PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	PREVALENCE AND CORRELATES OF ALCOHOL AND TOBACCO USE AMONG KEY POPULATIONS IN TOGO IN 2017: A CROSS-SECTIONAL STUDY
AUTHORS	Bitty-Anderson, Alexandra; GBEASOR-KOMLANVI, Fifonsi Adjidossi; Johnson, Pascal; Sewu, Essèboè; Dagnra, Claver; Salou, Mounerou; Blatome, Tetouyaba; Jaquet, Antoine; Coffie, Patrick; Ekouevi, Didier

VERSION 1 – REVIEW

REVIEWER	Dr Venkatesan Chakrapani Centre for Sexuality and Health Research and Policy (C-SHaRP), India
REVIEW RETURNED	03-Apr-2019

GENERAL COMMENTS	Comments Overall, the manuscript is well written and intended to add to the evidence base on key populations in Togo in relation to alcohol and tobacco use. The manuscript can possibly be further strengthened by addressing these comments. Title: Can consider adding a subtitle that mentions 'prevalence and correlates…' or similar terms – to provide more information about the content of the article. Abstract and Introduction: 1. The term 'determinants' is used (in Abstract and in Introduction). In line with the stated objectives, it may be better to use non-causal terms – for example, 'correlates or factors associated with'. 2. Estimation of the prevalence of alcohol and tobacco use can also be listed as one of the aims of the study. Currently the aim mentions identification of 'determinants' alone. 3. The conclusion of the manuscript recommends integration of screening for alcohol and tobacco use in HIV programmes. However, no details are provided about the current HIV prevention/care programmes for key populations in Togo, and what is the current situation of screening for alcohol and tobacco use. Methods: 1. Key references for the respondent-driven sampling can be provided. The characteristics of the seeds used for FSWs and DUs also need to be provided. 2. Why an estimated prevalence of tobacco was also not used for sample size estimation (in addition to an estimated prevalence of alcohol use)?

	3. Reliability of the three key scales used can be provided. Reference for the tobacco questions needs to be provided. 4. The term ‘multivariable’ needs to be used instead of ‘multivariate’ in the statistical analysis subsection. 5. Instead of ‘Patient and public involvement’, the term ‘Community involvement’ can be used. Results: 1. I assume that some ‘MSM’ and female DUs may be engaging in sex work, and some male DUs may be MSM. If data are available, then that information can be provided as well in the sociodemographic characteristics subsection. 2. It can be clarified that the results described in the third and fourth subsections of the Results section are based only on the multivariable logistic regression models. 3. Key populations are included as an independent variable in the regression models. This means, the factors identified are those that are common across the key populations. To understand what are the significant factors that are associated with alcohol and tobacco consumption for each of the key populations (MSM, FSWs, and DUs), the regression models can be run separately for each of these populations. Discussion: 1. While psychological distress can lead to alcohol use, it has also been shown in the literature that alcohol use can also lead to depression. This point can be added – especially as this is a cross-sectional survey. 2. It is claimed that “this study was completed in eight main cities of Togo, which could indicate that it is nationally representative”. Given that there is no multi-stage probability-based sampling and no information on the sampling frame for key populations at the country level (and given that there are no rural study sites), it may not be appropriate to call it as a nationally representative study. The authors need to accordingly revise their statement on representativeness and generalisability. 3. Conclusion paragraph can be further elaborated. Especially, the key factors associated with alcohol and tobacco use can be summarised here. Further research can also be proposed here briefly.

REVIEWER	Lloyd Goldsamt New York University United States of America
REVIEW RETURNED	08-Apr-2019

GENERAL COMMENTS	This paper presents data from a large survey of MSM, FSW and drug users in Togo. The study focused on alcohol and tobacco use, as well as psychological distress, among these three key populations. While this is a potentially important study for which the rationale is well-described, there are a number of issues that must be addressed prior to publication. The most important issue relates to the inclusion of female drug users as a separate group in the analyses. Although the sample size for the overall study is quite large, the sample of female drug users only includes 27 participants. This group should not be presented separately. They can either be included as part of the drug use group (not differentiated by gender) or simply dropped from the analyses due to their small sample size. The authors can

	point to the small numbers of female drug users as a limitation of the study and suggest further, targeted research with this population. There are also several issues regarding how the sample was constructed. First, one of the key populations is injection drug users, yet the study included drug users (injection was not an eligibility criteria). Is there a rationale for this? Second, the authors indicate that the initial MSM seeds had to represent one “subgroup” but it is not clear what these subgroups are or how they were chosen. More detail needs to be provide on the specific subgroups and why they were chosen as inclusion criteria for the MSM sample. In addition, sample size calculations were based on rates of hazardous alcohol consumption. Was tobacco use also considered in calculating the necessary sample size? If not, why? It would also be helpful to have more information about the social and geographic context of Togo, as this county is unfortunately likely to be unfamiliar to many readers. The study took place in eight towns. How were these towns selected and how representative are they of the municipalities throughout Togo. In the Discussion section, the authors refer to the eight main cities of Togo and suggest that the sample is nationally representative. This information should be presented in the Methods section. Finally, the Discussion section should include a focus on whether these results are generalizable to other sub-Saharan African countries. Since readers may not be highly familiar with Togo, some discussion of how it is similar or different to neighboring countries, and what that might mean for the findings from this study, would strengthen the conclusions presented.

VERSION 1 – AUTHOR RESPONSE

Reviewer(s)' Comments to Author:

Reviewer: 1
Reviewer Name: Dr Venkatesan Chakrapani
Institution and Country: Centre for Sexuality and Health Research and Policy (C-SHaRP), India

Comments
Overall, the manuscript is well written and intended to add to the evidence base on key populations in Togo in relation to alcohol and tobacco use. The manuscript can possibly be further strengthened by addressing these comments.

Authors: We thank the reviewer for this encouraging comment.

Title:
Can consider adding a subtitle that mentions ‘prevalence and correlates…’ or similar terms – to provide more information about the content of the article.

Authors: We thank the reviewer for this comment. We changed the title to take into account the fact that prevalence and correlates of alcohol and tobacco use have been explored in the study.

Prevalence and correlates of alcohol and tobacco use among key populations in Togo in 2017: a cross-sectional study

Abstract and Introduction:

1. The term 'determinants' is used (in Abstract and in Introduction). In line with the stated objectives, it may be better to use non-causal terms – for example, 'correlates or factors associated with'.

Authors: This comment has been taken into consideration and "determinants" was replaced with

The aim of this study was to estimate the prevalence of alcohol and tobacco consumption and to assess their correlates among female sex workers (FSW), MSM and drug users (DU) in Togo.

"correlates" in the abstract and in the introduction (Pages 2 and 5).

2. Estimation of the prevalence of alcohol and tobacco use can also be listed as one of the aims of the study. Currently the aim mentions identification of 'determinants' alone.

Authors: We thank the reviewer for this comment. This comment has been taken into consideration. To estimate the prevalence of alcohol and tobacco consumption has been added as an objective in the abstract and the introduction.

The aim of this study was to estimate the prevalence of alcohol and tobacco consumption and to assess their correlates among female sex workers (FSW), MSM and drug users (DU) in Togo.

3. The conclusion of the manuscript recommends integration of screening for alcohol and tobacco use in HIV programmes. However, no details are provided about the current HIV prevention/care programmes for key populations in Togo, and what is the current situation of screening for alcohol and tobacco use.

Authors: This comment has been taken into consideration in the revised version of the manuscript. A sentence was added in the discussion section to provide a brief overview of the standard of care for HIV prevention and treatment in Togo (page 12).

In fact, in Togo, the current policy on HIV prevention and care ensures access to HIV prevention and treatment services with the integration of Sexual and Reproductive Services and HIV care services for all citizens including key populations, but mental health interventions are not yet a component of the basic health services package.

Methods:

1. Key references for the respondent-driven sampling can be provided. The characteristics of the seeds used for FSWs and DUs also need to be provided.

Authors: This comment has been taken into consideration. References have been added in the "Methods" section for RDS key references.

> MSM were recruited using a Respondent Driven Sampling (RDS) method (17,18).
>
> 17. Malekinejad M, Johnston L, Kendall C, Kerr L, Rifkin M, Rutherford G. Using respondent-driven sampling methodology for HIV biological and behavioral surveillance in international settings: a systematic review. AIDS Behav. 2008;12(4 Suppl):S105-30.
>
> 18. Heckathorn D. Respondent-drive sampling: A new approach to the study of hidden populations. Soc Probl. 1997;44(2):174–99.

2. Why an estimated prevalence of tobacco was also not used for sample size estimation (in addition to an estimated prevalence of alcohol use)?

Authors: We agree with this comment and we thank the reviewer. We have added to the "sample size estimation" paragraph in the Methods section, our method of sample size calculation that takes into account tobacco prevalence estimates (Page 6).

> The sample size estimation was based on the estimated prevalence of hazardous alcohol drinking among key populations of 9.1% (19). We also took into account the prevalence of tobacco use, with the assumption that tobacco use prevalence in the key populations would be twice that of the general population. Hence, with a tobacco use prevalence of 6.8% in the general population, the expected prevalence of tobacco use among key populations was 13.6% (16). With a precision of 3% and an assumption of 10% of missing data, the minimum sample size was estimated at 552 participants per group at a minimum. Thus, to allow a comparison between groups, the total sample size estimated for the three groups of key populations was 1,656.

3. Reliability of the three key scales used can be provided. Reference for the tobacco questions needs to be provided.

Authors: This comment has been taken into consideration in the revised version of the manuscript. The three scales have been proven to be reliable and the key references proving the reliability of those scales have been provided (page 6). The reference for tobacco questions was also provided (page 6).

> Each question of the AUDIT can obtain a score from zero (0) to four (4). A score ≥8 for men and ≥7 for women indicates hazardous/harmful drinking, while a score of 0 indicates a non-drinker; moderate alcohol use lies in-between (17,21-23).
>
> Tobacco use was assessed using six questions indicating participants' smoking habits, frequency of smoking, history of smoking, type of products smoked and attempts at stopping to smoke (21).
>
> This scale has been examined and validated among several populations and aims at measuring anxiety and depression with a 10-item questionnaire, each question pertaining to an emotional state and a five-level response scale for each response. The score obtained from the scale allows to categorize participants into four categories of psychological distress: severe (score ≥ 30), moderate (score: 25-29), mild (score: 20-24) and none (score < 20) (24).

4. The term ‘multivariable’ needs to be used instead of ‘multivariate’ in the statistical analysis subsection.

Authors: This comment has been taken into consideration and “multivariate” was replaced with “multivariable” in the statistical analysis subsection (page 8).

> For model building, characteristics that had a p-value <0.20 in univariate analysis were considered for the full multivariable models, which were then finalized using a stepwise, backward elimination approach.

5. Instead of ‘Patient and public involvement’, the term ‘Community involvement’ can be used.

Authors: We thank the reviewer for this comment. However, “Patient and Public Involvement” is the title required by the journal to explain the involvement of patients and/or community members.

Results:

1. I assume that some ‘MSM’ and female DUs may be engaging in sex work, and some male DUs may be MSM. If data are available, then that information can be provided as well in the sociodemographic characteristics subsection.

Authors: We thank the reviewer for this comment. Unfortunately, this information was not assessed in the questionnaires and this is one limitation of our study in the discussion section (page 13).

> Interactions between the different groups of key populations (i.e., DUs engaging in sex work, MSM who engage in sex work, sex workers who are also MSM) were also not collected.

2. It can be clarified that the results described in the third and fourth subsections of the Results section are based only on the multivariable logistic regression models.

Authors: This comment has been taken into consideration (pages 9 and 10).

> Table 3 reports the results of the multivariable logistic regression model which describes the association between the independent variables and the hazardous/harmful consumption of alcohol and binge drinking.

3. Key populations are included as an independent variable in the regression models. This means, the factors identified are those that are common across the key populations. To understand what are the significant factors that are associated with alcohol and tobacco consumption for each of the key populations (MSM, FSWs, and DUs), the regression models can be run separately for each of these populations.

Thanks for this comment. However, considering the journal's instructions we cannot add three additional tables, one for each key population. If the editor agrees, they could be added as supplemental files in the revised version.

Discussion:

1. While psychological distress can lead to alcohol use, it has also been shown in the literature that alcohol use can also lead to depression. This point can be added – especially as this is a cross-sectional survey.

Authors: We agree with this comment and we thank the reviewer. In the discussion section, we indicate that the literature has found an association between psychological distress and alcohol use, meaning it could be both ways: psychological distress could lead to alcohol use and alcohol use could lead to psychological distress. Most articles in the literature were cross-sectional studies. Hence, we could not state the direction of this association (page 10).

In southern India, a study among FSW found a significant relationship between major depression and alcohol use (36).

2. It is claimed that "this study was completed in eight main cities of Togo, which could indicate that it is nationally representative". Given that there is no multi-stage probability-based sampling and no information on the sampling frame for key populations at the country level (and given that there are no rural study sites), it may not be appropriate to call it as a nationally representative study. The authors need to accordingly revise their statement on representativeness and generalizability.

Authors: We thank the reviewer for this comment. Key populations are concentrated in the main cities of Togo, and this is the case for other countries in the West Africa region. The sampling is based on the selection of the eight major cities in Togo with other 100 000 inhabitants. The selection of the sample also takes into account the diversity of behaviors specific to key populations, i.e., self-identification for MSM (gays vs. bisexuals), or the medium used for drug consumption (injection or consumption). The sampling of key population is based on the RDS method, which is a well-known method for recruiting hidden populations. Thus, we believe that our sample is representative of key populations in Togo. However, the sentence was revised and rephrased to better express our idea (page 12).

Finally, this study was completed in the eight main cities of Togo and used geographical mapping as well as RDS sampling, which could indicate that the findings of this study to reflect the national prevalence of alcohol and tobacco consumption among key populations.

3. Conclusion paragraph can be further elaborated. Especially, the key factors associated with alcohol and tobacco use can be summarised here. Further research can also be proposed here briefly.

Authors: We thank the reviewer for this comment. Sentences were added to the concluding paragraph (page 13).

Psychological distress and being a DU were both significantly associated with alcohol and tobacco consumption. There is a need for mental health and substance abuse screening, referral and treatment to be addressed and fully integrated into HIV prevention services for key populations. Further research is also needed to explore, through qualitative and quantitative designs, the consequences and impact of alcohol and tobacco consumption, as well as mental health issues such as psychological distress on individuals and its burden in the HIV epidemic.

Reviewer: 2
Reviewer Name: Lloyd Goldsamt
Institution and Country: New York University - United States of America
Please state any competing interests or state 'None declared': None declared

This paper presents data from a large survey of MSM, FSW and drug users in Togo. The study focused on alcohol and tobacco use, as well as psychological distress, among these three key populations. While this is a potentially important study for which the rationale is well-described, there are a number of issues that must be addressed prior to publication.

The most important issue relates to the inclusion of female drug users as a separate group in the analyses. Although the sample size for the overall study is quite large, the sample of female drug users only includes 27 participants. This group should not be presented separately. They can either be included as part of the drug use group (not differentiated by gender) or simply dropped from the analyses due to their small sample size. The authors can point to the small numbers of female drug users as a limitation of the study and suggest further, targeted research with this population.

Authors: This comment has been taken into consideration. All analyses were carried out for the overall group of drug users, including female drug users, in the revised version of the manuscript. Below, we display an example of the modifications included in the revised manuscript.

A total of 641 MSM, 537 DU and 937 FSW, with a median age of 25 years, interquartile range (IQR) [21-32 years] participated in the study.

There are also several issues regarding how the sample was constructed. First, one of the key populations is injection drug users, yet the study included drug users (injection was not an eligibility criteria). Is there a rationale for this? Second, the authors indicate that the initial MSM seeds had to represent one "subgroup" but it is not clear what these subgroups are or how they were chosen. More detail needs to be provide on the specific subgroups and why they were chosen as inclusion criteria for the MSM sample.

Authors: We thank the reviewer for this comment.

1) Drug users were defined as any consumer of drugs, regardless of the mode of consumption. The rationale for this is that drug users, including injection drug-users are considered an at-risk group. Injection drug users however represent a small percentage of drug users, and that is the case in most West African countries.

2) Initial seeds were MSM community leaders and they also had to be representative of the main existing MSM subgroups in Togo. These subgroups are based on how MSM self-identify themselves.

These additional details have been included in the revised version of the manuscript.

> Each seed from the first wave selected had to represent at least one MSM sub-group, based on how MSM self-identify: bisexuals or gays.

In addition, sample size calculations were based on rates of hazardous alcohol consumption. Was tobacco use also considered in calculating the necessary sample size? If not, why?

Authors: We agree with this comment and we thank the reviewer. We have added to the "sample size estimation" paragraph in the Methods section, our method of sample size calculation that takes into account tobacco prevalence estimates (Page 6).

> The sample size estimation was based on the estimated prevalence of hazardous alcohol drinking among key populations of 9.1% (19). We also took into account the prevalence of tobacco use, with the assumption that tobacco use prevalence in the key populations would be twice that of the general population. Hence, with a tobacco use prevalence of 6.8% in the general population, the expected prevalence of tobacco use among key populations was 13.6% (16). With a precision of 3% and an assumption of 10% of missing data, the minimum sample size was estimated at 552 participants per group at a minimum. Thus, to allow a comparison between groups, the total sample size estimated for the three groups of key populations was 1,656.

It would also be helpful to have more information about the social and geographic context of Togo, as this county is unfortunately likely to be unfamiliar to many readers. The study took place in eight towns. How were these towns selected and how representative are they of the municipalities throughout Togo. In the Discussion section, the authors refer to the eight main cities of Togo and suggest that the sample is nationally representative. This information should be presented in the Methods section.

Authors: We agree with this comment and we thank the reviewer. A paragraph was added in the methods section to explain in details the choice for the eight cities (page 6).

> Togo is a country of West Africa, with a population of 7.6 million inhabitants and covering 57,000 square kilometres, divided into five regions. As is the HIV epidemic in West Africa, the HIV prevalence in Togo is estimated at 2.1%, with a high prevalence among key population groups (5). In each region, based on the mapping and size estimation studies previously carried out in Togo, towns with the highest number of key populations were selected: Dapaong in the Savanes region; Kara in Kara region; Sokodé in the Centrale region; Atakpamé and Kpalimé in the Plateaux region and Tsévié, Aného and Lomé, the capital city in the Maritime region.

Finally, the Discussion section should include a focus on whether these results are generalizable to other sub-Saharan African countries. Since readers may not be highly familiar with Togo, some discussion of how it is similar or different to neighboring countries, and what that might mean for the findings from this study, would strengthen the conclusions presented.

Authors: We thank the reviewer. An additional paragraph was included in the discussion section to explain how findings from our study could be generalized to other sub-Saharan African countries (page 13).

Despite these limitations, the results presented in this study make a unique contribution to the literature on alcohol and tobacco use among key populations in West Africa, especially since Togo shares similar characteristics with other countries of West Africa regarding the HIV epidemic (concentrated HIV epidemics, and elevated HIV prevalences among key populations), access to treatment and prevention for key populations (3,4,42). The results could be generalized to other countries in West Africa.

VERSION 2 – REVIEW

REVIEWER	Dr Venkatesan Chakrapani, MD, PhD Chairperson, Centre for Sexuality and Health Research and Policy (C-SHaRP), Chennai, India.
REVIEW RETURNED	18-Jul-2019

GENERAL COMMENTS	The authors seemed to have addressed all the major comments of the reviewers. I have only two minor comments. 1. Use the term 'men who have sex with men' consistently, and not both 'males who have sex with males' and 'men who have sex with men'. 2. The second half of the last paragraph ('conclusions') can be rephrased for better comprehension. For example, instead of "...burden in the HIV epidemic", maybe "...contribution to the HIV epidemic"?

REVIEWER	Lloyd Goldsamt NYU Meyers College of Nursing USA
REVIEW RETURNED	26-Jul-2019

GENERAL COMMENTS	The authors have largely addressed comments from the prior review. However, there are several additional methodological details that should be included in the paper. These details refer to the study recruitment and interview procedures. While the authors describe the use of RDS to recruit their MSM sample, there are no details provided regarding recruitment of the DU and FSW samples. It would be helpful to know how these participants were recruited. Who were the recruiters? How did they decide who to approach (it appears that participants were recruited in public sex work and drug use venues). Was a screening interview conducted or, if not, how was study eligibility determined? Similarly, it would be helpful to know more details about the interviews. Who conducted them? Where did they take place?

	These details would provide the additional information necessary for readers to fully understand the study.

VERSION 2 – AUTHOR RESPONSE

Reviewer(s)' Comments to Author:

Reviewer: 1 Reviewer Name: Dr Venkatesan Chakrapani Institution and Country: Centre for Sexuality and Health Research and Policy (C-SHaRP), India

Please leave your comments for the authors below
The authors seemed to have addressed all the major comments of the reviewers.
I have only two minor comments.

1. Use the term 'men who have sex with men' consistently, and not both 'males who have sex with males' and 'men who have sex with men'.

Authors: We thank the reviewers for this comment. The term “men who have sex with men” was used

The aim of this study was to estimate alcohol and tobacco use prevalence and their correlates among female sex workers (FSW), men who have sex with men (MSM) and drug users (DU) in Togo.

throughout the manuscript.

2. The second half of the last paragraph ('conclusions') can be rephrased for better comprehension. For example, instead of "...burden in the HIV epidemic", maybe "...contribution to the HIV epidemic"?

Authors: The last sentence of the conclusion paragraph was changed to include “contribution” rather than “burden”

Further research is also needed to explore, through qualitative and quantitative designs, the consequences and impact of alcohol and tobacco consumption, as well as mental health issues such as psychological distress on individuals and its contribution to the HIV epidemic.

Reviewer: 2 Reviewer Name: Lloyd Goldsamt Institution and Country: New York University - United States of America Please state any competing interests or state ‘None declared’: None declared

Please leave your comments for the authors below

1- The authors have largely addressed comments from the prior review. However, there are several additional methodological details that should be included in the paper.

These details refer to the study recruitment and interview procedures. While the authors describe the use of RDS to recruit their MSM sample, there are no details provided regarding recruitment of the DU and FSW samples. It would be helpful to know how these participants were recruited. Who were the recruiters? How did they decide who to approach (it appears that participants were recruited in public sex work and drug use venues). Was a screening interview conducted or, if not, how was study eligibility determined?

Authors: We thank the reviewer for this comment. Details on recruitment and interview procedures are

> Recruitment of participants was completed by medical students after one week of training. FSW and DU were recruited in "hot spots" and drug-dealing and consumption locations, respectively. Recruitment was done by medical students after one week of training. The questionnaire was completed for MSM, in the MSM NGOs, for the FSW in the bars next to the "hot spots" dedicated to the study, and for DU in the "ghettos".

included in the Methods section: Study procedures. FSW and DU were recruited in "hot spots" and drug-dealing and consumption locations that were identified prior to the study, with the help of leaders from the community. After eligibility screening interviews were completed, consent was obtained prior to the administration of the questionnaire.

2- Similarly, it would be helpful to know more details about the interviews. Who conducted them? Where did they take place?
These details would provide the additional information necessary for readers to fully understand the study.

Authors: We thank the reviewer for this comment. Medical students, trained for one week prior to the beginning of the study administered the questionnaire. Details on the locations for the administration

> After eligibility screening and written informed consent approval, trained study staff (medical students) administered a structured and standardized questionnaire during a face-to-face interview. The interviews took place in the MSM community-based organizations for the MSM, for the FSW, in selected bars around the main "hot spots" from which they were recruited and for the DU, recruitment occurred in the smoking spots in the "ghettos".

of the questionnaire have been added to the Methods section: Study procedures

VERSION 3 – REVIEW

REVIEWER	Lloyd Goldsamt Rory Meyers College of Nursing, New York University USA
REVIEW RETURNED	16-Aug-2019

GENERAL COMMENTS	This version of the manuscript is responsive to the earlier reviews.