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Prevalence of HIV, Sexual Practices and Behaviors among Men Who Have Sex with Men in Kinshasa, Democratic Republic of Congo

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Abstract

Human Immunodeficiency Virus (HIV) is a deadly sex-transmitted infection (STI) that remains a worldwide public health concern. Despite the progress recorded in the HIV prevention, we still observe high HIV prevalence especially among Men who have sex with Men (MSM). Within this latter group, the prevalence of HIV is reported to be higher and can therefore be transposed into the general population through the bisexuals. In the Democratic Republic of Congo (DRC), the response to HIV/AIDS among MSM requires updated data on the magnitude of the infection, the sexual practices and behaviors which are key factors in the pandemic spread. This study aimed to determine the prevalence of HIV and to describe the sexual practices and behaviors among MSM recruited in Kinshasa, DRC. We conducted a prospective cross-sectional study from March 2014 to December 2017 to recruit MSM through the snowball technique in Kinshasa, DRC. Our data were collected on a paper-printed questionnaire via an interview followed by whole blood sample collection for ELISA assays. Of 323 MSM recruited, the MSM were single in 88.5% (286/323) and bisexuals in 61.7% (195/316). Nine percent of them were HIV positive (30/323) at the ELISA assays. The prevalence of HIV was 40% (12/30) in the 21-25 age group; 50% (15/30) in MSM with superior education level; 85.1% (23/27) among single MSM. Almost the quarter of the MSM had > 5 homosexual partners in the last six months; 5.5% (18/323) had more than 20 homosexual intercourses while 13.3% (43/323) of them contracted 3-5 heterosexual sex acts in the last three months. During anal intercourses, 34.4% (110/319) played a passive role versus 24.1% (77/319) for a versatile role. The condom use was systematically reported in 27.2% (87/319) of participants. The MSM were one time likely to the HIV infection when they had a high education level [^{a}OR 3.63(1.37-9.57)]. The fact of practicing more than three types of intercourse-anal, oral and others was five times more likely to be at risk for the HIV acquisition [^{a}OR 5.31 (1.26-22.30)]. This study reports a high prevalence of HIV among MSM which is associated with the high-risk sexual practices and behaviors such as the bisexuality, the multiple sexual partners, and the diversity of anal intercourses.

Keywords: MSM; HIV; Prevalence; Intercourse; Sexual practices; DRC

Introduction

Human Immunodeficiency Virus (HIV) is a deadly sex-transmitted infection (STI) that remains a worldwide public health concern. Since the start of the pandemic, 79.3 million people were reported to be infected with HIV in 2020. To date, 36.3 million died from AIDS-related illness. Despite, the tireless efforts done to successfully control the HIV infection spread, the incidence is still high in the world as report by the UNAIDS with 1.5 million new HIV-infected people in 2020, although the HIV-associated morbidity and mortality rates are decreasing in the world. Despite tremendous achievements recorded in the field of prevention and care, we still observe high prevalence of HIV among key populations across the world especially in the intravenous drug users, the sex workers and their clients, transgender women and Men who have Sex with Men (MSM). In this latter group, the prevalence of HIV is always reported to be higher compared to corresponding general population in various regions of the world. Additionally, the MSM group has been described as a vulnerable population due to their practices and behaviors which expose them to HIV and other STIs [1]. Different reports in the world clearly depict the huge difference in the prevalence of HIV between the MSM group and the general population i.e. 3% versus <1% for Middle-east and North Africa; 14.7% versus 1% for South and South-East Asia; 14.9% versus 1.3% for Central and southern America; 6.6% versus 1.7% for Eastern Europe and Central Asia; 25.4% versus 1.7% for Caribbean region [2-5]. Sub Saharan Africa bears the highest burden of HIV pandemic with almost two third (25.3 million) HIV infected people within its borders. In 2020, the UNAIDS reported 65% of new HIV infections in the key populations of which 39% occurred in sub-Saharan Africa [1,2].

Most of studies conducted among MSM confirmed the prevalence of HIV ranging from two to 20 times higher in the MSM compared to the corresponding general population [2,6-10]. Additional data

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in Africa showed that the prevalence of HIV among MSM is 1.7 to 27.5 times higher compared to men in the general population [11]. Numerous reasons have been suggested to sustain that high prevalence: the ignorance of the MSM concern ; the stigmatization based on the social, political, cultural and religious influences; the lack of structured interventions targeting MSM community; the poor accessibility of MSM to health services; the high frequency of anal intercourses and the versatile role played during them; the multiplicity of partners (male or female) almost associated with inconsistent condoms and suitable lubricants use; the sex for money behaviors and the affiliation to homosexual networks (links MSM through sex acts with almost members of the networks). Other overwhelming factors are the high sensitivity of the passive role during anal intercourse, the sex orgy, the partners swapping, etc. Whatever sexual practices are considered, vaginal secretions, menses, mucosa (vaginal, anorectal, oral) are potentially infectious and can constitute the front-door for HIV and STIs as well [2,6,12-17].

Furthermore, several studies showed a strong presence of bisexuals among the MSM population, suggesting the existence of a gateway between the general population and the key populations i.e. 32.1% in Tanzania [6], 62% in Cameroon [10], 17.7% and 33.6% in South Africa [15,18], 40.9% in Yemen [16], 94.1% in Senegal [18], and elsewhere [19-25]. Therefore, the high prevalence of HIV reported in the MSM can be directly transposed into the general population and contribute to the spread of HIV infection through the gateway population represented by the bisexuals [12].

In the Democratic Republic of Congo (DRC), the prevalence of HIV is around of 1.2% in the general population [26] and the integration of MSM activities in the HIV control program is relatively recent. The few available data on the cartography and the counting among MSM in few cities in DRC suggest the reality of the concern without depicting its magnitude. Yet, the response of the HIV/AIDS control program to the MSM issue requires updated data on the magnitude of the infection, the sexual practices and behaviors which are key factors in the control of the pandemic spread.

Objectives

This study aimed to determine the prevalence of HIV and to describe the sexual practices and behaviors among which some are likely to be involved in HIV and STIs transmission among MSM recruited in Kinshasa, DRC.

Materials and Methods

Study setting, design and population

We conducted a cross-sectional study from March 2014 to December 2017 in Kinshasa, the capital of the DRC in the framework of an ongoing collaboration between the Virology unit (CREMER) of the Microbiology Department at the Kinshasa Teaching School of Medicine and a non-governmental organization (NGO) called 'PSSP' specialized in community-based prevention and medical care for MSM active in Kinshasa. Study participants were recruited via three types of entry-points 1) the regular activities in the PSSP health centers, 2) joint sensitization field campaigns CREMER-PSSP and 3) CREMER day and night surveys in dancing-clubs, night-clubs, bars, hotels and other MSM meeting places in Kinshasa.

Prior to our field study activities, we organized field descents to collect information related to the MSM places/events regularly frequented by MSM, the schedules of events, the approximative number of people present at different events, and the possibility to be associated or integrate study enrolment during these activities. Based on these data, we assessed and refined our study recruitment strategy. We opted for the snowball sampling technique to bypass issues related to stigmatization which forces most MSM in Kinshasa to live their sexual preference/identity in a clandestine manner and makes them hard to reach. We worked with three peers from PSSP as front-door seeds to inform and propose study enrolment to the MSM in PSSP health centers and during the joint sensitization field campaigns. Additionally, we selected seven other existing community-peers known via previous projects to facilitate recruitment of MSM in the different hotspots of Kinshasa and organize the CREMER day and night surveys. The peers provided in individual sessions information on the study, and eligible and interested MSM were asked written informed consent. Once consented, the MSM received a labeled and encoded individual coupons as proof of study enrolment. During the survey, the recruited MSM presented their individual coupons to the peers or the investigators to ascertain their eligibility and their consent. Via each wave of newly enrolled MSM, a broader group of MSM was gradually reached [27-30].

Eligible participants were all men aged 18 years or older who had penile-anal or oral intercourse with other men in the last 12 months, and who were willing to participate in our survey. Based on an anticipated HIV prevalence of 45% and 5% error, we targeted consecutive enrolments.

Data collection, sample collection and sample processing

Consenting MSM were interviewed following a structured questionnaire on demographics, sexual orientation, sexual habits, number of sexual partners, condom and lubricants use (supple material 1). The interview took 15-25 minutes and was administered in a private room on-site. When a private room was not available, we prepared a quiet corner to administer the informed consent and the interview. All interviews were conducted in French and Lingala, which are the two languages spoken by the interviewees, but recorded in French. Interview data were collected on a paper-printed report form.

After the interview, a whole blood sample was collected from the antecubital vein in an EDTA tube. Samples were transported to the CREMER Virology Unit in a temperature-controlled cool box. The blood was centrifuged, plasma and cells were aliquoted separately in 1.8ml cryotubes and preserved at -80°C until further testing.

All laboratory tests were performed on the plasma aliquots. We screened all samples with the Determine HIV1/2 Alere® rapid test. We used the ELISA kit Vironostika HIV Ag/Ab® and Siemens Enzygnost HIV Integral II® for confirmation. All samples were run and interpreted as per the manufacturer's instructions and the results obtained were expressed as "positive" or "negative". All indeterminate results were not considered in this study.

Data analysis

We used the Epi Info® 7.1.2.0 software for data capture and creation of a database. The statistical analyses were run with IBM® SPSS 21 for Windows. The variables of interest were summarized in

frequency (n), proportions (%), and confidence level. Continuous variable was presented in mean, standard deviation (SD), minima and maxima. We considered a statistically significant result at 95% of confidence level.

Ethical issues

This study protocol was reviewed and approved by the Kinshasa School of Public Health ethics in DRC (ESP/CE/071/2017). A transportation fee of 5US$ equivalent in Congolese francs (CDF) was provided to each participant at the end of the survey.

Results

A total of 323 MSM were included in this study. The mean age was 24.3±4.5 years, whereas the mean age of sexual debut was 14.8±3.0. The most represented age group was 21 to 25 years with 45.1% (145/321). The duration of homosexuality practice was less than 5 years for 56.9% of MSM. Regarding the marital status, 88.5% (286/323) were single.

Of 323 MSM recruited, 9.3% (30/323) had anti-HIV antibodies through ELISA. About the sociodemographic characteristics, the prevalence of HIV was 40% (12/30) in the 21-25 age group; 50% (15/30) in the MSM with superior education level; 85.1% (23/27) among single; 70% (14/20) in the MSM with professional occupation; 29.6% (8/27) among MSM with a duration of homosexuality respectively <inferior to 5 years, and comprised between 11-15 years (Table 1).

The first intercourse was homosexual in 52.1% (167/321) of cases whereas 61.7% (195/316) of our participants were the bisexuals. Almost a quarter of MSM had >5 homosexual partners in the last six months. Regarding sex acts number in the last three months, 5.5% (18/323) of MSM have had >20 homosexual intercourses while 13.3% (43/323) of them contracted 3 to 5 heterosexual sex acts. As for the role played during anal intercourses, 34.4% (110/319) played a passive role versus 24.1% (77/319) for the versatile role.

The condom use was systematically reported in 27.2% (87/319) of the case, while only 22% (69/313) had a condom with them during the survey. At the time of last intercourse, 64.1% (204/318) of MSM reported the use of a condom. In over half of cases (174/314), MSM has not reported lubricant use during anal sex. Of MSM who used lubricants, only 43.5% (74/170) reported the use of water-based lubricants (WBL) (Table 2).

The partners of MSM were categorized into 2 groups, commercial and non-commercial. A quarter of MSM (81/233) had commercial partners, and all were foreigners. As for the non-commercial partners, 96.9% (220/227) of them were originated the DR Congo. The sexual orientation of main partners was represented by the homosexuals in 44.2% (143/323), followed by the bisexuals in 35% (113/323) of cases (Table 3).

First, we looked for the factors associated with HIV in univariate analysis. Five variables were associated to the 5% threshold: age (p <0.01), education level (p=0.05), role played during anal intercourse (p=0.01), the types of intercourse (p <0.01), the use of lubricants (p=0.05).

Indeed, the HIV infection risk was increasing by 12% per year of life [OR 1.12 (1.04-1.20)]. Associated factors with the infection were the superior education level [OR 2.78 (1.24-6.20)], the passive role during anal intercourse [OR 5.05 (1.62-15.71)], the versatile role played during anal intercourse [5.33 (1.63-17.39)], the fact of practicing more than 3 types of intercourses [OR 6.75 (2.19- 20.76)], and the use of lubricants [OR 2.46 (1.01-6.01)]. One variable was associated with a threshold comprised between 5 and 20%, the fact of being in a couple with a man [OR 3.11(1.14-8.46)]. A multivariate analysis was performed with six variables selected at a 20% threshold. Although, the frequency of sex acts and sexual identity were not

Table 1: Sociodemographic characteristics and HIV infection among MSM recruited in Kinshasa from 2014-2017.

Parameters	Proportion in % (N)	95% CI	ELISA Serology	
			HIV+ in % (N*)	HIV-in % (N**)
			9.3 (30)	90.7 (293)
Age				
Mean ± SD (Range)				
24.2 ± 4.6 (16-42)	-	[23.8-24.8]	-	-
Age group (N=321)			**% (HIV+/N*)**	**% (HIV-/N**)**
			N*=30	**N*=293**
≤ 20	19.1 (62)	[15.0-23.8]	6.7 (2)	20.5 (60)
21-25	45.1 (145)	[39.4-50.6]	40 (12)	45.4 (133)
26-30	26.5 (85)	[21.9-31.6]	30 (9)	26 (76)
31-35	6 (19)	[3.0-7.9]	13.3 (4)	5.1 (15)
> 35	3.1 (10)	[2.0-6.3]	10 (3)	3 (7)
Homosexuality duration (N=304)			**% (HIV+/N*)**	**% (HIV-/N**)**
In Years			**N*=27**	**N*=277**
≤ 5	54.3 (165)	[48.0-59.9]	29.6 (8)	56.7 (157)
6-10	22.7 (69)	[18.4-27.6]	18.6 (5)	23.1 (64)
11-15	13.8 (42)	[10.2-17.8]	29.6 (8)	12.2 (34)
16-20	5.3 (16)	[3.0-7.9]	11.1 (3)	4.6 (13)
> 20	3.9 (12)	[2.0-6.3]	11.1 (3)	3.5 (9)
Education level (N=323)			**% (HIV+/N*)**	**% (HIV-/N**)**
			N*=30	**N*=293**
Primary	4.6 (15)	[2.5-7.1]	3.3 (1)	4.7 (14)
Secondary	61.6 (199)	[55.7-66.6]	40 (12)	63.8 (187)
Superior	30.6 (99)	[25.7-36.2]	50 (15)	28.6 (84)
Other	3.0 (10)	[1.5-5.3]	6.7 (2)	2.9 (8)
Marital Status (N=320)			**% (HIV+/N*)**	**% (HIV-/N**)**
			N*=27	**N*=293**
Single	88.6 (286)	[84.8-92.0]	85.1 (23)	89.7 (263)
In couple with woman	2.7 (9)	[1.2-4.6]	3.7 (1)	2.7 (8)
In couple with men	8.7 (28)	[5.6-12.1]	11.2 (3)	7.6 (22)
Occupation (N=313)			**% (HIV+/N*)**	**% (HIV-/N**)**
			N*=20	**N*=293**
Yes	36.8 (119)	[32.2-42.1]	70 (14)	35.8 (105)
No	63.2 (204)	[57.9-67.8]	30 (6)	64.2 (188)

Table 2: Sexual practices, condoms and lubricants use among MSM recruited in Kinshasa from 2014-2017.

Parameters	Proportion in % (N)	95% CI
Type of first intercourse (N=321)		
Hétérosexuel	47.9 (154)	[42.1-53.3]
Homosexuel	52.1 (167)	[46.1-57.3]
Sexual orientation (N=316)		
Gay	35.5 (112)	[29.7-39.9]
Heterosexual	2.8 (9)	[1.2-4.6]
Bisexual	61.7 (195)	[55.1-65.6]
Homosexual partners		
In the last 6 months (N=323)		
≤ 2	54.6 (176)	-
3-5	21 (68)	-
> 5	24.4 (79)	-
Sex acts in the last 3 months (N=323)		
Homosexual		
≤ 2	40.2 (130)	-
3-5	24.1 (78)	-
6-10	18.9 (61)	-
11-20	11.1 (36)	-
>20	5.5 (18)	-
Heterosexual		
≤ 2	61.9 (222)	-
3-5	13.3 (43)	-
6-10	9.59 (31)	-
11-20	5.8 (19)	-
> 20	2.47 (8)	-
Role played during anal intercourse (N=319)		
Active	41.3 (132)	[35.0-45.8]
Passive	34.4 (110)	[29.1-39.6]
Versatile	24.1 (77)	[19.5-28.5]
Condoms		
Ever used a condom (N=322)		
Yes	93.1 (300)	[90.1-95.4]
No	6.9 (22)	[4.3-9.6]
Have a condom with them during the survey (N=313)		
Yes	22 (69)	[17.0-26.0]
No	78 (244)	[70.3-80.2]
Frequency of use (N=319)		
Everytime	27.2 (87)	[22.3-31.9]
Never	6.8 (22)	[4.0-9.3]
Often	21 (67)	[16.4-25.4]
Sometimes	45 (144)	[39.6-49.8]
Use during the last intercourse (N=318)		
Yes	64.1 (204)	[57.9-68.4]
No	35.9 (114)	[30.0-40.5]
Lubrifiants		
Ever used a lubricant (N=314)		
Yes	44.5 (140)	[37.8-48.9]
No	55.4 (174)	[48.0-59.4]
Types of lubricants (N=170)		
Oil based lubricants (OBL)	51.2 (87)	[46.0-56.2]
Water based lubricants (WBL)	43.5 (74)	[38.5-48.4]
Others	5.3 (9)	[3.7-7.1]

Table 3: Identity, origins, and sexual orientation of MSM partners.

Parameters	Proportion in % (N)	95% CI
Type of Partners (N=323)		
Commercial	25.1 (81)	-
Non commercial	74.9 (242)	-
Origin of partners		
Commercial (N=81)		
European	24.7 (20)	-
American	6.1 (5)	-
Non congolese African	24.7 (20)	-
Asian	7.5 (6)	-
Unidentified foreigners	37 (30)	-
Non commercial (N=227)		-
Congolese (DRC)	96.9 (220)	-
Non congolese African	2.2 (5)	-
European	0.9 (2)	-
Sexual orientation of the main partner (N=323)		
Homosexual	44.3 (143)	[40.9-47.7]
Bisexual	35 (113)	[30.3-36.2]
Ignore	20.7 (67)	[19.8-25.1]

significantly associated with the HIV infection; these variables were considered (forced) in the multivariate pattern. Logistic regression showed that the HIV infection is independent from the marital status, the sexual identity, the frequency of sex acts, the role played during anal intercourse, and the use of lubricants. On the other hand, it is associated with age, the education level, and the types of intercourse. MSM were strongly likely to have the HIV infection when they had a high education level [^{a}OR 3.63(1.37-9.57)]. That risk increased per year of life by 9% [^{a}OR 1.09 (1.00-1.18)] when the age increased by one unit. The fact of practicing more than three types of intercourse-anal, oral, and others was five times more likely to be a risk for the HIV acquisition [^{a}OR 5.31 (1.26-22.30)] (Table 4).

Discussion

Data on the magnitude of HIV infection as well as the sexual practices and behaviors among the MSM population are poorly supplied at the DRC HIV/AIDS control program. Also, the integration of the MSM into the HIV/AIDS policy is relatively recent. This study

Table 4: Risk factors associated with HIV infection among MSM recruited in Kinshasa.

Parameters	HIV+	HIV-	Univariate analysis	P univ	Multivariate analysis	P multiv
	n (%)	n (%)	OR (95% CI)		[a]OR (95% CI)	
Age in years	27 (0.93)	24 (0.26)	1.12 (1.04-1.20)	0.001	1.09 (1.00-1.18)	0.04
Marital status				0.08		0.84
Single	23 (8)	263(92)	-		-	
In couple with Women	1(11.1)	8(88.9)	1.42 (0.17-11.93)		1.23 (0.09-15.27)	
In couple with Men	6(21.4)	22(78.6)	3.11 (1.14-8.46)		1.43 (0.41-5.02)	
Education level				0.05		0.04
Superior	15 (15.2)	84 (84.8)	2.78 (1.24-6.20)		3.63 (1.37-9.57)	
Secondary	12 (6)	187 (94)	-		-	
Primary	1 (6.7)	12 (93.3)	1.11 (1.13-9.19)		3.95 (0.39-40.00)	
Other	2 (20)	8 (80)	3.89 (0.74-20.40)		4.88 (0.69-34.11)	
Role played during anal intercourse				0.01		0.29
Active	4 (3.0)	128 (97)	-	-	-	-
Passive	15 (13.6)	95 (86.4)	5.05 (1.62-15.71)	0.005	2.66 (0.66-10.75)	
Versatile	11 (14.3)	66 (85.7)	5.33 (1.63-17.39)	0.006	2.75 (0.70-10.73)	
Frequency of condom use	-	-	-	0.63	-	-
Everytime	6 (6.9)	81 (93.1)	-			
Never	1 (4.8)	20 (95.2)	0.67 (0.07-5.92)			
Often	7 (10.4)	60 (89.6)	1.57 (0.50-4.92)			
Sometimes	16 (11.1)	128 (88.9)	1.68 (0.63-4.49)			
Intercourse types combined to sex orgy and partner swapping (anal/oral/ sex orgy/partner swapping)				0.006		0.06
1 type	6 (5.3)	108 (94.7)	-		-	
2 types	9 (8.7)	94 (91.3)	1.72 (0.59-5.02)		1.19 (0.33-4.27)	
3 types	6 (8.8)	62 (91.2)	1.74 (0.53-5.63)		1.33 (0.33-5.28)	
>3 types	9 (27.3)	24 (72.7)	6.75 (2.19-20.76)		5.31 (1.26-22.30)	0.02
Use of lubricants				0.05		0.8
No	7 (5.0)	133 (95)	-	-	-	
Yes	20 (11.4)	156 (88.6)	2.46 (1.01-6.01)	-	1.13 (0.40-3.19)	
Types of lubricants used	-	-	-	0.82	-	-
Aqueous	10 (135)	64 (86.5)	-	-		
Oily	9 (10.3)	78 (89.7)	0.73 (0.28-1.92)	-		
Other	1 (11.1)	8 (88.9)	0.80 (0.09-7.09)	-		

showed a 9.3% prevalence of HIV among MSM in Kinshasa. Almost ninety percent of MSM were single, 61.7 % with bisexual orientation; nearly the quarter had > 5 homosexual partners in the six months before the survey; more than 5% of them had >20 homosexual and 11 to 20 heterosexual intercourses in the last three months. The combination of multiple types of intercourse was five times more likely to be at risk for HIV acquisition.

This study showed a high prevalence of HIV infection among MSM as higher as 7.75 times fold compared to the corresponding general population of the DRC (9.3% *vs.* 1.2%). The prevalence of HIV infection was 25.5% among the MSM versus 4.6% in the general population in Douala, and 44.4% among the MSM versus 6.3% for the general population in Yaoundé [10]; 21.5% among MSM versus 2% for the general population in Senegal [7]; 12.3% in MSM versus 0.8% for the general population in Tanzania [8, 9]. If we compared the prevalence of HIV infection among MSM and men of the general population, authors reported an average prevalence of 17.8% versus 6.1% respectively. Regardless of the African region considered, the prevalence of HIV infection still shows the same trends: 14.4, 3.3- and 1.24-times folder among MSM compared to men in the general population respectively in Western/Central, Eastern and Southern Africa [11]. However, the high prevalence of HIV found among MSM (9.3%) in our study is still lower compared to that of several African studies especially, in Senegal (Wade: 21.5%) [7], in South Africa (Baral: 25.5%) [15], in Zanzibar (Dahoma and Johnson: 12.3%) [8,9], in Cameroon (Park: 25.5% in Douala, 44.4% in Yaoundé) [10]. Although, Mirzazadeh in Yemen reported a low prevalence at 5.9%

[16]. The difference observed in our study can be explained by the fact that in a given region or country, the prevalence of HIV infection among MSM is strongly modeled on the trend of the infection in the general population. Additionally, the highly homosexual stigmatizing behaviors could generate the criminalization of homosexuality capable of impeding the implementation of the intervention policy in favor of MSM population.

We found 61.7% of bisexuals, 5.8% of MSM who had 11 to 20 heterosexual sex acts in the last three months. These results corroborate Park's findings with 62% of bisexuals in Yaoundé and Douala [10]. However, our findings contrast with Mmbaga [6], Wade [7], Baral [15], Mirzazadeh [16], and Lane [18] who respectively found 32.1%, 94.1%, 17.1%, 40.9%, and 33.6% of bisexuals in their respective studies. The political, social, and religious context could explain those disparities. Indeed, in the countries with homosexuality favorable legislation, the MSM tends to freely express their sexual identity as well as most of their activities. On the other hand, the drastic policy applied against homosexual rights in unfavorable legislation countries strongly hinders the disclosure of the sexual identity and the homosexual activities. Given the context of stigma in which our study was conducted in the DRC, we think that most MSM could not fully disclose their sexual identity. Therefore, it was easy for them to take as much women as possible from the general population to avoid arousing any suspicion from their entourage.

The systematic condom use was reported in 27.2% in our study. Mirzazadeh (Yemen 2011) [16], Baral (South Africa 2011) [15] reported a very low rates use, respectively 10% and 6.5%. Wade (Senegal 2005) [7] and Mmbaga [6] (Tanzania 2012) respectively found 66% and 36.7% of condom use. We think that condom use is correlated with the magnitude of the vulgarization in the messages targeting the HIV prevention. Additionally, the unavailability, the refusal, and the lack of interest in the condoms could explain the low rate of use. The MSM reported 33.6% of condoms unavailability in our study.

Only 44.5% of MSM in our study reported having used a lubricant once. Among the lubricant's users, 43.5% acknowledged the use of water-based lubricants one time, whereas 34% and 25.3% of MSM reported the use of the Vaseline and the saliva as lubricant substitutes, respectively. Ju Nyeong Park (Cameroon) found a rate of 90% of lubricant use and 26.3% of the substitutes of lubricant [10]. Baral (South Africa, 2011) reported a water-based lubricant use in 1.9% and oil-based lubricant in 98.1% of cases during the anal sex acts; and the saliva was the most lubricant substitute used in 18.6% [15].

The differences observed can originate in the poor level of knowledge on the lubricants, their existence and roles during anal intercourses as well as the limited availability in pharmacies and HIV/AIDS control program and agencies in the DRC.

The snowball technique used to recruit the MSM throughout this study could have generated the eventual biases through the selection of the participants with epidemiological links. Accordingly, the selection of the MSM may have not been as random as expected with the respondent-driven-sampling. Our questionnaire did not allow us to collect more information on the MSM partners especially, on their sexual practices and behaviors. This could have had led to an underestimation of the extent of HIV transmission in the general population. However, this study documents for the first time the prevalence of HIV, the sexual practices and behaviors among the MSM population of Kinshasa, in the Democratic Republic of Congo.

Conclusion and Prospects

This study conducted in Kinshasa, the capital of the Democratic Republic of Congo, documented for the first time a high prevalence of the HIV infection among the MSM in which the bisexuality, the multiple sexual partners, and the diversity of anal intercourses were the commonly experienced practices. Some of the habits reported in our study were associated with a high risk of the HIV transmission. The data provided by this study are timely since they can guide the adjustment of the strategies used by the DRC HIV/AIDS control program the prevention, the sensitization, and the management of the HIV infection. This study offers relevant information to the DRC HIV/AIDS control program in the context of evidence-based health policy. We prospect conducting a multicenter respondent-driven sampling through different cities of the DRC to increase the epidemiological distance between the MSM attending at our surveys. We also propose to enrich the survey by including some key information on the sexual practices and behaviors of the MSM partners.

Declaration

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