HIV Risk, Prevalence, and Access to Care Among Men Who Have Sex with Men in Lebanon

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Abstract

Little is known about HIV prevalence and risk among men who have sex with men (MSM) in much of the Middle East, including Lebanon. Recent national-level surveillance has suggested an increase in HIV prevalence concentrated among men in Lebanon. We undertook a biobehavioral study to provide direct evidence for the spread of HIV. MSM were recruited by respondent-driven sampling, interviewed, and offered HIV testing anonymously at sites located in Beirut, Lebanon, from October 2014 through February 2015. The interview questionnaire was designed to obtain information on participants' sociodemographic situation, sexual behaviors, alcohol and drug use, health, HIV testing and care, and experiences of stigma and discrimination. Individuals not reporting an HIV diagnosis were offered optional, anonymous HIV testing. Among the 292 MSM recruited, we identified 36 cases of HIV (12.3%). A quarter of the MSM were born in Syria and recently arrived in Lebanon. Condom use was uncommon; 65% reported condomless sex with other men. Group sex encounters were reported by 22% of participants. Among the 32 individuals already aware of their infection, 30 were in treatment and receiving antiretroviral therapy. HIV prevalence was substantially increased over past estimates. Efforts to control future increases will have to focus on reducing specific risk behaviors and experience of stigma and abuse, especially among Syrian refugees.

Keywords: HIV behavioral risk, Middle East, MSM, displaced people, stigma

Introduction

THE NUMBER OF HIV CASES in the Middle East and North Africa (MENA) region is the lowest of all the world's regions.¹ Nevertheless, there is concern that prevalence is increasing especially in high-risk populations.^{2,3} The ability to detect such increases may be hampered by difficulties in identifying and providing HIV testing to members of high-risk populations, a consequence of the criminalization and stigmatization of male same sex behaviors.^{2,4} Such difficulties might be particularly acute in Lebanon, where an influx of Syrian refugees has swelled the country's population by 25%. Despite the existence of laws forbidding homosexuality in Lebanon, there is greater feeling of tolerance than in most other MENA countries.^{5,6} Its National AIDS Program (NAP) has openly reported to UNAIDS on the HIV epidemic in the community of men who have sex with other men (MSM) in

the context of a population-wide epidemic that has been characterized as low prevalence.⁷ The NAP and UNAIDS reported 1,455 cumulative cases through 2011, with 109 cases reported in the previous year mostly through sexual transmission.⁸ Although much of the sexual transmission was held to be among the MSM population, the prevalence and incidence were considered to be low. This is consistent with a pair of small research studies that accrued samples of MSM.

The first biobehavioral study of high-risk populations, conducted in 2008–2009, found a point prevalence of 1.2% among MSM (1 of 83).⁹ A second study, conducted in 2012, estimated HIV prevalence at 1.5% (3 of 198).¹⁰ Since then, estimates of the HIV epidemic in the MENA region still suggest low prevalence, but a 20% increase in prevalence in the 4 years between 2011 and 2015.¹ This region-wide assessment was iterated in Lebanon, when in 2014, for the first time, the NAP and UNAIDS reports indicated an increasing national

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prevalence and the presence of clearly defined pockets of concentrated epidemic within most at-risk populations, which include MSM, people who inject drugs, and commercial sex workers.¹¹ More than 90% of these newly diagnosed HIV cases have been in men; the absence of an equivalent number of new cases among women suggests that much of the increase in the prevalence has been among MSM.¹²

Beginning in the summer of 2014, we conducted a project to recruit, interview, and test for HIV the largest sample of MSM yet assembled in Lebanon. This effort was part of a large comprehensive project designed to estimate the size of MSM and drug-using populations at risk for HIV in Lebanon, conduct HIV testing, explore risk behaviors and psychological factors influencing risk, and map the geographic distribution of these populations. In this study, we report on HIV prevalence and identify HIV risk behaviors and psychological factors associated with prevalent infection among MSM. Secondary outcomes included factors associated with receiving HIV care among those MSM who reported being HIV positive and differences between Lebanese-born and foreign-born MSM.

Materials and Methods

The study was conducted by a team of American consultants and local field team led by a local public health expert and staffed by an outreach team drawn from four nongovernmental organizations (NGOs) that serve the target population. The study protocol, recruitment method, data collection instruments, HIV testing approach, and oral consent forms were approved by the Institutional Review Board at the Lebanese American University.

The questionnaire for the study was built upon the framework of the Integrated Bio-Behavioral Survey (IBBS) toolbox. Available from the University of San Francisco Global Health Sciences and developed in conjunction with the HIV Epidemiology section of the San Francisco Department of Public Health. The IBBS is a free publicly available tool for conducting international HIV surveillance that has been used in published research in at least eight countries in Eastern Europe, Africa, and Asia.¹³ The resulting survey was designed not only to collect information but also to inform policy and evaluate programs serving HIV-affected populations. It was divided into seven major sections: (1) sociodemographics, (2) sexual history and current behaviors, (3) sexual networks, (4) drug use, (5) stigma, discrimination, and violence, (6) history of HIV and sexually transmitted infections, and (7) for those who reported being HIV positive, HIV care experiences. The questionnaire was translated into Arabic and a 3-day training workshop with outreach workers from the local agencies serving the MSM community was used to produce a final adaptation of the questionnaire.

Participants were recruited by respondent-driven sampling (RDS) beginning with seeds who were MSM already known to the outreach workers. RDS is a widely used chain-referral scheme for recruiting individuals from hidden populations or without a known sampling frame.¹⁴ It employs coupons for those already recruited to invite others in the population of interest to participate in the study and a dual incentive provided both for participation and for successful recruitment. Seeds and coupon holders were screened for eligibility, asked to provide informed consent, and interviewed at one of three

NGOs serving MSM or at another location, either public or private, as preferred by potential recruits.

Eligibility criteria for participation included being male and 18 years of age or older, self-report of sex with another man in 6 months before enrollment, and being selected as a seed or in possession of a valid study coupon. After obtaining informed consent, the staff administered the survey questionnaire in either Arabic or English. In addition to the seven sections described above, the questionnaire was used to collect data pertinent to understanding recruitment patterns. Individuals who did not report having been diagnosed with HIV were offered HIV testing after completing the survey. Willing participants were given four coupons to recruit other participants. Sample recruitment and data collection began in early October 2014 and ended on February 15, 2015. For this study, a total of 19 seeds were enrolled, of whom 15 recruited at least one other individual.

Statistical methods

Self-reported answers to survey questions were compiled to determine the characteristics of the sample and frequencies of individual risk behaviors and practices. In this report, HIV infection status was determined either by self-report or voluntary testing offered to those reporting either a negative result at the last test or no prior history of HIV testing.

In addition to descriptive statistics, correlations between these behaviors and HIV-1 prevalence, the primary outcome of interest, were identified. Logistic regression modeling with HIV status as the dependent variable was developed using R software.¹⁵ Given the special circumstances created by refugee flows into Lebanon and the lack of previous studies and literature on the MSM community, we forced certain demographic, national origin, and risk behaviors into the logistic regression model. We then determined the most efficient and parsimonious model using backward stepwise model selection with the Akaike information criterion.^{16,17} To better assess HIV risk, we created a multiple correlation matrix applying Pearson's correlation test to identify possible collinearity among the six main HIV sexual risk behaviors using the Rcmdr package.¹⁸

Results

Recruitment of the sample

RDS proved an effective tool in recruiting MSM; a total of 292 eligible individuals were enrolled into the study. The mean number of subjects recruited by each subject was 0.9 (± 1.5) for all subjects and 2.7 (± 1.3) among subjects who recruited at least one other subject. The recruitment pattern reveals that it was most common for participants who were successful recruiters to have all four of their coupons redeemed and this accounted for 236 (63%) of the sample recruited by other participants. The percentage of participants who had all four coupons redeemed did not decrease over the course of the study, suggesting no saturation of the target population. We examined the self-reported network size (degree) of participants based on responses to questions about how many people they had contact with in the past month who they would consider eligible for recruitment into the study. The mean network degree of subjects was 15.8 (± 17.5) and the mean network degree among successful recruiters was 19.5 (± 23.9).

Participant characteristics

Sociodemographic characteristics of study participants are presented in Table 1. Of particular interest was the finding that only 71% was born in Lebanon and a quarter was born in Syria. Although participation was open to any resident of Lebanon, all but 28 participants (9.6%) lived within Beirut or one of its contiguous suburbs. Of the 10 individuals who reported being married, five had male spouses despite the illegality of same-sex marriage in Lebanon.

Data on behavioral risks are presented in Table 2. Committed relationships, consisting of only a single sexual partner in the year before interview, were reported by 53 (17.8%). Among these, more than three-quarters ($n=40$, 76.9%) reported that this person was someone with whom they regularly had sex at a mean frequency of just more than once per week (55.6 times in the past year) with a range from once to 261 times. Condom use in this group of monogamous MSM was rare; only seven of those men who reported having sex at least 10 times in the past year with that single partner reported always using condoms. We identified eight partnerships with known discordant HIV status. In five of the eight, condoms were always used; in another two, condoms were sometimes used one-third or three-quarters of the time; and in one, condoms were never used.

More than one in five MSM ($n=61$, 21.6%) reported engaging in group sex during the year before interview. The

TABLE 1. MEN WHO HAVE SEX WITH MEN
SOCIODEMOGRAPHICS

Variable		
Age, years		
Mean $\pm$ SD	27.1	8.1
Median (IQR)	25	21, 30
Country of birth		
Lebanon	206	71%
Syria	72	25%
Iraq	2	1%
Other	10	3%
No response	2	1%
Educational level		
Never attended school	3	1%
Completed primary school	62	21%
Completed secondary school	52	18%
Some postsecondary	82	28%
Completed postsecondary	90	31%
Employed or earning an income	177	60%
Range of monthly income		
$\leq \$500$	112	38%
\$501–2,000	109	37%
\$2,001–\$4,000	29	10%
>\$4,000	2	<1%
No response	40	14%
Marital status		
Currently married	10	3%
Formerly married	15	5%
Never married	264	90%
Duration of current residence, in months		
Mean $\pm$ SD	70.1	86.9
Median (IQR)	27	5, 72

IQR, interquartile range; SD, standard deviation.

TABLE 2. MEN WHO HAVE SEX WITH MEN
SEXUAL BEHAVIORS AND RISKS

Variable	No.	
Ever had vaginal or anal sex with a woman	102	35.4%
Vaginal or anal sex with a woman, last year	36	12.3%
Ever had anal sex with a man	283	98.6%
Age at first sex with a man	Mean $\pm$ SD, 16.7 $\pm$ 4.2	Median (IQR), 10 (2.5, 27.5)
Anal sex with a man, last year	283	98.6%
No. of male partners, last year	Mean $\pm$ SD, 20.7 $\pm$ 1.6	Median IQR, 10.0 2.5, 27.5
Only for those reporting ≥ 1 No. with only a single partner, last year	53	17.8%
No condom use for those reporting ≥ 1 partner		
Female partners	20/36	55.6%
Male partners	184/283	65.0%
Gave sex for money, goods, or service		
Female partners	7/36	30.6%
Male partners	13/283	4.6%
Received sex for money, goods, or service		
Female partners	11/36	10.8%
Male partners	83	29.3%
Engaged in group sex, last year	61	21.6%
No. of group sex encounters, last year	Mean $\pm$ SD, 3.5 $\pm$ 4.8	Median (IQR), 2 (1, 3)
Only for those reporting ≥ 1	44/55	81.8%
Condom availability during group sex		
Respondents' condom use during group sex, last encounter		
Never	30/61	49.2%
Sometimes	20/61	32.8%
All	10/61	16.4%
Substance use during group sex, last encounter		
Alcohol	45	81.8%
Stimulants (cocaine or methamphetamine)	7	11.5%
Club drugs (e.g., ecstasy, GHB, ketamine)	9	14.8%
Others	4	6.6%
Location of last group sex encounter		
Club	1	1.6%
Hotel	13	21.3%
Private residence	44	72.1%
Other	4	6.6%
Finding sex partners		
Mobile App	120	41.1%
Internet	53	18.2%
Bar	30	10.3%
Club	23	7.9%
Other	89	30.5%
Injection drug use		
Ever	5	1.7%
Last 30 days	1	0.3%

mean number of group sex encounters was 3.5 and the range was from 1 to 25. Data on condom use, available for 55 of these events, revealed that condoms were available on 45 (81.8%) occasions, but on 18 occasions, not everyone used them. Reporting on respondent's own behaviors during group

sex revealed that condom use was much less frequent. Nearly half ($n=30$, 49.2%) never used a condom and only 10 (16.4%) used a condom for all intercourse. Alcohol and drug use data were available for 48 of the 61 group sex events. Alcohol was available at 45 (93.8%), stimulants such as methamphetamine were available at 7 (14.6%), club drugs were available at 9 (18.8%), and multiple substances were available at 16 (33.3%) events (data not shown). Individuals reported consuming alcohol and stimulants at similar rates (alcohol: 81.8% and stimulants: 11.5%), and club drugs such as ecstasy or GHB were more readily available (37.5%) than were consumed (14.8%).

Among the interesting results was the use of electronic media to find sexual partners. Online searching for partners, using either a mobile app or the Internet, was reported by 173 (59.7%) MSM. Face-to-face first contacts were less common; only 53 MSM (18.3%) reported meeting at venues such as bars or clubs, 16 (5.5%) on the street, and 4 (1.4%) at private parties.

Few MSM reported injection drug use. Only 5 (1.7%) had ever injected and only one had done so in the 6 months before interview.

HIV prevalence and associated factors

Serological testing for HIV was offered to all participants. Sixteen participants who reported no previous HIV test declined to be tested in this study. A total of 36 individuals were recorded as HIV positive, of whom 32 were already aware of being infected, and only four new infections were detected among the 209 individuals who agreed to be tested after completing the survey interview. We estimate the prevalence at 13.0% among the 276 participants with any history of testing and 14.9% among those who reported a prior test and either were positive at that test or tested negative then and agreed to be retested as part of this study ($n=242$). The participants with previously diagnosed HIV were all interviewed at a single NGO site.

We analyzed sociodemographic and behavioral factors associated with HIV infection using bivariate analysis (Table 3).

Sociodemographic factors associated with HIV-positive status at $p \leq .05$ included older age, Lebanese birth, and higher income. Because most individuals were aware of their status, it was not surprising to find that prevalence was significantly associated with four separate measures of less sexual risk during the last three encounters—less condomless sex, fewer individuals with multiple partners, less transactional sex, and less sex while intoxicated or high on drugs. We constructed a Pearson's correlation matrix of the six most important HIV sexual risk factors and found no relationships between variables greater than or equal to 0.80, thus demonstrating no evidence of multicollinearity. Of the eight questions concerning stigma and discrimination, two were negatively associated with HIV status; none of those who were aware of being HIV positive reported experiencing housing discrimination or physical abuse. Stepwise logistic regression used for variable selection reduced the number of variables significantly associated with being HIV positive to just two, both were sociodemographic—older age and having been born in Lebanon (Table 3).

Thirty of the 32 individuals aware of being infected also reported being in care at the time of the interview and 28 were receiving antiretroviral medications. The median time since these patients' last visit for HIV was 1 month.

Discussion

The main findings from our study of MSM in Lebanon are (1) a higher HIV-1 prevalence than in any previous study, (2) the existence of a large number of Syrian-born recently arrived MSM, and (3) HIV risk behaviors concentrated among HIV-negative MSM that are centered around the use of social media for partner acquisition and participation in group sexual encounters.

HIV prevalence in the sample of MSM recruited in the sample was higher than the 1.2%–1.5% found in prior studies, both of which had been conducted within the past decade.^{9,10} The prevalence in excess of 10% is suggestive of an expanding epidemic, consistent with observations reported by the NAP of Lebanon and in the local press.^{11,12} However,

TABLE 3. FACTORS ASSOCIATED WITH PREVALENT HIV INFECTION AMONG MEN WHO HAVE SEX WITH MEN

Variable	HIV positive ($n=36$), n (%)	HIV negative ($n=240$), n (%)	Bivariate analysis		Multivariate model	
			Odds ratio	p	Adjusted odds ratio	95% CI
Age, years				<.001		
≤25	6 (16.7)	142 (59.2)	Referent		12.27	4.07–37.01
>25	30 (83.3)	98 (40.8)	8.69			
Country of birth						
Lebanon	30 (83.3)	166 (69.2)	Referent			
Syria	4 (11.1)	64 (26.7)	0.255	.028	0.14	0.037–0.51
Other	2 (5.6)	8 (3.3)	1.23	.80		
More than secondary school	31 (86.1)	181 (75.4)	2.526	.093	n.s.	n.s.
Higher income	15 (41.7)	65 (27.1)	2.325	.026	n.s.	n.s.
Multiple partners, last year	23 (63.9)	198 (82.5)	0.406	.023	n.s.	n.s.
Any condomless sex, last year	17 (47.2)	168 (70.0)	0.377	.008	n.s.	n.s.
Any transactional sex, last year	5 (13.9)	89 (37.1)	0.281	.011	n.s.	n.s.
Sex while drug or high, last year	8 (22.2)	103 (42.9)	0.380	.022	n.s.	n.s.
Refused housing	0 (0)	32 (13.6)	—	.0217	n.s.	n.s.
Physically assaulted	0 (0)	40 (16.9) ^a	—	.0091	n.s.	n.s.

^a $N=235$.

CI, confidence interval.

our prevalence estimate must be taken in the context of recruitment bias introduced by our use of RDS. Thirty of the 32 HIV-positive participants who were aware of their status were interviewed at one of the three NGOs, whereas only 43 of the remaining 249 participants were interviewed there. This points out the difficulties of conducting chain-referral sampling and potential problems that occur when researchers attempt to extrapolate their findings to the underlying population from which the sample was drawn.

The additional finding that almost all individuals who knew that they were infected were in care and all but 4 (of 32) were being treated with antiretroviral medications again suggests that our sampling scheme tapped into a well-connected support group for HIV-positive MSM. The actual prevalence of HIV among MSM remains an open research question that requires a larger and more representative sample. However, given that our point estimate substantially exceeds previous estimates, the need for further sampling is clear and compelling.

The second major finding that Syrian-born men now comprise a quarter of a sample of MSM recruited in Beirut suggests an altered demographic, one brought on by migration and displacement caused by the Syrian civil war. The small sample and the nature of RDS recruitment preclude drawing definitive conclusions about HIV epidemiological prospects for these newly arriving men. Nonetheless, the findings do suggest that at present, these Syrian-born MSM have a lower HIV prevalence than their Lebanese-born counterparts. The findings around sexual risk behaviors and a set of elevated factors measuring discrimination and stigma do, however, suggest that they are at an increased likelihood of becoming HIV infected, consistent with studies conducted elsewhere.^{19–21} More work will need to be done to identify how to intervene to reduce this risk and, in broader terms, protect the health and well-being of the newly arriving displaced population.

The third finding demonstrates that the MSM community is adept at using social media for arranging meetings that presage sexual activity. Among the 70% who reported multiple partners in the 6-month survey window, 70% used electronic tools to find partners. This suggests that interventions that work through electronic social media might be useful in reaching the higher risk members of the MSM community.

There are some substantial limitations to our study. The first is the use of RDS. Although recruitment followed a common pattern of several long chains from a number of seeds, this does not ensure a representative sample of MSM. Indeed, our finding of a concentration of HIV-positive MSM, all of whom knew their status and were in care, within one chain suggests nonuniform sampling. In addition, our sample of 292 individuals comprises about 8% of the estimated population of MSM in the Beirut area.²² Therefore, we must consider our sample one of convenience. Note that we have not used adjusted prevalence or proportion estimators. There is no evidence that weighted estimates are warranted because RDS methodology fails to meet the assumptions required for applying these estimators, in that one or more assumptions used in weighting are either routinely violated in practice or unprovable given the quasi-network structure and hidden recruitment features of sampling.^{23–32}

The small sample size also limits our power to find demographic and behavioral variables associated with HIV status. Nonetheless, our finding that awareness of HIV-positive status was associated with reductions in HIV risk

behavior is consistent with findings among MSM from Europe and the United States.^{33–35}

Despite these limitations, the findings do suggest the potential for a growing HIV epidemic concentrated among the MSM community in Lebanon that displays high rates of multiple partnerships and group sex and is being enlarged by immigration of Syrian men whose legal and economic status may compromise their ability to have sex safely. The findings also suggest that newly emerging intervention approaches that use electronic social media might be employed to reduce HIV transmission. We are working with local NGOs and health authorities to determine if such interventions can be developed.

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