16 years of age and older who have engaged in anal sex versus those who have not. To do so, we examine data collected from lower-income youth attending secondary school in Cape Town, South Africa. Given that HIV prevalence among South African female adolescents is higher than their male counterparts (Rahle et al., 2007), analyses will be stratified by sex.

Methods

The research protocol was reviewed and approved by the University of the Western Cape Research Ethics Committee and the Chesapeake Institutional Review Board. Participants provided written informed consent. Data were collected between April and August 2012.

Location and participants

Respondents attended one of three secondary schools in the low-income Cape Town community, Langa. All students in Grades 8–11 who were at least 16 years old (the legal age of consent in South Africa) were invited to participate. Of the 1,191 eligible students present on the day of survey administration, 1,107 (93%) completed it.

Procedures

Youth took an average of one hour to complete the paper and pencil survey. To assure anonymity, names were not collected and teachers and school administrators were absent from the room. The survey was written in English, one of the official languages of South Africa (InterSol Inc., 2010) and the language of instruction in secondary schools.

Measures

The survey was first piloted among youth in the target age range to ensure readability as well as acceptability of sensitive questions.

Anal sex

Anal sex was measured by asking “Have you ever had anal sex? We mean when a penis goes into an anus.” The sex of the actors was intentionally vague because of the stigma associated with men having sex with men.

Participants were also asked about oral sex: “Have you ever had oral sex? We mean stimulating the vagina or penis with the mouth or tongue” and vaginal sex: “Have you ever had vaginal sex? We mean when a penis goes into a vagina.”.

Attitudinal indicators

Information. HIV-related information was measured with eight items, including adaptations from Misovich’s Teen Health Survey (Fisher, Fisher, Bryan, & Misovich, 2002). Items were designed to measure key components of the Information Motivation Behavioral model of HIV prevention and common HIV misconceptions noted in South Africa. As an example: “The same male condom can be used more than once”. Participants responded using a 4-point scale (1 [definitely false] – 4 [definitely true]). “Definitely true” and “probably true” for accurate items were coded as correct, as were “definitely false” and “probably false” for inaccurate statements. Scores reflected the number of correct answers; higher scores reflected greater HIV-related information (Range: 1–8).

Motivation. Three components of HIV-related motivation were assessed: (1) attitudes towards HIV preventive acts, (2) subjective norms regarding HIV preventive acts, and (3) behavioral intentions for HIV prevention (Fisher et al., 2002). The attitudes subscale included six items, each on a 4-point scale (0 [very difficult] – 3 [very easy]). Scores were summed to create an overall measure of attitudes toward prevention (Range: 0–18; Cronbach’s $\alpha = .5$). Both subjective norms, a 12-item subscale measuring adolescents’ perceived norms of friends and partners to engage in HIV preventive behaviors, and the 4-item subscale for behavioral intentions used a 4-point scale (0 [very untrue] – 3 [very true]). A sum variable was created for each; larger numbers reflected stronger subjective norms favoring HIV preventive behaviors and stronger intentions to execute these behaviors, respectively (Subjective norms: Range: 0–36, Cronbach’s $\alpha = .75$; Behavioral intentions: Range: 0–12, Cronbach’s $\alpha = .52$).

Behavioral skills. Six items measured one’s self-efficacy to enact HIV preventive behaviors (Fisher et al., 2002). Response options were captured on a 4-point scale reflecting the difficulty of each behavior (0 [very hard to do] – 3 [very easy to do]). A sum variable was created such that higher scores reflected greater self-efficacy to perform HIV preventive behaviors (Range: 0–18; Cronbach’s $\alpha = .65$).

Beliefs about abstinence. A four-item scale assessed beliefs about abstinence (Fisher et al., 2002). Participants were asked how much they agreed (0 [strongly disagree] – 3 [strongly agree]) with statements related to abstinence. A sum variable was created, with higher scores reflecting positive views toward abstinence (Range: 0–12; Cronbach’s $\alpha = .58$).

HIV risk. Youth were asked to appraise their personal risk of getting HIV. Response options ranged from 0 [no chance] to 4 [very strong chance] and were dichotomized to reflect those who indicated they had either an above average chance or very strong chance of getting HIV/AIDS versus all other youth.

Condom use. Participants were also asked how often they used condoms. Possible responses ranged from never (0) to always (5). Consistent with previous research (Ybarra, Bull, Kiwanuka, Bangsberg, & Korchmaros, 2012), a dichotomous variable was created to reflect condom use half of the time or less versus more frequently.

Dating violence. Youth who responded that they had ever had a boyfriend or girlfriend were also asked whether their partner ever hit, slapped, or physically hurt them (Ybarra et al., 2013). Perpetration was assessed with a parallel question.

Sexual violence. Participants who reported vaginal and/or anal sex were asked five questions to assess sexual coercion victimization (Ybarra et al., 2012). For example, “Have you ever had sex because you were too afraid to say ‘no?’” Five parallel perpetration questions were asked subsequently.

Data cleaning

Surveys were entered by two independent research staff. Discrepant entries were reconciled by referring to the respondent’s paper survey. Missing data were imputed using best set regression (StataCorp, 2009). Respondents were required to have non-missing data for at least 80% of the variables, resulting in an analytical sample of 931 respondents. Compared to the final sample ($M = 17.51$ years old), those who were dropped were significantly older ($M = 18.04$, $t(960) = 4.51$, $p < .001$), more likely to report not knowing their mother/guardian’s level of education, $X^2(1, N = 943) = 15.50$, $p < .01$, and less likely to have engaged in vaginal sex, $X^2(1, N = 893) = 4.48$, $p = .03$. Differences were not noted for oral or anal sex however.

Data analysis

First, to quantify the number of youth engaging in each of the three types of sex assessed, lifetime prevalence rates were reported by youth age, for males and females separately. Next, three categories were created to reflect the continuum of sexual experience in adolescence: (1) never had either vaginal or anal sex, (2) ever had vaginal sex, and (3) ever had anal sex. Categories were exclusive. Adolescents who reported only oral sex ($n = 23$) were included in the first category as oral sex is very low risk for HIV (Centers for Disease Control and Prevention, 2017). Those who reported both anal and vaginal sex were included in the third category.

When data for all three groups of youth were available, the relative (conditional) odds of a history of either vaginal or anal sex versus neither sexual experience were quantified using multinomial logistic regression. When data were only asked of sexually experienced

youth, logistic regression estimated the relative odds of anal versus vaginal sex. In both cases, odds ratios were adjusted for demographic characteristics (i.e., age, family income, and combined parental education) and process variables (e.g., honesty in responding to survey questions).

Results

Demographic characteristics of the sample are shown in Table 1, and lifetime sexual behaviors, in Table 2. Of the 937 youth included in the analyses, 29% of youth had never had any type of sex; 24% had ever had oral sex, 66% had ever had vaginal sex, and 18% had ever had anal sex. Three times as many males (31%) as females (11%) reported ever having anal sex (Table 2).

The percentage of youth reporting lifetime rates of anal sex increased with age: 31% of 20-to-24 year olds had anal sex compared to 16% of 16-to-17-year olds, $X^2(2, N = 937) = 10.25, p = .006$ (Figure 1). This difference appeared to be driven by older male, $X^2(2, N = 349) = 7.01, p = .03$, but not female, $X^2(2, N = 588) = 1.46, p = .48$, sexual behavior.

Correlates of sexual behavior among males

In general, HIV preventive information, motivation, and behavioral skills were similar for males who had either anal or vaginal sex versus those who had never had sex after controlling for demographic variables ($n = 349$, Table 3). Of exception: As one's level of HIV preventive information increased, so too did the relative odds of a history of vaginal sex (COR = 1.24). Positive beliefs about abstinence were negatively associated with a history of both vaginal (COR = 0.77) and anal sex (COR = 0.70). One's self-appraised risk for HIV as well as involvement in dating violence were similar across males irrespective of their sexual experience. Males also similarly rated their survey experience to be private although a self-appraisal of being dishonest was associated with reduced odds of reporting vaginal sex (COR = 0.37).

Among demographically similar sexually active males ($n = 287$; Table 3), those who used condoms half of the time or less were four times more likely to report a history of anal versus vaginal sex (OR = 4.12). All but one type of sexual coercion victimization (i.e., having sex after given alcohol or drugs) was associated with higher odds of reporting anal versus vaginal sex. All five perpetration experiences, except having given a gift to someone to have sex, were similarly associated with increased odds of anal sex among males.

Table 1. Youth characteristics (n = 937).

Demographic Characteristics	All (n = 937)	Males (n = 349)	Females (n = 588)	p value
Age (Range: 16–24; M:SD)	17.50 (1.21)	17.61 (1.19)	17.43 (1.21)	.03
Grade				
Grade 8	1 (.11)	1 (.29)	0 (0)	.02
Grade 9	1 (.11)	0 (0)	1 (.17)	
Grade 10	499 (53.26)	206 (59.03)	293 (49.83)	
Grade 11	436 (46.53)	142 (40.69)	294 (50.0)	
Race				
African	918 (97.97)	342 (97.99)	576 (97.96)	.56
Coloured ^a	5 (.53)	1 (.29)	4 (.68)	
Indian	1 (.11)	1 (.29)	0 (0)	
White	1 (.11)	0 (0)	1 (.17)	
Other	12 (1.28)	5 (1.43)	7 (1.19)	
Father's Education				
No formal education	21 (2.24)	7 (2.01)	14 (2.38)	.53
Primary school	58 (6.19)	23 (6.59)	35 (5.95)	
Secondary school	341 (36.39)	116 (33.24)	225 (38.27)	
Tertiary institution/university graduate	251 (26.79)	92 (26.36)	159 (27.05)	
I am not sure	266 (28.39)	111 (31.81)	155 (26.36)	
Mother's Education				
No formal education	20 (2.13)	5 (1.43)	15 (2.55)	.11
Primary school	46 (4.91)	23 (6.59)	23 (3.91)	
Secondary school	375 (40.02)	130 (37.25)	245 (41.67)	
Tertiary institution/university graduate	305 (32.55)	109 (31.23)	196 (33.33)	
I am not sure	191 (20.38)	82 (23.50)	109 (18.54)	
Income				
Lower than the average family	265 (28.28)	84 (24.07)	181 (30.78)	.02
Similar to the average family	578 (61.69)	235 (67.34)	343 (58.33)	
Higher than the average family	94 (10.03)	30 (8.60)	64 (10.88)	
Importance of religion on respondent's life				
Not at all important	26 (2.77)	10 (2.87)	16 (2.72)	.01
Somewhat unimportant	15 (1.60)	8 (2.29)	7 (1.19)	
Somewhat important	116 (12.38)	59 (16.91)	57 (9.69)	
Very important	780 (83.24)	272 (77.94)	508 (86.39)	

Note: p-values test for significant sex difference.

^aColoured refers to youth who are mixed race (White and African).

Correlates of sexual behavior among females

Among demographically similar females (n = 588; Table 4), the relative odds of ever having vaginal sex versus never having sex rose as one's attitudes towards HIV preventive behaviors rose (COR = 1.11). A positive association was also noted for behavioral intentions (COR = 1.12) whereas behavioral skills (COR = 0.92) and beliefs about abstinence (COR = 0.86) were associated with reduced odds of a history of vaginal sex. In contrast, none of the IMB scales discriminated between girls who had anal sex versus never had sex; beliefs about abstinence were negatively associated with a history of anal sex however.

Those who reported perpetrating dating violence were significantly less likely to also report a history of vaginal sex versus never having sex (COR = 0.58). Females who said they were dishonest in their survey answers were also significantly less likely to have reported vaginal sex (COR = 0.28); the opposite was true for those who thought they had privacy in completing the survey (COR = 1.86). None of these indicators were significant predictors of anal sex experiences, with the exception of beliefs about abstinence, which was associated with reduced odds of having had anal sex (COR = .77). Dating violence victimization and self-appraised HIV risk were similar for females irrespective of their sexual experiences.

Table 2. Lifetime sexual behaviors among male and female secondary school students in Langa, Cape Town, South Africa ($n = 937$).

	All ($n = 937$)	Males ($n = 349$)	Females ($n = 588$)	p value
Sexual Behaviors N (%)^a				
No Sexual Behaviors	269 (28.71)	53 (15.19)	216 (36.73)	<.001
Oral Sex	227 (24.23)	121 (34.67)	106 (18.03)	<.001
Vaginal Sex	620 (66.17)	273 (78.22)	347 (59.01)	<.001
Anal Sex	173 (18.46)	109 (31.23)	64 (10.88)	<.001
Exclusive Sexual Behaviors				
Only Vaginal Intercourse	358 (38.21)	124 (35.53)	234 (39.80)	.19
Only Oral Sex	23 (2.45)	9 (2.58)	14 (2.38)	.85
Only Anal Sex	13 (1.39)	5 (1.43)	8 (1.36)	.93
Only Vaginal & Oral Sex	114 (12.17)	54 (15.47)	60 (10.20)	.02
Only Anal & Oral Sex	12 (1.28)	9 (2.58)	3 (.51)	.01
Only Vaginal & Anal Sex	70 (7.47)	46 (13.18)	24 (4.08)	<.001
All Three Sexual Behaviors	78 (8.32)	49 (14.04)	29 (4.93)	<.001

Note: p -value test significant sex difference.

^aYouth may be included in more than one of the three sexual behavior categories.

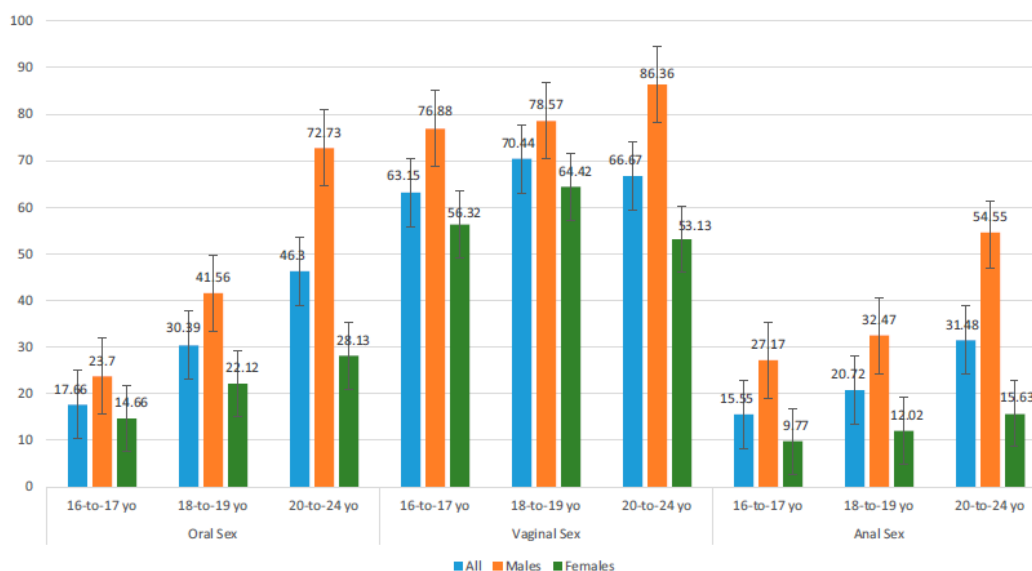


Figure 1. Comparison of lifetime sexual behaviors by age and sex among 16–24 year old secondary school students in Cape Town, South Africa ($n = 937$).

Note: $n = 521$ for 16-to-18 year olds (173 males and 348 females), 362 for 18-to-19 year olds (154 males and 208 females), and 54 for 20-to-24 year olds (32 females and 22 males).

Among otherwise demographically alike sexually experienced females ($n = 358$), the relative odds of engaging in anal versus vaginal sex were significantly higher for females who endorsed all but one of the sexual coercion victimization items (i.e., been giving alcohol or drugs to facilitate sex). Similarly, the relative odds of having a history of anal versus vaginal sex was significantly higher for females who endorsed all sexual coercion perpetration items. Using a condom half of the time or less was four times higher for females who had ever had anal versus vaginal sex ($OR = 4.46$).

Discussion

In this study of over 900 youth 16 years of age and older attending secondary schools in Langa, a low-income community in Cape Town, South Africa, almost one in three males and one in ten females have had anal sex. By comparison, almost four in five males and three in five females have had vaginal sex. Despite noted differences in prevalence rates by sex, both boys and girls who have had anal sex are more likely than their same-sex peers who have had vaginal sex to report sexual coercion victimization and perpetration experiences and inconsistent condom use. Interestingly, some differences in HIV motivation, information, and behavioral skills were noted for youth who have had vaginal sex versus youth who have never had sex; scores are largely similar for youth who have had anal sex versus youth who have never had sex however. Together, these findings suggest that anal sex is not uncommon and may be an important marker for other HIV risk behaviors in at least one lower income South African community. In addition to providing concrete information about how to reduce one's HIV risk during anal sex (e.g., by using lubrication), adolescent HIV prevention programs should also integrate discussions about healthy and unhealthy relationships and how to negotiate difficult conversations, including those about sexual boundaries.

The lack of difference in perceived HIV risk for youth who have had and not had anal sex is concerning. It echoes findings among Ugandan male youth, some of whom thought anal sex was protective for HIV (Katz et al., 2013). Because some youth may be choosing to engage in anal sex to reduce pregnancy risk (Duby & Colvin, 2014; Maynard, Carballo-Diéguez, Ventuneac, Exner, & Mayer, 2009), HIV prevention programming needs to clearly communicate that this same behavior increases HIV risk. Young people need accurate information to weigh the potential risk and benefit of their sexual choices as well as the tools to engage in anal sex more safely (e.g., negotiating condom use).

The epidemiology of anal sex in this study, which suggests that youth as young as 16 years of age have had anal sex but that rates also increase with age, provides additional support for previous observations that secondary high school is a critical age of initiation of sexual behavior (Shisana et al., 2014).

Table 3. Relative odds of vaginal or anal sex versus never having sex among male secondary school students in Cape Town, South Africa.

Youth correlates	Never had sex (n = 62)	Ever vaginal sex (n = 178)		Ever Anal sex (n = 109)	
	M (SD)	M (SD)	COR (95% CI)	M (SD)	COR (95% CI)
HIV Preventive Information	4.48 (1.81)	4.94 (1.64)	1.24 (1.01, 1.50)	4.83 (1.60)	1.16 (.93, 1.44)
HIV Preventive Motivation: Attitudes	11.47 (3.55)	12.29 (3.72)	.99 (.89, 1.10)	12.28 (3.81)	1.06 (.94, 1.19)
HIV Preventive Motivation: Subjective Norms	22.60 (6.85)	22.67 (6.75)	1.01 (.94, 1.08)	20.94 (6.57)	.97 (.90, 1.04)
HIV Preventive Motivation: Behavioral Intentions	7.52 (3.13)	7.93 (2.91)	1.02 (.88, 1.19)	7.64 (2.80)	1.02 (.86, 1.21)
HIV Preventive Behavioral Skills	11.74 (4.21)	11.79 (3.67)	1.04 (.95, 1.15)	11.39 (3.46)	1.05 (.95, 1.17)
Beliefs About Abstinence	8.74 (2.19)	6.84 (3.19)	.77 (.68, .88)	5.76 (3.04)	.70(.61, .80)
	n (%)	n (%)	COR (95% CI)	n (%)	COR (95% CI)
Above average chance of getting HIV (self-appraised)	4 (6.45)	16 (8.99)	1.55 (.45, 5.38)	12 (11.01)	1.52 (.42, 5.55)
Physical dating violence ^a					
Victim of dating violence	14 (29.79)	43 (26.06)	.57 (.29, 1.13)	31 (32.29)	.67 (.32, 1.43)
Perpetrated dating violence	11 (23.40)	53 (32.12)	.96 (.49, 1.86)	41 (42.71)	1.23 (.60, 2.52)
Self-reported dishonesty in answering survey questions	14 (22.58)	19 (10.67)	.37 (.15, .93)	21 (19.27)	.70 (.26, 1.85)
Perception of personal privacy during the survey	45 (72.58)	136 (76.40)	.82 (.37, 1.81)	78 (71.56)	.76 (.32, 1.79)
	n (%)	n (%)		n (%)	COR (95% CI)
Condom use (n = 287)					
Half the time or less	NA	128 (71.91)	NA	40 (36.70)	1.0 (Ref)
More than half of the time	NA	50 (28.09)	NA	69 (63.30)	4.12 (2.42, 7.0)
Victimization of sexually coercive behavior (n = 287)					
Had sex for gift	NA	64 (35.96)	NA	58 (53.21)	1.74 (1.04, 2.91)
Had sex after lied to	NA	64 (35.96)	NA	55 (50.46)	1.72 (1.04, 2.85)
Had sex after given alcohol or drugs	NA	21 (11.80)	NA	33 (30.28)	2.81 (1.48, 5.31)
Had sex because afraid to say no	NA	27 (15.17)	NA	32 (29.36)	2.11 (1.15, 3.87)
Had sex after physically forced, hurt, threatened	NA	21 (11.80)	NA	17 (15.60)	1.10 (.53, 2.29)
Perpetration of sexually coercive behavior (n = 287)					
Given gift for sex	NA	39 (21.91)	NA	39 (35.78)	1.64 (.94, 2.86)
Lied to someone so they would have sex	NA	45 (25.28)	NA	54 (49.54)	2.65 (1.58, 4.45)
Gave someone alcohol or drugs to have sex	NA	21 (11.80)	NA	32 (29.36)	2.57 (1.32, 5.00)
Made someone afraid to say no to sex	NA	30 (16.85)	NA	33 (30.28)	1.90 (1.06, 3.43)
Physically forced, hurt, or threatened someone into having sex	NA	23 (12.92)	NA	28 (25.69)	1.93 (1.00, 3.72)

^aAmong those who have a dating history.

COR = Conditional odds ratio; generated from multinomial logistic regression. There are three outcome categories: No sexual experience (Reference group), Vaginal sexual experience, and Anal sexual experience. Exponentiated coefficients are interpreted as the ratio of the conditional odds for a one-unit increase in the response variable; or for categorical response variables, the ratio of conditional odds for the specific category compared to the reference category. Thus, regression equations estimated the conditional odds of being in one of the two sexually experienced categories (i.e., ever vaginal sex or ever anal sex) compared to being in the “never had sex” category.

OR = odds ratio; reflects the relative odds of being a youth who has ever anal sex versus ever vaginal sex.

COR and OR models are adjusted for age, family income, and combined parental education, honesty while taking the survey, and feelings of privacy while taking the survey. Bolded are significant at $p < .05$.

NA = Not applicable – youth who had never had sex were not asked these questions. Accordingly, relative odds for ever vaginal versus never had sex were not estimated.

If, because of cultural norms, it is untenable to talk about anal sex with younger youth before they become sexually active (e.g., primary school youth), then sexual education about anal sex administered to 16-year-old youth would be well-timed to provide them with preventive skills before they enter the developmental period when they are more likely to begin engaging in anal sex.

A previous national study found rates of anal sex to be similar for adolescent boys and girls (Lane et al., 2006). Our findings are similar to Harrison et al. (2012), however, which found that rates of anal, vaginal, and oral sex were reported more frequently by males. While this may be a function of social desirability bias (i.e., males may be more likely to over-report, and females to under-report sexual experiences because of social norms), it also suggests that, in at least some cases, males may be having anal sex with other males and/or females may be having more anal sex partners than males. Although purely speculative, given the stigma surrounding men having sex with men (Tucker et al., 2014), South African male youth who have sex with other males may be doing so while also

identifying as heterosexual. HIV prevention programming for all adolescents, but particularly males, needs to be discussed from a heteronormative frame while including strategies to reduce risk for both insertive and receptive partners.

Limitations

The response rate within schools was over 90%, but it bears noting that the three surveyed schools were not necessarily representative of Cape Town nor South Africa. That said, the population is from a lower income community and is therefore perhaps more representative of youth at greater risk for HIV than those in more privileged settings. Additionally, the study is cross-sectional; causal inferences are not supported.

Table 4. Relative odds of vaginal or anal sex versus never having sex among female secondary school students in Cape Town, South Africa.

Youth correlates	Never had sex (n = 230)	Ever vaginal sex (n = 294)		Ever Anal sex (n = 64)	
	M (SD)	M (SD)	COR (95% CI)	M (SD)	COR (95% CI)
HIV Preventive Information	4.95 (1.62)	5.17 (1.47)	1.06 (.94, 1.20)	4.56 (1.79)	.86 (.72, 1.02)
HIV Preventive Motivation: Attitudes	10.95 (4.39)	12.20 (3.85)	1.11 (1.04, 1.18)	11.05 (4.45)	1.02 (.92, 1.12)
HIV Preventive Motivation: Subjective Norms	23.21 (6.79)	22.98 (7.34)	.97 (.93, 1.00)	23.02 (7.27)	1.01 (.95, 1.07)
HIV Preventive Motivation: Behavioral Intentions	7.38 (2.92)	8.13 (2.81)	1.12 (1.03, 1.23)	7.77 (3.31)	1.08 (.94, 1.23)
HIV Preventive Behavioral Skills	12.44 (4.38)	11.93 (3.81)	.92 (.87, .97)	11.58 (3.87)	.96 (.88, 1.04)
Beliefs About Abstinence	9.40 (2.53)	8.38 (2.75)	.86 (.80, .93)	7.41 (3.06)	.77 (.69, .86)
	n (%)	n (%)	COR (95% CI)	n (%)	COR (95% CI)
Above average chance of getting HIV (self-appraised)	37 (16.09)	32 (10.88)	.86 (.49, 1.52)	9 (14.06)	.83 (.36, 1.90)
Physical dating violence ^a					
Victim of dating violence	44 (25.00)	102 (36.30)	1.15 (.71, 1.88)	25 (44.64)	.62 (.29, 1.32)
Perpetrated dating violence	36 (20.45)	75 (26.69)	.58 (.36, .95)	29 (51.79)	1.84 (.86, 3.91)
Self-reported dishonesty in answering survey questions	34 (14.78)	9 (3.06)	.28 (.12, .67)	12 (18.75)	.79 (.32, 1.97)
Perception of personal privacy during the survey	168 (73.04)	259 (88.10)	1.86 (1.09, 3.19)	42 (65.63)	.85 (.41, 1.76)
Condom use (n = 287)		n (%)		n (%)	OR
Half of the time or less	NA	202 (68.71)	NA	18 (28.13)	1.0 (Ref)
More than half of the time	NA	92 (31.29)	NA	46 (71.88)	4.46 (2.37, 8.37)
Victimization of sexually coercive behavior (n = 287)					
Had sex for gift	NA	59 (20.07)	NA	31 (48.44)	3.09 (1.68, 5.66)
Had sex after lied to	NA	46 (15.65)	NA	25 (39.06)	3.06 (1.62, 5.78)
Had sex after given alcohol or drugs	NA	22 (7.48)	NA	11 (17.19)	1.83 (.77, 4.34)
Had sex because afraid to say no	NA	44 (14.97)	NA	23 (35.94)	2.17 (1.12, 4.21)
Had sex after physically forced, hurt, threatened	NA	33 (11.22)	NA	19 (29.69)	2.38 (1.17, 4.84)
Perpetration of sexually coercive behavior (n = 287)					
Given gift for sex	NA	33 (11.22)	NA	21 (32.81)	3.88 (1.96, 7.66)
Lied to someone so they would have sex	NA	28 (9.52)	NA	26 (40.63)	6.07 (3.06, 12.03)
Gave someone alcohol or drugs to have sex	NA	15 (5.10)	NA	14 (21.88)	4.06 (1.71, 9.64)
Made someone afraid to say no to sex	NA	17 (5.78)	NA	17 (26.56)	4.59 (2.09, 10.10)
Physically forced, hurt, or threatened someone into having sex	NA	23 (7.82)	NA	19 (29.69)	3.68 (1.66, 8.15)

^aAmong those who have a dating history.

COR = Conditional odds ratio; generated from multinomial logistic regression. There are three outcome categories: No sexual experience (Reference group), Vaginal sexual experience, and Anal sexual experience. Exponentiated coefficients are interpreted as the ratio of the conditional odds for a one-unit increase in the response variable; or for categorical response variables, the ratio of conditional odds for the specific category compared to the reference category. Thus, regression equations estimated the conditional odds of being in one of the two sexually experienced categories (i.e., ever vaginal sex or ever anal sex) compared to being in the "never had sex" category.

OR = odds ratio; reflects the relative odds of being a youth who has ever anal sex versus ever vaginal sex.

COR and OR models are adjusted for age, family income, and combined parental education, honesty while taking the survey, and feelings of privacy while taking the survey. Bolded are significant at $p < .05$.

NA = Not applicable – youth who had never had sex were not asked these questions. Accordingly, relative odds for ever vaginal versus never had sex were not estimated.

Furthermore, while we took precautions to increase participant confidentiality, it is still possible that anal sex was underreported given that it is socially and culturally taboo. Finally, youth younger than 16 years of age were excluded because of the logistical challenges of obtaining parental permission. The prevalence and co-relation of anal sex and other important HIV risk-related indicators for younger youth is an important area of future research.

Conclusion

As one of the first studies of anal sex among adolescents in South Africa, findings need to be replicated in more representative samples. Data suggest however, that discussions with South African boys and girls about anal sex, particularly the HIV risk involved and strategies to reduce these risks, are warranted. Co-relations between anal sex and coercive sex additionally suggest that scenarios involving the negotiation of consensual anal sex or the refusal of unwanted anal sex could also be included in healthy relationship programming.

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