Author's response to reviews

Title: Correlates of prior HIV testing among men who have sex with men in Cameroon: a cross-sectional analysis

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Version: 2 Date: 24 September 2014

Author's response to reviews: see over
Author's response to reviews

**Title:** Correlates of HIV testing among men who have sex with men in Cameroon: a cross-sectional analysis

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**Version:** 2  **Date:** 2 September, 2014

Dear Editors

Thank you for providing us with the opportunity to revise our manuscript. We are also grateful to the reviewers for their detailed and constructive comments which we feel have strengthened the paper. We have modified edits accordingly and included a point by point response to your suggestions below.

We look forward to hearing from you.

Sincerely,

Stefan Baral, MD MPH CCFP FRCPC
Associate Professor
Director, Key Populations Program, Center for Public Health and Human Rights
Department of Epidemiology
Reviewer's report

Title: Correlates of HIV testing among men who have sex with men in Cameroon: a cross-sectional analysis

Version: 1 Date: 11 July 2014

Reviewer: Jesse Clark

Reviewer's report:
Thank you for the opportunity to review, “Correlates of HIV testing among men who have sex with men in Cameroon: a cross-sectional analysis.” The manuscript presents important information on HIV testing history and associated factors among MSM in two cities in Cameroon. Given the high prevalence of HIV in this population, deeper understanding of factors associated with prior HIV testing is essential to developing future strategies to control the HIV epidemic in the area. There are a few points that should be addressed prior to publication:

Introduction

1) Throughout the Introduction, but especially in Paragraph 4, information from previous studies on factors associated with prior HIV testing are collapsed without sufficient attention to how differences in context may influence the findings (i.e., MSM populations in Douala, Lesotho, and San Francisco are not directly comparable and factors associated with prior testing in one setting may not be related in another).

We have clarified the language of the introduction paragraph 4 and 5 to reflect that setting certainly affects the factors associated with prior testing. We have also removed citing “older age” as a correlate since older men have more years in which they could have been tested (as highlighted by the reviewer in a different comment below).

“Documented individual-level factors positively associated with ever receiving an HIV test among MSM in the sub-Saharan African setting include employment [15], bisexual concurrency [19], “outness” and identifying as gay or homosexual as compared to straight or bisexual [20]. In one study in Douala, Cameroon, knowing someone living with HIV, being exposed to HIV prevention programs, having a steady male partner, and being non-Muslim was associated with ever testing [17]. HIV testing in the past 12 months has been shown to be associated with condom use during last male-to-male sexual intercourse in Lesotho [12]. In the United States, higher education [21], having knowledge of HIV [21], having multiple sex partners
[21, 22] were associated with ever testing for HIV. Higher social support was associated with testing in the past 6 months in the United States [23].

Among South African MSM, never testing for HIV was associated with being black, living in a township and lack of HIV-related knowledge [24]. Moreover, lower income and internalized homophobia reduced the likelihood of recent HIV testing [20, 24]. Self-reported reasons for never testing for the HIV included low risk perception and perceived health care stigma in South Africa [8]. Fear of public exposure of sexual practices and identity and behaviors have also been reported as significant barriers for MSM seeking HIV testing in qualitative studies conducted in Senegal and Kenya [25]. Fear of testing has also been associated with preferring a feminine gender expression, being sexually active, having a history of sexually transmitted infections, and experiencing sexual orientation-based victimization at school and the workplace [8]. Finally, studies from sub-Saharan Africa have demonstrated that heteronormative HIV prevention messaging may increase misperceptions that penile-anal sex does not pose a risk for HIV transmission and deter MSM from being tested [26, 27].

Methods

2) Although details of the study methods have been previously published, it would help to have more information about the RDS sampling, in order for the reader to evaluate the potential representativeness of the data presented. Given that the samples recruited were fairly small for RDS recruitment, it would help to have more information to see whether the sample was derived from a few specific social networks or if there was a diverse range of participants recruited. Specifically, was there an ethnographic mapping process used to help identify seed recruits? How many seed recruits were selected and how were they recruited? How many waves of recruitment were achieved? What was the median length of the recruitment chains? In the previous publication by Park et al, the authors state that seeds were recruited, “through existing community contacts,” and that, “The CBOs worked with the research team to identify the initial seeds,” which seems to indicate that seeds were recruited through contacts with the CBOs. If so, then the finding that a large percentage of participants had been tested at the CBO sites would be less remarkable. Obviously, these questions do not significantly undermine the author’s findings, but answering them would help to provide greater transparency to the data reported.

Thank you for this comment. No ethnographic mapping was used to identify seed recruits. In the methods section under 2.1 Study population after the last sentence of paragraph 1, we have added:

“Seven seeds heterogeneous in sexual orientation and sexual role preference were selected through existing community contacts and CBOs serving MSM to begin the recruitment process in each city.”

In results section paragraph 1, after sentence 4, we have inserted “In Douala, the median number of waves per seed was six (range 1-8). In Yaounde, the median number of waves per seed was five (range 1-9)”

In paragraph 9 of the discussion section, we have expanded the limitation of the study from “The network structure assumptions of RDS could not be evaluated in the current study.” to:
“The assumptions of RDS for the MSM population in Cameroon have not been tested in the current study or other studies in this setting to date.”

3) Final paragraph of Section 2.2 refers to participants being offered, “outreach and linkage to HIV care.” Given the fact that participants had already been recruited to the study (through RDS outreach), were there additional outreach efforts involved?

No additional outreach efforts were involved. The last two sentences of paragraph 2 in section 2.2 have been changed to show that people newly diagnosed with HIV were referred to HIV care and treatment. “All participants also received free HIV testing and pre- and post-test counseling, condoms, condom-compatible lubricants (CCL), and access to peer education and support groups. Newly diagnosed individuals were referred to HIV care and treatment.”

Results

4) The authors refer to Table 1 for data on participants’ sexual identity, but this information is not included in Table 1. In addition, how were sexual identity categories determined? From pre-specified categories (if so, what options were provided), by participants’ self-described terms, or both?

Thank you for this comment. We have removed the text “(Table 1)”. Sexual orientation was determined from pre-specified categories, which included an “other” category. The sentence has been changed to: Sixty-two per cent of men chose “bisexual” (425/511) to describe their sexual orientation, whereas 28.6% chose “gay or homosexual” (144/511), 8.0% (41/511) chose “MSM” and 1.8% (9/511) chose “other”.

Discussion

5) The finding that lifetime history of HIV testing increased in association with participant age is not surprising (with greater age comes a greater number of time in which one could have been tested). What would be more helpful to address here would be how prevalence of recent testing differed between age groups.

Thank you for this comment. We agree with the reviewer that the age related differences in ever testing by age is likely explained by this phenomenon. We performed additional secondary Fisher’s exact chi-square analyses to statistically test whether there were significant differences between age groups for ever testing and testing in the past 12 months. Under Methods, 2.3 Statistical Analysis, paragraph 2, sentence 2, we added:

“Fisher’s exact test was used to assess differences in ever testing and HIV testing in the past 12 months (“How many times have you been tested for HIV during the last 12 months” (≥1/None)) by current HIV serostatus and age category (coded as 18-21/22-25/26-29/≥30 years) for each city.”

In the results section, under 3.1 HIV testing practices, paragraph 1 we added after the last sentence:

“(Table 1). Ever testing for HIV and testing in the past 12 months did not differ by age category in Douala (p=0.14 and p=0.28 respectively). Ever testing for HIV did
differ by age category in Yaoundé (p=0.001) however no age difference was observed for testing in the past 12 months (p=0.07) (Figure 1)."

Finally, we have changed the text in paragraph 6 of the discussion to:

“In both cities, young MSM aged 18 to 21 were least likely to report having ever been tested for HIV and HIV testing in the past 12 months compared to older men. Given these data and that men in this age group are being diagnosed with HIV and the median age of sexual debut with another man is 19 years in our sample (IQR 17-22) [5], including young MSM in future HIV testing initiatives and HIV surveillance studies may improve testing outcomes. While a trend towards negative association between older age and ever testing was observed among men aged 30 or greater in both cities, additional research will be needed to corroborate these data due to small sample sizes in this age category.”

6) The authors acknowledge the potential limitations/bias of RDS recruitment in characterizing their sample, but some more discussion would be helpful, specifically addressing how recruitment characteristics in this sample may have influenced some of the key findings (e.g., could the high prevalence of prior HIV testing be related to use of CBOs as the basis for seed recruitment? Is it possible that a sample of MSM without links to local CBOs would have a lower frequency of prior testing and present an important group unreached by current VCT efforts?)

Thank you for this comment. CBOs were one method of recruiting seeds, the other method was through existing community contacts. For this reason, we believe that is difficult to know whether the prevalence of prior HIV testing would be higher or lower with more recruitment waves. We also agree that MSM without links to local CBOs may be underrepresented. While it is possible including such men may reduce the prevalence of HIV testing, HIV testing is also offered via public and private hospitals thus further research will be required to test whether including such men affects the prevalence of prior testing. We have added after sentence 3 of the limitation paragraph in the discussion (paragraph 9):

“Given that six recruitment waves were not reached in every recruitment chain, MSM who are less likely to be socially connected to recruits of seeds such as men who do not attend MSM CBOs, may be underrepresented in this study.”

After sentence 5, we have also added:

“The assumptions of RDS for the MSM population in Cameroon have not been tested in the current study or other studies to date.”

Tables

7) Similar to above, 74.0% of participants who reported prior HIV testing said they were advised to do so by a Peer Educator. Could this fact be explained by involvement of Peer Educators in seed/participant recruitment for the study?

Peer educators were only involved in the recruitment of seeds for this study and so we believe that potential bias in this regard is negligible. We also noted that
while being advised to get tested by a peer educator was high, the majority of men were last tested outside of MSM CBOs (such as a public hospital or clinic).

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:** I declare that I have no competing interests
Reviewer's report
Title: Correlates of HIV testing among men who have sex with men in Cameroon: a cross-sectional analysis
Version: 1 Date: 11 August 2014
Reviewer: Amy J Drake
Reviewer's report:
1. Participants provided written consent, so study results are confidential (not anonymous)?
   Thank you for your comment. Yes, as required by the National Ethics Committee of Cameroon, oral consent was obtained and the interviewer signed the consent form, and therefore the data were anonymous. Unique codes were produced at the time of recruitment and no personal information that could identify the participants was gathered. We have replaced the text in paragraph 2, sentence 1 under methods to:
   Consent was provided orally and documented in writing by the interviewer. Study procedures were anonymous.

2. The statistical analysis section is very confusing: suggest providing very clear description of 1. Calculation of variables, 2. Descriptive analysis methods, 2. Bivariate analysis methods, 3. Multivariate analysis methods. While these items appear to be in the description, it is very hard to tell what was done.
   Thank you for this comment. We have revised all five paragraphs of the statistical analysis section to clarify the steps mentioned by the reviewer.

   a. It seems possible that weights could have been created in Stata OR that the transition matrix was used for dichotomous variables, but it is unlikely that both of these are true.
      Thank you for this comment. We have removed the text “weights were based on the transition matrix for the dependent dichotomous variable “ever tested for HIV” and replaced it with “Weights for all regression models were built using the RDSII estimator using “ever tested for HIV” as the outcome.”

   b. Were weights based on ‘ever tested’ or ‘tested in past 12 months’? most results appear to be based on ‘ever tested’.
      Thank you for this comment. Weights were based on ever tested. This has now been addressed in the responses above.

   c. Additionally, it could benefit from:
      i. Definition of terms/calculations:
         1. Age: what is “per increase in age”
            We have added “with spline terms for age (knot at age of 30 years)” to the first sentence of paragraph 4 of 2.3 Statistical Analysis under methods.

         2. Current HIV status (is this self-reported or serostatus?)
            This has been removed from the methods section since HIV serostatus was not used as a covariate.

         3. Social support for condom use (Tables 3 & 4)
            (Please see response to comment 4.)

         4. HIV knowledge composite score, per 20% increase (Tables 3 & 4)
As the first sentence of paragraph 5 of 2.3 Statistical Analysis under methods we have added:

“Condom use variables were dichotomized (consistent coded as 0 from always use condoms in the past 12 months; inconsistent coded as 1 from Most of the time/Sometimes/Never use condoms in the past 12 months). The HIV knowledge composite was constructed by taking the sum of correct answers (possible range 0-13) and converting it to a percentage (possible range 0-100%). The social support for condom use composite percentage was created by dichotomizing each of the 8 items into yes (strongly agree and agree) and no (disagree and strongly disagree) then taking the sum of the 8 items (possible range 0-8) and converting it into a percentage (possible range 0-100%).”

We have also added a shortened version of these two sentences to table 3 & 4 as footers.

ii. Use consistent categories
1. For example, in table 3, education is “higher than secondary”, in table 4, once category is “secondary” and one is “University or technical studies”. We have now added an additional row “≤Secondary” in table 3 for consistency.

3. Not all statements in conclusion are mentioned in analysis.
   Thank you for this comment, we have reviewed the conclusion and edited it appropriately.

4. Table 3 and 4: These tables are confusing when all rows are omitted. Suggest displaying all rows.
   While we have not displayed all rows, we have included footnotes to indicate referent groups for rows with the referent group omitted.

5. Table 1:
   a. Add the total number (n) in each unweighted column at the top of the column (consider taking it out of title.)]
      We have added the total n at the top row of table 1, 2 and 3 for clarity.

   b. It is odd that in Douala, the various sources of information on HIV testing adds to less than the population size (especially if people were allowed to provide more than one source). ‘Never’ having received information would be an important category. (Also, is this in last 12 months?)
      This question was only asked of men who had ever been tested. A footnote has been added to clarify this. We have also added a ‘none of these sources’ category under the “Information on HIV testing ever received from” row. We have changed the name of this row as “Information on HIV testing ever received from”

   c. Please check calculations and clarify numerators and denominators. For example, proportion who disclosed test result to someone is reported in Yaounde as 166 (87.4%). But 166/238=69.7% and 166/238=84.2%.
      We have indented the “Disclosed test result to someone” row to show that the denominator is everyone who “Received test results at last test”.


d. How were skipped values handled in the RDS analysis? It is possible to get values for the “advised to get tested by” indicator in the RDS analysis by using a placeholder for the skipped values. (I assume that this is why the values are missing.) The “advised to get tested by” variable had small cell sizes which were not amenable to RDS-weighting. However we felt that the categories with smaller cell sizes were important to report separately as opposed to collapsing. We have added a footnote “# RDS-weighted estimates could not be run due to small cell sizes” to table 1 to clarify this issue.

6. Table 2:
   a. Is the p-value of both rows a result of a chi sq?
      Yes, we have stated this as a footnote.

   b. Is this discussed in discussion?
      Thank you. We have added two sentences in the discussion paragraph 2 to highlight this finding:
      “Additionally, more men reported being willing to return to this CBO for future testing compared to men last tested at a hospital or other testing sites, though future studies powered to assess differences in willingness to return to HCT sites by type of site are required.”

7. Table 3 (and 4):
   a. Correct title to say “ever testing” (instead of “testing”)
      Thank you, we have added “prior” to the title.

   b. Add the n for ‘ever tested’ in column (and never tested if you decide to keep the column)
      Change made as indicated by the reviewer.

   c. This table is confusing because in some cases, all categories are listed (age, occupational status, etc.) but in others they are not (education).
      We have listed all categories for categorical variables but not for binary variables in the interest of simplicity. However, footnotes have been added to clarify the referent groups for each variable.

   d. Should I assume that the referent category for religion is anything other than Christian?
      Yes, the responses for binary groups are mutually exclusive thus referent group for all binary variables are the negative of that variable. However, footnotes have been added to clarify the referent groups for each variable.

   e. I suspect that there is some reversal going on in the ‘inconsistent condom use’ ORs (i.e., the data are incorrect)
      Thank you for this comment, the ‘inconsistent condom use with regular male partners’ has been switched with the ‘inconsistent condom use with casual partners’ row in table 3.

   f. Education has similar values in OR and aOR: it seems that forcing age into this
model should have lowered the aOR more.

Since age was fitted as a spline term with a knot at 30 years, we can confirm that these data are correct.

g. The ‘social support for condom use, composite score’ is not explained
   This has now been addressed. Please see response to comment 4.

8. Figure 1:
   a. I don’t think it is possible that the data in figure 1 AND in table 1 are both correct.
      Thank you. Since age was fitted as a spline term with a knot at 30 years, we can confirm that these data are correct. Figure 1 does not show the linear yearly trend of ever testing for men older than 30 years, only the aggregate percentage of men ever tested, which is shown by the age 30+ years spline term in table 1.

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:
I declare that I have no competing interests
Major Compulsory Revisions
1. If one of the main purposes of this article is to inform the delivery of HIV testing among MSM in Cameroon, it would be more relevant to focus on more recent behavior. I would highly recommend conducting the bivariate analysis comparing those who had tested in the last 12 months versus those who had not. Policy or program changes targeting MSM who had tested for HIV in the past may not be effective in linking MSM to the HIV care and treatment cascade or continuum.

We thank the reviewer for this comment. We have revised the final paragraph of the introduction to better highlight the purpose of this analysis:

“In the current analysis, we aim to contribute to the limited literature on HIV testing among MSM in Central and West Africa, characterize HIV testing practices among MSM in Douala and Yaoundé and investigate the correlates of ever HIV testing and testing in the past 12 months.”

We have also revised the conclusion paragraph to reflect that these data may be useful in informing the design of testing programs and research rather than their implementation:

“Access to HIV testing is a key first step in successfully linking MSM to the HIV care and treatment continuum [54, 55]. These data demonstrate that subgroups of MSM such as young MSM and men with less education may need to be targeted when designing future HIV prevention programs and research studies, and that innovative approaches to reaching this marginalized population may be useful. Given the legal context, increasing appropriate periodicity of HIV testing among MSM in Cameroon necessitates continued investment in decentralized, culturally and clinically competent, and confidential health services. This could include the expansion of MSM-friendly CBOs providing HCT services, to provide more complex HIV service delivery or strengthening the CBOs’ referral system into care and treatment services. In addition, these data suggest that respecting the rights of sexual minorities and reducing structural barriers such as homophobia may help to optimize the response against the HIV epidemic in the region. Ultimately, given the levels of HIV testing and high HIV burden in Cameroon, optimizing the safe and effective provision and uptake of antiretroviral therapy (ART) based prevention and treatment approaches through improved uptake of HIV testing is paramount in changing the trajectory of the HIV epidemic among these men and within their sexual networks.”

Finally, we revised the last two sentences of the Conclusions paragraph of the abstract to better reflect the purpose of our current research:
“Giving specific attention to MSM who are younger, of lower socioeconomic status and less connected to community-based MSM organizations may increase HIV testing uptake. Given the levels of HIV testing and high HIV burden in Cameroon, optimizing the safe and effective provision and uptake of antiretroviral therapy (ART) based prevention and treatment approaches is paramount in changing the trajectory of the HIV epidemic among these men and within their sexual networks.”

2. If the information is available, it is crucial to include MSM who are HIV positive but self-reported HIV negative. Prevention and program efforts should focus on those who are being missed by the HIV care continuum. On the flip side, it is not relevant to include those who already know they are HIV positive in this analysis. These persons could be the ones captured in "ever testing" but not in "recent testing". Analysis on HIV testing should focus on those who actually need HIV testing. If self-reported HIV status was not included in the questionnaire, this needs to be emphasized in the limitations.

Thank you for this comment. Self-reported status was not asked in the questionnaire and is a limitation of this analysis as noted by the reviewer. We have inserted the following sentence after sentence 1, paragraph 9 of the discussion section:

“Data on knowledge of one’s own HIV status was not collected in this study; excluding men who have previously been diagnosed with HIV from the analysis may change the study results.”

3. The article should mention or state any correlation, if any, between recent HIV testing behavior and HIV prevalence, particularly because the observed HIV prevalence among MSM in Cameroon was substantially high.

Thank you. We have added the following paragraph to paragraph 2 of the results section:

“Both ever tested for HIV (p=0.001) and HIV testing in the past 12 months (p=0.004) differed in Douala by HIV serostatus: 6.9% of men who tested HIV-positive in this study had never been tested for HIV prior to the study (5/72), compared to 24.6% among men who tested HIV-negative (44/179). Similarly, 22.2% of men who tested HIV-positive had not been tested in the past 12 months (16/72) compared to 42.1% among men who tested HIV-negative (75/178). In Yaoundé, no differences by HIV serostatus was observed: 17.4% (17/98) of men who tested HIV-positive had never been tested compared to 20.4% (22/108) of HIV-negative men (p=0.60), and 53.6% (52/97) of men who tested HIV-positive had not been tested in the past 12 months compared to 50.9% (55/108) of HIV-negative men (p=0.78).”

We have also highlighted this issue in the discussion by adding the following to sentence 2, paragraph 1 of the discussion section:

“and a significant proportion of men who tested HIV seropositive had never had an HIV test (6.9% in Douala, 17.4% in Yaoundé).”

Minor Essential Revisions
1. Although it is reported elsewhere, it would be helpful to have a description of
the seeds, including the number of seeds by city, reported in this article. It would also be useful to know if the seeds were included in the analysis.

We have now inserted the following text in the methods section, 2.1 Study population, end of paragraph 1:

Seven seeds heterogeneous in sexual orientation and sexual role preference were selected through existing community contacts to begin the recruitment process in each city.

The following text has been added to the beginning of the first sentence of the 2.3 Statistical analysis section, paragraph 1, since seeds were not included in the analysis:

“Non-seed”

2. There is a typo in Table 4. For “Inconsistent condom use: regular male partner(s)” for “never tested for HIV”, the percentage should be 26.0 not 67.6.

Thank you, we have now corrected the percentages for this row.

Discretionary Revisions

1. The comparison between the adjusted and unadjusted multivariate analysis seems unnecessary. It is sufficient to say that no differences were found between the weighted and unweighted multivariate analyses. Although there is no specified method to conduct multivariate analyses in RDS surveys, it is generally recommended by experts to weight the data.

Thank you, we have deleted the unweighted columns from table 3 and 4 for clarity since the differences between the RDS-naïve and RDS-weighted models are already highlighted in the text of the result.

2. Because HIV testing at the specific CBO was higher among MSM in Douala, it would be helpful to know what the homophily was for ever attending or recent attendance at a CBO--more specifically, Alternatives-Cameroun. Although recruitment patterns are accounted for in the RDS estimator II, it would give context to the results of HIV testing.

Thank you for this suggestion. We have added the following text to the results section, 3.1 HIV testing practices, paragraph 5, after sentence 2:

“Homophily was 0.29 for men who had accessed Alternatives-Cameroun (Douala) in the past 12 months compared to 0.09 for men who had not; homophily was 0.11 for men who had accessed Humanity First (Yaounde) in the past 12 months compared to -0.17 for men who had not.”

Level of interest: An article of limited interest
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests: I declare I have no competing interests
Reviewer's report
Title: Correlates of HIV testing among men who have sex with men in Cameroon: a cross-sectional analysis
Version: 1 Date: 20 August 2014
Reviewer: Gabriela Paz-Bailey
Reviewer's report:

Compulsory revisions

1. Both CDC and WHO HIV testing recommendations for MSM are to test at least once a year. HIV testing in this population is common and about two thirds had tested in the past year and 80% had tested at least once in their lifetime. For programmatic purposes it may be more useful to use past 12 months testing as the outcome. Programs could benefit in knowing who is not testing every 12 months and target them for testing services. You also need to clarify the timeframe for the outcome in the abstract, results and tables.

   Thank you for this comment. We have addressed this issue in the response to Reviewer 3’s first comment above. We have also added the word “prior” to the title, the last sentence of the abstract (paragraph 1), subheading 3.3 under the results section (“Factors associated with prior HIV testing”), to clarify the timeframe of the outcome.

2. The RDS weighted adjusted analyses is not clearly described. Since there are no standardized methods to do weighted multivariate analyses of RDS data, it would be important for the authors to describe in more detail their analyses methods. Was the weight for the outcome variable used in the analyses?

   Thank you for this comment. We have removed the text “weights were based on the transition matrix for the dependent dichotomous variable “ever tested for HIV”“ in methods, 2.3 Statistical analysis and added “Weights for all regression models were built using the RDSII estimator using “ever tested for HIV” as the outcome.” in paragraph 3, sentence 3.

   Was network size used as a covariate in the model? What there any account for clustering?

   Thank you. Network size was not used as a covariate in the model since the individual weights are a function of individual network size. We did not account for clustering in these multivariate models, however, ran a sensitivity analysis to check whether including a clustering by seed covariate changed the statistical significance of the results and it did not. We have added the following to the methods, under statistical analysis, paragraph 5, second to last sentence:

   “A sensitivity analysis was conducted to test the effect of clustering by seed in the final multivariate models.”

   In the results, under both sections Factors associated with prior HIV testing: Douala and Factors associated with prior HIV testing: Yaoundé, paragraph 2, second to last sentence, we added:

   “Sensitivity analysis demonstrated that clustering by seed did not affect the statistical significance of any of the associations in the multivariate model.”
3. You state in the first paragraph of the statistical analyses that the RDS2 estimator was used and that the weights used the transition matrix. To my knowledge RDS2 estimators do not use the transition matrix for dichotomous variables. Please check: Section 3 of Volz and Heckathorn 2008 (Journal of Official Statistics)

Thank you for this comment. We have removed the text “weights were based on the transition matrix for the dependent dichotomous variable “ever tested for HIV” in methods, 2.3 Statistical analysis and replaced it with “Individualized weights were created in Stata/SE Version 11.2 (College Station, Texas) using the RDSII estimator to account for differences in social network size for each variable included in the descriptive analysis [Volz and Heckathorn 2008].”

4. In the current paragraph of your methods you state that the multivariate analyses evaluated the association between HIV status and covariates, I thought your outcome was ever testing for HIV.

This has been removed from the methods section since HIV serostatus was not used as a covariate.

Discretionary revisions
5. It would be important to use any measure of health care system usage such as having had a visit to a health care provider, or disclosure of sexual preferences to a health care provider and explore their association with HIV testing.

We agree with the reviewer, however these data were not collected in this study. We hope to add further analyses in future data collection in Cameroon to address this point.

6. Is homosexuality illegal in Cameroon? Would be useful to provide more info on the legal framework.

We have added the following text to the end of sentence 1 in the introduction section, paragraph 7: “; Sexual relationships between men are both criminalized and highly stigmatized in Cameroon as observed in many countries across the world [Altman et al., 2012; Human Rights Watch 2008]”

We have also integrated the information from paragraph 6 into this paragraph to improve the flow and highlight how stigma and discrimination may pose a barrier to HIV testing access:

“Perceived or experienced stigma and discrimination due to sexual orientation and concerns about confidentiality in the healthcare setting are significant structural barriers to accessing HIV services, particularly in settings where male-to-male sexual practices are criminalized [8, 30-34]”

Finally, we edited the overall language of this paragraph to highlight the relevance of criminalization in the Cameroon context.

7. Presenting four OR for each variable seems excessive especially since the results do not change..

Thank you. We have deleted the RDS-naïve rows and noted differences in these two pairs of models in the text of the results.
Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:
I declare I have no competing interests.

For all reviewers: we have proofread the manuscript and made minor grammatical changes throughout.