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Sexual motivation, sexual transactions and sexual risk behaviors in men who have sex with men in Dar es Salaam, Tanzania

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Abstract

Understanding the associations between sexual motivation and sexual risk behaviors of men who have sex with men (MSM) is critical for developing effective HIV prevention interventions. To examine these associations, we employed data from a survey of 200 MSM in Dar es Salaam, Tanzania, recruited through respondent driven sampling. Results showed that 44.5% of surveyed participants most often looked for love/affection when having sex, and 36.5% most often looked for money. Money-motivated MSM were more likely to identify themselves as bisexual, more likely to have anal sex, and had significantly higher numbers of partners of both sexes. Those who most often looked for love/affection were less likely to ask for condom use, to actually use a condom, and to use lubrication in anal sex. MSM with different sexual motivations had dissimilar sexual risk behaviors. Tailored health interventions for each group to reduce these sexual risks for STIs/HIV prevention are needed.

Keywords

men who have sex with men; sexual motivation; sexual behavior; sex work; Africa

Introduction

Associations between emotional sex or transactional sex and sexual risk behaviors among men who have sex with men (MSM) have been documented in some studies.(1-5) In general, sex with emotional connection is more likely to negate condom use. Using a 5-item

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decisional balance construct related to considering bareback sex (i.e., anal intercourse without a condom) a way of seeking pleasure and emotional connection with other men, Bauermeister et al (2009) found that a greater score of the Pleasure and Emotional Connection sub-scale was associated with a higher frequency of unprotected receptive anal intercourse.(1) MSM in six Chinese cities felt greater affect toward intimate or stable partners than toward casual partners (acquaintance, stranger or sex workers); and condom use was less consistent in anal sex with perceptually more-affective partner types.(3) MSM who sought long-term relationships might also serosort (i.e. looking for HIV-seroconcordant partners) or seroguess to perform intimate sexual behaviors including bareback sex.(2, 5) In serodiscordant MSM relationships, greater intimacy was argued to function as a risk factor. (4)

In most studies in MSM groups worldwide, MSM who engage in transactional sex often have higher numbers of sexual partners and are more likely to have sex with partners of both sexes.(6-10) Condom negotiation and condom use with several different sexual partners might be more difficult. Thus, although the likelihood of condom use in transactional anal sex was higher than that in affectionate sex in some studies as noted above, a few other studies still documented lower proportions of consistent condom use during anal sex in this group.(9, 11) Sexual identities of MSM seeking economic gain were also different from non-sex workers. A higher proportion of MSM sex workers self-identified as bisexual (10, 12) or transgender (9). Sexual roles (13), sexual identities, and sexual orientations (12, 14, 15) were found to influence sexual behavioral risks for STIs/HIV transmission such as unprotected anal intercourse. Sexual identities and roles were also found to affect lubricant use. In a study of MSM in Lima, Peru, MSM who reported sexual identities or roles consistent with receptive anal intercourse were more likely to report lubricant application than MSM who claimed an exclusively insertive sexual role.(16) Presumably due to these risk factors, engaging in sex work among MSM has been shown to result in elevated risk for HIV infection in many settings.(6, 8, 10, 11, 17-19)

There are few studies of MSM in sub-Saharan Africa (SSA) due to two main reasons. First, the HIV pandemic in this region has been portrayed as primarily heterosexually-transmitted (20), and hence HIV transmission through male-male sexual activities have been under-emphasized. Second, the extremely negative climate towards homosexual behavior in SSA has restricted investigation of MSM behaviors and other risk factors.(21) Given this stigmatizing climate, the development of formal MSM venues were limited; and consequently, a large number of less-known local MSM contact, social, and sex sites spread across areas, ranged across venue types, and may be very time-specific. MSM were not included in surveillance systems of most African countries.(22) Tanzania, with a population of 45 million (23), is one of the more stable and prosperous African countries. Community and governmental mobilization around HIV/AIDS has been relatively strong. The HIV prevalence among adults aged 15 in Tanzania is estimated at 5.6%–6.2% in the general population.(23, 24) In a behavioral surveillance survey of MSM in Zanzibar, Tanzania, the estimate of HIV prevalence in MSM is 12.3%.(22) In that survey, 70% of MSM reported paying another man for anal or oral sex, and 84% were paid for anal or oral sex in the past month. Although MSM's information and knowledge about HIV were accurate in Dar es Salaam (19), condom use ranged from low to moderate. Inconsistent condom use ranged

between 85%-90% for anal sex with paying, paid or non-paid male partners.(22) There was no significant difference in condom use between casual (43%) and regular (49%) partners. (19) Among those who were paid for sex in the past month, 59% had more than one anal sex partner.(22) Seventy percent reported bisexual activity in the past month. The prevalence of these sexual risks and practices were slightly lower in another study among MSM in Dar es Salaam, Tanzania.(25)

Although these few recent studies highlight the prevalence of sexual behaviors which elevate the risk for HIV infection among Tanzanian MSM, no studies have examined these sexual risk behaviors by sexual motivation. As found in some MSM populations in other countries, those who engaged in having sex with men for economic gain may have different sexual risk behaviors than those who have sex for love or emotion. This study aims to investigate MSM's sexual risk behaviors associated with sexual motivation in Dar es Salaam, Tanzania. Results of this investigation are important and necessary for developing appropriate health education messages and tailored risk-reduction promotion interventions for different groups of MSM. Tailoring has been shown to increase effectiveness of health behavior change interventions.(26)

Methods

Study design, sampling and recruitment

Data were collected from a cross-sectional survey of 200 MSM in Dar es Salaam, Tanzania using respondent driven sampling (RDS). RDS is a research method that involves snowball sampling where a researcher uses some starting individuals to refer those they know and in turn these individuals refer those they know throughout a network.(27-29) Since MSM in Tanzania are a closed and hidden population (21), RDS is an appropriate recruitment strategy. We identified five seeds of diverse ages and from different areas of the city for better representativeness, to recruit the first wave of participants. Each seed or referrer was given three coupons to recruit three members who they knew were MSM and who had sex with a man in the past six months. Coupons had unique identification numbers linking coupons to the referring seed. Characteristics of those recruited as part of the waves were continually compared to the characteristics of seeds to determine when the sample reached equilibrium. As we were about to close any seed chain, we reduced the number of coupons to two and the last respondents in each seed were not given any coupon. Our desired sample size of 200 was reached after an average of seven waves.

Procedure

Eligible participants underwent a self-administered interview using a paper/pencil structured questionnaire with some open-ended questions. Prior to interviewing, participants were fully informed regarding the purpose of the interview, the study's rationale, and the benefits/risks of participation. To protect participants' identity and confidentiality, oral informed consents were obtained in Swahili or English (the two official languages of Tanzania), as the participant preferred. The interview took about 30-40 minutes to administer. If participants had difficulty in understanding item(s), research assistants who were graduates and trained in research interviewing read or explained the item(s) in a manner consistent with the item's

meaning. For participants who could not read, a research assistant read all questions to the participants, and recorded participants' answers. The interviews took place in private at a house rented for the project or in a prearranged alternative safe location. Participants could choose to take the interview in Swahili or English. For the Swahili version of the questionnaire, the accuracy of the translations and its content validity was assessed by a panel of native Swahili-speaking experts. After translation into Swahili and back-translation into English, the questionnaire was pilot-tested with five MSM for comprehension, clarity and response range, and modified as appropriate. Each participant and the referrer received an equivalent of \$2.75 US dollars in compensation for transportation. The study was reviewed and approved by the University of Texas Health Science Center's Institutional Review Board (HSC-SPH-10-0033) and the Tanzanian National Institute for Medical Research (NIMR/HQ/R.8a/Vol. IX/1088).

Measures

The questionnaire contained sections covering demographic data and several items related to MSM's sexual experience, and physical and mental health. The current analysis focused on sexual risk behaviors, including sexual identities and orientations, numbers of sexual partners, condom use, and lubricant use (Table I). Sexual motivations were recorded by asking the question "What are you most often looking for when you want to have sex with men [in general]?" Response categories included sexual gratification, love/affection, companionship, money, and other. In this report, money-motivated MSM refers to those participants who responded with money to this question, and affection-motivated MSM refers to those participants who responded with love/affection. HIV-1 status was tested by two rapid tests, Determine, Abbott Laboratories, USA; Unigold, Trinity Biotech plc, Ireland.

Analysis

We closely followed the RDS sampling conditions in order to ensure statistical assumptions and hence to reduce biases in statistical analyses (e.g. participants were asked to randomly recruit others from their network).(27, 28, 30, 31) In addition, 95.5% of the recruited participants in our sample responded that they would have given a coupon to the same person who actually gave them a coupon; this showed that ties were reciprocal. The medians of personal network size, which was measured by the question "How many gay men have you known by name in the past 15 years?", were not different by sexual motivations (Table I). This suggested that participants' personal network size would not confound the associations of our interest between sexual motivations and other variables; hence, adjusting or controlling for network size in multivariable analysis was not necessary. In addition, as Heckathorn (2007) noted, although weighting RDS data is potentially important for point estimates, it has little effect in association or regression analyses.(28) Therefore, we used unweighted data which enabled multivariable analysis in this report.

Sexual risk behaviors were examined and reported for the total sample, and then were compared between two major sexual motivation groups: those who most often looked for love/affection versus those who most often looked for money in sex. Differences in continuous variables and some ordinal variables between two sexual motivation groups were examined using t-tests for variables with a normal distribution, and Mann-Whitney U tests

for variables without a normal distribution. Differences in categorical variables were examined using chi-square tests. Multivariable logistic regression models were used to examine the adjusted associations between sexual motivations and main outcomes of interest (e.g. condom use). A factor was included as a covariate in multivariable logistic regression model based on *a priori* knowledge and if it was potentially associated with both sexual motivation and outcomes of interest (p -value $< .25$, suggested by Hosmer & Lemeshow, 2000).(32)

Results

Socio-demographic and behavioral characteristics of the whole sample and by sexual motivation are displayed in Table I. In our sample, 82% of MSM had anal sex with a non-paying male partner(s) in the past month, but also 81.3% were paid to have sex with a man in the past month. Regarding sexual motivation in our sample, 44.5% most often looked for love/affection when having sex, 36.5% most often looked for money, 17% looked for sexual gratification and 2% looked for other things such as companionship or respect. Average ages, religious beliefs, and total household incomes of those who most often looked for love/affection and of those who most often looked for money did not differ statistically (Table I). Compared to those who most often looked for love/affection, those who most often looked for money had a lower average level of education, were more likely to have ever had a meaningful sexual relationship with a woman, were more likely to be attracted to both men and women, and were more likely to identify themselves as bisexual. Those who most often looked for money had significantly higher numbers of partners of both sexes, both during their lifetime and during the past six months. Those who most often looked for love/affection were less likely to ask for condom use and to actually use a condom during anal sex with paying partners in past six months. This group was also less likely to use lubrication during anal sex, although 95.5% of them knew about lubrication. Reasons for not using lubrication during anal sex were not statistically different between the two groups (data not shown); this might be due to a small sample of non-users. The percentage of HIV sero-positives in this Tanzanian MSM sample was 30.2%. Self-perceived risk of HIV infection and current HIV status were not statistically different by sexual motivation.

Given that condom use proportions differed by sexual motivations, we further compared condom-use frequencies by types of partners (non-paying, paying, and paid) in the past month by using gammas which assess associations of ordinal measures of condom-use frequencies. Gamma values for condom use in insertive sex with non-paying partners versus with paid partners (i.e. partners who received money for sex) was 0.88 ($p < .001$, $n=18$), and for condom use in insertive sex with non-paying partners versus paying partners (i.e. partners who gave money for sex) was 0.87 ($p < .001$, $n=87$). For condom-use frequencies in receptive anal intercourse, the gamma value was 0.74 ($p < .001$, $n=81$) for non-paying partners versus paying partners; (gamma value for condom-use frequencies between non-paying partners and paid partners could not be estimated due to a very small subsample size of 11).

Highest education level was a potential confounder in our data since it was associated with sexual motivation, and lower education level was potentially correlated with infrequent

condom use with paying partners in the past six months (p -value=.056). Highest education level, however, was not associated with numbers of sexual partners of both sexes (p -value=.391), and with frequencies of using lubrication during anal sex (p -value=.722). Thus, we built logistic regression models to further investigate the association between sexual motivation and never using a condom in anal sex, controlled for education levels (Table II). Compared to those who most often looked for money in anal sex, those who most often looked for love/affection were five times more likely to never ask for condom use and were four times more likely to never use a condom.

Discussion

In general, descriptive statistics of several risk factors for STIs/HIV in our sample are comparable to other studies in the MSM population worldwide (3, 7, 15, 22, 25, 33) and in Tanzania (19). MSM tended to have multiple and concurrent relationships; the median number of male and female partners in the past six months was five. Half of the participants in this study had sex with both male and female partners in the past five years, which is similar to MSM in Malawi, Namibia, and Botswana.(33) Overall consistent condom use rates were only 24.5% with paying partners and 36.9% with non-paying partners; this suggests that these Tanzanian MSM are at high risk for STIs/HIV. Compared to HIV prevalence in the region, the percentage of HIV-positive MSM in our sample is higher than it is in Zanzibar (Tanzania) and in Namibia, but parallels the prevalence among MSM in Botswana, Malawi, and Kenya.(15, 33)

This study's data showed interesting dynamic interactions of love, sex and money among Tanzanian MSM. Thirty percent reported selling sex as their major source of income; and this proportion was similar to our previous study results of MSM in Dar es Salaam.(34) However, the figure that more than 80% of our participants were paid by a man for sex in the past month signified a potential sex-work status of those who reported not to mainly earn by selling sex; and hence the actual proportion of MSM who were sex-worker might be higher than 30%. Around one-fifth of those who received payment for sex in the past month also purchased male sex (i.e. paid a man for sex) in the past month. Almost half of our sample was most often looking for love/affection, presumably even in paid sex, and only 17% of them most often looked for sexual gratification. In a previous study in Tanzanian MSM who were mostly drug-users in Zanzibar, results also showed that 80% received payment for sex in the past month, and 35% paid for sex, which implies an overlap proportion of those who were both selling and purchasing sex.(35) Similarly, a study of 449 MSM in coastal Kenya showed that 69.9% of participants reported being paid for sex, whereas 34.3% paid for sex.(36) These transactional sex dynamics were similarly found among African Americans in two large urban areas in the US, of whom 12% both got paid and paid for sex in the past three months.(12) Given this trend, the conceptualization and definition of male traded or compensated sex (e.g. "MSM male sex worker") in future studies may need further elaboration. Indeed, we wonder if we can justifiably characterize the patterns of exchange of sex for money as "sex work" in this sample in the way we might in other MSM populations worldwide. In addition to a core of about 30% of the sample who made a living by selling sex, it seems that there was a pattern of sexual exchange, in which money played the role of a facilitator, with people selling sex where they would not as a

matter of choice to have sex with a particular partner, and buying it when they were in the same situation but as a non-preferred partner for someone they found attractive. What seems to be occurring is a bidirectional sex *exchange*, facilitated by money, rather than a strictly *commercial sex work* system. Obviously, sexual attractiveness is a form of capital, particularly as the median age of this sample was in the early 20s, which probably inflates the importance of sex barter. Future studies, especially qualitative ones, may also want to examine whether this group who both sells and purchases male sex has any identifying characteristics or behavioral risks, in terms of sexual identity, partnership structure, and health. Knowledge of these characteristics and potentially associated risks can contribute to tailored health interventions for this group.

Our findings revealed that participants with different sexual motivations had dissimilar sexual behavioral risk factors. The significantly higher proportion of those who earned money by selling sex in the past month among the money-motivated group compared to the affection-motivated group adds to the reliability of self-classification of sexual motivation. Money-motivated MSM were more likely to ever have a meaningful sexual relationship with a woman, were more likely to be attracted to both men and women, and were more likely to identify themselves as bisexual. Motivated by money, a proportion of these men might have been engaging in anal sex with men, which was high risk for STIs/HIV, without being sexually oriented to men and without enjoying having sex with men. In a study about compensated sex and sexual risk among MSM in Peru, it was similarly found that self-identified homosexual men paid or gave gifts in exchange for company or sexual favors, whereas heterosexual men looked for things such as money or goods in a cycle of compensated sex dynamics.(6) The distribution of sexual positions with the past three partners revealed that only 8.2% of money-motivated MSM did not have anal sexual intercourse, which was significantly lower than it was among affection-motivated MSM (39.3%). This figure suggests that money-motivated MSM were more willing to accept anal sex with new male partners. Similar to some other studies in MSM sex workers (6), money-motivated MSM in our study had a significantly higher number of partners of both sexes; perhaps males for money and females for affection or sexual gratification. If MSM in this money-motivated group become infected with any STIs/HIV, they will have a higher probability of spreading the infection to multiple partners of both sexes due to concurrency.

Although money-motivated MSM used condoms more frequently than affection-motivated MSM, rates of consistent condom use with different types of partners within money-motivated MSM group were still low in general, ranging from 24%-38%. Further investigation of condom use with different types of sexual partners in the past month, including non-paying, paying, and paid partners, revealed high and significant gamma coefficients for both insertive and receptive anal intercourse. This indicates that there was minimal difference in condom use patterns across partner types: that is, condom behavior with paid, paying and non-paying partners was essentially similar and little distinction seemed to be made on whether condoms were used based on the commercial or barter nature of the activity. Unlike suggestions that commercial sex workers distinguish between paying and non-commercial partners in terms of condom use, these data suggest that this type of personal organization of risk by paid/paying status of partners does not occur in these MSM.

It was found in another bisexual MSM population that when condom use was inconsistent in sex with male partners, it tended to be inconsistent also in sex with female partners.(17) In the behavioral surveillance survey of MSM in Zanzibar, Tanzania, about 87% of respondents did not consistently use a condom with female sexual partner(s) (paid or non-paid) in the past month.(22) STIs/HIV prevention for this group of MSM, besides condom use promotion, may want to address financial sexual motivation in order to reduce unnecessary or unwanted engagement in anal sex with men.

For those MSM who most often looked for love/affection, the median number of lifetime male partners was close to that in money-motivated group (7 vs. 9, respectively). This suggests that mostly looking for love/affection does not necessarily infer being faithful or having less multiple and/or concurrent relationships. Additionally, affection-motivated MSM were less likely to ask for condom use and to consistently use a condom during anal sex. Given some different behavioral risks between money-motivated and affection-motivated MSM groups, tailoring health behavior interventions may be needed for each group. For example, targeted health messages to reduce STIs/HIV risk may want to focus on reducing numbers of sexual partners of both sexes for the money-motivated group, and focus on promoting consistent condom use for the affection-motivated group. As another example, non-gay self-identifying MSM were less likely to be reached and included in previous behavioral risk reduction interventions, and hence might have had less exposure to previous STIs/HIV prevention messages.(37) Thus, intervention programs for money-motivated MSM, who were less likely to self-identify as gay or homosexual, may need to have an extensive recruitment strategy beyond the “gay” community, and to apply a short intervention delivery span without several follow-ups which has been found to be more effective.(37) Risk reduction messages for this population should target the risk behaviors rather than the sexual identities, and should be clear and focused.

This study has limitations. The RDS method might restrict our sample's representativeness and generalizability to all MSM in Tanzania. Yet, this method is most feasible and effective for recruiting such hidden populations as this one.(29) Sexual motivations were obtained from only one item; hence, it may not be highly valid and may not reflect any dynamics in sexual motivations over time. Behavioral variables were based on self-report and hence might be subject to recall bias or under-reporting. Our moderate sample size might have limited statistical power in some analyses, especially for multivariable analysis. Regarding survey administration, there was a continuum between respondents who read all the questions themselves and those who had the whole interview read to them. Most participants read and answered the questions themselves, with assistance given for only a few questions. Different methods in survey administration might have resulted in differences in self-reported sexual behaviors, given the social desirability bias documented in another African country.(38) Nevertheless, a recent systematic review and meta-analysis of interviewing tools to investigate self-reported STIs/HIV-related behaviors indicated that such differences only occurred for some variables and were not consistent. (39)

Conclusion

These data suggest that sex, love/affection, and payment for sex were interactive dynamics rather than clearly distinctive categories. A proportion of those who received payment for sex were still often looking for love/affection; and some sex sellers were also sex purchasers. Participants with different sexual motivations had dissimilar sexual behavioral risk factors. MSM who most often looked for money in sex had a significantly higher number of partners of both sexes; while affection-motivated MSM were less likely to ask for condom use and to consistently use a condom during anal sex. Tailored health interventions to reduce sexual risk behaviors for STIs/HIV prevention for each group are needed.

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References

1. Bauermeister JA, Carballo-Diequez A, Ventuneac A, Dolezal C. Assessing motivations to engage in intentional condomless anal intercourse in HIV risk contexts (“bareback sex”) among men who have sex with men. *AIDS Education and Prevention*. 2009; 21(2):156–68. [PubMed: 19397437]
2. Frost DM, Stirratt MJ, Ouellette SC. Understanding why gay men seek HIV- • seroconcordant partners: Intimacy and risk reduction motivations. *Culture, Health & Sexuality*. 2008; 10(5):513–27.
3. Kong TSK, Laidler KJ, Pang H. Relationship type, condom use and HIV/AIDS risks among men who have sex with men in six Chinese cities. *AIDS Care*. 2012; 24(4):517–28. [PubMed: 22084891]
4. Theodore PS, Duran REF, Antoni M, Fernandez MI. Intimacy and sexual behavior among HIV-positive men-who-have-sex-with-men in primary relationships. *AIDS and Behavior*. 2004; 8(3): 321–31. [PubMed: 15475679]
5. Zablotska IB, Imrie J, Prestage G, Crawford J, Rawston P, Grulich A, et al. Gay men's current practice of HIV seroconcordant unprotected anal intercourse: serosorting or seroguessing? *AIDS Care*. 2009; 21(4):501–10. [PubMed: 19266409]
6. Fernandez-Davila P, Salazar X, Caceres CF, Maiorana A, Kegeles S, Coates TJ, et al. Compensated sex and sexual risk: Sexual, social and economic interactions between homosexually- and heterosexually-identified men of low income in two cities of Peru. *Sexualities*. 2008; 11(3):352–74. [PubMed: 19890491]
7. Kelly JA, Amirkhania YA, McAuliffe TL, Dyatlov RV, Granskaya J, Borodkina OI, et al. HIV risk behavior and risk-related characteristics of young Russian men who exchange sex for money or valuables from other men. *AIDS Education and Prevention*. 2001; 13(2):175–88. [PubMed: 11398961]
8. Liu H, Liu H, Cai Y, Rhodes A, Hong F. Money boys, HIV risks, and the associations between norms and safer sex: A respondent-driven sampling study in Shenzhen, China. *AIDS and Behavior*. 2009; 13(4):652–62. [PubMed: 18841459]
9. Tun W, de Mello M, Pinho A, Chinaglia M, Diaz J. Sexual risk behaviours and HIV seroprevalence among male sex workers who have sex with men and non-sex workers in Campinas, Brazil. *Sexually Transmitted Infections*. 2008; 84(6):455–7. [PubMed: 19028946]
10. Weber AE, Craib KJP, Chan K, Martindale S, Miller ML, Schechter MT, et al. Sex trade involvement and rates of human immunodeficiency virus positivity among young gay and bisexual men. *International Journal of Epidemiology*. 2001; 30(6):1449–54. [PubMed: 11821362]

11. Bacon O, Lum P, Hahn J, Evans J, Davidson P, Moss A, et al. Commercial sex work and risk of HIV infection among young drug-injecting men who have sex with men in San Francisco. *Sexually Transmitted Diseases*. 2006; 33(4):228–34. [PubMed: 16565643]
12. Wheeler D, Lauby J, Liu KI, Slutman L, Murrill C. A comparative analysis of sexual risk characteristics of black men who have sex with men or with men and women. *Archives of Sexual Behavior*. 2008; 37(5):697–707. [PubMed: 18509753]
13. Clark J, Salvatierra J, Segura E, Salazar X, Konda K, Perez-Brumer A, et al. Moderno love: Sexual role-based identities and HIV/STI prevention among men who have sex with men in Lima, Peru. *AIDS and Behavior*. 2013; 17(4):1313–28. [PubMed: 22614747]
14. Lau JTF, Wang M, Wong HN, Tsui HY, Jia M, Cheng F, et al. Prevalence of bisexual behaviors among men who have sex with men (MSM) in China and associations between condom use in MSM and heterosexual behaviors. *Sexually Transmitted Diseases*. 2008; 35(4):406–13. [PubMed: 18362864]
15. Sanders EJ, Graham SM, Okuku HS, van der Elst EM, Muhaari A, Davies A, et al. HIV-1 infection in high risk men who have sex with men in Mombasa, Kenya. *AIDS*. 2007; 21(18):2513–20. [PubMed: 18025888]
16. Clark JL, Salvatierra HJ, Segura ER, Salazar X, Konda K, Galea J, et al. Frequency, patterns, and preferences of lubricant use during anal intercourse within male sexual partnerships in Lima, Peru: Implications for a rectal microbicide HIV prevention intervention. *AIDS Care*. 2013; 25(5):579–85. [PubMed: 23082796]
17. Lau JTF, Cai W, Tsui HY, Chen L, Cheng J, Lin C, et al. Unprotected anal intercourse behavior and intention among male sex workers in Shenzhen serving cross-boundary male clients coming from Hong Kong, China - prevalence and associated factors. *AIDS Care*. 2012; 24(1):59–70. [PubMed: 21745021]
18. Mimiaga M, Reisner S, Tinsley J, Mayer K, Safren S. Street workers and internet escorts: Contextual and psychosocial factors surrounding HIV risk behavior among men who engage in sex work with other men. *Journal of Urban Health*. 2009; 86(1):54–66. [PubMed: 18780186]
19. Nyoni JE, Ross MW. Condom use and HIV-related behaviors in urban Tanzanian men who have sex with men: A study of beliefs, HIV knowledge sources, partner interactions and risk behaviors. *AIDS Care*. 2013; 25(2):223–9. [PubMed: 22788911]
20. Schmid GP, Buve A, Mugenyi P, Garnett GP, Hayes RJ, Williams BG, et al. Transmission of HIV-1 infection in sub-Saharan Africa and effect of elimination of unsafe injections. *Lancet*. 2004; 363(9407):482–8. [PubMed: 14962531]
21. Ross MW, Nyoni J, Bowen AM, Williams ML, Kashiha JJ. Sexual and geographic organisation of men who have sex with men in a large East African city: opportunities for outreach. *BMJ Open*. 2012; 2(6):e001813.
22. Dahoma M, Johnston L, Holman A, Miller L, Mussa M, Othman A, et al. HIV and related risk behavior among men who have sex with men in Zanzibar, Tanzania: Results of a behavioral surveillance survey. *AIDS and Behavior*. 2011; 15(1):186–92. [PubMed: 19997862]
23. United Nations. *Population and HIV/AIDS 2010*. New York: United Nations, Department of Economic and Social Affairs, Population Division; 2010.
24. USAID. *Tanzania HIV/AIDS Health Profile*. United States Agency for International Development; 2012.
25. Mmbaga EJ, Dodo MJ, Leyna GH, Moen K, Leshabari MT. Sexual practices and perceived susceptibility to HIV infection among men who have sex with men in Dar es Salaam, mainland Tanzania. *Journal of AIDS and Clinical Research; Special Issue: Risk behaviors: HIV/AIDS - Volume 1*. 2011; (Journal Article):012.
26. Noar SM, Benac CN, Harris MS. Does tailoring matter? Meta-analytic review of tailored print health behavior change interventions. *Psychological bulletin*. 2007; 133(4):673–93. [PubMed: 17592961]
27. Heckathorn DD. Respondent-Driven Sampling: A new approach to the study of hidden populations. *Social problems*. 1997; 44(2):174–99.
28. Heckathorn DD. Extensions of respondent-driven sampling: Analyzing continuous variables and controlling for differential recruitment. *Sociological Methodology*. 2007; 37(1):151–207.

29. Malekinejad M, Johnston L, Kendall C, Kerr L, Rifkin M, Rutherford G. Using respondent-driven sampling methodology for HIV biological and behavioral surveillance in international settings: A systematic review. *AIDS and Behavior*. 2008; 12(1):105–30.
30. Heckathorn DD. Respondent-Driven Sampling II: Deriving valid population estimates from chain referral samples of hidden populations. *Social Problems*. 2002; 49(1):11–34.
31. Salganik MJ, Heckathorn DD. Sampling and estimation in hidden populations using respondent-driven sampling. *Sociological Methodology*. 2004; 34(1):193–240.
32. Hosmer, DW.; Lemeshow, S. *Applied logistic regression*. New York: John Wiley & Sons; 2000.
33. Baral S, Trapence G, Motimedi F, Umar E, Iiping S, Dausab F, et al. HIV prevalence, risks for HIV infection, and human rights among men who have sex with men (MSM) in Malawi, Namibia, and Botswana. *PLoS ONE*. 2009; 4(3):e4997. [PubMed: 19325707]
34. Nyoni J, Ross MW. Factors associated with HIV testing in men who have sex with men, in Dar es Salaam, Tanzania. *Sexually Transmitted Infections*. 2012; 88(7):483–83. [PubMed: 22745441]
35. Johnston LG, Holman A, Dahoma M, Miller LA, Kim E, Mussa M, et al. HIV risk and the overlap of injecting drug use and high-risk sexual behaviours among men who have sex with men in Zanzibar (Unguja), Tanzania. *International Journal of Drug Policy*. 2010; 21(6):485–92. [PubMed: 20638262]
36. Sanders EJ, Okuku HS, Smith AD, Mwangome M, Wahome E, Fegan G, et al. High HIV-1 incidence, correlates of HIV-1 acquisition, and high viral loads following seroconversion among MSM. *AIDS*. 2013; 27(3):437–46. Epub 2012/10/20. [PubMed: 23079811]
37. Johnson WD, Diaz RM, Flanders WD, Goodman M, Hill AN, Holtgrave D, et al. Behavioral interventions to reduce risk for sexual transmission of HIV among men who have sex with men. *The Cochrane database of systematic reviews*. 2008; (3):CD001230. Epub 2008/07/23. [PubMed: 18646068]
38. Gregson S, Zhuwau T, Ndlovu J, Nyamukapa CA. Methods to reduce social desirability bias in sex surveys in low-development settings: Experience in Zimbabwe. *Sexually Transmitted Diseases*. 2002; 29(10):568–75. [PubMed: 12370523]
39. Phillips AE, Gomez GB, Boily MC, Garnett GP. A systematic review and meta-analysis of quantitative interviewing tools to investigate self-reported HIV and STI associated behaviours in low- and middle-income countries. *International Journal of Epidemiology*. 2010; 39(6):1541–55. [PubMed: 20630991]

Table 1
Socio-demographic and behavioral characteristics by sexual motivations

Variables	All (N=200)	Love/affection (N=89)	Money (N=73)	p-values
Age	mean (SD) 24.6 (5.3)	24.8 (4.5)	24.1 (4.9)	.348
Highest education level	n (%) ^d			
Completed primary school or less	70 (35.0)	28 (31.5)	31 (42.5)	.051
Some secondary school	53 (26.5)	20 (22.5)	22 (30.1)	
Completed secondary school or higher	77 (38.5)	41 (46.1)	20 (27.4)	
Religious beliefs	n (%)			
Islam	136 (68.7)	57 (64.8)	54 (75.0)	.295
Roman Catholic	42 (21.2)	19 (21.6)	14 (19.4)	
Other	20 (10.1)	12 (13.6)	4 (5.6)	
Total household income in past month (thousand Tanzanian shillings), (N=100) ^b	mean (SD) 194.6 (226.6)	202.8 (275.9)	188.1 (167.5)	.789
Percent of total household income contributed by participants in past month, (N=76)	mean (SD) 44.3 (24.4)	43.0 (21.6)	44.8 (25.3)	.762
Earned money by selling sex in past month	n (%)			
Yes	60 (30.0)	15 (16.9)	36 (50.0)	<.001
Ever had a meaningful sexual relationship with a woman	n (%)			
Yes	133 (66.5)	53 (59.6)	55 (75.3)	.034
Ever married or lived with a female partner	n (%)			
Yes	34 (21.5)	16 (25.0)	13 (20.3)	.526
Sex attracted to	n (%)			
Only men	114 (57.6)	63 (71.6)	33 (45.8)	.004
Mostly men	36 (18.2)	9 (10.2)	16 (22.2)	
Mostly women or only women	48 (24.2)	16 (18.2)	23 (31.9)	
Self-perceived sexual identities	n (%)			
Gay/homosexual	126 (66.3)	67 (77.9)	39 (55.7)	.003
Bisexual	64 (33.7)	19 (22.1)	31 (44.3)	
Sexual activity in past 5 years	n (%)			
Only men	100 (50.5)	53 (60.2)	29 (39.7)	.014
Mostly men	61 (30.8)	25 (28.4)	25 (34.2)	
Men & women equally, or mostly women	37 (18.7)	10 (11.4)	19 (26.0)	

Variables	All (N=200)	Love/affection (N=89)	Money (N=73)	p-values
Number of male & female partners lifetime	16 (9–32)	13.5 (8–31)	20 (11–45)	.036
Number of male & female partners in past 6 months	5 (3–10)	3 (2–6)	7 (4–12)	<.001
Number of female partners lifetime	4 (1–10)	3.5 (1.5–8)	5 (1–10)	.433
Number of gay men known in past 15 years	10 (5–20)	10 (5–20)	10 (5–30)	.622
Number of male partners lifetime	8 (4–20)	7 (3–20)	9 (4–20)	.234
Ever had a male partner who was African but not Tanzanian in life time	n (%)			
Yes	60 (30.3)	20 (23.0)	24 (32.9)	.163
Ever had a male partner who was a non-African foreigner in life time	n (%)			
Yes	58 (29.6)	18 (20.9)	25 (34.7)	.052
Sexual positioning with the past 3 partners	n (%)			
No anal sex	49 (24.5)	35 (39.3)	6 (8.2)	<.001
Insertive only	65 (32.5)	21 (23.6)	29 (39.7)	
Receptive only	66 (33.0)	28 (31.5)	26 (35.6)	
Both insertive and receptive	20 (10.0)	5 (5.6)	12 (16.4)	
Had insertive anal sex with a non-paying male partner in past month	n (%)			
Yes	95 (47.5)	40 (44.9)	34 (46.6)	.928
Had receptive anal sex with a non-paying male partner in past month	n (%)			
Yes	90 (45.0)	43 (48.3)	30 (41.1)	.654
Frequencies of condom use in anal sex with non-paying partner in past month (among who had anal sex with non-paying partners)	n (%)			
Never	53 (33.8)	30 (42.3)	15 (28.3)	.206
Sometimes	46 (29.3)	18 (25.4)	18 (34.0)	
Always	58 (36.9)	23 (32.4)	20 (37.7)	
Being paid by a man for sex in past month	n (%)			
Yes	161 (81.3)	68 (77.3)	63 (87.5)	.095
Number of different paying partners in past month (among who were paid by a man for sex in past month)	1 (1–3)	1 (1–3)	1 (1–3)	.865
Paid a man for sex in past month	n (%)			
Yes	36 (18.5)	22 (25.9)	7 (9.7)	.009
Paid a man for sex in past month (among who were paid by a man for sex in past month)	n (%)			
Yes	30 (19.2)	17 (26.6)	6 (9.7)	.014
Frequencies of asking for condom use in anal sex with paying partners in past 6 months (among who were paid by a man for sex in past month)	n (%)			

Variables	All (N=200)	Love/affection (N=89)	Money (N=73)	p-values
Never	59 (38.8)	36 (53.7)	8 (18.7)	.002
About ½ the time or less	36 (23.7)	11 (16.4)	16 (35.6)	
More than ½ the time	13 (8.6)	5 (7.5)	6 (13.3)	
Every time	44 (28.9)	15 (22.4)	15 (33.3)	
Frequencies of condom use in anal sex with paying partners in past 6 months (among who were paid by a man for sex in past month)	n (%)			
Never	59 (41.3)	36 (55.4)	16 (32.0)	.033
About ½ the time or less	35 (24.5)	12 (18.5)	15 (30)	
More than ½ the time	14 (9.8)	5 (7.7)	7 (14.0)	
Every time	35 (24.5)	12 (18.5)	12 (24.0)	
Use a condom in anal sex with most recent commercial partner (among who were paid by a man for sex in past month)	n (%)			
Yes	62 (39.0)	23 (34.8)	23 (36.5)	.844
Know about lubrication for anal sex	n (%)			
Yes	191 (96.0)	84 (95.5)	70 (95.9)	.893
Frequencies of using lubrication for anal sex	n (%)			
Never	6 (3.0)	3 (3.4)	2 (2.7)	.004
Rarely	28 (14.1)	22 (25.0)	4 (5.5)	
Often	7 (3.5)	5 (5.7)	1 (1.4)	
Very often	36 (18.2)	12 (13.6)	18 (24.7)	
Every time	121 (61.1)	46 (52.3)	48 (65.8)	
Self-perceived risk of HIV infection ^c	n (%)			
No risk	22 (11.5)	8 (9.5)	10 (14.3)	.605
Low risk	9 (4.7)	7 (8.3)	2 (2.9)	
Moderate risk	20 (10.5)	10 (11.9)	5 (7.1)	
High risk	140 (73.3)	59 (70.2)	53 (75.7)	
HIV status ^d	n (%)			
Positive	52 (30.2)	20 (27.0)	23 (35.4)	.287

^a All percentages in the table were estimated when missing cases for each according variable were excluded.

^b The other 100 cases did not know their total household income in past month; this proportion of missing data did not statistically differ between two groups (p-value=.485).

^c Analysis excluded those who knew their HIV+ status prior to this study (N=191).

^dN=172; the other 28 participants did not agree to be tested in this study.

Table II

Adjusted odd ratios (95% confidence intervals) for the association between condom use in anal sex and sexual motivation

Independent variables	Dependent variables	
	Never asked for condom use with paying partners in past 6 months (1=never)	Never used a condom with paying partners in past 6 months (1=never)
Sexual motivation		
Love/affection	4.51 (1.93–10.53) ***	3.27 (1.54–6.94)**
Money	1	1
Highest education level		
Completed primary school of less	1.18 (.49–2.89)	1.21 (.51–2.86)
Some secondary school	.36 (.13–.97)*	.75 (.30–1.87)
Completed secondary school or higher	1	1

* p-values <.05;

** p-values <.01;

*** p-values <.01