

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	A cross sectional assessment of Tuberculosis and Human Immunodeficiency Virus prevalence in 13 correctional facilities in Zambia
AUTHORS	Kagujje, Mary; Somwe, Paul; Hatwiinda, Sisa; Bwalya, Joel; Zgambo, Tamala; Thornicroft, Moomba; Bozzani, Fiammetta; Moonga, Clement; Muyoyeta, Monde

VERSION 1 – REVIEW

REVIEWER	Aladesanmi, Adeniyi Olatunji University of Ilorin
REVIEW RETURNED	14-May-2021

GENERAL COMMENTS	<p>Thanks for the great work you have done in the conduct of this research.</p> <p>I have few clarifications</p> <ol style="list-style-type: none">1. The research was done in 13 correctional facilities out of 87, what was the sampling method used to select the 13 facilities? Kindly include a chart of this sampling in the supplementary data2. the screening method was not uniformed in the different correction centre this may have impact on the result. please add to limitations3. Screening patient with Chest Xray is not meant to be after a negative GeneXpert as there are other differential causes of CXR abnormalities that may mimic Tuberculosis kindly acknowledge this in the limitations4. Not allowing freedom to opt out of Tuberculosis screening doesn't seem right.5. Can you adduce any reason in the discussion for the possible reduction in the prevalence for TB and HIV compared to the previous studies. <p>I really commend you for the work as it must have been laborious considering the sample population</p> <p>Regards.</p>
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REVIEWER	Moglad, Ehssan H Prince Sattam bin Abdulaziz University
REVIEW RETURNED	15-May-2021

GENERAL COMMENTS	<p>In this manuscript, the authors describe the prevalence of Tuberculosis (TB) and Human Immunodeficiency virus (HIV) in Zambian correctional facilities. It is interesting to figure out the epidemiological status of TB and HIV in Zambian correctional facilities. However, I found several comments in this study:</p> <ol style="list-style-type: none">1. The entire manuscript requires revision in the use of abbreviations.
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	<p>2. Zambia has 87 correctional facilities, and you chose 13 only, why and on which basis?</p> <p>3. In table 1: move n (%) to the second column.</p> <p>4. In table 2,3, and 4: write in the end of the table what these abbreviations stand for?</p>
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REVIEWER	Amon, J Drexel University, Office of Global Health, Dornsife School of Public Health
REVIEW RETURNED	17-May-2021

GENERAL COMMENTS	<p>The manuscript “Prevalence of Tuberculosis and Human Immunodeficiency Virus in Zambian correctional facilities” reports on a cross-sectional assessment of HIV and TB prevalence in 13 correctional facilities in Zambia.</p> <p>Comments:</p> <p>1. Abstract – There is some confusion between the stated Methods (cross-sectional study) and Intervention (mass and entry screening). The Methods suggest that a specific study was conducted (point-estimate of a sample or census of detainees). The Intervention statement and text in the paper suggests that routine programmatic data was used. This should be clarified. The Conclusion states that the results suggest a reduction of TB and HIV prevalence however there is no reference to where this ‘baseline’ data comes from, when it was collected, or if it is from the same set of correctional facilities. Is this a comparison to data collected in 2011 reported in the second paragraph of the Introduction? But for HIV the 2011 prevalence of 22.9% falling to 14.3% is more than 8.6%. Please clarify.</p> <p>2. Article Summary – it is not accurate to say that because of a large sample, the results are generalizable. Generalizable to what population? How does the selection of 13 of 87 facilities permit generalizability to all facilities within Zambia? What are the characteristics of individuals in those facilities included in the study versus those in other facilities?</p> <p>3. Introduction – the statement that “Much as the living conditions in correctional facilities perpetuate TB and HIV (4, 5), incarcerated people also often come from socio-economically disadvantaged backgrounds where the burden of TB and HIV is already high(1,3).” is vague. Please be more specific and direct about what living conditions specifically perpetuate TB and HIV transmission. For example: “While people who are incarcerated often have higher rates of TB and HIV on entry (1,3), conditions in correctional facilities – including crowding, poor ventilation, lack of access to screening and medical care, sexual violence and lack of availability of condoms for consensual sexual behaviors facilitate TB and HIV transmission within correctional settings (4,5).” As figure 1 refers to 15% of individuals “in court or on farms” and therefore not able to be screened for HIV or TB, some mention should be made of this in the text as well. Is this a limitation/bias?</p> <p>In the last paragraph of the Introduction, regarding study aims, please narrow the aim to determine current TB/HIV prevalence in 13 correctional facilities, rather than “in Zambian correctional facilities” more broadly.</p>
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4. Methods – It would be helpful to the reader to have more information and context in the “Study setting and population” section. For example, the section starts by stating that “Zambia has 87 correctional facilities with a total population of 21,000 incarcerated people (11).” However, the citation states that the population is 22,823 and the capacity of all facilities is 9,150. Further, population of detainees has increased from 2000 to the present and that approximately one in five individuals detained is in pre-trial detention. It is also unclear if the statement “Routinely, incarcerated people undergo TB screening and HIV testing at entry or within 7 days of admission into correctional facilities. Depending on availability of logistics, periodic TB and HIV mass screening are carried out, with freedom to opt out of HIV testing but not TB screening and testing.” refers to the facilities participating in the study or if it refers to all facilities in the country. Please clarify.

5. Results –

- a. Given that there were only 4 “circumstantial children” in the study, none of which had TB or HIV, I do not see any value in including this population in the paper. Please remove this group from the tables and the narrative.
- b. Please define the age of juveniles (<19) in the table and give median ages for each category of adults and juveniles.
- c. The text states that “Those already on anti-TB treatment at the time of screening were documented as TB cases and those on anti-retroviral therapy (ART) were recorded as HIV positive; they were not retested” however Figure 1 does not specify the number of individuals who were on anti-TB treatment or ART. This should be included in the figure and in the text.
- d. It is surprising that the prevalence comparison between new entrants versus residents is given so little attention, given that individuals who are TB/HIV positive at entry affect the interpretation of results in terms of the type of prison-based interventions needed and the ability of prison-based intervention to reduce prevalence. It is also potentially misleading to only include p values which can be influenced by sample size rather than point estimates and to have this table only available as a supplemental file. Despite overlapping CIs, it is interesting to note confirmed TB prevalence of 1,018 vs 1,613 per 100,000 among residents vs new entrants and HIV prevalence of 14.5% vs 11.3%. However, regression analysis is needed to address confounding. Consider including the table in the main text and providing more narrative on the results.

6. Discussion –

- a. The first sentence of the Discussion compares the results to past studies, however it is not clear when these were done or if the two TB and one HIV citations are the basis for comparison. Cite #14 represents data from 2008, #15 from 2013-2014, and #16 from 2016. Then the second paragraph presents a comparison to a 2010-2011 study. It would be helpful to order the presentation chronologically.
- b. Reference to and proposed explanation of the non-significance of statistical tests comparing residents to new entrants should acknowledge sample size and wide confidence intervals as a limiting factor to drawing any inferences.
- c. The citation to #20 should be to Todrys, Katherine W., et al. "Imprisoned and imperiled: access to HIV and TB prevention and

	<p>treatment, and denial of human rights, in Zambian prisons." Journal of the International AIDS Society 14.1 (2011): 1-11. Which is a more appropriate cite than Todrys KW. Unjust and Unhealthy: Hiv, Tb, and Abuse in Zambian Prisons. 2010.</p> <p>d. The discussion could say a bit more related to women and juveniles in prisons – in terms of the limits of data availability as well as the specific needs/challenges addressing these populations. See, for example, additional cites that might be useful to reference (including if it is possible to make the point that progress has been made relative to these populations) by Todrys and colleagues: Todrys, et al. "Health and human rights of women imprisoned in Zambia." BMC international health and human rights 11.1 (2011): 1-7. And Todrys KW et al. Human rights and health among juvenile prisoners in Zambia. Int J Prison Health. 2011;7(1):10-7.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer 1

1.	The research was done in 13 correctional facilities out of 87, what was the sampling method used to select the 13 facilities? Kindly include a chart of this sampling in the supplementary data 2.	<p>Thank you. The 13 correctional facilities were purposefully selected by the EJJOH project because they hold a significant number of juveniles. Refer to line 94-95.</p> <p>The manuscript has been revised to limit the generalizability of the findings to the 13 facilities in which the activity was done. Refer to line 47, 297-298.</p>
2	The screening method was not uniformed in the different correction centre this may have impact on the result. please add to limitations	Thank you, this was included under bullet 4 under strengths and limitations (Line 51) and line 301-302
3	Screening patient with Chest Xray is not meant to be after a negative GeneXpert as there are other differential causes of CXR abnormalities that may mimic Tuberculosis kindly acknowledge this in the limitations	<p>Indeed, there are other differential causes of CXR abnormalities that may mimic tuberculosis. We have included this as a limitation. Refer to line 302-305.</p> <p>That said, chest x-ray can be done after a negative GeneXpert in patients with history suggestion of TB.</p>
4	Not allowing freedom to opt out of Tuberculosis screening doesn't seem right.	Given the mode of transmission of TB and the living conditions in correctional facilities (overcrowding, poor ventilation, poor nutrition and HIV rates of HIV) which are risk factors for both TB infection and progression from infection to disease, TB screening is mandatory to maximise early detection and hence prevent others from contracting TB infection. This has been clarified.

		Refer to line 108-109
5	Can you adduce any reason in the discussion for the possible reduction in the prevalence for TB and HIV compared to the previous studies.	This has been added, refer to line 248-258 and line 280-283.
6	I really commend you for the work as it must have been laborious considering the sample population	Thank you so much sir

Reviewer 2

1	The entire manuscript requires revision in the use of abbreviations.	This is noted, thank you. Revisions have been made
2	Zambia has 87 correctional facilities, and you chose 13 only, why and on which basis?	Thank you. The 13 correctional facilities were purposefully selected by the EJJOH project because they hold a significant number of juveniles. Refer to line 94-95. The manuscript has been revised to limit the generalizability of the findings to the 13 facilities in which the activity was done. Refer to line 47, 297-298.
3	In table 1: move n (%) to the second column.	Thank you, this has been done. Refer to line 180
4	In table 2,3, and 4: write in the end of the table what these abbreviations stand for?	Thank you sir, this has been done. Refer to lines 181, 191, 205 and 218

Reviewer 3

1.	The manuscript "Prevalence of Tuberculosis and Human Immunodeficiency Virus in Zambian correctional facilities" reports on a cross-sectional assessment of HIV and TB prevalence in 13 correctional facilities in Zambia.	Indeed, thank you so much. The title has been revised as such refer to Line 1-3
Abstract		
2	There is some confusion between the stated Methods (cross-sectional study) and Intervention (mass and entry screening). The Methods suggest that a specific study was conducted (point-estimate of a sample or census of detainees). The Intervention statement and text in the paper suggests that routine programmatic data was used. This should be clarified.	Thank you, this has been clarified. A point estimate was done under programmatic conditions. Refer to line 31-32 and 82-83
3	The Conclusion states that the results suggest a reduction of TB and HIV prevalence however there is no reference to	Thank you so much for the guidance. The baseline data is

	<p>where this 'baseline' data comes from, when it was collected, or if it is from the same set of correctional facilities. Is this a comparison to data collected in 2011 reported in the second paragraph of the Introduction? But for HIV the 2011 prevalence of 22.9% falling to 14.3% is more than 8.6%. Please clarify.</p>	<p>the 2011 study. This the information been included. Refer to line 38-39</p> <p>We request that you explain this feedback on HIV prevalence a little further. Since these are percentages, we have just subtracted them to arrive at the reduction.</p>
Article summary		
4	<p>It is not accurate to say that because of a large sample, the results are generalizable. Generalizable to what population? How does the selection of 13 of 87 facilities permit generalizability to all facilities within Zambia? What are the characteristics of individuals in those facilities included in the study versus those in other facilities?</p>	<p>That's true. I have revised to restrict findings to the 13 correctional facilities. Refer to line 47</p>
Introduction		
5	<p>Introduction – the statement that “Much as the living conditions in correctional facilities perpetuate TB and HIV (4, 5), incarcerated people also often come from socio-economically disadvantaged backgrounds where the burden of TB and HIV is already high(1,3).” is vague. Please be more specific and direct about what living conditions specifically perpetuate TB and HIV transmission. For example: “While people who are incarcerated often have higher rates of TB and HIV on entry (1,3), conditions in correctional facilities – including crowding, poor ventilation, lack of access to screening and medical care, sexual violence and lack of availability of condoms for consensual sexual behaviors facilitate TB and HIV transmission within correctional settings (4,5).”</p>	<p>Thanks a lot for this. This has been revised, refer to line 59-62</p>
6	<p>In the last paragraph of the Introduction, regarding study aims, please narrow the aim to determine current TB/HIV prevalence in 13 correctional facilities, rather than “in Zambian correctional facilities” more broadly.</p>	<p>Thank you. This has been done. Refer to line 78</p>
Methods		
7	<p>It would be helpful to the reader to have more information and context in the “Study setting and population” section. For example, the section starts by stating that “Zambia has 87 correctional facilities with a total population of 21,000 incarcerated people (11).” However, the citation states that the population is 22,823 and the capacity of all facilities is</p>	<p>Thank you, additional information has been added. Refer to line 89-91</p>

	9,150. Further, population of detainees has increased from 2000 to the present and that approximately one in five individuals detained is in pre-trial detention.	
8	It is also unclear if the statement “Routinely, incarcerated people undergo TB screening and HIV testing at entry or within 7 days of admission into correctional facilities. Depending on availability of logistics, periodic TB and HIV mass screening are carried out, with freedom to opt out of HIV testing but not TB screening and testing.” refers to the facilities participating in the study or if it refers to all facilities in the country. Please clarify.	Thank you, this has been clarified that all facilities in the country are expected to do this. Refer to line 104-106
Results		
9	As figure 1 refers to 15% of individuals “in court or on farms” and therefore not able to be screened for HIV or TB, some mention should be made of this in the text as well. Is this a limitation/bias?	Thank you, this has been done. Refer to line 162-163. It has been mentioned as a potential cause of bias, line 305-306
10	a. Given that there were only 4 “circumstantial children” in the study, none of which had TB or HIV, I do not see any value in including this population in the paper. Please remove this group from the tables and the narrative.	Thank you, they have been removed
11	Please define the age of juveniles (<19) in the table and give median ages for each category of adults and juveniles.	Thanks, definition of juveniles has been included. Refer to line 180, 190, 204 and 217 The median ages for adults and juveniles have also been included in the text. Refer to line 177-178.
12	The text states that “Those already on anti-TB treatment at the time of screening were documented as TB cases and those on anti-retroviral therapy (ART) were recorded as HIV positive; they were not retested” however Figure 1 does not specify the number of individuals who were on anti-TB treatment or ART. This should be included in the figure and in the text.	Thank you, this is included in Figure 1
13	It is surprising that the prevalence comparison between new entrants versus residents is given so little attention, given that individuals who are TB/HIV positive at entry affect the interpretation of results in terms of the type of prison-based interventions needed and the ability of prison-based intervention to reduce prevalence. It is also potentially misleading to only include p values which can be influenced by sample size rather than point estimates	This is true and hence these findings have been added to the main text and narrative provided. Refer to line 180, 190, 204 and 217 for the tables and the text line 189, 202-203 and 215-216

	<p>and to have this table only available as a supplemental file. Despite overlapping CIs, it is interesting to note confirmed TB prevalence of 1,018 vs 1,613 per 100,000 among residents vs new entrants and HIV prevalence of 14.5% vs 11.3%. However, regression analysis is needed to address confounding. Consider including the table in the main text and providing more narrative on the results.</p>	<p>The point estimates and p-values have both been included in the tables</p> <p>Regression analysis did not show any confounding by category of client and sex on the relationship between TB and inmate status</p>
Discussion		
14	<p>a. The first sentence of the Discussion compares the results to past studies, however it is not clear when these were done or if the two TB and one HIV citations are the basis for comparison. Cite #14 represents data from 2008, #15 from 2013-2014, and #16 from 2016. Then the second paragraph presents a comparison to a 2010-2011 study. It would be helpful to order the presentation chronologically.</p>	<p>Thank you sir and indeed that's ideal.</p> <p>We have kept the test relating to citations 14,15 and 16 in the first paragraph as this is our summary of important findings. The text relating to the 2010-2011 study was moved further down as we expanded our discussion.</p>
15	<p>b. Reference to and proposed explanation of the non-significance of statistical tests comparing residents to new entrants should acknowledge sample size and wide confidence intervals as a limiting factor to drawing any inferences.</p>	<p>Thank you sir. This has been added. Refer to line 292-294</p>
16	<p>c. The citation to #20 should be to Todrys, Katherine W., et al. "Imprisoned and imperiled: access to HIV and TB prevention and treatment, and denial of human rights, in Zambian prisons." <i>Journal of the International AIDS Society</i> 14.1 (2011): 1-11. Which is a more appropriate cite than Todrys KW. <i>Unjust and Unhealthy: Hiv, Tb, and Abuse in Zambian Prisons</i>. 2010.</p>	<p>Thank you sir, this has been updated. Refer to line 422-424</p>
17	<p>The discussion could say a bit more related to women and juveniles in prisons – in terms of the limits of data availability as well as the specific needs/challenges addressing these populations. See, for example, additional cites that might be useful to reference (including if it is possible to make the point that progress has been made relative to these populations) by Todrys and colleagues: Todrys, et al. "Health and human rights of women imprisoned in Zambia." <i>BMC international health and human rights</i> 11.1 (2011): 1-7. And Todrys KW et al.</p>	<p>Thank you so much sir, the section on women and juveniles has been expanded. Refer to line 235-244 and 280-283</p>

	Human rights and health among juvenile prisoners in Zambia. Int J Prison Health. 2011;7(1):10-7.	
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VERSION 2 – REVIEW

REVIEWER	Aladesanmi, Adeniyi Olatunji University of Ilorin
REVIEW RETURNED	05-Jul-2021

GENERAL COMMENTS	Thanks for effecting the outline corrections from the previous draft. i accept the manuscript for publication. Regards
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REVIEWER	Amon, J Drexel University, Office of Global Health, Dornsife School of Public Health
REVIEW RETURNED	27-Jul-2021

GENERAL COMMENTS	<p>Author's comment: The Conclusion states that the results suggest a reduction of TB and HIV prevalence however there is no reference to where this 'baseline' data comes from, when it was collected, or if it is from the same set of correctional facilities. Is this a comparison to data collected in 2011 reported in the second paragraph of the Introduction? But for HIV the 2011 prevalence of 22.9% falling to 14.3% is more than 8.6%. Please clarify.</p> <p>>> The reduction from 22.9% to 14.3% is a reduction of 8.6 percentage points, but more accurately it is a reduction of 37.6% and should be stated as such (e.g., a reduction from 22% to 11% would be a reduction of 50%). This should also be fixed in the Discussion (lines 328-9 in the tracked changes version).</p> <p>First review comment: The discussion could say a bit more related to women and juveniles in prisons – in terms of the limits of data availability as well as the specific needs/challenges addressing these populations. See, for example, additional cites that might be useful to reference (including if it is possible to make the point that progress has been made relative to these populations) by Todrys and colleagues: Todrys, et al. "Health and human rights of women imprisoned in Zambia." BMC international health and human rights 11.1 (2011): 1-7. And Todrys KW et al. Human rights and health among juvenile prisoners in Zambia. Int J Prison Health. 2011;7(1):10-7.</p> <p>Author's comment: Thank you so much sir, the section on women and juveniles has been expanded. Refer to line 235-244 and 280-283</p> <p>>> I do not see the changes identified in terms of an expanded section on women (these changes seem only to relate to TB) nor the inclusion of a reference to the BMC article on women in Zambian prisons suggested above. While HIV and TB are key concerns they are not the exclusive health concerns of individuals in prisons and some brief mention of this would be beneficial.</p>
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VERSION 2 – AUTHOR RESPONSE

Reviewer 1

1.	Thanks for effecting the outline corrections from the previous draft. i accept the manuscript for publication.	Thank you so much sir
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Reviewer 2

1	<p>Author's comment: The Conclusion states that the results suggest a reduction of TB and HIV prevalence however there is no reference to where this 'baseline' data comes from, when it was collected, or if it is from the same set of correctional facilities. Is this a comparison to data collected in 2011 reported in the second paragraph of the Introduction? But for HIV the 2011 prevalence of 22.9% falling to 14.3% is more than 8.6%. Please clarify.</p> <p>>> The reduction from 22.9% to 14.3% is a reduction of 8.6 percentage points, but more accurately it is a reduction of 37.6% and should be stated as such (e.g., a reduction from 22% to 11% would be a reduction of 50%). This should also be fixed in the Discussion (lines 328-9 in the tracked changes version).</p>	<p>Thank you sir. This has since been revised. Please refer to lines 45 and 290.</p> <p>The same change has been applied to the increase in DR TB prevalence line 276</p>
2	<p>First review comment: The discussion could say a bit more related to women and juveniles in prisons – in terms of the limits of data availability as well as the specific needs/challenges addressing these populations. See, for example, additional cites that might be useful to reference (including if it is possible to make the point that progress has been made relative to these populations) by Todrys and colleagues: Todrys, et al. "Health and human rights of women imprisoned in Zambia." BMC international health and human rights 11.1 (2011): 1-7. And Todrys KW et al. Human rights and health among juvenile prisoners in Zambia. Int J Prison Health. 2011;7(1):10-7.</p> <p>Author's comment: Thank you so much sir, the section on women and juveniles has been expanded. Refer to line 235-244 and 280-283</p> <p>>> I do not see the changes identified in terms of an expanded section on women (these changes seem only to relate to TB) nor the inclusion of a reference to the BMC article on women in Zambian prisons suggested above. While HIV and TB are key concerns they are not the exclusive health concerns of individuals in</p>	<p>Thank you sir. The expanded section for women in relation to HIV has been included. Refer to line 286-287</p> <p>The BMC reference has been included. Refer to line 424-425</p> <p>We appreciate the guidance to mention that while HIV and TB are key concerns, they are not the exclusive health concerns of individuals in prisons.</p> <p>This has been included in the conclusion. Refer to line 326-327</p>

	prisons and some brief mention of this would be beneficial	
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VERSION 3 – REVIEW

REVIEWER	Amon, J Drexel University, Office of Global Health, Dornsife School of Public Health
REVIEW RETURNED	30-Aug-2021

GENERAL COMMENTS	The authors have responded to all comments.
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