Published in final edited form as:

AIDS Care. 2013 ; 25(6): 784–792. doi:10.1080/09540121.2012.748161.

Community environments shaping transactional sex among sexually active men in Malawi, Nigeria, and Tanzania

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Abstract

Transactional sex, or the exchange of sex for material goods or money, is a risky sexual behavior that has been linked to HIV/AIDS and gender-based violence. Throughout sub-Saharan Africa, transactional sex remains a common practice, putting men and women at risk of HIV. However, little is known of how community environments shape men's participation in risky transactional sex. This analysis examines community-level influences on participation in risky transactional sex among sexually active men in three African countries (Malawi, Tanzania, and Nigeria). The analysis uses Demographic and Health Survey (DHS) data to examine the association between men's report of risky transactional sex and community characteristics including economic, gender norms, HIV behavior and knowledge, and demographic factors. The results show that men residing in communities with more female education and later age of first birth are less likely to report risky transactional sex, while men who live in communities where men report higher number of sexual partners are more likely to report risky transactional sex. While programmatic interventions should continue to improve women's status individually and relative to men, such efforts should be extended to recognize that many community and cultural influences also affect men's sexual behavior. Programs that understand, discuss, and challenge community factors that influence men's sexual behavior may be able to provide a more effective intervention resulting in opportunities for communities to initiate behavioral change.

Keywords

transactional sex; contextual factors; community; Africa; men

Introduction

Transactional sex is a common practice in sub-Saharan Africa; studies report transactional sex prevalence rates between 5% and 80% (Chatterji, Murray, London, & Anglewicz, 2005; Dunkle et al., 2007; Dunkle et al., 2004b; Hunter, 2002; Jewkes, Vundule, Maforah, & Jordaan, 2001; Kaufman & Stavrou, 2004; Luke, 2003; Luke & Kurz, 2002; Marsiglio, 1998; Matasha et al., 1998; Meekers & Calves, 1997; Nyanzi, Pool, & Kinsman, 2001; Nzyuko et al., 1997; Weiss, Whelan, & Gupta, 1996). In addition, research has shown that participation in transactional sex is linked to negative health outcomes, including gender-based violence, and risk of HIV acquisition for women (Dunkle et al., 2004a, 2004b; Silberschmidt & Rasch, 2001). While some previous studies have examined the characteristics associated with participation in transactional sex among African women, few have considered risk factors associated with men participating in transactional sex. In

addition, very few studies have demonstrated how the environment in which men live shapes participation in transactional sex. This analysis aims to understand how the reporting of risky transactional sex among African men is associated with residence in communities with particular economic, social, and cultural traits, specifically, how community-level gender-related characteristics shape the reporting of risky transactional sex among men.

Background

Transactional sex is defined as the exchange of sex for material goods or money, with the majority of transactional sex exchanges defined as men distributing and women receiving material goods. Transactional sex differs from commercial sex work in that participants may also be “boyfriends” and “girl-friends” rather than “client” and “sex worker,” also the exchange of material goods is a part of a broader set of obligations (Hunter, 2002). A study of transactional sex in 12 African countries found that unmarried and younger men and women are the most likely to participate in transactional sex (Chatterji et al., 2005). Peer pressure for sexual experience for males, or for luxury goods in females, may also play a role in younger men and women’s participation in transactional sex (Chatterji et al., 2005).

In addition, risky transactional sex, or transactional sex without a condom, exists on a continuum based on the economic status of women. Among women in poverty, transactional sex is an economic survival strategy and forms a power imbalance, based on money and violence (Dunkle et al., 2007), positioning women at a disadvantage in sexual negotiations (Maganja et al., 2007). Men may offer more money to engage in more risky sexual behaviors, such as no condom use (Maganja et al., 2007). Among women who are less poor, transactional sex can provide women an opportunity for social mobility and economic independence (Swidler & Watkins, 2007). In these relationships, women may be more able to negotiate condom use (Maganja et al., 2007; Poulin, 2007; Swidler & Watkins, 2007).

However, the role of larger community-level factors in shaping participation in transactional sex has not been examined in sub-Saharan Africa. Communities that have highly stratified gender expectations and opportunities, and place women at an economic and social disadvantage, may have a higher prevalence of risky transactional sex as they create fewer alternative pathways for economic survival for women. This paper examines how community measures of economics, knowledge, behavior, and demographics shape men’s reporting of participation in transactional sex.

Data

Data for this analysis are taken from the nationally representative Demographic and Health Surveys (DHSs) for Malawi (2004), Tanzania (2004–2005), and Nigeria (2003). The DHS men’s questionnaires included a module on HIV/AIDS and sexual behavior. This module is standardized across all three countries and collects data on sexual behavior, knowledge and attitudes regarding HIV/AIDS, and attitudes toward intimate partner violence. The overall response rate ranged from 86% to 92% in the three countries. Analysis was restricted to sexually active men, defined as men who reported ever having sex; the analysis sample sizes were Malawi 2893 (aged 15–54), Tanzania 2110 (aged 15–54), Nigeria 1799 (aged 15–59).

The outcome of interest, risky transactional sex, was measured as a dichotomous variable. The DHS asks three questions: “*Have you ever paid for sex?*,” “*How long ago was the last time you paid for sex?*,” and “*The last time you paid for sex, was a condom used on that occasion?*” The variable was coded as 1 if they reported yes to transactional sex in the past 12 months and reported that no condom was used, and 0 if they reported not having transactional sex in the past 12 months, or yes to having transactional sex, but with a condom. The inclusion of “*paid*” in the questions may lead the respondent toward reporting

monetary encounters with commercial sex workers, thus the analysis essentially models the reporting of participation in paid transactional sex. A substantial body of evidence exists to suggest that for many women in Africa, the greatest risk of HIV infection lies in marriage, and the greatest source of HIV infection lies in unprotected sex with their husbands (Amaro, 1995; Dunkle et al., 2008; Pulerwitz, Izazola-Licea, & Gortmaker, 2001; Smith, 2007). Hence, for women, a significant risk of HIV infection from their husbands/partners lies in their husband's risk of HIV infection through participation in risky transactional sex.

Methods

A separate multilevel logistic model was fitted to the outcome of reporting of risky transactional sex for men in each country using STATA 11.1 software package (College Station, Texas), with the same model fitted for each country. Collinearity checks were performed for each model, with no evidence of collinearity identified. A multilevel modeling approach was utilized to account for the hierarchical nature of the data, with men clustered within communities (Primary Sampling Units [PSUs]). The inclusion of PSU-level random effect terms allows the intercept to vary across communities, providing a measure of the extent to which the odds of reporting transactional sex varies between communities, and the degree of PSU-level unexplained variance in the reporting of risky transactional sex. We do not include household as a random intercept, as there were no households in which more than one male adult was interviewed. Individual- and household-level factors were drawn from previous studies of the risk factors for transactional sex and the literature on men's extramarital sexual activity in Africa. The key covariates in the models were the community-level variables. The DHS does not directly collect community-level data; therefore, proxy community-level variables were derived based on PSUs. In this analysis, the PSU is a measure of an individual's community, and community variables were created by aggregating individual data to the PSU. Each PSU contains approximately 30 households, with a range of 15–50 individuals; PSUs with fewer than 10 respondents were excluded from the analysis. To examine how participation in transactional sex may be shaped by relative gender norms and opportunities required the use of data from both the men and women's DHS. Community-level variables were created for the women's survey, again by aggregating individual data to the PSU level; these community characteristics were then linked to the men's survey by the PSU identifier. Four domains of community-level variables were explored: community economics, community gender norms, community HIV behavior and knowledge, and community demographics (Table 1).

Community economics

Women's financial dependence on men, especially in lower-income settings, is a result of the lack of opportunities for women to accrue capital, in the form of education and employment (Barker & Ricardo, 2005; Hunter, 2005). In order to examine how community economics shape men's participation in risky transactional sex, the analysis uses four community-level variables: the percentage of women and men in the community who are currently employed and the percentage of women and men in the community with at least primary education.

Community gender norms

Dunkle et al. (2007) found that men who reported more equitable gender attitudes were less likely to report main partnerships underpinned by exchange. The analysis uses three measures of community behavior and knowledge: the mean number of sexual partners for men in the past 12 months, the mean score for men on an index measuring acceptability of wife-beating, and the mean score for men on an index measuring household decision-making. Each index was first created at the individual level, and aggregated to the PSU. The

index created to measure attitudes toward wife-beating is comprised of five variables measuring the acceptability of wife-beating under five circumstances; men who score five on this index approve of wife-beating under each of these circumstances. The index of decision-making is created from five variables measuring men's attitudes to their roles in five decisions; men who score five on this index report that they have the final say in each of these decisions.

Community HIV behavior and knowledge

To assess HIV risk behavior and knowledge among men at the community level, the percentage of men using a condom at last intercourse and the percentage of men and women who know three ways to avoid HIV infection were considered.

Community demographics

Conservative values regarding expected gender roles within a community may influence men's participation in transactional sex due their greater economic and social freedom and prevailing attitudes that prescribe more autonomy to men. To examine this, the analysis includes the mean age at marriage for women and mean age of first birth for women. Women with younger ages at marriage or birth may have fewer alternative pathways to gain social capital (e.g., education or employment), or may be following traditional gender scripts that require early child-bearing and marriage of women.

Results

The percentage of men reporting risky transactional sex varied across the three countries: in Malawi, 12.37% of men aged 15–54 reported paying for sex and not using a condom in the past 12 months, and the percentages in Nigeria and Tanzania were lesser with 9.78% and 6.73% of men aged 15–59 and 15–54, respectively (Figure 1). A greater percentage of men reported paying for sex in the past 12 months regardless of condom use (Malawi: 20.93%, Tanzania: 14.02%, and Nigeria: 14.37%). In general, the men included in the analysis were from rural areas, reported regular exposure to radio, television, and newspaper, and were non-smokers (Table 2).

Individual- and household-level results

The proportion of men reporting risky transactional sex increases significantly among men aged over 40 in Nigeria and differs significantly between urban and rural areas in Malawi and Nigeria. In all the three countries, a smaller proportion of men with a higher level of educational attainment report risky transactional sex. Similarly, the proportion of men who report risky transactional sex decreases with increased age of sexual debut in Malawi and Tanzania. In Nigeria, a greater proportion of men who are married/cohabitating or divorced/widowed/separated reported risky transactional sex than did men who were never married. Finally, a greater proportion of men in the lowest wealth quintile reported risky transactional sex than in higher wealth quintiles.

Community-level results: community economics

In all the three countries, men were less likely to report risky transactional sex in communities where a greater proportion of women had at least a primary education [Malawi OR 0.27 (0.14, 0.52) Tanzania OR 0.50 (0.19, 1.29), and Nigeria OR 0.22 (0.18, 0.59)]. Interestingly, men's educational attainment at the community level was only significantly associated with risky transactional sex in one country (Table 3). Men in communities where a greater proportion of men had at least primary education were 30% less likely to report risky transactional sex in Nigeria [OR 0.70 (0.25, 0.90)]. While men's employment status at

the community level was not significantly associated with risky transactional sex, however, in Nigeria, in communities where a greater proportion of women were currently employed, men were less likely to report risky transactional sex [OR 0.38 (0.16, 0.89)].

Community gender norms

The mean score for men on attitudes toward decision-making was negatively associated with risky transactional sex (Nigeria OR 0.69 (0.42, 0.99)).

Community HIV behavior and knowledge

Mean number of sexual partners for men in the community in the previous 12 months was positively associated with risky transactional sex in all the three countries [Malawi OR 1.67 (1.24, 2.24), Tanzania 1.34 (1.04, 1.73), and Nigeria (OR 2.36 (1.92, 2.92)]. In communities with a higher proportion of men reporting condom use at last intercourse, men were less likely to report risky transactional sex in Malawi [OR 0.57 (0.28, 0.98)]. Men in communities where a greater proportion of men and a greater proportion of women knew of three ways to avoid HIV infection were less likely to report risky transactional sex in Tanzania and Nigeria.

Community demographics

Men in communities where there was a higher mean age at first birth for women were less likely to report risky transactional sex [Malawi OR 0.86 (0.73, 0.99) and Tanzania OR 0.81 (0.67, 0.98)].

The PSU-level random intercept term was significant in all the three countries, demonstrating that there is a significant, unexplained variation in the reporting of participation in risky transactional sex between men across communities.

Discussion

At the individual and household levels, there were a few surprising results. The results for Tanzania show evidence that men with any education were more likely to partake in risky transactional sex, while in Nigeria only men with primary education were more likely to participate in risky transactional sex. Generally, it is believed that men's access to more capital – for example through education – results in more disposable income to participate in transactional sex; however, household wealth index was not positively associated with risky transactional sex, and hence it is unlikely that the relationship between education and participation in risky transactional sex can be explained by increases in income. In fact, in Nigeria, men in a higher wealth quintile are less likely to participate in risky transactional sex. This result, perhaps, arises from the focus on *risky* transactional sex; small levels of education (such as primary education) may afford opportunities for social interaction and employment outside the home for men, which in turn provide opportunities for social and sexual mixing. However, these low levels of education are insufficient to provide exposure to information or the means to encourage participation in safer rather than risky transactional sex. Higher levels of educational attainment are thus associated with lower, or less significant, associations with risky transactional sex. However, the diversity in associations between education and participation in risky transactional sex – there were no significant educational variations in Malawi – points to the need for further, and deeper, investigative work to understand the likely locally contextually specific relationship between education and transactional sex.

In communities characterized by greater gender equity – with high rates of participation in education and employment among women – the levels of participation in risky transactional

sex were generally lower. In contexts in which the opportunities to accrue economic capital are less biased toward men, women may be less economically dependent on men, and may have more negotiating power in relationships, thus increasing their ability to negotiate for condom use or reducing the need to participate in transactional sex. Higher levels of educational attainment may also foster greater negotiating powers for women, providing them with increased functional autonomy that reduces both the need to participate in transactional sex and the ability to control the terms of transactional sex. These may also be communities in which more value is placed on providing opportunities for women to accrue economic capital. Thus, it may not be the resources that come with education and employment alone that are reducing sexual risk-taking among men; it may be endogeneity – that there is something about these types of communities that allow women to achieve these resources are also generally more supportive of the rights of women. Living a community in which women had their first birth later also reduced participation in risky transactional sex among men. When women delay their first birth they are more able to take advantage of opportunities for economic and social advancement, and the ability to control and negotiate their own sexual and reproductive debut may be linked to their ability to control participation in risky transactional sex.

Lastly, men in communities in which men report a higher mean number of sexual partners were more likely to report risky transactional sex. This result may suggest that participation in risky transactional sex is just one part of a risk profile of a community and often occurs simultaneously in communities that have high levels of other risk factors, such as large numbers of sexual partners. Also, having a large number of sexual partners may be one route to achieving a traditional notion of masculinity, and thus community environments that support this notion may also be supporting men's participation in risky transactional sex.

These factors, however, do not fully explain the role of the community in shaping participation in risky transactional sex. Significant community-level variation remained in all countries, demonstrating the need for further investigation and data collection efforts to examine other dimensions of community environments that may influence the sexual behaviors of men. For example, the models do not include measures of the presence and quality of health services, or the presence of programmatic efforts aimed at reducing HIV transmission, the presence of which may mediate the relationships between community gender environments and risky transactional sex by providing access to information on risk reduction and condoms. Additionally, stronger measures of gendered power dynamics at the community level, or prevalent norms around condom use, may also help reduce unexplained the community-level variation.

There are several limitations to this study. First, the cross-sectional nature of the DHS data means that we identify factors associated with participation in risky transactional sex, and do not imply causality. The questions on participation in transactional sex ask if the respondent had *paid* for sex, which may focus the respondent toward more traditional forms of monetary transactional sex with commercial sex workers, and omit the reporting of other forms of transactional sex, or transactional sex that may occur within relationships. The analysis uses DHS data that are now several years old, and there may have been significant increases in programmatic efforts in the three study countries since then that have led to shifts in the community environments. The analysis relies on self-reported sexual behavior data, which often result in over-reports of sexual activity (Glynn et al., 2001). The DHS data, however, remains the only routinely collected and comparable data source on men's sexual behavior in Africa, and although the potential for misreporting of behavior is acknowledged, the new information gained through this analysis far outweighs this potential bias. The community-level variables used in the analysis are derived from individual-level data, due to the absence of comparable community-level data. As such, information on

health facilities and ongoing educational and behavioral change activities in the community are missing from the analysis, an absence that is likely reflected in the significant random effects terms. Communities are conceptualized as small geographic units or PSUs. It is possible, that these PSUs do not accurately capture what individuals believe to be their actual community. Future analysis of this sort should focus on other types of community, for example ethnic or religious groups, and examine how shared characteristics of those groups influence the risk-taking of their members. Finally, the analysis modeled participation in risky transactional sex; there were a significant percentage of men who reported participating in transactional sex in which a condom was used, and further analysis is warranted to examine if the community elements shaping participation in safer transactional sex differ to those identified here for risky transactional sex.

Conclusion

The results show several elements of community environments that are associated with participation in risky transactional sex and raise a number of implications. From a methodological perspective the results highlight the need for further data collection efforts to accurately capture the elements of community environments that shape the sexual behavior of men in high HIV prevalence settings. HIV behavioral interventions should engage in a more holistic view of gender that moves beyond individual measures of gender and autonomy and includes recognition of the broader community-level social, cultural, and behavioral forces that shape gender inequities and create unequal opportunities and risk environments for men and women. For example, interventions that shift women's access to social capital, e.g., through micro-credit programs, may have residual effects on shifting gender power dynamics and reducing financial dependence of women on men. Additionally, programs that understand, discuss, and challenge community factors that influence men's sexual behavior, through community-level dialogue on the roles of men and women, may be able to provide a more effective interventions resulting in opportunities for communities to initiate behavioral change.

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Figure 1.
Distribution of reported risky transactional sex among men aged 15–59 in Malawi (2004)
Tanzania (2004–2005), and Nigeria (2003).

Table 1

Operational definitions for community-level variables used in the modeling of risky transactional sex among men in Malawi, Tanzania, and Nigeria.

Community economics	
Percentage of men currently employed	Percentage of men in the community who are currently employed
Percentage of women currently employed	Percentage of women in the community who are currently employed
Percentage of men with at least primary education	Percentage of men in the community with at least a primary education
Percentage of women with at least primary education	Percentage of women in the community with at least a primary education
Community behavior and knowledge	
Mean number of sexual partners for men in previous 12 months	Mean number of sexual partners for men in the previous 12 months in the community
Percentage of men using a condom at last intercourse	Percentage of men in the community who used a condom at last intercourse
Percentage of men who know three ways to avoid HIV infection	Percentage of men in the community who know three ways to avoid HIV infection
Percentage of women who know three ways to avoid HIV infection	Percentage of women in the community who know three ways to avoid HIV infection
Mean score for men on attitudes toward violence against women	6-point scale of attitudes toward domestic violence where a lower score indicates that violence is not justified
Mean score for men on attitudes toward male roles	5-point scale of men's attitudes toward their roles in household decision-making where a higher score reflects men who report making the final decision
Community demographics	
Mean age at marriage for women	Mean age at marriage for women aged 15–49 in the community
Mean age at first birth for women	Mean age at first birth for women aged 15–49 in the community

Table 2

Background characteristics and distribution of risky transactional sex by individual and household level factors, among sexually active men aged 15–54 in Malawi, Tanzania, and Nigeria.

	Malawi (n = 2893)			Tanzania (n = 2110)			Nigeria (n = 1799)		
	Freq dist (%)	% reporting risky transactional sex		Freq dist (%)	% reporting risky transactional sex		Freq dist (%)	% reporting risky transactional sex	
Age									
15–29	12.41	14.48		12.89	9.19		7.00	5.56**	
20–24	18.18	11.60		18.01	5.53		15.73	7.42**	
25–29	20.81	9.63		17.49	8.13		15.95	5.57**	
30–34	16.28	12.31		17.11	7.20		15.06	7.38**	
35–39	9.92	12.20		13.32	3.56		11.23	6.44**	
40+	22.40	14.51		21.18	6.71		35.02	15.71**	
Residence									
Urban	14.73	9.39*		22.70	5.85		40.08	7.63*	
Rural	85.27	12.89*		77.30	6.99		59.92	11.22*	
Education									
None	12.13	12.25**		12.89	3.68**		23.51	10.87**	
Primary	63.15	14.34**		73.79	7.96**		26.85	13.66**	
Secondary	22.78	7.13**		9.95	3.33**		36.52	8.07**	
Higher	1.94	10.71**		3.36	1.41**		13.12	4.66**	
Age at first sex									
<15	29.42	15.86**		25.59	7.96**		13.45	12.40	
16–20	49.91	12.33**		51.99	7.57**		40.41	10.59	
21+	20.67	7.53**		22.42	3.38**		46.14	8.31	
Marital status									
Never married	23.19	11.77		28.72	7.76		30.18	7.18**	
Married/cohabitating	73.07	12.58		65.36	5.95		66.48	10.54**	
Divorced/widowed/separated	3.73	12.04		5.92	10.40		3.34	18.33**	

	Malawi (n = 2893)		Tanzania (n = 2110)		Nigeria (n = 1799)	
	Freq dist (%)	% reporting risky transactional sex	Freq dist (%)	% reporting risky transactional sex	Freq dist (%)	% reporting risky transactional sex
Reports regular exposure to radio, television, and newspaper						
Yes	54.20	10.97*	65.64	6.14	61.42	9.77
No	45.80	14.04*	34.36	7.86	38.58	9.80
Knows three ways to avoid HIV transmission						
Yes	63.83	11.75	67.89	7.51*	70.14	10.57
No	36.17	12.98	32.11	5.04*	29.86	10.74
Index of attitudes toward male roles (mean)	0.35	0.40	0.98	1.21**	0.79	0.75
Currently smokes tobacco						
Yes	24.02	13.09	26.30	9.37**	14.67	19.32**
No	75.98	12.15	73.70	5.79**	85.33	8.14**
Household wealth quintile						
1	13.38	11.89	17.96	9.23*	19.07	15.16**
2	20.67	14.88	19.81	7.89*	16.73	14.62**
3	23.64	12.28	18.82	7.56*	18.73	8.31**
4	22.81	12.73	22.56	4.83*	20.57	7.84**
5	19.50	9.75	20.85	4.77*	24.90	5.13**

* Significant at <0.05 level;

** significant at <0.01 level (tests are Chi-square or Fisher's exact tests as appropriate).

Table 3

Multilevel model for risky transactional sex among men aged 15–54 in Malawi, Tanzania, and Nigeria.

Individual	Malawi	Tanzania	Nigeria
Age (ref. = 15–19)			
20–24	0.95 (0.64, 1.41)	1.52 (0.86, 2.69)	2.79 (1.06, 7.37)
25–29	1.16 (0.75, 1.82)	2.50 (1.13, 4.78)	4.43 (1.63, 9.54)
30–34	1.51 (0.94, 2.43)	2.24 (1.11, 4.53)	4.73 (1.63, 9.42)
35–39	1.20 (0.75, 2.01)	1.36 (0.63, 2.96)	6.90 (2.23, 9.87)
40+	1.13 (0.70, 1.81)	1.55 (0.75, 3.18)	7.89 (4.03, 9.42)
Resident in a rural area (ref. = urban)	0.91 (0.66, 1.25)	0.83 (0.52, 1.33)	0.98 (0.66, 1.44)
Education (ref. = none)			
Primary	1.09 (0.77, 1.55)	3.17 (1.66, 6.06)	1.97 (1.11, 3.48)
Secondary	1.15 (0.76, 1.74)	2.35 (1.05, 5.55)	1.74 (0.91, 3.01)
Higher	1.14 (0.52, 2.50)	1.43 (1.07, 4.73)	0.99 (0.46, 2.89)
Age at first sex (ref. <15)			
16–20	0.69 (0.55, 0.85)	1.01 (0.72, 1.38)	0.76 (0.45, 1.35)
21+	0.34 (0.25, 0.47)	0.47 (0.28, 0.78)	0.28 (0.16, 0.47)
Marital status (ref. = never married)			
Married/cohabitating	1.01 (0.71, 1.42)	0.59 (0.37, 0.95)	0.70 (0.39, 0.94)
Divorced/widowed/separated	1.46 (0.86, 2.49)	1.18 (0.63, 2.22)	1.94 (0.87, 4.32)
Reports regular exposure to radio, television, and newspaper	1.12 (0.90, 1.38)	0.71 (0.52, 0.98)	0.90 (0.76, 0.98)
Knows three ways to avoid HIV transmission	0.10 (0.88, 1.17)	0.56 (0.20, 0.91)	1.24 (0.88, 1.78)
Index of attitudes toward male roles	1.14 (1.01, 1.32)	1.15 (0.98, 1.34)	1.22 (0.98, 1.51)
Currently smokes tobacco	1.08 (0.86, 1.35)	1.61 (1.18, 2.20)	2.96 (2.03, 4.96)
Household			
Household wealth quintile (ref. = 1)			
2	1.14 (0.81, 1.61)	1.02 (0.65, 1.60)	0.67 (0.40, 1.12)
3	1.16 (0.83, 1.63)	1.10 (0.69, 1.74)	0.45 (0.26, 0.78)
4	1.18 (0.84, 1.61)	1.08 (0.61, 1.63)	0.43 (0.24, 0.79)
5	1.60 (1.08, 2.39)	0.91 (0.47, 1.71)	0.30 (0.14, 0.60)
Community economics			
Percentage of men currently employed	1.04 (0.69, 1.55)	0.46 (0.16, 1.30)	1.79 (0.63, 5.07)
Percentage of women currently employed	1.14 (0.72, 1.79)	1.89 (0.69, 5.14)	0.38 (0.16, 0.89)
Percentage of men with at least primary education	0.92 (0.45, 1.89)	1.02 (0.37, 2.77)	0.70 (0.25, 0.90)
Percentage of women with at least primary education	0.27 (0.14, 0.52)	0.50 (0.19, 1.29)	0.22 (0.18, 0.59)
Community behavior and knowledge			
Mean number of sexual partners for men in previous 12 months	1.67 (1.24, 2.24)	1.34 (1.04, 1.73)	2.36 (1.92, 2.92)
Percentage of men using a condom at last intercourse	0.57 (0.28, 0.98)	0.78 (0.36, 1.70)	0.98 (0.37, 2.59)
Percentage of men who know three ways to avoid HIV infection	0.96 (0.54, 1.46)	0.37 (0.06, 0.98)	0.32 (0.08, 0.98)
Percentage of women who know three ways to avoid HIV infection	0.64 (0.25, 1.16)	0.54 (0.12, 0.84)	0.23 (0.07, 0.58)
Mean score for men on attitudes toward violence against women	0.92 (0.67, 1.27)	0.93 (0.77, 1.11)	1.16 (0.96, 1.42)
Mean score for men on attitudes toward male roles	0.86 (0.66, 1.12)	1.02 (0.74, 1.40)	0.69 (0.42, 0.99)

Individual	Malawi	Tanzania	Nigeria
Community demographics			
Mean age at marriage for women	1.13 (0.97, 1.32)	0.90 (0.76, 1.06)	1.04 (0.88, 1.23)
Mean age at first birth for women	0.86 (0.73, 0.99)	0.81 (0.67, 0.98)	0.96 (0.80, 1.14)
Random intercept term (standard error)			
PSU-level random intercept	0.683 (0.071)	0.274 (0.98)	0.357 (0.84)

Note: Figures in bold are significant at 5% level.