PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Access to and utilization of antimicrobials among forcibly displaced persons in Uganda, Yemen, and Colombia: a pilot cross-sectional survey
AUTHORS	Kamiab Hesari, David; Aljadeeah, Saleh; Brhlikova, Petra; Hyzam, Dalia; Komakech, Henry; Patiño Rueda, Jhon Sebastián; Ocampo Cañas, Jovana A.; Ching, Carly; Orubu, Ebiowei; Bernal, Oscar; Basaleem, H; Orach, Christopher; Zaman, Muhammad; da Costa, Clarissa

VERSION 1 – REVIEW

REVIEWER	Sumon, Shariful Amin ICDDRB, Infectious Diseases Division
REVIEW RETURNED	10-Mar-2024

GENERAL COMMENTS	Review of the Manuscript ID bmjopen-2024-084734 Antibiotic Utilization Patterns and Perception about Antimicrobial Resistance among Forcibly Displaced Persons in Uganda, Yemen, and Colombia: A Pilot Study Page – 2 1. Line 5: Title: better revised the title, can be used - Antibiotic utilization pattern and barriers to healthcare seeking among … … (as per findings presented in the result section) 2. Line 34: revised the objectives, add a line of the intro 3. Line 43: targeted or data collected? 4. Line 53: align with Title, objectives written in the background, and presented findings 5. Line 47: include the reasons for three study countries and add references 6. Line 56: add a line of Total participants, e.g. A total of 136 participants were enrolled in this study, of which 66.2% (90/136) were female and most (92.6%, 126/136) of the participants had no health insurance. 7. Line 59: revise the terms ‘preventatively’ and ‘inappropriately’ Page – 3 1. Line 16: avoid ‘first’ 2. Line 27: better drop the last limitation, can be added ‘non-response’ in Colombia for ‘time restriction’ 3. Line 46: avoid ‘our time’ 4. Line 47: include the reasons for three study countries and add references Page – 4 5. Line 9: reference no 13 needs to be appropriated place, same for Ref no 14/15

	6. Line 22: which ‘these two global challenges’ 7. Line 24: along with migrant, add a brief on IDPs 8. Line 26: informal pathways or informal healthcare-seeking pattern? 9. Line 29: ‘to assess the feasibilities’ – is not the study’s main objective, revised it according to the title 10. Line 37: align and revise the title based on the last line of the introduction Page – 5 11. Line 55: 50 participants from seven health facilities? Page – 6 12. Line 3: add the camp name in Colombia 13. Line 9: did you use paper copy of questionnaire? 14. Line 23: The definition of ‘quality’ needs to be explained in the data collection or analysis 15. Line 26: add a brief hoe the categorical, five-point scale, open-ended, etc. questions were analyzed 16. Line 30: ‘Responses to open-ended survey questions were categorized using thematic analysis’ needs to be presented in the result section. Page – 7 17. Table 1: The age category should be revised, and can be limited to a 3 to 4 age group. Similar revision for Education/profession/Residency/Living duration. Add a column of ‘total’ as presented in the abstract’s result Page – 8 18. Line 6: What do you mean by ‘high-quality antimicrobials’? On what criteria this was defined? 19. Line 8: Mention the section 20. Line 14-16: How do you measure satisfaction? q13 is not sufficient to measure the satisfaction level? Describe what responses were considered. Define scratch card (q14) 21. Line 16-18: As ‘was no way of testing the quality of the used medicine in Yemen and Uganda, Colombia (16%)’, how do you categorize the responses of q13? 22. Line 26: define ‘informal pathways’ 23. Line 44: define ‘lower quality of healthcare’ Page – 9 24. Line 12: The subheading can be revised; this section describes information on knowledge of antibiotic use; The Heading of section B in the questionnaire looks more appropriate 25. Line 33: The heading of section C in the questionnaire can be described in an individual paragraph 26. Line 33: can add a comparison of findings from three countries in a separate paragraph 27. Line 33: Discussion needs to align with the result section, e.g. barriers need a separate paragraph 28. Line 36: use either one - antibiotics/antimicrobials 29. Line 35-45: the first para needs to focus on study objectives and key findings, the last 5 lines could be more fitted to the Introduction 30. Line 50: merge the first 3 lines of limitation 31. Line 55: Ref 55 line needs to move to the method> sample size 32. Line 56: Page – 11

	33. Line 43: better focus on the findings explored from three countries instead of researchers. The second strength could be moved to the first. 34. Line 56: Page 5 mentioned “second client exiting each clinic was chosen”, which means participants by age/sex couldn’t be controlled 35. Line 60: third limitation was already covered in the first. Page – 12 36. Line 10: The title indicated perception/AB use pattern, but the majority parts of the paper focused on barriers – align this with the revised title/key objective 37. Line 11: revised the first line 38. Line 20” Training of pharmacists or drug sellers? 39. The format of References needs to be revised 40. Can be used one figure only, combined ‘Treatment adherence’ looks more appropriate, better to use percentages in the bar chart.

REVIEWER	Kumwenda, Geoffrey Peterkins Jichi Medical University School of Medicine Graduate School of Medicine
REVIEW RETURNED	03-Apr-2024

GENERAL COMMENTS	In this study, the authors have described patterns of antibiotic utilization and perception of resistance among forcibly displaced individuals (FDPs) in Uganda, Yemen, and Colombia. The authors identified varying factors that contribute to unnecessary antibiotic utilization among FDPs in these regions. In addition to financial constraints and reachability to health centers, the authors found that most of the FDPs had no health insurance and that profoundly affected their access to medical care and eventually led to other informal means of obtaining antimicrobials, either without a doctor’s prescription or through family and friends. The study provides some relevance in increasing access to antibiotics and knowledge of drug resistance among FDPs in the fight against AMR. This is especially important considering that FDPs usually live in crowded communities, with poor hygiene/sanitation which could act as breeding grounds for AMR infections. However, whilst the authors have described different factors that contribute to the unnecessary utilization of antibiotics among the FDPs, they (like the rest of the citizens) could simply be victims of already existing poor economic, social, or political structures in these countries. For example, most of the Venezuelans in Colombia had only lived at their current address for <6 months, and for them to indulge in such behaviors like obtaining drugs over-the-counter, they are likely to be using an already known system within the community. The same would apply to the IDPs in Yemen. Hence my question then is, would the results be different if this study is conducted among the “true” citizens living within or surrounding these FDP communities? There seems to be an interesting relationship between the level of education/professional status and some health behavioral misconducts, such as over-the-counter drug purchases and seeking care/drugs without a doctor’s prescription. For example, whilst most of the FDPs in Colombia are relatively educated with good professional status, they are the biggest culprits of such misconduct compared to the non-educated and poor FDPs in Uganda. Could the authors please shed more light on this and

	what would be the possible supporting factors driving such misconduct? For the sake of the reproducibility of the study, whose results largely depended on the answers obtained through the questionnaire, I would advise the authors to include the actual questionnaires (in local languages, in the appendix/supplementary) that were used on the ground. Interpretation of English words (particularly medical terms or phrases) in different languages can vary considerably and may be misleading sometimes. Lastly, the study has some limitations such as the selection of the camps, the geographical locations of the camps, and also the overall participants. However, some of these limitations have been addressed in the discussion section.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Shariful Amin Sumon, ICDDRB
Comments to the Author:
Review of the Manuscript ID bmjopen-2024-084734
Antibiotic Utilization Patterns and Perception about Antimicrobial Resistance among Forcibly Displaced Persons in Uganda, Yemen, and Colombia: A Pilot Study

Page – 2
1. Line 5: Title: better revised the title, can be used - Antibiotic utilization pattern and barriers to healthcare seeking among … … (as per findings presented in the result section)

Response: We changed the title according to the Editor's, and Reviewers' comments (see above).

2. Line 34: revised the objectives, add a line of the intro

Response: We changed the structure of the objectives to align with the title as suggested by the reviewer.

3. Line 43: targeted or data collected?

Response: Thank you for this comment. 7 health facilities were targeted, and out of 5, data was collected. We changed this part of the abstract.

4. Line 53: align with Title, objectives written in the background, and presented findings

Response: We changed the title of the manuscript to align with the objectives of the main text.

5. Line 47: include the reasons for three study countries and add references

Response: Thank you for this comment. The reasons for choosing the three study sites are given further down in the document under “Study population selection” in the methods. We added the following sentence to the abstract: “The three countries were selected, due to their high number of

displaced people in their respective continents."

6. Line 56: add a line of Total participants, e.g. A total of 136 participants were enrolled in this study, of which 66.2% (90/136) were female and most (92.6%, 126/136) of the participants had no health insurance.

Response: We changed this accordingly.

7. Line 59: revise the terms 'preventatively' and 'inappropriately'

Response: The sentence was changed to: "In Yemen and Uganda, respondents used antibiotics to treat (58/86, 67.4%) and prevent (39/86, 45.3%) a cold."

Page – 3
1. Line 16: avoid 'first'

Response: We changed the sentence to: "This cross-sectional, multicentered study identified challenges and barriers that limit access to quality antibiotics/antimicrobials among forcibly displaced populations in low- and middle-income countries."

2. Line 27: better drop the last limitation, can be added 'non-response' in Colombia for 'time restriction'

Response: Thank you for this comment. We changed the last limitation to include the limitations of "snowball" sampling, as suggested by the editor.

3. Line 46: avoid 'our time'

Response: We changed this accordingly.

4. Line 47: include the reasons for three study countries and add references

Response: We have added references to the sentences. Detailed reasons for the choice of the three study countries are provided in the Methods under "Study Population selection".

Page – 4
5. Line 9: reference no 13 needs to be appropriated place, same for Ref no 14/15

Response: We changed the sentence accordingly.

6. Line 22: which 'these two global challenges'

Response: The challenges of antimicrobial resistance and forced displacement. We edited this sentence to read the following way: "The necessity for research at the nexus of the two global challenges of AMR and forced displacement was emphasized in the latest Global Evidence Review on Health and Migration (GEHM) series by the World Health Organization"

7. Line 24: along with migrant, add a brief on IDPs

Response: We have added the following sentence to the manuscript: "Similarly, gaps in research concerning the accessibility of healthcare for IDPs have been identified (29)"

8. Line 26: informal pathways or informal healthcare-seeking pattern?

Response: Informal pathways of accessing medicine/healthcare.

9. Line 29: ‘to assess the feasibilities’ – is not the study’s main objective, revised it according to the title

Response: Thank you for pointing this out. We removed this sentence from the manuscript.

10. Line 37: align and revise the title based on the last line of the introduction

Response: We changed the title of the manuscript to match the objectives/results.

Page – 5
11. Line 55: 50 participants from seven health facilities?

Response: Data was collected from five healthcare facilities: Panyadoli health centre III, Panyadoli hills health Centre II, Nyakadote health Centre II, Kiryandongo hospital and Lacor allied medical Centre. We have edited the manuscript accordingly.

Page – 6

12. Line 3: add the camp name in Colombia

Response: In Colombia, data was not collected from a refugee camp but from a district with a high rate of Venezuelan migrants in Bogotá (Kennedy district)

13. Line 9: did you use paper copy of questionnaire?

Response: The study team in Colombia used a digital survey tool for enacting the questionnaires. In Uganda and Yemen paper copies of the questionnaires were used.

14. Line 23: The definition of ‘quality’ needs to be explained in the data collection or analysis

Response: We did not provide any definition of quality to the respondents and asked them about their overall perception of (satisfaction with) the product quality in addition to questions about the manufacturer and expiration date. We edited the manuscript accordingly.

15. Line 26: add a brief hoe the categorical, five-point scale, open-ended, etc. questions were analyzed

Response: The five-point scale questions the mean score were analyzed and reported. For Open-ended questions, we used thematic analysis. However, we did not include these results as not enough data was obtained to have a proper evaluation of the open-ended questions. We removed the following sentence from the method section since we did not include open-ended questions in the results: “Responses to open-ended survey questions were categorized using thematic analysis.”

16. Line 30: ‘Responses to open-ended survey questions were categorized using thematic analysis’ needs to be presented in the result section.

Response: Only a few participants responded to the open-ended questions. Therefore, we didn’t publish them in this paper but included it in the limitations of this manuscript. All responses can be

found in a separate Excel file included as a supplementary file to the submission.

Page – 7
17. Table 1: The age category should be revised and can be limited to a 3 to 4 age group. Similar revision for Education/profession/Residency/Living duration. Add a column of 'total' as presented in the abstract's result

Response: Thank you. A revised table according to the suggestions of the reviewer can now be found in the manuscript.

Page – 8
18. Line 6: What do you mean by 'high-quality antimicrobials'? On what criteria this was defined?

Response: See response to 14.

19. Line 8: Mention the section

Response: Section A of the questionnaire. We edited the manuscript accordingly.

20. Line 14-16: How do you measure satisfaction? q13 is not sufficient to measure the satisfaction level? Describe what responses were considered. Define scratch card (q14)

Response: No quantitative measurement of satisfaction was used. We just asked about "satisfaction" among the patients without a definition. Some countries have established so-called "scratch cards," which are unique codes that are written on boxes of medicinal products. This unique code can be read with a smartphone or sent to a phone number to verify its authenticity and, therefore, fight counterfeit drugs. The coating can be "scratched off" (For example here: https://sproxil.com/case%20study%20type%20slug/sproxil-combating-counterfeit-drugs-with-mobile-phones/#:~:text=Sproxil%20is%20helping%20to%20improve,that%20are%20targeted%20by%20counterfeiters.)

21. Line 16-18: As 'was no way of testing the quality of the used medicine in Yemen and Uganda, Colombia (16%)', how do you categorize the responses of q13?

Response: No follow-up question was asked after this yes/no question.

22. Line 26: define 'informal pathways'

Response: Thank you for pointing this out. We were working with the definition from the WHO GEHM on informal pathways: "Acquiring antibiotics through informal networks, including from trips abroad, ethnic stores (e.g. tiendas, bodegas), online purchases, or relatives or friends who either post antibiotics or bring them from their own trips abroad" p.16.

Mukherjee et al describe informal pathways as:
"antibiotics are available over the counter (OTC) without the need for a prescription. The choice of accessing antibiotics through either formal or informal pathways is influenced by various social and cultural factors, including income levels, access to healthcare professionals, advice from friends and family, and other considerations. Patients have the option to either choose the formal pathway and consult a physician for a prescription or directly approach a pharmacist through an informal pathway to purchase antibiotics without a prescription. Additionally, individuals may engage in self-medication or seek guidance from friends and family, which influences the pattern of self-medication among

patients.” https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10850286/

We added the following sentence to the manuscript: “Informal pathways or networks are ways of accessing antibiotics without a prescription, such as over-the-counter purchases, or sharing antibiotics with friends and family (28, 45).”

23. Line 44: define ‘lower quality of healthcare’

Response: We didn’t specifically define “lower quality of healthcare” for the patients beforehand. The WHO defines the quality of health the following way: “Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with evidence-based professional knowledge “.
(https://www.who.int/news-room/fact-sheets/detail/quality-health-services)

Page – 9
24. Line 12: The subheading can be revised; this section describes information on knowledge of antibiotic use; The Heading of section B in the questionnaire looks more appropriate

Response: We changed the subheading to: “Treatment adherence and AMR awareness within the study population”

25. Line 33: The heading of section C in the questionnaire can be described in an individual paragraph

Response: The results of section C of the questionnaire are described on page 8.

26. Line 33: can add a comparison of findings from three countries in a separate paragraph

Response: we have added the following table of the most important findings to the end of the result section

Table 2: Summary of most important results
Uganda Yemen Colombia

Top Barriers of Access Financial barrier
(Median score 4) The used medicine needs prescription
(Median score 3) Financial barrier
(Median score 4)
Unavailability of certain medicine
(Median score 4) Unavailability of certain medicine
(Median score 3) Used medicine needs prescription
(Median score 3)
Time to reach the nearest health care center
(Median Score 3) Time to reach the nearest healthcare center
(Median score 3) Time to reach the nearest healthcare center
(Median score 2)
Obtaining antibiotics through informal pathways 13/34
(38.2%) 27/50
(54.0%) 34/50
(68.0%)
Awareness about AMR 9/36
(25.0%) 4/50

(8.0%) 11/50
(22.0%)

27. Line 33: Discussion needs to align with the result section, e.g. barriers need a separate paragraph

Response: Thank you for this suggestion. We edited the discussion and the result section and hope that they are now sufficient.

28. Line 36: use either one - antibiotics/antimicrobials

Response: As described in the methods section, we used both terms to have a broader scope on the topic.

29. Line 35-45: the first para needs to focus on study objectives and key findings, the last 5 lines could be more fitted to the Introduction

Response: As suggested, we moved the last five lines to the introduction and added some key findings in the paragraph.

30. Line 50: merge the first 3 lines of limitation

Response: we merged the lines according to the reviewer's comments.

31. Line 55: Ref 55 line needs to move to the method> sample size
32. Line 56:

Page – 11
33. Line 43: better focus on the findings explored from three countries instead of researchers. The second strength could be moved to the first.

Response: Thank you for this comment. we changed this accordingly.

34. Line 56: Page 5 mentioned “second client exiting each clinic was chosen”, which means participants by age/sex couldn’t be controlled

Response: Following the reviewers comment, we left this statement out.

35. Line 60: third limitation was already covered in the first.

Response: We changed the strength and limitations according to the reviewers and editors’ comments.

Page – 12
36. Line 10: The title indicated perception/AB use pattern, but the majority parts of the paper focused on barriers – align this with the revised title/key objective

Response: We changed the title of the manuscript to have more focus on the access to antibiotics.

37. Line 11: revised the first line

Response: We changed this line to: “By assessing behavioral, organizational, and social barriers to access to quality antimicrobials, this study sheds some light on the situation of forcibly displaced people in three distinct settings.”

38. Line 20” Training of pharmacists or drug sellers?

Response: This depends on the context of each study setting and the availability of medicine.

39. The format of References needs to be revised

Response: We have revised the references.

40. Can be used one figure only, combined ‘Treatment adherence’ looks more appropriate, better to use percentages in the bar chart.

Response: Thank you for pointing this out. We used percentages in the Bar charts.

Reviewer: 2
Dr. Geoffrey Peterkins Kumwenda, Jichi Medical University School of Medicine Graduate School of Medicine
Comments to the Author:
In this study, the authors have described patterns of antibiotic utilization and perception of resistance among forcibly displaced individuals (FDPs) in Uganda, Yemen, and Colombia. The authors identified varying factors that contribute to unnecessary antibiotic utilization among FDPs in these regions. In addition to financial constraints and reachability to health centers, the authors found that most of the FDPs had no health insurance and that profoundly affected their access to medical care and eventually led to other informal means of obtaining antimicrobials, either without a doctor’s prescription or through family and friends.

The study provides some relevance in increasing access to antibiotics and knowledge of drug resistance among FDPs in the fight against AMR. This is especially important considering that FDPs usually live in crowded communities, with poor hygiene/sanitation which could act as breeding grounds for AMR infections. However, whilst the authors have described different factors that contribute to the unnecessary utilization of antibiotics among the FDPs, they (like the rest of the citizens) could simply be victims of already existing poor economic, social, or political structures in these countries. For example, most of the Venezuelans in Colombia had only lived at their current address for <6 months, and for them to indulge in such behaviors like obtaining drugs over-the-counter, they are likely to be using an already known system within the community. The same would apply to the IDPs in Yemen. Hence my question then is, would the results be different if this study is conducted among the “true” citizens living within or surrounding these FDP communities?

Response: Thank you for this interesting comment. In Uganda, we included the host population in the survey and the responses were similar to those of the migrant participants. This is not surprising as the migrant population in Uganda is integrated and accesses healthcare services alongside the host population. However, we do not have comparable data and analysis from Colombia and Yemen, where we did not have any control group. In the manuscript, we, therefore, do not refer to the Ugandan control group. We agree that this is an important issue, and further research should include controls to better understand differences, if any, between the displaced and host populations

There seems to be an interesting relationship between the level of education/professional status and some health behavioral misconducts, such as over-the-counter drug purchases and seeking care/drugs without a doctor’s prescription. For example, whilst most of the FDPs in Colombia are

relatively educated with good professional status, they are the biggest culprits of such misconduct compared to the non-educated and poor FDPs in Uganda. Could the authors please shed more light on this and what would be the possible supporting factors driving such misconduct?

Response: Thank you for pointing out this interesting relationship. We agree that our data suggest this relationship which is in contrast to the published literature on patterns of antibiotic utilization (e.g. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10479900/; https://www.mdpi.com/2227-9032/10/9/1636). Given the limited sample size, we do not draw attention to this in the current manuscript, but the issue warrants further research if the displaced populations indeed behave differently.

For the sake of the reproducibility of the study, whose results largely depended on the answers obtained through the questionnaire, I would advise the authors to include the actual questionnaires (in local languages, in the appendix/supplementary) that were used on the ground. Interpretation of English words (particularly medical terms or phrases) in different languages can vary considerably and may be misleading sometimes.

Response: Thank you for this comment. We have included the questionnaires in the language they were asked in as part of our submission.

Lastly, the study has some limitations such as the selection of the camps, the geographical locations of the camps, and also the overall participants. However, some of these limitations have been addressed in the discussion section.

Response: The limitations section has been rewritten and strengthened based on editor's and reviewers' comments.

VERSION 2 – REVIEW

REVIEWER	Sumon, Shariful Amin ICDDRB, Infectious Diseases Division
REVIEW RETURNED	26-May-2024

GENERAL COMMENTS	None