

Supplementary Material

Barriers and facilitators to pre-exposure prophylaxis among African migrants in high income countries: a systematic review

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Appendix 1: Syntax Used for Database Searches

Appendix 2: Table of Excluded Studies (n=58) and Reasons for Exclusion

Appendix 3: Critical Appraisal of Quantitative Studies Using the ‘Joanna Briggs Institute Checklist for Analytical Cross-Sectional Studies’ (39)

Appendix 4: Critical Appraisal of Qualitative Studies Using a modified ‘CASP Qualitative Checklist’ (37)

Appendix 5: List of Abbreviations

Appendix 1: Syntax Used for Database Searches

OVID EMBASE (784 results)

1. "africa south of the sahara"/ or africa/ or angola/ or benin/ or botswana/ or burkina faso/ or burundi/ or cameroon/ or cape verde/ or central africa/ or central african republic/ or chad/ or comoros/ or congo/ or cote d'ivoire/ or democratic republic congo/ or djibouti/ or equatorial guinea/ or eritrea/ or ethiopia/ or gabon/ or gambia/ or ghana/ or guinea/ or guinea-bissau/ or kenya/ or lesotho/ or liberia/ or madagascar/ or malawi/ or mali/ or mayotte/ or mozambique/ or namibia/ or niger/ or nigeria/ or rwanda/ or sahel/ or senegal/ or sierra leone/ or somalia/ or south africa/ or south sudan/ or sudan/ or swaziland/ or tanzania/ or togo/ or uganda/ or zambia/ or zimbabwe/
2. somaliland/
3. north africa/ or algeria/ or egypt/ or libyan arab jamahiriya/ or mauritania/ or morocco/ or tunisia/ or western sahara/
4. (Africa* or subsahara* or sub-sahara* or Algeria* or Angola* or Benin* or Bostwana* or Burkina* or Burundi* or Cape Verde* or Cameroon* or Central Africa* or Chad* or Comor* or Congo* or Ivoirian* or Djibouti* or Egypt* or Equatoguinea* or Eritrea* or Swazi* or Ethiopia* or Gabon* or Gambia* or Ghana* or Guinea* or Guinea-Bissau national* or Bissau-guinea* or Kenya* or Mosotho* or Basotho* or Liberia* or Libya* or Malagasy* or Malawi* or Mali* or Mauritania* or Mauriti* or Morocc* or Mozambi* or Namibia* or Niger* or Nigeria* or Rwanda* or Sao Tome Principe* or Sao Tome* or Senegal* or Seychell* or Sierra Leone* or Somali* or South Africa* or Sudan* or South sudan* or Tanzania* or Togo* or Tunisia* or Uganda* or Zambia* or Zimbabwe* or Abuja or Accra or Addis Ababa or Algiers or Antananarivo or Asmara or Bamako or Bangui or Banjul or Bissau or Bloemfontein or Brazzaville or Cairo or Cape Town or Conakry or Dakar or Djibouti or Dodoma or Freetown or Funchal or Gaborone or Gitega or Harare or Hargeisa or Jamestown Saint Helena or Juba or Kampala or Khartoum or Kigali or Kinshasa or Laayoune or Las

Palmas or Libreville or Lilongwe or Lobamba or Lome or Luanda or Lusaka or Malabo or Mamoudzou or Maputo or Maseru or Mbabane or Mogadishu or Monrovia or Moroni Comoros or N'Djamena or Nairobi or Niamey or Nouakchott or Ouagadougou or Port Louis or Porto Novo or Praia or Pretoria or Rabat or Saint Denis Reunion or Santa Cruz de Tenerife or Sao Tome or Tifariti or Tripoli or Tunis or Victoria Seychelles or Windhoek or Yamoussoukro or Yaounde).mp.

5. 1 or 2 or 3 or 4
6. migrant/ or emigrant/ or immigrant/ or migrant worker/
7. refugee/ or asylum seeker/
8. undocumented immigrant/
9. migration/ or immigration/
10. (migrat* or emigrat* or immigrat* or migrant* or emigrant* or immigrant* or refugee* or asylum seeker* or communit*).mp.
11. 6 or 7 or 8 or 9 or 10
12. 5 and 11
13. pre-exposure prophylaxis/
14. (pre exposure prophylax* or preexposure prophylax* or PREP or tenofovir or truvada or Tenvir EM or Adco-Emtevir or Ricovir EM).mp.
15. emtricitabine plus tenofovir disoproxil/ or tenofovir/ or tenofovir disoproxil/
16. RNA directed DNA polymerase inhibitor/
17. (Emtricitabin* and Tenofovir*).mp.
18. (emtriva and viread).mp.
19. 13 or 14 or 15 or 16 or 17 or 18

20. 12 and 19

21. anti human immunodeficiency virus agent/

22. 12 and 21

23. 20 or 22

OVID Medline (748 results)

1. africa/ or africa, northern/ or algeria/ or egypt/ or libya/ or morocco/ or tunisia/ or "africa south of the sahara"/ or africa, central/ or cameroon/ or central african republic/ or chad/ or congo/ or "democratic republic of the congo"/ or equatorial guinea/ or gabon/ or "sao tome and principe"/ or africa, eastern/ or burundi/ or djibouti/ or eritrea/ or ethiopia/ or kenya/ or rwanda/ or somalia/ or south sudan/ or sudan/ or tanzania/ or uganda/ or africa, southern/ or angola/ or botswana/ or lesotho/ or malawi/ or mozambique/ or namibia/ or south africa/ or swaziland/ or zambia/ or zimbabwe/ or africa, western/ or benin/ or burkina faso/ or cabo verde/ or cote d'ivoire/ or gambia/ or ghana/ or guinea/ or guinea-bissau/ or liberia/ or mali/ or mauritania/ or niger/ or nigeria/ or senegal/ or sierra leone/ or togo/
2. (Africa* or subsahara* or sub-sahara* or Algeria* or Angola* or Benin* or Bostwana* or Burkina* or Burundi* or Cape Verde* or Cameroon* or Central Africa* or Chad* or Comor* or Congo* or Ivoirian* or Djibouti* or Egypt* or Equatoguinea* or Eritrea* or Swazi* or Ethiopia* or Gabon* or Gambia* or Ghana* or Guinea* or Guinea-Bissau national* or Bissau-guinea* or Kenya* or Mosotho* or Basotho* or Liberia* or Libya* or Malagasy* or Malawi* or Mali* or Mauritania* or Mauriti* or Morocc* or Mozambi* or Namibia* or Niger* or Nigeria* or Rwanda* or Sao Tome Principe* or Sao Tome* or Senegal* or Seychell* or Sierra Leone* or Somali* or South Africa* or Sudan* or South sudan* or Tanzania* or Togo* or Tunisia* or Uganda* or Zambia* or Zimbabwe* or Abuja or Accra or Addis Ababa or Algiers or Antananarivo or Asmara or Bamako or Bangui or Banjul or Bissau or Bloemfontein or Brazzaville or Cairo or Cape Town or Conakry or Dakar or Djibouti or Dodoma or Freetown or Funchal or Gaborone or Gitega or Harare or Hargeisa or Jamestown

Saint Helena or Juba or Kampala or Khartoum or Kigali or Kinshasa or Laayoune or Las Palmas or Libreville or Lilongwe or Lobamba or Lome or Luanda or Lusaka or Malabo or Mamoudzou or Maputo or Maseru or Mbabane or Mogadishu or Monrovia or Moroni Comoros or N'Djamena or Nairobi or Niamey or Nouakchott or Ouagadougou or Port Louis or Porto Novo or Praia or Pretoria or Rabat or Saint Denis Reunion or Santa Cruz de Tenerife or Sao Tome or Tifariti or Tripoli or Tunis or Victoria Seychelles or Windhoek or Yamoussoukro or Yaounde).mp.

3. 1 or 2
4. "Transients and Migrants"/
5. "Emigration and Immigration"/
6. Refugees/
7. "emigrants and immigrants"/ or undocumented immigrants/
8. (migrat* or emigrat* or immigrat* or migrant* or emigrant* or immigrant* or refugee* or asylum seeker* or communit*).mp.
9. 4 or 5 or 6 or 7 or 8
10. 3 and 9
11. Pre-Exposure Prophylaxis/
12. (pre exposure prophylax* or preexposure prophylax* or PREP or tenofovir or truvada or Tenvir EM or Adco-Emtevir or Ricovir EM).mp.
13. tenofovir/ or emtricitabine, tenofovir disoproxil fumarate drug combination/
14. (Emtricitabin* and Tenofovir*).mp.
15. (emtriva and viread).mp.
16. 11 or 12 or 13 or 14 or 15

17. 10 and 16
18. anti-hiv agents/ or reverse transcriptase inhibitors/
19. 10 and 18
20. 17 or 19

Web of Science (247 results)

#1 TOPIC: (Africa* OR subsahara* OR "sub-sahara*" OR Algeria* OR Angola* OR Benin* OR Bostwana* OR "Burkina Faso" OR Burkina* OR Burundi* OR "Cabo Verde" OR "Cape Verde*" OR Cameroon* OR "Central Africa*" OR Chad* OR Comor* OR Congo* OR "Cote d'ivoire" OR Ivoirian* OR Djibouti* OR Egypt* OR "Equatorial Guinea" OR Equatoguinea* OR Eritrea* OR Swazi* OR Ethiopia* OR Gabon* OR Gambia* OR Ghana* OR Guinea* OR "Guinea-Bissau" OR "Guinea-Bissau national*" OR "Bissau-guinea*") OR TOPIC: (Kenya* OR Lesotho OR Mosotho* OR Basotho* OR Liberia* OR Libya* OR Madagascar OR Malagasy* OR Malawi* OR Mali* OR Mauritania* OR Mauriti* OR Morocc* OR Mozambi* OR Namibia* OR Niger* OR Nigeria* OR Rwanda* OR "Sao Tome Principe*" OR "Sao Tome*" OR Senegal* OR Seychell* OR "Sierra Leone*" OR Somali* OR "South Africa*" OR Sudan* OR "South sudan*" OR Tanzania* OR Togo* OR Tunisia* OR Uganda* OR Zambia* OR Zimbabwe*) OR TOPIC: (Abuja OR Accra OR "Addis Ababa" OR Algiers OR Antananarivo OR Asmara OR Bamako OR Bangui OR Banjul OR Bissau OR Bloemfontein OR Brazzaville OR Cairo OR "Cape Town" OR Conakry OR Dakar OR Djibouti OR Dodoma OR Freetown OR Funchal OR Gaborone OR Gitega OR Harare OR Hargeisa OR "Jamestown Saint Helena" OR Juba OR Kampala OR Khartoum OR Kigali OR Kinshasa OR Laayoune OR "Las Palmas" OR Libreville OR Lilongwe OR Lobamba OR Lome OR Luanda OR Lusaka) OR TOPIC: (Malabo OR Mamoudzou OR Maputo OR Maseru OR Mbabane OR Mogadishu OR Monrovia OR Moroni Comoros OR "N'Djamena" OR Nairobi OR Niamey OR Nouakchott OR Ouagadougou OR "Port Louis" OR "Porto Novo" OR Praia OR Pretoria OR Rabat OR "Saint Denis Reunion" OR "Santa Cruz de Tenerife" OR "Sao Tome" OR Tifariti OR Tripoli OR Tunis OR "Victoria Seychelles" OR Windhoek OR Yamoussoukro OR Yaounde)

#2 TOPIC: (migrat* OR emigrat* OR immigrat* OR migrant* OR emigrant* OR immigrant* or refugee* OR "asylum seeker*" OR communit*)

#3 #2 AND #1

#4 TOPIC: ("pre exposure prophylax*" OR "preexposure prophylax*" OR PREP OR tenofovir* OR Truvada OR "Tenvir EM" or "Adco-Emtevir" or "Ricovir EM")

#5 TOPIC: (emtricitabin* and tenofovir*)

#6 TOPIC: (emtriva and viread)

#7 #6 OR #5 OR #4

#8 #7 AND #3

#9 TOPIC: ("anti HIV agent*" OR "antiHIV agent*" OR "reverse transcriptase inhibitor*")

#10 #9 AND #3

#11 #10 OR #8

Appendix 2: Table of Excluded Studies (n=58) and Reasons for Exclusion

	Study	Reasons for Exclusion
1	Anonymous (2010)	Study did not include African migrants
2	Arnold et al. (2014)	Study did not include African migrants
3	Blackstock et al. (2017)	Study did not include African migrants
4	Blackstock et al. (2015)	Study did not include African migrants
4	Brooks et al. (2015)	Study did not include African migrants
6	Brown et al. (2018)	Did not report our primary outcome(s) of interest
7	Buchbinder et al. (2018)	Study did not include African migrants
8	Budu-Larbi et al. (2018)	Did not report our primary outcome(s) of interest
9	Cassolato (2016)	Study did not include African migrants
10	Clement et al. (2018)	Study did not include African migrants
11	Collier et al. (2017)	Study did not include African migrants
12	Daughtridge et al. (2015)	Study did not include African migrants
13	DiStefano & Takeda (2017)	Study did not include African migrants
14	Eaton et al. (2018)	Study did not include African migrants
15	Eaton et al. (2015)	Study did not include African migrants
16	Eaton et al. (2014)	Study did not include African migrants
17	Elopre et al. (2017)	Study did not include African migrants
18	Flash et al. (2014)	Study did not include African migrants
19	Friedman et al. (2019)	Study did not include African migrants
20	Garcia et al. (2016a)	Study did not include African migrants
21	Garcia et al. (2016b)	Study did not include African migrants
22	Garcia et al. (2015)	Study did not include African migrants
23	Hosek et al. (2017)	Study did not include African migrants
24	Hosek et al. (2012)	Study did not include African migrants
25	Hotton et al. (2018)	Study did not include African migrants

26	Johnsen et al. (2017)	Study did not include African migrants
27	Johnson et al. (2019)	Study did not include African migrants
28	Kubicek et al. (2015)	Study did not include African migrants
29	Kwakwa et al. (2016)	Study did not include African migrants
30	Landovitz et al. (2017)	Study did not include African migrants
31	Langanke et al. (2012)	No disaggregated data available for African migrants in study
32	Liu et al. (2016)	Study did not include African migrants
33	Logie et al. (2018)	Did not report our primary outcome(s) of interest
34	Mimiaga et al. (2016)	Study did not include African migrants
35	Mitchell et al. (2018)	Study did not include African migrants
36	Ojikutu et al. (2019)	Study did not include African migrants
37	Ojikutu et al (2018)	No disaggregated data available for African migrants in study
38	Page et al. (2018)	Study did not include African migrants
39	Patten (2016)	Study did not include African migrants
40	Peterson et al. (2016)	Study did not include African migrants
41	Philbin et al. (2018)	Study did not include African migrants
42	Philbin et al. (2016)	Study did not include African migrants
43	Poteat (2016)	Study did not include African migrants
44	Ransome et al. (2018)	No disaggregated data available for African migrants in study
45	Sales et al. (2018)	Study did not include African migrants
46	Sales et al. (2017)	Study did not include African migrants
47	Sang et al. (2018)	Study did not include African migrants
48	Schnarrs et al. (2018)	Study did not include African migrants
49	Schueler et al. (2019)	Study did not include African migrants
50	Suh et al. (2018)	Study did not include African migrants
51	Vuytsteke et al. (2018)	Did not report our primary outcome(s) of interest
52	Wenzel et al. (2017)	Study did not include African migrants
53	Willie et al. (2017)	Study did not include African migrants

54	Young et al. (2018)	No disaggregated data available for African migrants in study
55	Young et al. (2017)	Study did not include African migrants
56	Young et al. (2013)	Duplicate study of already included paper
57	Zhang et al. (2019)	Study did not include African migrants
58	Zomorodi & Avery et al. (2018)	Study did not include African migrants

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Appendix 3: Critical Appraisal of Quantitative Studies Using the ‘Joanna Briggs Institute Checklist for Analytical Cross-Sectional Studies’ (39)

	Author (year)	
	Ekong (2018) (30)	Kwakwa (2014) (29)
Were the criteria for inclusion in the sample clearly defined?	No	No
Were the study subjects and the setting described in detail?	Yes	Yes
Was the exposure measured in a valid and reliable way?	Not Applicable	No
Were objective, standard criteria used for measurement of the condition?	Not Applicable	Not Applicable
Were confounding factors identified?	No	No
Were strategies to deal with confounding	No	No

factors stated?		
Were the outcomes measured in a valid and reliable way?	Yes	No
Was appropriate statistical analysis used?	No	No
Overall Appraisal	Include, but weak	Include, but weak

Appendix 4: Critical Appraisal of Qualitative Studies Using a modified ‘CASP Qualitative Checklist’ (37)

	Author (year)					
	Bazzi (2017) (43)	Mullens (2018) (34)	Okoro (2019) (31)	Witzel (2018) (32)	Witzel (2017) (33)	Young (2014) (11)
Was there a clear statement of the aims of the research?	Yes	Yes	Yes	Yes	Yes	Yes
Is a qualitative methodology appropriate?	Yes	Yes	Yes	Yes	Yes	Yes
Was the research design appropriate to address the aims of the research?	Yes	Yes	Yes	Yes	Yes	Yes
Was the recruitment strategy appropriate to the aims of the research?	Yes	Yes	Yes	Yes	Yes	Yes
Was the data collected in a way that addressed the research issue?	Yes	Yes	Yes	Yes	Yes	Yes
Has the relationship between researcher and participants been adequately considered?	Not reported	Not reported	Not reported	Not reported	Yes	Not reported
Have ethical issues been taken into consideration?	Yes	Yes	Yes	Yes	Yes	Yes
Was the data analysis sufficiently rigorous?	Yes	Yes	Yes	Yes	Yes	Yes
Is there a clear statement of findings?	Yes	Yes	Yes	Yes	Yes	Yes
How valuable is the research?	Very	Very	Somewhat	Very	Very	Very
Level of Quality?	High	High	Moderate	High	High	High

Appendix 5: List of Abbreviations

FDA: Food and Drug Administration

FGD: Focus Group Discussions

GBM: gay, bisexual, and other men who have sex with men

IDI: In-depth Interview

PLHIV: people living with HIV

PrEP: Pre-Exposure Prophylaxis

TGW: transgender women

UK: United Kingdom

US: United States