



# Factors associated with unprotected anal intercourse among men who have sex with men in Douala, Cameroon

E Henry,<sup>1</sup> F Marcellin,<sup>2,3,4</sup> Y Yomb,<sup>5</sup> L Fugon,<sup>2,3,4</sup> S Nemande,<sup>5</sup> C Gueboguo,<sup>6</sup> J Larmarange,<sup>7</sup> E Trenado,<sup>1</sup> F Eboko,<sup>2,3,4</sup> B Spire<sup>1,2,3,4,8</sup>

## See Editorial, p82

<sup>1</sup>Coalition PLUS, Pantin, France

<sup>2</sup>INSERM, U912 (SE4S), Marseille, France

<sup>3</sup>Université Aix Marseille, IRD, UMR-S912, Marseille, France

<sup>4</sup>ORS PACA, Observatoire Régional de la Santé Provence Alpes Côte d'Azur, Marseille, France

<sup>5</sup>Alternatives-Cameroun, Douala, Cameroun

<sup>6</sup>Université de Yaoundé 1, Département de Sociologie, Yaoundé, Cameroun

<sup>7</sup>IRD, CEPED UMR 196, University Paris Descartes INED IRD, Paris, France

<sup>8</sup>AIDES, Pantin, France

<sup>9</sup>AIDES, Pantin, France

<sup>10</sup>AIDES, Pantin, France

## Correspondence to

Bruno Spire, INSERM U912/ORS PACA, 23 rue Stanislas Torrents, 13006 Marseille, France; [bruno.spire@inserm.fr](mailto:bruno.spire@inserm.fr)

Accepted 10 August 2009

Published Online First

24 August 2009

## ABSTRACT

**Objectives** Research on men who have sex with men (MSM) in sub-Saharan Africa was neglected for a long time. The objective of this study was to understand factors associated with unprotected anal intercourse (UAI) with male partners among a group of MSM living in the city of Douala, Cameroon.

**Methods** In 2008, a survey on the sexual activity and practices of MSM was set up in Douala in collaboration with a local community-based organisation. Data were collected among a convenience sample of 168 MSM during face-to-face interviews with trained interviewers.

**Results** A total of 142 individuals reported sexual activity during the previous 6 months, among whom 80 (57%) reported UAI with male partners. In a multivariate logistic regression model adjusted for the frequency of sexual intercourse, not having had access to prevention interventions and not knowing any HIV-infected person were both independently associated with a higher risk of UAI. Other factors associated with this higher risk included having had a stable male partnership at some point in one's life and not having been out of Douala for more than 4 weeks during the previous year.

**Conclusions** This community-based research is the first study of MSM in Cameroon and the HIV transmission risks they face. Results show the importance of HIV prevention interventions from peers, and underline the need to maintain efforts to develop specific interventions targeting MSM more efficiently in the African context.

Research on men who have sex with men (MSM) in sub-Saharan Africa was neglected for a long time. Criminalisation of male-to-male sex in many countries, social denial and difficulty in reaching this population were the explanations given for the weak involvement of researchers in this area. However, recent literature describing MSM in Africa,<sup>1–3</sup> and the assumption that this population could be significantly vulnerable to HIV and sexually transmitted infections (STI)<sup>4–5</sup> has encouraged a growing number of epidemiological studies in recent years. Although heterosexual contact remains the main mode of HIV transmission in sub-Saharan Africa,<sup>6</sup> HIV prevalence there has been described to be higher within the MSM population than in the general population.<sup>7</sup> In the first epidemiological study focusing on MSM in sub-Saharan Africa, conducted in Senegal among 463 individuals, HIV prevalence was 21.5%, compared with less than 1% for the general Senegalese population. The high frequency of sexual contact with women reported by this study's participants also suggests

that a sexual bridge between MSM and women could contribute to the expansion of the HIV epidemic.<sup>8</sup>

Access to existing national prevention and care programmes is still very difficult for MSM. Available data have highlighted the need for the design and implementation of specific interventions in order to include this group in the development of such programmes now and in the future. Designing specific interventions for MSM in African countries would require a greater understanding of HIV risk-taking in this population.<sup>9</sup> However, the data currently available are mainly prevalence data, and few studies have explored the psychosocial determinants of systematic condom use during male-to-male sexual intercourse.

In Cameroon, qualitative studies conducted in the general population show that sociosexual networks are relatively closed groups.<sup>10</sup> As a consequence, homo–bisexual practices have long been considered to concern a very small part of the population, and thus have not been included in any HIV prevention policies. As with many countries in the region, the situation for MSM is still very difficult in this country. Homosexuality is illegal and male-to-male sex is punished by prison sentences.<sup>1</sup> There is also strong social denial about homosexual practices, which can often lead to violence.<sup>11</sup> Although organised associations are forbidden, social mobilisation around human rights and public health issues has recently started among gay and lesbian individuals in larger cities in Cameroon. Whereas sociological studies recognise the age-old existence of homosexual practices in the country and have started to describe its various expressions,<sup>12</sup> no study has yet focused on the HIV/AIDS risks faced by MSM there.

The objective of our study was to understand factors associated with unprotected anal intercourse (UAI) in a group of MSM in Douala, the economic capital city of Cameroon.

## METHODS

### Definition of MSM

The terminology “MSM” is widely used in the literature and HIV/AIDS programmes to define men who have sexual contact with other men, whether or not they identify themselves as homosexual or gay.<sup>13</sup>

<sup>1</sup> Penal code (Law 65-LF-24, 12 November 1965 and Law 67-LF-1, 12 June 1967) art 347 bis-homosexuality: “Is punished by imprisonment from 6 months to 5 years and a 20 000 to 200 000 FCFA fine”.

In our study, even though it fails to describe specificities among men of diverse identities, we decided to use this definition, which focuses on sexual practices rather than on sexual identity.<sup>14</sup>

### Study design

Living in a setting of stigma and criminalisation, the MSM population is often described as difficult to reach in Cameroon. This study was designed and implemented with Alternatives—Cameroun, a local Cameroonian community-based organisation working in the field of human rights and protection of sexual minorities, and which is already implementing HIV/AIDS prevention and care activities targeting MSM. These activities include HIV prevention education, campaigns to promote HIV testing, free condom distribution, as well as informal “chats” organised in convivial places (often at a volunteer’s home) where individuals can talk freely about their everyday life including their sexual activity and use of condoms. Recruitment and data collection were made possible thanks to the organisation’s informal social networks and access to the population.

The study was conducted in Douala, the economic capital city of Cameroon, between May and June 2008 in a convenience sample of 168 MSM. Eligibility criteria for participation were as follows: being aged 18 years or older; living in Douala for at least 6 months and having had at least one episode of sexual intercourse with a man during one’s life. Five members of Alternatives—Cameroun, who were also peer leaders, recruited participants through their social networks and in settings where MSM meet (nightclubs, snack bars, mixed or gay bars in Douala and its suburbs, as well as on the internet via the Alternatives—Cameroun website). Snowball referrals facilitated the extension of recruitment to those having less contact with Alternatives—Cameroun. Study participants were administered an 85-item questionnaire during face-to-face interviews with members of Alternatives—Cameroun. This questionnaire was designed using previous sexual studies on MSM both in Europe and Africa and pre-tested in situ. The questions explored the following domains: sociodemographic characteristics; sexuality (sexual lifestyle and practices, condom use during the previous 6 months, number and gender of sexual partners); knowledge of HIV/AIDS and STI; signs and symptoms of STI and known HIV status. Interviewers were trained before administering the questionnaire. As a complement to these quantitative data, qualitative interviews were conducted on a subsample of 29 participants to acquire a greater understanding of the complexity of individual situations.

### Safety of participants

The study team was very attentive to the participants’ safety. Research authorisations were obtained from local representatives of the Ministry of Health and the Ministry of Research and Innovation. Names and places where MSM meet were not made public and confidentiality was respected. Before starting the interview, participants systematically received detailed information about the survey’s objectives and their right to interrupt the interview without justification. Informed consent was obtained by the investigator before each interview. At the end of the interview, participants were invited to a prevention session and referred, if they wished, to Alternatives—Cameroun’s healthcare centre for HIV and STI screening, prevention and care.

### Statistical analyses

Logistic regression was used to identify factors associated with UAI with male partners during the previous 6 months, among variables derived from the face-to-face questionnaire items.

Variables associated with items having a response rate of less than 50% or including at least one category that concerned less than 5% of the study sample were not included in the analyses. Neither were the variables associated with items describing sexual practices other than anal intercourse. On the basis of these criteria, a total of 15 variables was tested. Each of these was first tested using univariate modelling. Variables with a *p* value less than 0.20 at this step were considered eligible for the multivariate analysis. A backward procedure based on the Wald test was used to select significant variables in the multivariate model. Due to the relatively small sample size, the significance level was fixed at  $\alpha = 0.10$ . The stability of the obtained multivariate model was confirmed by comparing the  $2^k$  possible multivariate models with each other (*k* being the number of variables eligible for the multivariate analysis) using associated Akaike information criterion (AIC) values.<sup>15</sup> Individuals’ satisfaction with HIV prevention messages relative to their prevention needs was then evaluated among the subsample of individuals who had had access to prevention actions. Satisfaction with prevention messages was compared between peer-based and other types of interventions, such as prevention actions by healthcare providers, non-governmental organisations or TV and radio broadcasts. A  $\chi^2$  test was used to compare the proportions of satisfied individuals. Data management was performed using SPSS, USA, while R (Free Software Foundation’s GNU General Public Licence)<sup>16</sup> was used for statistical analyses.

### RESULTS

Among the 168 MSM who participated in the study, we restricted our analysis to the 142 individuals who reported anal sexual intercourse with male partners during the previous 6 months. Among the 26 remaining individuals, 11 reported not having had anal sexual intercourse with a male partner during the previous 6 months, while 15 reported not having had intercourse of any type with a male partner during this period of time. The median age of these 26 individuals was 23 years (interquartile range (IQR) 20–27), 24 were single and seven had travelled out of Douala for at least 4 weeks during the previous year.

The characteristics of the 142 study participants are described in table 1.

Sixteen (11%) of the study participants were members of Alternatives—Cameroun. The median age was 26 years (IQR 23–30) (table 1), 92% of the participants had a secondary school or university educational level and 57% had a lucrative activity. The majority of the participants (84%) were single, 13% were married and 29% had at least one child. Almost half of the participants reported bisexual practices during the previous 6 months. Sixty-six participants had disclosed their sexual orientation to at least one relative or friend (43 to a friend, 29 to a brother or sister, 27 to their mother and 28 to other members of their family, details not provided in table 1). The median age at first MSM relationship was 19 years (IQR 17–22). Eighty-one participants (57%) had already had access to prevention interventions, with 27 (33%) of these having received interventions from MSM peers. Among the latter, 18 had benefited from HIV testing promotion campaigns, 17 had received HIV prevention training, nine had benefited from free condoms and two had participated in “chats”.

A total of 80 participants (57%) reported UAI with a male partner during the previous 6 months.

In the univariate analyses (table 2), the following factors relating to individuals’ experience with HIV were found to be

**Table 1** Main characteristics of participants

Variables	No of participants (%) or median (IQR)
Age, years	26 (23–30)
Age at first MSM relationship, years	19 (17–22)
Having a lucrative activity	81 (57)
Having at least one child	41 (29)
Matrimonial status	
Single	120 (84)
Married	18 (13)
Divorced	4 (3)
Educational level	
Primary school	11 (8)
Secondary school	89 (63)
University	41 (29)
Not in Douala for at least 4 weeks during previous year	41 (29)
Sexual orientation disclosed to at least one relative or friend	66 (47)
Knowing a HIV-infected individual	72 (51)
Exposed to HIV prevention interventions	81 (57)
Knowledge of his own HIV status	
No	64 (45)
Yes	66 (47)
No answer	12 (8)
No of male partners in previous 6 months	
One	50 (35)
Between 2 and 4	63 (44)
Five or more	29 (21)
Frequency of sexual intercourse in previous 6 months	
Less than once a month	18 (13)
At least once a month or irregularly but with intense periods	63 (44)
At least once a week	61 (43)
No stable male partner at any point during one's life	8 (6)
At least one female partner in previous 6 months	69 (49)
UAI with male partner(s) in previous 6 months	80 (57)

IQR, interquartile range; MSM, men who have sex with men; UAI, unprotected anal intercourse.

associated with UAI ( $p < 0.20$ ): not knowing any HIV-infected individual; not knowing one's own HIV status and not having been exposed to HIV prevention interventions. In addition, the following factors relating to individuals' sexual activity were also found to be associated with UAI: a higher number of partners; a higher frequency of sexual intercourse; hiding one's own sexual orientation; having had a stable relationship at some point in one's life and having had at least one female partner in the previous 6 months. Finally, sociodemographic characteristics such as older age at the time of the study and at first MSM relationship as well as not having been out of Douala for more than 4 weeks during the previous year were also found to be associated with UAI.

After adjusting for the frequency of sexual intercourse in the multivariate analysis, the following factors were identified as independent correlates of UAI with male partners during the previous 6 months: not knowing any HIV-infected person; not having been exposed to HIV prevention interventions; having had a stable male partner at some point in one's life and not having been out of Douala for more than 4 weeks during the previous year.

Consideration of the AIC values for the  $2^{11} = 2048$  possible models showed that this was the best model, yielding the smallest value of AIC (results not shown).

A complementary analysis showed that among individuals who had had access to HIV prevention actions, interventions

from MSM peers were appreciated more than other HIV prevention actions, with 89% (24/27) versus 69% (37/54) of individuals satisfied with the prevention messages given ( $p = 0.045$ ).

## DISCUSSION

Our study is the first to investigate the issue of unprotected sex between men in Cameroon. Results show that 57% of sexually active study participants reported at least one episode of UAI during the previous 6 months. Even if the observational period is different (one year vs 6 months), this result may be paralleled with those of four studies among MSM in Senegal, Sudan and Kenya, which underline even higher frequencies of UAI.<sup>8 17–19</sup> Studies on MSM in Africa have mainly focused on the prevalence of HIV and unprotected sex,<sup>20</sup> and very few have investigated correlates of risky sexual behaviours.<sup>8</sup> Our study identifies a set of psychosocial factors that influence condom use during male-to-male anal intercourse.

Interestingly, the results highlight a positive association between condom use in male-to-male anal intercourse and access to HIV prevention actions, even after adjusting for the frequency of sexual relationships. A meta-analytic review carried out in 2005 suggested the efficacy of targeted HIV behavioural interventions for reducing sexual risk behaviour of MSM.<sup>21</sup> In addition, a study conducted among MSM in Senegal showed that after employing targeted interventions, the proportions of those who had at least one episode of unprotected insertive anal intercourse and those who had at least one episode of receptive anal intercourse during the previous month with a male partner decreased from 24% to 9% ( $p < 0.01$ ) and 21% to 10% ( $p < 0.01$ ), respectively.<sup>22</sup>

The results also suggest that there is a positive association between the frequency of sexual relationships and the risk of inconsistent condom use, something that challenges HIV prevention.

Peers education activities are known to have a significant impact on sexual behaviour at a community level.<sup>23 24</sup> In our study, peer-implemented interventions were better received than other HIV prevention actions, as the messages were more adapted to individuals' needs. This was confirmed by the results of qualitative interviews. During these interviews, participants explained that most prevention interventions focused only on heterosexual intercourse, and that prevention issues concerning oral and anal intercourses were rarely discussed. They also reported that peer-based interventions centered on MSM practices were more adapted to their needs and offered them a rare chance to have access to prevention material such as lubricants. However, with only 57% of individuals reporting exposure to prevention interventions, results also suggest that HIV prevention, including peer-based actions, currently does not effectively reach its target in the MSM population.

We also found that knowing a HIV-positive person was associated with more systematic condom use during anal intercourse with male partners. How knowing someone with HIV influences attitudes to condom use was already explored in the very different context of the gay community of Los Angeles in 1997. The conclusion drawn was that the number of HIV persons known has no significant impact on systematic condom use, but that there may be a possible effect from greater emotional closeness to a HIV-positive person without AIDS.<sup>25</sup> In our study we may hypothesise that the participants who reported knowing at least one HIV-positive person had more information about HIV and felt more concerned about the virus.

**Table 2** Univariate and multivariate logistic modelling of factors associated with UAI

Variables	OR (95% CI)	p Value	Adjusted OR (95% CI)	p Value
Age, years	1.05 (0.98 to 1.12)	0.15		
Age at first MSM relationship, years	1.08 (0.99 to 1.19)	0.09		
Having a lucrative activity	1.17 (0.60 to 2.29)	0.64		
Having at least one child	1.51 (0.72 to 3.18)	0.28		
Matrimonial status				
Single (ref)	1			
Married	1.29 (0.47 to 3.54)	0.63		
Divorced	2.46 (0.25 to 24.27)	0.44		
Educational level				
Primary school (ref)	1			
Secondary school	1.07 (0.30 to 3.76)	0.92		
University	1.07 (0.28 to 4.06)	0.93		
Not in Douala for at least 4 weeks during previous year	0.57 (0.27 to 1.18)	0.13	0.48 (0.22 to 1.08)	0.076
Sexual orientation disclosed to at least one relative or friend	0.62 (0.32 to 1.20)	0.16		
Not knowing a HIV-infected individual	1.89 (0.97 to 3.70)	0.06	2.00 (0.94 to 4.35)	0.071
Not having been exposed to HIV prevention interventions	1.96 (0.98 to 3.85)	0.06	2.04 (0.95 to 4.35)	0.066
Knowledge of his own HIV status				
No (ref)	1			
Yes	0.56 (0.28 to 1.13)	0.11		
No answer	0.56 (0.16 to 1.94)	0.36		
No of male partners in previous 6 months				
One (ref)	1			
Between 2 and 4	1.78 (0.84 to 3.78)	0.13		
Five or more	2.23 (0.87 to 5.75)	0.10		
Frequency of sexual intercourse in previous 6 months				
Less than once a month (ref)	1		1	0.039
At least once a month (or irregularly but with intense periods)	3.55 (1.17 to 10.77)	0.03	4.80 (1.43 to 16.09)	0.011
At least once a week	2.50 (0.83 to 7.50)	0.10	3.06 (0.95 to 9.83)	0.060
No stable male partner at any point during one's life	0.10 (0.01 to 0.83)	0.03	0.07 (0.01 to 0.63)	0.018
At least one female partner in previous 6 months	1.61 (0.82 to 3.14)	0.16		

MSM, men who have sex with men; OR, odds ratio; UAI, unprotected anal intercourse.

The other factors associated with UAI were as follows: not having been out of Douala for more than 4 weeks during the previous year and having had a stable relationship at some point in one's life. On the basis of data from qualitative interviews, we can make the assumption that proximity and confidence with male partners may be among the important risk factors for UAI among MSM in Douala. Mobility has been identified as a factor associated with more frequent sexual risk behaviours in many studies conducted in sub-Saharan Africa, including Cameroon. However, those studies only investigated heterosexual relationships and mainly focused on specific populations such as sex workers, truck drivers and people living near international borders or in commercial areas.<sup>26 27</sup>

Our study has some limitations. First, the validity of participants' responses to questions concerning their sexuality and intimacy could be affected by social desirability bias. However, self-reports appeared to be the best method to investigate such issues in the present study. Using biological markers of unsafe sex such as STI could not reasonably be considered as a suitable approach due to the complexity of planning physical examinations and biological tests in such a difficult-to-reach population. Second, while network-based recruitment was the only way to ensure the interviewees' security, snowball sampling may have introduced a selection bias<sup>28</sup>. Indeed, data from qualitative interviews suggest that the study sample may be biased towards younger MSM with a higher educational level. Weighted methods, such as respondent-driven sampling, could have dealt with this selection bias more effectively. However, qualitative data also suggest that the use of the snowball technique was an

advantage for the study from the participants' point of view. Indeed, during qualitative interviews, several participants explained they were afraid to disclose their sexual orientation and to speak freely about their sexual practices. The fear of being arrested was a recurring subject in the interviews (three individuals had already been arrested because of their sexual orientation). Interviewees explained they had agreed to participate in the study because they considered that confidentiality and safety were guaranteed by the recruitment method. Third, the study may be limited by the fact that it was undertaken by an organisation that offers information and prevention. However, we can see from quantitative results that most of the study participants were not part of the organisation at the time of the study. This minimises the possible association between contact with the organisation and increased report of condom use. Finally, our study was conducted in a limited urban area, that of Douala. However, with 2 million inhabitants, this harbour city is the most cosmopolitan of the country, both from the point of view of the population's ethno-regional origins and of the socioeconomic stratification. In addition, a major population and economic centre such as Douala probably offers MSM a greater degree of sexual freedom and opportunity to meet male partners, making it an ideal place to situate this kind of study.

Despite these limitations, as the first study to explore HIV transmission risk behaviours among MSM in Cameroon, our work could open the way to future studies on MSM and HIV in this country and in similar contexts throughout sub-Saharan Africa. Various "profiles" of MSM and sexual identities exist, which another qualitative study could try to bring to light.

## Key messages

- ▶ There is a need for a national HIV prevention strategy targeting MSM in Cameroon.
- ▶ Peer-based prevention interventions should be encouraged to lower the risk of unsafe sex.
- ▶ MSM involvement should be encouraged in prevention policies.

Further investigation could concern specific populations inside the “sex workers” group and their customers. A multisite study would also facilitate clarifying similarities and differences in HIV/AIDS and STI knowledge, sexual behaviours and practices between MSM from various cities in Cameroon. It could also help to improve monitoring of the impact of peers’ prevention activities.

Our study suggests that prevention interventions should be systematically implemented within the high-risk group of MSM in the African context. Results have already helped community-based organisations to design new prevention activities and to support the social mobilisation of MSM in Douala. Findings also highlight the need for a national prevention project targeting MSM in Cameroon, where HIV prevention is currently centered on heterosexual contact and vaginal intercourse. Beyond social norms, erroneous representations of HIV risk and taboos, prevention strategies should consider all forms of sexuality and social status. Effective prevention and care also require respect of individuals’ rights to choose and live their sexuality.<sup>29</sup>

**Funding** This study has received funding and technical support from AIDES, Pantin, France.

**Competing interests** None.

**Patient consent** Obtained.

**Contributors** EH and FM collaborated in the writing of the manuscript. EH was also involved in the design and conducting of the survey. YY and SN were involved in the design and conducting of the survey, as members of Alternatives—Cameroun. LF performed the statistical analyses. CG, JL, ET and FE revised the manuscript before submission, and complemented it with contextual data. BS chose the main directions for data analysis and participated in the interpretation of results.

**Provenance and peer review** Not commissioned; externally peer reviewed.

## REFERENCES

1. Murray S, Roscoe WE. *Boy wives and female husbands: studies of african homosexualities*. London: St Martin’s Press, 1998.
2. Niang CI, Tapsoba P, Weiss E, et al. “It’s raining stones”: stigma, violence and HIV vulnerability among men who have sex with men in Dakar, Senegal. *Culture, Health Sexuality* 2003;**5**:499–512.
3. Parker R, Khan S, Aggleton P. Conspicuous by their absence? Men who have sex with men (MSM) in developing countries: implication for HIV prevention. *Crit Public Health* 1998;**329**–46.
4. Niang CMA, Kostermans K, Binswanger H, et al. Men who have sex with men in Burkina Faso, Senegal, and The Gambia: The multi-country HIV/AIDS program approach. *Proceedings of the XVth International AIDS Conference*. 11–16 July 2004, Bangkok, Thailand. International AIDS Society, abstract We PeC 6148.
5. Sharma A, Muga CT, Steel MEA. HIV risk and prevention among men who have sex with men in Nairobi, Kenya. *Proceedings of the XVth International AIDS Conference*. 11–16 July 2004, Bangkok, Thailand.
6. UNAIDS. *2008 Report on the global AIDS epidemic*. Geneva: UNAIDS, 2008.
7. Baral S, Sifakis F, Cleghorn F, et al. Elevated risk for HIV infection among men who have sex with men in low- and middle-income countries 2000–2006: a systematic review. *PLoS Med* 2007;**4**:e339.
8. Wade AS, Kane CT, Diallo PA, et al. HIV infection and sexually transmitted infections among men who have sex with men in Senegal. *AIDS* 2005;**19**:2133–40.
9. Van Griensven F. Men who have sex with men and their epidemic in Africa. *AIDS* 2007;**21**:1361–2.
10. Eboko F. “Risque-sida, pouvoirs et sexualité. La puissance de l’Etat en question au Cameroun”. In: *Le désarroi camerounais. L’épreuve de l’économie-monde*. Paris: Karthala, 2000:235–62.
11. Gueboguo C. *La problématique de l’extorsion et du chantage sur la base de l’orientation sexuelle au Cameroun: sociologie de l’expérience des bisexuels/les, gays, lesbiennes, et transgenres*. New York: International Gay and Lesbian Human Rights Commission, 2008.
12. Gueboguo C. *La question homosexuelle en Afrique. Le cas du Cameroun*. Paris: L’Harmattan edn, 2006.
13. Young RM, Meyer IH. The trouble with “MSM” and “WSW”: erasure of the sexual-minority person in public health discourse. *Am J Public Health* 2005;**95**:1144–9.
14. Pathela P, Blank S, Sell RL, et al. The importance of both sexual behavior and identity. *Am J Public Health* 2006;**96**:765; author reply 766.
15. Burnham KP, Anderson DR. *Model selection and multimodel inference: a practical information-theoretic approach*, 2nd edn. New York: Springer Sciences & Business Media, 2002.
16. R, Development, Core, Team. *R: a language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing, 2008.
17. Elrashed S. Prevalence, knowledge and related risky sexual behaviors of HIV/AIDS among receptive men who have sex with men (MSM) in Khartoum State, Sudan, 2005. *Proceedings of the XVth International AIDS Conference*. 13–18 August 2006, Toronto, Canada. International AIDS Society, abstract Tu PE 059.
18. Angala P. Men who have sex with men (MSM) as presented in VCT data in Kenya. *Proceedings of the XVth International AIDS Conference*. 13–18 August 2006, Toronto, Canada. International AIDS Society, abstract Mo PE 0581.
19. Sanders EJ, Graham SM, Okuku HS, et al. HIV-1 infection in high risk men who have sex with men in Mombasa, Kenya. *AIDS* 2007;**21**:2513–20.
20. Caceres CF, Konda K, Segura ER, et al. Epidemiology of male same-sex behaviour and associated sexual health indicators in low- and middle-income countries: 2003–2007 estimates. *Sex Transm Infect* 2008;**84**(Suppl 1):i49–56.
21. Herbst JH, Sherba RT, Crepaz N, et al. A meta-analytic review of HIV behavioral interventions for reducing sexual risk behavior of men who have sex with men. *J Acquir Immune Defic Syndr* 2005;**39**:228–41.
22. Wade A LJ, Diop AK, Diop O, et al. Reduction of risk behaviors among MSM in Senegal after targeted prevention interventions. *Proceedings of the XVIIth International AIDS Conference*. 3–8 August 2008, Mexico City, Mexico. International AIDS Society, abstract THPE 0349.
23. Williamson LM, Hart GJ, Flowers P, et al. The Gay Men’s Task Force: the impact of peer education on the sexual health behaviour of homosexual men in Glasgow. *Sex Transm Infect* 2001;**77**:427–32.
24. Elford J, Hart G, Sherr L, et al. Peer led HIV prevention among homosexual men in Britain. *Sex Transm Infect* 2002;**78**:158–9.
25. Mansergh G, Marks G, Miller L, et al. Is ‘knowing people with HIV/AIDS’ associated with safer sex in men who have sex with men? *AIDS* 2000;**14**:1845–51.
26. Khan MR, Patnaik P, Brown L, et al. Mobility and HIV-related sexual behavior in Burkina Faso. *AIDS Behav* 2008;**12**:202–12.
27. Lydie N, Robinson NJ, Ferry B, et al. Mobility, sexual behavior, and HIV infection in an urban population in Cameroon. *J Acquir Immune Defic Syndr* 2004;**35**:67–74.
28. Evans AR, Wiggins RD, Mercer CH, et al. Men who have sex with men in Great Britain: comparison of a self-selected internet sample with a national probability sample. *Sex Transm Infect* 2007;**83**:200–5; discussion 205.
29. Saavedra J, Izazola-Licea JA, Beyrer C. Sex between men in the context of HIV: The Jonathan Mann Memorial Lecture in Health and Human Rights. *J Int AIDS Soc* 2008;**11**:9.

**STI**

## Factors associated with unprotected anal intercourse among men who have sex with men in Douala, Cameroon

E Henry, F Marcellin, Y Yomb, L Fugon, S Nemande, C Gueboguo, J Larmarange, E Trenado, F Eboko and B Spire

*Sex Transm Infect* 2010 86: 136-140 originally published online August 24, 2009

doi: 10.1136/sti.2009.036939

---

Updated information and services can be found at:  
<http://sti.bmj.com/content/86/2/136>

---

### References

*These include:*

This article cites 16 articles, 4 of which you can access for free at:  
<http://sti.bmj.com/content/86/2/136#BIBL>

### Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

### Topic Collections

Articles on similar topics can be found in the following collections

[Editor's choice](#) (78)  
[Drugs: infectious diseases](#) (3182)  
[HIV / AIDS](#) (2514)  
[HIV infections](#) (2514)  
[HIV/AIDS](#) (2514)  
[Health education](#) (960)

---

### Notes

---

To request permissions go to:  
<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:  
<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:  
<http://group.bmj.com/subscribe/>