

HIV Vulnerability of Men Who Have Sex with Men in Developing Countries: Horizons Studies, 2001–2008

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SYNOPSIS

While male-to-male sexual behavior has been recognized as a primary risk factor for human immunodeficiency virus (HIV), research targeting men who have sex with men (MSM) in less-developed countries has been limited due to high levels of stigma and discrimination. In response, the Population Council's Horizons Program began implementing research activities in Africa and South America beginning in 2001, with the objectives of gathering information on MSM sexual risk behaviors, evaluating HIV-prevention programs, and informing HIV policy makers. The results of this nearly decade-long program are presented in this article as a summary of the Horizons MSM studies in Africa (Senegal and Kenya) and Latin America (Brazil and Paraguay), and include research methodologies, study findings, and interventions evaluated. We also discuss future directions and approaches for HIV research among MSM in developing countries.

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From the beginning of the human immunodeficiency virus (HIV) epidemic, male-to-male sexual behavior has been recognized as a primary risk factor for HIV and sexually transmitted infections (STIs). Since that time, most HIV-related behavioral research among men who have sex with men (MSM) has been conducted in North America and Europe,¹ and now HIV-prevention counseling and testing are cornerstones for HIV programs serving MSM populations in the developed world. Research from Latin America² included assessments and evaluations of MSM and their HIV risk from Mexico,^{3,4} Brazil,⁵⁻⁷ and the Dominican Republic.⁸ In Asia, recognition of the increased risk of HIV among MSM was built upon a limited number of assessments in Thailand,⁹ Cambodia,¹⁰ and China.¹¹

In Africa, however, there has been a profound absence of any policy, program, or research initiative that assessed MSM as a vulnerable population or even considered MSM as a distinct subpopulation. Since the first appearance of HIV on the continent, most African HIV and acquired immunodeficiency syndrome (AIDS) policies were based on the belief that unprotected heterosexual contact was the primary driver of the African epidemic.¹²⁻¹⁴ This was a key factor in convincing African policy makers of the severity of the epidemic, and since that time, nearly all HIV-prevention programs in Africa have focused exclusively on the risks associated with vaginal intercourse. South Africa was one exception, where its post-apartheid constitution provided legal protection to homosexuals and empowered some grassroots HIV-prevention initiatives, albeit mainly by organizations operating in urban settings that did not widely target predominantly black townships.

Prior to 2000, research on MSM in Africa was limited to occasional ethnographic or qualitative studies,¹⁵⁻¹⁷ but no population-based surveys or assessments attempted to quantify and characterize MSM as a subpopulation within African social structures, let alone assess or survey sexual behaviors and exposure to STIs. In the late 1990s, African heads of states Daniel arap Moi of Kenya and Robert Mugabe of Zimbabwe both publicly denied that indigenous homosexuality or same-sex sexual behavior existed in Africa without coercion through Western or foreign influence.¹⁸ Such prominent public statements reflect a deeply entrenched culture of homophobia that persists today. Recent opinion articles in African newspapers state that same-sex sexualities “have been non-African since time immemorial,”¹⁹ and “violate the cultural, religious, moral, and legal norms of the country.”²⁰

The denial of MSM behavior, and the stigma associated with it, discouraged African researchers from objectively evaluating homosexuality for fear that

others would ridicule them and question their sexual orientation.²¹ However, limited qualitative documentation as well as an abundance of anecdotal evidence suggested that MSM are present in Africa and likely are at increased risk for HIV, but are largely invisible from researchers and policy makers. Given this discrepancy, the Horizons program expanded its portfolio to investigate the vulnerability of MSM in Africa, first through descriptive assessments, and then followed by intervention studies in both Senegal and Kenya.

In contrast to Africa, the MSM populations in Central and South America have experienced different challenges. While targeted homophobia and discrimination is still an essential problem in the region, the near institutional denial seen in Africa does not exist in the same form. The distinction is important as it affected the strategy for developing a research portfolio on either continent. In Africa, Horizons determined that it was most important to implement studies to describe and characterize the population as a way to convince policy makers that MSM did indeed exist. However, in South America, the Horizons program was able to focus on analysis of MSM behaviors to develop new evidence-based approaches to risk reduction and to guide prevention programs. The results of this nearly decade-long program are presented in this article as a summary of the Horizons MSM studies in Africa and Latin America, including research methodologies, study findings, and programs evaluated. We also discuss future directions and approaches for HIV research on MSM in developing countries.

RESEARCH STRATEGIES

Horizons and partners designed, conducted, and published the first large-scale descriptive studies of African MSM in 2001 in Dakar, Senegal,²² and 2004 in Nairobi, Kenya.²³ Both studies utilized quantitative and qualitative survey methods including in-depth interviews and ethnographic observations. These studies documented the existence of MSM populations within major African cities, previously unknown to national AIDS programs, as well as risk behaviors that rendered these populations especially vulnerable to HIV. Following the success of these initial assessments, Horizons and regional partners expanded the research agenda to include an intervention study of MSM in Senegal²⁴ and of male sex workers who have sex with men in Mombasa, Kenya.²⁵ The latter activity also utilized capture-recapture methods to enumerate the number of active male sex workers, estimated at more than 700 in Mombasa alone.²⁶

In the South American studies, Horizons and its

partners incorporated recent innovations in probability sampling for MSM, as well as HIV testing of the study population to produce seroprevalence estimates. The Brazilian study was conducted in the southeastern city of Campinas.²⁷ In Paraguay, MSM were enrolled for a study in Ciudad del Este, on the border of Brazil and Argentina, with a large concentration of high-risk populations such as truck drivers, drug users, and sex workers (male and female).²⁸

Recruiting hidden MSM with snowball, respondent-driven, and time-location sampling

Entrenched homophobia makes identifying MSM a particularly challenging task. The Horizons studies utilized three different sampling strategies designed to recruit members of hard-to-reach populations (e.g., drug users or sex workers). Snowball sampling, in which participants randomly recruit peers from their personal networks, was used to reach MSM in the Dakar and Nairobi studies. Snowball sampling, however, is a nonprobability sampling method, which may fail to reach some MSM and produce biased results.²⁹ The two Latin American studies used respondent-driven sampling (RDS), a more rigorous methodology similar to snowball sampling that utilizes more controlled peer recruitment and statistical weights to provide theoretically unbiased population estimates.^{30–33} RDS has been successful in recruiting MSM in previous studies in other countries,^{34–36} including Uganda³⁷ and Zanzibar³⁸ in Africa, thus establishing the method as feasible and methodologically preferable to snowball sampling. Despite the advantages of RDS, recruitment of MSM proved challenging in the Latin American studies, though this appeared to be related to fears of disclosure and testing for HIV rather than to the methodology itself. Nevertheless, these studies are the first to provide population estimates for HIV prevalence and associated risk behaviors among MSM in Brazil and Paraguay, and led to the adoption of RDS for the national surveillance of high-risk populations in Brazil.

Time-location sampling, in which participants are sampled from a list of contact locations and the times in which they are found at these venues, was used to sample male sex workers in Mombasa. First, Horizons and partners successfully implemented a capture-recapture enumeration of male sex workers who sell sex to men.²⁶ This entailed conducting two enumerations of male sex workers one week apart, whereupon men counted in only one week or both weeks (“recaptures” or matches) enabled a population estimation derived from capture-recapture calculation. This activity also produced detailed data on locations and times where male sex workers were seeking clients. These data were

utilized to produce the time-location sampling frame. Research staff avoided public scrutiny by training MSM as “mobilizers” to identify male sex workers at these locations and escort them to a central location for interviewing. These methodologies were effective in Mombasa, but further study is needed to compare the generalizability and reliability of time-location sampling vs. RDS among male sex worker populations.

Qualitative data and local partnerships as critical elements

The African studies benefited from partnerships with anthropologists from respected local collaborating institutions in Senegal (Cheikh Anta Diop University) and Kenya (University of Nairobi), who supplemented the quantitative behavioral surveys with in-depth interviews and ethnographic observations. Qualitative interviews with MSM revealed that the majority of their male sexual partners were local (i.e., from the same communities) and that first sexual experiences with men often took place during adolescence with friends or acquaintances. Such results refuted prevailing beliefs in Africa that homosexual behavior was the result of foreign coercion. These partnerships proved critical in establishing the legitimacy of the research in Africa and provided a foundation for future partnerships with government agencies in both countries.

HIV AND STI RISK AMONG MSM

Sexual risk behaviors and networks

While the experience and realities of MSM in Africa and South America were different, results highlighted HIV vulnerabilities across all the Horizons studies. The Table summarizes the population characteristics and reported sexual behaviors of the six MSM studies described in this article. In the African studies, high levels of insertive and receptive anal sex with inconsistent condom use were the norm. In addition, high proportions of multiple or concurrent sex partners were reported in all studies, but were particularly high among Mombasa male sex workers and MSM in Nairobi, Campinas, and Ciudad del Este.

Reported condom use varied widely across studies. The 2001 assessment of MSM in Dakar found low levels of condom use with last male insertive partners (23%) and receptive partners (14%). Follow-up surveys in Dakar in 2003 and 2005, and in Nairobi in 2004, documented condom use at last sex at more than 70%. Consistent condom use (considered a more important indicator in terms of HIV risk reduction^{39,40}) was reported by more than 50% of respondents in these surveys, but by only 36% of male sex workers in the

Table. Sample characteristics, sexual behaviors, and HIV prevalence of study or comparable populations, Horizons studies of MSM in developing countries, 2001–2008

	Senegal		Kenya		Brazil	Paraguay
	Dakar (1) ^a	Dakar (2) ^b	Nairobi ^c	Mombasa ^{d,e}	Campinas ^{f,g}	Ciudad del Este ^h
Sample characteristics						
Year of survey	2001	2003/2005	2004	2006/2008	2005–2006	2006
Target population	MSM aged ≥18 years	MSM aged ≥18 years	MSM aged ≥18 years	Male sex workers aged ≥16 years	MSM aged ≥14 years	MSM aged ≥16 years
Sample size	250	258/290	500	425/442	658	296
Type of study	Descriptive	Intervention	Descriptive	Intervention	Descriptive	Descriptive
Sampling methodology	Snowball	Snowball	Snowball	Time-location	RDS	RDS
Mean [median] age of men in sample	25	27/26	26	27/25	[23]	[21]
Sexual behaviors						
Consistent condom use with male partner (percent, time period)	27, past month	52/58, past 12 months	56, past 12 months	36/50, past 30 days	29 (AI), 25 (RAI), past two months	20 (AI), 35 (RAI), past six months ⁱ
Condom use at last sex with a male partner (percent)	23 (AI), 14 (RAI)	73/82	75	58/68	NR	NR
Had recent multiple male partners (percent, time period)	21, past month	26/27, past month	47, past month	74/63, past seven days	53, past two months	62, past six months
Had recent female sexual partners (percent, time period)	47, past month	9/12, past month	5, past month	29/39, past 30 days	16, past two months	83, past six months
Received money for sex with a man (percent, time period)	9, last sex with man	26/17, past month	52, past 12 months	87/82, past seven days	15, past two months	21 ⁱ

continued on p. 320

Table (continued). Sample characteristics, sexual behaviors, and HIV prevalence of study or comparable populations, Horizons studies of MSM in developing countries, 2001–2008

	Senegal		Kenya		Brazil	Paraguay
	Dakar (1) ^a	Dakar (2) ^b	Nairobi ^c	Mombasa ^{d,e}	Campinas ^{f,g}	Ciudad del Este ^h
HIV prevalence among MSM						
HIV prevalence among study population (percent)	NA	NA	NA	NA	7	1
HIV prevalence among comparable population (percent [n])	22 (n=465) ^k	33 (n=265)	11 (n=780) ^m	25 (n=285) ⁿ	NA	NA
National HIV prevalence among all adults aged 15–49 years (percent)	1 ^k		7 ^k		1 ^k	<1 ^k

^aNiang CI, Tapsoba P, Weiss E, Diagne M, Niang Y, Moreau AM, et al. "It's raining stones": stigma, violence and HIV vulnerability among men who have sex with men in Dakar, Senegal. *Cult Health Sex* 2003;5:499-512.

^bMoreau A, Tapsoba P, Ly A, Niang CI, Diop AK. Implementing STI/HIV prevention and care interventions for men who have sex with men in Senegal. Horizons Research Summary. Washington: Population Council; 2007.

^cOnyango-Ouma W, Birungi H, Geibel S. Understanding the HIV/STI risks and prevention needs of men who have sex with men in Nairobi, Kenya. Horizons Final Report. Washington: Population Council; 2005.

^dGeibel S, Luchters S, King'ola N, Esu-Williams E, Rinyiru A, Tun W. Factors associated with self-reported unprotected anal sex among male sex workers in Mombasa, Kenya. *Sex Transm Dis* 2008;35:746-52.

^eGeibel S, Kingola N, Luchters S. Impact of male sex worker peer education on condom use in Mombasa, Kenya. Presented at the 5th IAS Conference on HIV Pathogenesis Treatment and Prevention; 2009 Jul 21; Cape Town, South Africa [abstract TUAD204].

^fRDS population estimates are presented for Brazil and Paraguay.

^gde Mello M, de Araujo Pinho A, Chinaglia M, Tun W, Júnior AB, Ilário MCFJ, et al. Assessment of risk factors for HIV infection among men who have sex with men in the metropolitan area of Campinas City, Brazil, using respondent-driven sampling. Washington: Population Council; 2008.

^hChinaglia M, Tun W, de Mello M, Insfran M, Diaz J. Assessment of risk factors for HIV infection in female sex workers and men who have sex with men in Ciudad del Este, Paraguay. Washington: Population Council; 2008.

ⁱConsistent condom use is reported for IAI and RAI with occasional male partners, defined as partners with whom the respondent had sex only once or from time to time and with whom he did not exchange money, drugs, or gifts for sex.

^jMSM were asked whether they "currently" engage in sex work (i.e., receiving money, drugs, or gifts in exchange for anal or oral sex). The majority indicated they sold sex to male partners. UNAIDS. 2008 report on the global AIDS epidemic. Geneva: UNAIDS; 2008. Also available from: URL: http://www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/2008/2008_Global_report.asp [cited 2008 Oct 14].

^kWade AS, Kane CT, Diallo PA, Diop AK, Gueye K, Mboup S, et al. HIV infection and sexually transmitted infections among men who have sex with men in Senegal. *AIDS* 2005;19:2133-40.

^lAngala P, Parkinson A, Kilonz N, Natecho A, Taegtmeier M. Men who have sex with men (MSM) as presented in VCT data in Kenya. 16th International AIDS Conference; 2006 Aug 13–18; Toronto [abstract MOPE0581].

^mSanders 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;21:2513-20.

HIV = human immunodeficiency virus

MSM = men who have sex with men

RDS = respondent-driven sampling

IAI = insertive anal intercourse

RAI = receptive anal intercourse

NR = not reported

NA = not applicable

2006 Mombasa survey and less than 30% in Campinas and Ciudad del Este.

The prevalence of men selling sex to other men was surprisingly high in all areas studied. In addition to the Mombasa survey that specifically targeted male sex workers, the 2001 Dakar study documented that 9% of respondents reported selling sex to their last male partner; 15% of MSM in Campinas reported selling sex to men in the past two months; 21% of MSM in Ciudad del Este reported currently selling sex (primarily to male clients); and more than half of Nairobi MSM reported selling sex to men for money or gifts in the past year. While surprisingly high, these numbers may be a product of peer recruitment survey methods failing to reach more hidden or isolated segments of the MSM population—an area meriting further study.

These studies also demonstrate that heterosexual sex is common among MSM: 29% (2006) and 39% (2008) of male sex workers in the Mombasa surveys reported having a female paying or nonpaying sex partner in the past 30 days; 83% of MSM in Ciudad del Este had a female sex partner in the past six months; 88% of respondents in Senegal reported ever having sex with a woman; 5% of MSM in Nairobi reported having a female sex partner in the month prior to the survey; and 16% of MSM in Campinas reported having a female sex partner in the two months prior to the survey. These results underscore that MSM are not sexually isolated, and that potential “bridging” of homosexual and heterosexual practices by these men has broader public health implications.

HIV prevalence among MSM

HIV testing in the Ciudad del Este and Campinas populations revealed that prevalence was marginally higher than general population rates in the former, but much higher in the latter (Table). In addition, more than 70% of those testing positive were unaware of their status, suggesting the need to emphasize HIV testing in this group. HIV-prevention programs for younger MSM are particularly important—the Campinas study reported an HIV seroprevalence of 4% among MSM aged 14 to 19 years, a particularly alarming finding given that the national prevalence is less than 1%, and the mean age of sexual debut was 13.

Disparities are even more alarming in African seroprevalence studies. Data from other non-Horizons studies and the Senegal intervention program revealed very high HIV prevalence compared with the general populations. In Senegal, where the national prevalence is 1%,⁴¹ HIV prevalence among MSM ranges from 22%⁴² among a national snowball sample to 33% among MSM who requested testing from intervention services dur-

ing the second Dakar study.²⁴ In Kenya, with a national prevalence of 7%,⁴¹ MSM prevalence ranges from 11% among MSM tested in voluntary counseling and testing (VCT) clinics⁴³ to 25% among a convenience sample of 285 MSM enrolled in a vaccine trial cohort near Mombasa.⁴⁴

Stigma, discrimination, and violence: barriers to counseling and treatment

Horizons documented a high level of physical, verbal, and sexual victimization of MSM. In Nairobi, male sex workers were significantly more likely to experience physical, sexual, and verbal abuse than other MSM, and were unlikely to report such abuse to the authorities. In Campinas, more than 30% of MSM reported physical abuse in their lifetime, but only 6% reported these incidents and only 11% sought medical treatment. Additionally, 78% reported psychological abuse, which was found to be independently associated with unprotected receptive anal intercourse (adjusted odds ratio [AOR] = 1.89; $p < 0.05$).

Fear of public exposure prompted MSM to identify confidentiality as the most important consideration when seeking STI treatment or HIV counseling. At the same time, qualitative data revealed that MSM feared revealing their sexual identity and behaviors to health-care providers. In addition, in-depth interviews with health-care providers in Nairobi showed that counselors and providers generally did not ask about same-sex sexual behavior, and thus did not offer appropriate HIV-prevention messages.

Use of oil-based lubricants with condoms

All of the Horizons MSM studies in Africa documented high usage of petroleum jelly, baby oils, and lotions for lubrication during anal intercourse both with and without condoms. While a majority of respondents in the Senegal study reported using products such as Vaseline®, shea butter, body lotion, and shaving gels or creams, only 26% of MSM in Nairobi and 21% of male sex workers in Mombasa correctly knew that only water-based lubricants should be used with latex condoms, and only 15% of male sex workers in the 2006 survey had used a water-based lubricant with their last male client. In both Kenyan studies, reported use of oil-based lubricants was significantly associated with ever experiencing condom breakage, consistent with studies documenting decreased structural integrity of condoms when used with lubricants or preparations containing mineral or vegetable oils.^{45–47} Finally, respondents consider condoms to be available and affordable, while water-based lubricants are scarce and costly. In Nairobi and Mombasa, for example, water-based lubricants are

only available in select supermarkets and pharmacies, where a 50-gram tube of K-Y® Jelly costs approximately U.S. \$4.00 compared with U.S. \$0.30 for a 25-gram container of petroleum jelly. Lubricant use was also low in Ciudad del Este, with only 28% using lubricants during insertive anal intercourse and 16% during receptive anal intercourse. Among lubricant users, only half reported using water-based lubricants.

INTERVENTION APPROACHES

Findings from initial studies suggested increasing outreach via peer educators and training service providers and counselors on, or sensitizing them to, the specific medical and prevention needs of MSM. In Dakar, strong collaborating partners trained 40 MSM peer educators and recruited 12 service providers to provide MSM-sensitive services with subsequent increases in HIV testing and consistent condom use among MSM.²⁴

In Mombasa, 40 male sex worker peer educators were trained in HIV prevention and basic counseling skills. Additionally, 20 health-care providers from Mombasa-area hospitals and clinics were trained and sensitized to MSM issues including diagnosis of STIs and HIV counseling. Condoms and water-based lubricants were distributed via a drop-in center and by peer educators, with substantial uptake of both education sessions and drop-in center visits. Significant increases were recorded in correct knowledge of anal HIV transmission (65% to 73%, $p < 0.01$), correct knowledge of use of water-based lubrications with latex condoms (21% to 41%, $p < 0.001$), reported condom use with last male client (58% to 68%, $p < 0.01$), and consistent condom use with male clients in the past 30 days (36% to 50%, $p < 0.001$). Male sex workers reporting increased exposure (range: 0 to 5+ yearly contacts) to peer educators in the Mombasa area were more likely to report consistent condom use (AOR = 1.14, $p < 0.01$).⁴⁸

By ensuring discretion, these approaches were successful in providing HIV-prevention resources to MSM in highly stigmatized societies. In addition, other intervention models, including modified HIV counseling and testing for MSM, are being delivered by Liverpool VCT in Nairobi. These pilot projects, however, remain model programs and have yet to be adopted more broadly throughout Africa.

FUTURE RESEARCH AND NEXT STEPS

The Horizons studies have brought attention to an ignored, vulnerable population—indeed showing that MSM actually exist in some countries and are not a for-

eign phenomenon, but an African reality. The studies have added to the general knowledge of the HIV risks of MSM in developing countries, implemented innovative quantitative and qualitative sampling methodologies, and produced the first large-scale assessments of MSM in Africa. The Population Council, which directs the Horizons program, has been credited as “the first international [nongovernmental organization] to recognize that the HIV-related vulnerabilities of men who have sex with men in Africa deserved serious attention.”⁴⁹

Currently, MSM research in Africa has expanded beyond the Horizons program. Published seroprevalence studies exist for Senegal,⁴² Kenya,⁴⁴ Malawi,⁵⁰ Namibia,⁵⁰ Botswana,⁵⁰ and South Africa,^{51,52} and other behavioral studies have been conducted for Uganda,³⁷ South Africa,^{53,54} and Cameroon.⁵⁵ This growing collection of research activities will bring necessary attention to the HIV vulnerabilities of MSM in sub-Saharan Africa.

At the policy level, while Brazil has included MSM as a priority group in its national HIV-prevention campaigns, most national HIV programs in Africa have been slow to acknowledge and address MSM in official policy. Only a few African countries mention MSM in their national strategic plans in the context of most-at-risk populations, and few or none have a specific national HIV policy for MSM. Many service providers are reluctant to officially provide services to MSM until these policy issues are addressed, and many researchers continue to avoid study of MSM for fear of stigma. In addition, community and religious stigma remains a barrier to implementation of service delivery and research initiatives, although some countries have seen increased public debate and discussion of the issue. Even simple measures, such as consistent provision of water-based lubricants, have yet to be adopted in many countries, although further study on the epidemiologic impact of lubrication use and condom breakage is needed.

MSM in developing countries continue to be both “understudied and underserved,”⁵⁶ but we feel the best way to influence policy is through the provision of unbiased data. The work outlined in this article has already resulted in some movement: the directors of the National AIDS Commission in Senegal⁵⁷ and National AIDS Control Council in Kenya⁵⁸ have since acknowledged the existence of MSM and the need to address them in national HIV policy. In addition, the Population Council and Kenya’s National AIDS Control Council hosted a regional conference on MSM for Eastern and Central African policy makers, including directors of national AIDS programs, in 2008.⁵⁹ By gathering and informing those most influential in

terms of designing policy and presenting the state of the science, we hope to have a broad and lasting effect on the provision of HIV-prevention services to this population. We also urge other organizations to expand their efforts toward understanding and addressing the HIV risks of MSM in developing countries.

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