HIV, syphilis and sexual risk behaviours among men who have sex with men in Agadir and Marrakesh, Morocco

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ABSTRACT
Objective To collect baseline measurements of HIV and syphilis prevalence and sexual risk behaviours among men who have sex with men (MSM) in Agadir and Marrakesh, Morocco, and provide strategic information to improve outreach programmes.

Methods and Design Respondent-driven sampling was used to recruit men who reported having anal sex with another man in the last 6 months, aged 18 years and older and living in either Agadir or Marrakech for the past 6 months, regardless of nationality. Data were analysed with the multiplicity estimator using respondent-driven sampling analysis tool V.6.0.

Results 323 MSM in Agadir and 346 in Marrakech were recruited into the survey. Most MSM in both cities reported being < 25 years, being unemployed, bisexual and in a couple with both a man and a woman. Most reported selling sex and having sex with women. HIV prevalence was 5.6% in Agadir and 2.8% in Marrakesh; syphilis was 7.0% in Agadir and 10.8% in Marrakesh. Among MSM who tested positive for HIV, 31.6% in Agadir and 56.4% in Marrakesh were co-infected with syphilis.

Conclusions HIV and syphilis findings coupled with high-risk activities indicate the need for expanding programmes targeting MSM throughout Morocco. Selling sex and sex with women may be a strategy to cope with extreme stigma towards MSM. Criminalisation and discrimination of MSM in Morocco underscores the urgent need for long-term and sustainable risk reduction through legal reforms and promotion and protection of human rights.

INTRODUCTION
HIV prevalence in Morocco is estimated at 0.15% among the general population. In the few published men who have sex with men (MSM) studies conducted to date in the five countries comprising North Africa, HIV prevalence was found to range from 1.4% to 6.2% in Egypt and 0% to 9% in Morocco.1 2 Incidence of HIV in MSM in Morocco is estimated to be 1.04% and HIV prevalence is projected to reach as high as 11.1%.1 Recent surveys conducted in other Middle East and North African (MENA) countries have found that MSM engage in numerous high-risk behaviours, including multiple sexual partnerships, commercial sex and unprotected anal intercourse.2 3 Additionally, MSM have reported being married or engaging in sexual intercourse with women, highlighting the possible transmission of HIV and other sexually transmitted infections (STIs) to female sex partners.4 4 Male-to-male sex in Morocco is illegal and punishable by imprisonment and fines. This paper presents findings from a biobehavioural survey conducted among MSM in Agadir and Marrakesh, Morocco to provide information and establish baseline measurements of HIV and syphilis prevalence and sexual risk behaviours.

METHODS
MSM were sampled using respondent-driven sampling, a peer-to-peer recruitment method.5 6 The survey began with 10 participants in Agadir and 8 in Marrakesh, identified through outreach workers. Eligible men underwent consent, completed a face-to-face interview in Arabic, and provided blood specimens for HIV and syphilis testing. Upon completing the survey process, participants received up to three uniquely coded coupons to use in recruiting their peers. Respondents were compensated the equivalent of US$7 for completing the survey and US$3.50 for each eligible recruit who enrolled in the survey. To ensure anonymity, respondents’ questionnaires and biological tests were identified using a unique number provided on the recruitment coupons. The Morocco Faculty of Medicine ethics committee approved the protocol.

Laboratory procedures
HIV samples were tested using ELISA. Reactive specimens were assessed using a western blot confirmatory test. ELISA and western blot discordant cases were tested again using a molecular biology tool polymerase chain reaction. Syphilis was tested using Treponema pallidum hemagglutination assay (TPHA) and Venerable Disease Research Laboratory (VDRL) tests (Omega Diagnostics Limited, Scotland, UK)—reactive serological TPHA and VDRL tests are presented (Table 1).

Statistical analysis
Population proportions and 95% CIs were derived with the respondent-driven sampling analysis tool V6.0 using the multiplicity estimator.6

RESULTS
Three hundred and twenty-three MSM in Agadir and 346 in Marrakech enrolled in the survey. A maximum number of 12 waves was reached in the Agadir sample and 23 waves in the Marrakesh sample. Most MSM in both cities reported being < 25 years, attending secondary school, being unemployed, single, bisexual and in a couple with a man and a woman (table 1). High percentages of men in both cities reported receiving...
Table 1  Sociodemographic characteristics, sexual risk and infection status of men who have sex with men, Morocco, 2010–2011

|                          | Agadir (N=323) |                  | Marrakech (N=346) |                  |
|--------------------------|---------------|------------------|-------------------|------------------|
|                          | N  | %  | 95% CI       | N  | %  | 95% CI       |
| Age (years)              |    |    |              |    |    |              |
| ≤24                      | 235| 78.2| 71.8 to 83.8| 228| 75.6| 68.7 to 81.5|
| ≥25                      | 88 | 21.8| 16.2 to 28.2| 117| 24.4| 18.3 to 31.4|
| Current education level  |    |    |              |    |    |              |
| None/Koranic             | 16 | 8.3 | 4.1 to 15.2 | 33 | 10.3 | 6.0 to 15.1 |
| Primary                  | 80 | 21.0| 14.7 to 27.4| 100| 24.8| 19.3 to 30.9|
| Secondary/professional   | 198| 61.9| 52.5 to 68.2| 206| 64.3| 57.0 to 71.1|
| College/> secondary      | 29 | 8.7 | 4.5 to 15.7 | 6  | 0.7 | 0.2 to 1.4  |
| Current employment status|    |    |              |    |    |              |
| None                     | 163| 50.6| 42.3 to 59.1| 189| 55.0| 46.6 to 63.6|
| Employed                 | 74 | 21.9| 15.8 to 28.8| 78 | 18.5| 13.4 to 24.2|
| Student                  | 86 | 27.5| 20.2 to 35.3| 79 | 26.5| 18.5 to 34.7|
| Marital status           |    |    |              |    |    |              |
| Single                   | 308| 96.2| 93.4 to 98.4| 330| 97.2| 94.7 to 99.0|
| Married                  | 13 | 3.5 | 1.3 to 6.2  | 5  | 0.9 | 0 to 2.5    |
| Divorced                 | 2  | 0.3 | 0 to 0.8    | 10 | 2.0 | 0.5 to 4.0  |
| Sexual orientation       |    |    |              |    |    |              |
| None                     | 13 | 1.9 | 0.9 to 3.5  | –  | –  | –            |
| Homosexual/gay           | 102| 25.1| 18.0 to 32.8| 88 | 21.0| 14.2 to 28.3|
| Bisexual                 | 182| 67.3| 59.0 to 74.3| 224| 69.8| 62.8 to 76.6|
| Heterosexual             | 7  | 3.0 | 1.0 to 5.7  | 32 | 8.8 | 5.5 to 13.0 |
| Transsexual              | 4  | 2.3 | 0 to 6.6    | 1  | 0.4 | 0 to 1.0    |
| Other                    | 2  | 0.5 | 0 to 1.3    | –  | –  | –            |
| Current type of relationship |    |    |              |    |    |              |
| Not in a stable relationship | 61 | 15.8| 10.9 to 20.9| 85 | 25.3| 18.8 to 32.7|
| As a couple with a man   | 57 | 25.2| 18.0 to 32.7| 89 | 27.8| 20.7 to 34.3|
| As a couple with a woman | 26 | 7.6 | 4.3 to 11.6 | 46 | 12.3| 8.3 to 17.6 |
| As a couple with a man and woman | 178 | 51.5| 43.9 to 59.1| 124 | 34.5| 27.6 to 41.5|
| Paid money or goods for sex (past 6 months) |    |    |              |    |    |              |
| Yes                      | 52 | 17.3| 11.5 to 23.4| 50 | 13.8| 8.9 to 19.7 |
| No                       | 270| 82.7| 76.6 to 88.5| 290| 86.2| 80.3 to 91.1|
| Received money or goods for sex in past 6 months |    |    |              |    |    |              |
| Yes                      | 214| 64.7| 58.1 to 72.1| 234| 65.6| 57.6 to 72.9|
| No                       | 108| 35.3| 27.9 to 41.9| 109| 34.4| 27.1 to 42.4|
| Condom use—last anal sex with male commercial sex partner |    |    |              |    |    |              |
| Yes                      | 125| 59.0| 42.4 to 69.0| 93 | 31.3| 21.0 to 44.8|
| No                       | 82 | 41.0| 31.0 to 57.6| 154| 68.7| 55.2 to 79.1|
| Anal sex—occasional male sex partners (past 6 months) |    |    |              |    |    |              |
| Yes                      | 245| 78.0| 71.0 to 83.8| 179| 52.7| 44.1 to 60.0|
| No                       | 77 | 22.0| 16.2 to 29.0| 165| 47.3| 40.0 to 55.9|
| Condom use—last anal sex with occasional male sex partner |    |    |              |    |    |              |
| Yes                      | 117| 49.3| 35.0 to 61.1| 62 | 37.1| 22.6 to 56.5|
| No                       | 94 | 50.0| 38.3 to 64.3| 110| 62.9| 43.5 to 77.5|
| Anal sex—regular male sex partners (past 6 months) |    |    |              |    |    |              |
| Yes                      | 158| 44.0| 37.0 to 51.3| 114| 32.2| 24.9 to 39.0|
| No                       | 165| 56.0| 48.7 to 63.0| 232| 67.8| 61.0 to 75.2|
| Condom use—last anal sex with regular male sex partner |    |    |              |    |    |              |
| Yes                      | 106| 46.5| 35.9 to 62.5| 50 | 40.9| 17.7 to 62.1|
| No                       | 93 | 53.5| 37.5 to 64.1| 73 | 59.1| 37.9 to 82.3|
| Ever had sex with a woman|    |    |              |    |    |              |
| Yes                      | 224| 80.9| 74.5 to 85.7| 282| 83.0| 75.9 to 89.2|
| No                       | 99 | 19.1| 13.3 to 25.5| 62 | 17.0| 10.8 to 24.1|
| Number of female sex partners (past 6 months) |    |    |              |    |    |              |
| 0                        | 6  | 1.2 | 0 to 2.5    | 34 | 11.3| 5.2 to 17.6 |
| 1                        | 42 | 19.0| 9.0 to 25.3 | 68 | 24.0| 15.8 to 30.2|
| 2–4                      | 73 | 35.4| 28.6 to 48.8| 95 | 36.1| 28.2 to 45.5|
| ≥5                       | 100| 44.3| 34.3 to 54.2| 87 | 28.6| 22.5 to 37.8|

Continued
money for sex; lower percentages reported paying for sex. High percentages of MSM in both cities reported ever having sex with a female partner, among which most reported having had multiple female sex partners in the past 6 months. Although condom use was inconsistent with all partner types, it was especially low in Marrakesh. MSM in Agadir had a higher HIV prevalence, but lower syphilis prevalence, compared with MSM in Marrakesh. Co-infection with HIV and syphilis was 31.6% in Agadir and 56.4% in Marrakesh.

**DISCUSSION**

This is the first biobehavioural survey among MSM in Morocco and provides essential baseline data for understanding HIV risk patterns and trends. HIV prevalence in Agadir and Marrakesh was higher than that found in institutional studies of fairly large sample sizes (n=1147 in 2008; 1216 in 2009) of MSM testing at voluntary counseling and testing (VCT) centres across Morocco (1.2% in 2008; 2.2% in 2009). Currently, VCT programmes in Morocco do not focus on people at high risk for HIV infection and there are limited health services specially designed to meet the needs of MSM. Syphilis prevalence was around 10% in both cities and a sizeable percentage of MSM in Marrakesh who tested positive for HIV were co-infected with syphilis. STIs, especially those that result in genital ulcers, are easily transmitted to sexual partners and associated with further potential spread of HIV and other sexually transmitted infections to the wider population.

MSM in Agadir and Marrakesh practice numerous risky sexual behaviours, have multiple male partner types and do not use condoms consistently. This survey reaffirms some common and alarming facts found in other MENA countries, namely, that MSM commonly practice sex with women, are self-described as bisexual and are in a ‘couple’ with a woman (as well as with a man) as a means of coping with their same sex preference (eg, ‘I have sex with men only for money, so I am not homosexual, this is a commercial transaction’).

Given that male-to-male sex is criminalised and stigmatised, it is possible that we missed some isolated networks. For instance, the samples may have under-represented older, employed and/or extremely hidden MSM who may have been more reluctant to participate due to stigma, fear of being recognised or just not having the time. However, sample convergence was attained for all variables analysed here and the sample size was in excess of that calculated (equivalent to a design effect of almost 3) indicating ample statistical power for our analyses. In addition, the survey was conducted at an non-governmental organization that was known by respondents to provide HIV and other services and socially desirable responses may have been more prevalent than if the study were conducted in an objective setting. These findings illustrate the need to support enhanced packages for prevention, care and treatment of HIV infection provided in settings that are easily accessed by and comfortable to MSM. The current criminalisation and discrimination of MSM in Morocco underscores the urgent need for long-term and sustainable risk reduction through legal reforms and promotion and protection of human rights. Future rounds of biobehavioural surveys (as well as baseline surveys in other affected cities in Morocco), using the same sampling method, are needed to monitor HIV trends and assess progress.

**Table 1 Continued**

|                | Agadir (N=323) |                  |                  |                  | Marrakech (N=346) |                  |                  |                  |
|----------------|----------------|------------------|------------------|------------------|--------------------|------------------|------------------|------------------|
|                | N   | %    | 95% CI           | N   | %    | 95% CI           | N   | %    | 95% CI           |
| **Condom use**|     |      |                  |     |      |                  |     |      |                  |
| Last sex with female sex partner |     |      |                  |     |      |                  |     |      |                  |
| Yes            | 109 | 47.2 | 32.5 to 54.9     | 75  | 29.2 | 19.8 to 37.2     |
| No             | 107 | 52.8 | 45.1 to 67.5     | 175 | 70.8 | 62.8 to 80.2     |
| **HIV status**|     |      |                  |     |      |                  |     |      |                  |
| Negative       | 303 | 94.4 | 90.3 to 97.7     | 332 | 97.2 | 95.0 to 99.1     |
| Positive       | 19  | 5.6  | 2.3 to 9.8       | 14  | 2.8  | 0.9 to 5.0       |
| **Syphilis status** |     |      |                  |     |      |                  |     |      |                  |
| Negative       | 285 | 93.0 | 89.6 to 96.1     | 304 | 89.2 | 83.9 to 94.7     |
| Positive       | 37  | 7.0  | 4.0 to 10.4      | 36  | 10.8 | 5.3 to 16.1      |

**Key messages**

- The findings that 3% of men who have sex with men (MSM) in Marrakesh and 6% in Agadir are HIV positive, coupled with MSM having multiple male anal sex partner types and inconsistent condom use, demonstrates an urgent need to scale up services targeting this population.
- MSM are having unprotected sex with women, indicating further potential spread of HIV and other sexually transmitted infections to the wider population.
- MSM reported receiving money or goods for sex which may be a means of earning extra income and/or avoiding being ‘homosexual’ or ‘gay’.
- High criminalisation and discrimination of MSM in Morocco, underscores the urgent need for long-term and sustainable risk reduction through legal reforms and promotion and protection of human rights.
Contributors LGJ conducted the analyses and wrote the manuscript. KA, MHER, OM, AA, NR, LO, AB and BEO contributed to the design and conduct of the study and, along with MK, reviewed the manuscript.

Funding This work was supported by The Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria, grant number [MOR-607-G02-H].

Competing interests None.

Ethics approval The protocol and questionnaire were submitted for ethical review and approval to the ethical committee of Faculty of Medicine of Casablanca, Morocco in November of 2010.

Provenance and peer review Commissioned; externally peer reviewed.

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