

# **Burden of disease of gonorrhoea in Latin America: systematic review and meta-analysis**

Ariel Bardach<sup>1</sup>, Tomás Alconada<sup>1</sup>, Carolina Palermo<sup>1</sup>, Carlos Rojas-Roque<sup>1</sup>, María Macarena Sandoval<sup>1</sup>,  
Jorge Gomez<sup>2</sup>, Thatiana Pinto<sup>3</sup>, Agustin Ciapponi<sup>1</sup>

<sup>1</sup>Institute for Clinical Effectiveness and Health Policy, Buenos Aires, Argentina; <sup>2</sup> GSK, Buenos Aires,  
Argentina; <sup>3</sup>GSK Panama City, Panama

[abardach@iecs.org.ar](mailto:abardach@iecs.org.ar)

[alconadatomas@gmail.com](mailto:alconadatomas@gmail.com)

[mariacarolinapalermo@yahoo.com.ar](mailto:mariacarolinapalermo@yahoo.com.ar)

[crojas@iecs.org.ar](mailto:crojas@iecs.org.ar)

[macarena\\_sandoval@yahoo.com.ar](mailto:macarena_sandoval@yahoo.com.ar)

[Jorge.a.gomez@gsk.com](mailto:Jorge.a.gomez@gsk.com)

[thatiana.x.pinto@gsk.com](mailto:thatiana.x.pinto@gsk.com)

[aciapponi@iecs.org.ar](mailto:aciapponi@iecs.org.ar)

**Correspondence to:** Agustin Ciapponi, Dr Emilio Ravnani 2024 (C1014CPV) Buenos Aires, Argentina,

Tel: +5411 4777 8767, Email: [aciapponi@iecs.org.ar](mailto:aciapponi@iecs.org.ar)

# SUPPLEMENTARY MATERIAL

## Supplementary Material Table S1 Search strategies

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### 1. MEDLINE PubMed

(Gonorrhea[Mesh] OR Gonorrhoea\*[tiab] OR Neisseria Gonorrhoeae[Mesh] OR N.Gonorrhea\*[tiab] OR Gonococc\*[tiab]) AND (America[MeSH Terms:noexp] OR America\*[tiab] OR Latin America [Mesh] OR Latin America\*[tiab] OR Latin America\*[tiab] OR Latin America\*[tiab] OR Latina\*[tiab] OR Hispanic Americans[Mesh] OR Latin America\*[tiab] OR Latin America\*[tiab] OR Iberoamerica\*[tiab] OR Ibero Americ\*[tiab] OR Pan American\*[tiab] OR Central America[Mesh] OR Central America\*[tiab] OR Central America\*[tiab] OR Mesoamerica\*[tiab] OR Mesoamerica\*[tiab] OR Middle America\* [tiab] OR South America[Mesh] OR South America\*[tiab] OR South America\*[tiab] OR "South America"[tiab] OR Caribbean Region[mesh] OR Caribbean\*[tiab] OR West Indies[ Mesh] OR West Indies[Mesh] OR West Indi\*[tiab] OR Antill\*[tiab] OR Indians, South American[Mesh] OR Indians, Centroamericano[Mesh] OR Amerindians\*[tiab] OR Indios[tiab] OR American Indians \* [tiab] OR Native American\*[tiab] OR Patagoni\*[tiab] OR Andes[tiab] OR Andean\*[tiab] OR Amazon\*[tiab] OR Argentin\*[ad] OR Argentin\*[tiab] OR Argentina[pl] OR Bolivia\*[ad] OR Bolivia\*[tiab] OR Bolivia[pl] OR Brazil\*[ad] OR Brazil\*[ad] OR Brazil\*[tiab] OR Brazil\*[tiab ] OR Brazil[pl] OR Colombia\*[ad] OR Colombia\*[tiab] OR Colombia[pl] OR Chile\*[ad] OR Chile\*[ad] OR Chile\*[ad] OR Chile\*[tiab] tiab] OR Chile[pl] OR Ecuador\*[ad] OR Ecuador\*[ad] OR Ecuador\*[tiab] OR Ecuador[pl] OR Guiana\*[ad] OR Guyana\*[tiab] OR French Guiana[pl] OR Guyan\*[ad ] OR Guyan\*[tiab] OR Guyana[pl] OR Paraguay\*[ad] OR Paraguay\*[tiab] OR Paraguay[pl] OR Peru\*[ad] OR Peru\*[tiab] OR Peru[pl] OR Suriname\*[ tiab] OR Suriname\*[tiab] OR Suriname[pl] OR Uruguay\*[ad] OR Uruguay\*[tiab] OR Uruguay[pl] OR Venezuela\*[ad] OR Venezuela\*[tiab] OR Venezuela[pl] OR Belize\* [ad] OR Belize\*[tiab] OR Belize[pl] OR Costa Ric\*[ad] OR Costaric\*[ad] OR Costa Ric\*[tiab] OR Costaric\*[tiab] OR Costaric\*[ tiab] OR Costa Rica[pl] OR Salvador\*[ad] OR Salvador\*[tiab] OR El Salvador[pl] OR Guatemala\*[ad] OR Guatemala\*[tiab] OR Guatemala[pl] OR Hondur\*[ad] OR Hondur\*[tiab] OR Honduras[pl] OR Nicaragua\*[ad] OR Nicaragu\*[tiab] OR Nicaragua[pl] OR Panam\*[ad] OR Panam\*[tiab] OR Panama[pl] OR Mexico[Mesh] OR Mexic\*[ad] OR Mexic\*[tiab] OR Meji\*[tiab] OR Mexico[pl] OR Cuba\*[ad] OR Cuba\*[tiab] OR Cuba[pl] OR Dominic\*[ad] OR Dominic\*[tiab] OR Dominican Republic[pl] OR Haiti\*[ad] OR Haiti[pl] OR Jamaic\*[ad] OR Jamaic\*[tiab] OR Jamaica[pl] OR Puerto Rico[Mesh] OR Puerto Ric\*[tiab] OR Puertoric\*[tiab] OR Puertoric\*[tiab] OR Puertoric\*[ tiab])

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### 2. EMBase (Elsevier)

#9 #8 AND (2011:py OR 2012:py OR 2013:py OR 2014:py OR 2015:py OR 2016:py OR 2017:py OR 2018:py OR 2019:py OR 2020:py) #8 #6 and #7

#7 americas:ti,ab OR 'south and central america'/exp OR ((latin NEAR/1 america\*):ti,ab) OR latinamerica\*:ti,ab OR latinoamerica\*:ti,ab OR hispanoamerica:ti, ab OR iberoamerica\*:ti,ab OR ((ibero NEAR/1 americ\*):ti,ab) OR panamerica\*:ti,ab OR ((south NEAR/1 america\*):ti,ab) OR southamerica\*:ti ,ab OR south america\*:ti,ab OR (america:ti,ab AND del:ti,ab AND south:ti,ab) OR ((central NEAR/1 america\*):ti,ab) OR central america\*:ti, ab OR mesoamerica\*:ti,ab OR ((meso NEAR/1 america\*):ti,ab) OR ((middle NEAR/1 america\*):ti,ab) OR 'caribbean'/exp OR 'caribbean islands'/ exp OR caribbean\*:ti,ab OR caribbean\*: ti,ab OR ((west NEAR/1 indi\*):ti,ab) OR antill\*:ti,ab OR 'american indian'/exp OR amerindian\*:ti, ab OR indians:ti,ab OR ((native NEAR/1 america\*):ti,ab) OR patagoni\*:ti,ab OR andes:ti,ab OR andean\*:ti,ab OR amazon\*:ti,ab OR 'argentina'/exp OR argentin\*:ti,ab OR 'bolivia'/exp OR bolivia\*:ti,ab OR 'brazil'/exp OR brazil\*:ti,ab OR brasil\*:ti,ab OR 'colombia'/ exp OR colombia\*:ti,ab OR 'chile'/exp OR chile\*: ti,ab OR 'ecuador'/exp OR ecuador\*:ti,ab OR 'french guiana'/exp OR guiana\*:ti,ab OR 'guyana'/exp OR guyan\*:ti,ab OR 'paraguay'/exp OR paraguay\*: ti,ab OR 'peru'/exp OR peru\*:ti,ab OR 'suriname'/exp OR suriname\*:ti,ab OR 'uruguay'/exp OR uruguay\*:ti,ab OR 'venezuela'/ exp OR VENEz\*:ti,ab OR 'belize'/exp OR beliz\*:ti,ab OR 'costa rica'/exp OR 'costa rica':ti,ab OR costaric\*:ti,ab OR costaric\*:ti, ab OR 'el salvador'/exp OR SALVADOR\*:ti,ab OR 'guatemala'/exp OR guatemal\*:ti,ab OR 'honduras'/or or hondur\*:ti,ab OR 'nicaragua'/exp OR nicaragu \*:ti,ab OR 'panama'/exp OR panam\*:ti,ab OR 'mexico'/exp OR mexic\*:ti,ab OR meji\*:ti,ab OR 'cuba'/exp OR cuba\*:ti, ab OR 'dominican republic'/exp OR dominica\*: ti,ab OR 'haiti'/exp OR haiti\*:ti,ab OR 'jamaica'/exp OR jamaic\*:ti,ab OR 'puerto rico'/exp OR ( (port NEAR/1 ric\*):ti,ab) OR puertoric\*:ti,ab OR puertoric\*:ti,ab

#6 #1 OR #2 OR #3 OR #4 OR #5

#5 gonococc\*:ti,ab

#4 n.gonorrhea\*:ti,ab

#3 "neisseria gonorrhoeae"/exp

#2 gonorrhea\*:ti,ab

#1 'gonorrhea'/exp

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### 3. Cochrane-Central Library (Wiley)

#1MeSH descriptor: [Gonorrhea] blows up all the trees #2Gonorrhoea\*:ti,ab,kw

#3MeSH descriptor: [Neisseria gonorrhoeae] exploits all #4N trees. Gonorrhea\*:ti,ab,kw

#5Gonococc\*:ti,ab,kw

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#6MeSH descriptor: [Americas] this term only #7MeSH descriptor: [Latin America] all trees explode #8(Latin NEAR/1 America\*):ti,ab,kw  
 #9Latinamerica\*:ti,ab,kw #10Latinamerica\*:ti,ab,kw #11Hispanoamerica\*:ti,ab,kw #12Iberoamerica\*:ti,ab,kw #13(Ibero NEAR/1 Americ\*):ti,ab ,kw #14Panamerican\*:ti,ab,kw  
 #15MeSH descriptor: [Central America] exploit all trees #16(Central NEAR/1 America\*):ti,ab,kw #17Centroamerica\*:ti,ab,kw  
 #18Mesoamerica\*:ti,ab,kw  
 #19(Meso NEAR/1 America\*):ti,ab,kw #20(Middle NEAR/1 America\*):ti,ab,kw  
 #21MeSH descriptor: [South America] explode all trees #22(South NEAR/1 America\*):ti,ab,kw #23Southamerica\*:ti,ab,kw  
 #24Sudamerica\*:ti,ab,kw  
 #25 (America NEAR / 1 South): ti, ab, kw  
 #26MeSH descriptor: [Caribbean Region] all trees explode #27Caribbean: ti, ab, kw  
 #28Caribe\*:ti,ab,kw  
 #29MeSH descriptor: [West Indies] exploit all trees #30(West NEAR/1 Indi\*):ti,ab,kw  
 #31Antill\*:ti,ab,kw  
 #32MeSH descriptor: [Indians, South Americans] exploit all trees #33MeSH descriptor: [Indians, Central Americans] exploit all the trees #34Amerindian\*:ti,ab,kw  
 #35Indians: ti, ab, kw  
 #36 (American NEAR/1 Indian\*):ti,ab,kw #37(Native NEAR/1 Latin\*):ti,ab,kw #38Patagoni\*:ti,ab,kw  
 #39Andes:ti,ab,kw #40Andean\*:ti,ab,kw #41Amazon\*:ti,ab,kw #42Argentin\*:ti,ab,kw #43Bolivia\*:ti,ab,kw #44Brazil\*:ti, ab,kw  
 #45Brazili\*:ti,ab,kw #46Colombia\*:ti,ab,kw #47Chile\*:ti,ab,kw #48Ecuador\*:ti,ab,kw #49Guiana\*:ti,ab,kw #50Guyan \*:ti,ab,kw  
 #51Paraguay\*:ti,ab,kw #52Peru\*:ti,ab,kw #53Suriname\*:ti,ab,kw #54Uruguay\*:ti,ab,kw #55Venez\*:ti,ab ,kw #56Belize\*:ti,ab,k  
 #57(Costa NEAR/1 Ric\*):ti,ab,kw #58Costarric\*:ti,ab,kw #59Costaric\*:ti,ab,kw #60Salvador\*:ti,ab,kw  
 #61Guatemala\*:ti,ab,kw #62Hondur\*:ti,ab,kw #63Nicaragu\*:ti,ab,kw #64Panam\*:ti,ab,kw  
 #65MeSH descriptor: [Mexico] all trees explode #66Mexic\*:ti,ab,kw  
 #67Cuba\*:ti,ab,kw #68Dominic\*:ti,ab,kw #69Haiti\*:ti,ab,kw #70Jamaic\*:ti,ab,kw  
 #71MeSH descriptor: [Puerto Rico] exploit all trees #72(Puerto NEAR/1 Ric\*):ti,ab,kw  
 #73Puertoric\*:ti,ab,kw #74Puertoric\*:ti,ab,kw #75#1 OR #2 OR #3 OR #4 OR #5  
 #76#6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR  
 #22 OR #23 OR  
 #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39  
 OR  
 #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54 OR #55  
 OR  
 #56 OR #57 OR #58 OR #59 OR #60 OR #61 OR #62 OR #63 OR #64 OR #65 OR #66 OR #67 OR #68 OR #69 OR #70 OR #71  
 OR  
 #72 OR #73 OR #74  
 #77#75 and #76 with year of publication from 2011 to 2020, in essays

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#### 4. ECONLit (EBSCO) 08/31/2020

Limiters S4S1 OR S2 OR S3 - Date of publication: 20110101-20200831 S3TI Gonococc\* OR AB Gonococc\*  
 S2TI N.Gonorrhoea\* OR AB N.Gonorrhoea\* Gonorrhoea S1TI\* OR AB Gonorrhoea\*

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#### 5. CINAHL (EBSCO) 08/31/2020

Limiters S15S6 AND S14 - Date of publication: 20110101-20200831 S14S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13  
 S13AB (Latin NEAR/1 America\*) OR Latinamerica\* OR Latin America\* OR Latin\* OR HISPANIC AMERICANS OR  
 Iberoamerica\* OR (Ibero NEAR/1 Americ\*) OR Panamerican\* OR (Central NEAR/1 America\*) OR Central America\* OR  
 Mesoamerica\* OR (Meso NEAR/1 America\*) OR (Middle NEAR/1 America\*) OR (South NEAR/1 America\*) OR  
 SOUTHAMERICA\* OR Sudamerica\* OR (America NEAR/1 Sur) OR Caribbean OR Caribe\* OR (West NEAR/1 Indi\*) OR Antill\*  
 OR Amerindian\* OR Indians OR (American NEAR/1 Indio\*) OR (Native CERCA/1 America\*) OR Patagoni\* OR Andes OR  
 Andinos\* OR Amazonas\* OR Argentin\* OR Bolivia\* OR Brazil\* OR Brazil\* Colombia\* OR Colombia\* OR Colombia OR Chile\*  
 OR Ecuador\* OR Guyana\* OR Guyan\* OR Guyan\* OR Paraguay\* OR Paraguay\* OR Peru\* OR Suriname\* OR Suriname\* OR  
 Uruguay\* OR Venezuela\* OR Belize\* OR (CLOSE Coast/1 Ric\*) OR Costa Rica\* OR Costa Ric\* OR Costa Ric\* OR Costa Rica\*  
 OR Salvador\* OR Salvador\* OR Guatemala\* OR Guatemala\* OR Guatemala\* OR Guatemala OR Hondur\* OR Nicaragua\* OR  
 Panama\* O Mexic\* O Cuba\* O Dominic\* O Dominic\* O Haiti\* O Jamaic\* O (NEAR Port/ 1 Ric\*) OR Puerto Rican\* OR Puerto  
 Rican\*  
 S12TI (CLOSE Latin/1 America\*) OR Latin America\* OR Latin America\* OR Latin America OR Hispanic America\* OR Ibero  
 America\* OR (Ibero NEAR/1 Americ\*) OR Pan American\* OR (Central NEAR/1 America\*) OR Central America\* OR

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Mesoamerica\* OR (Meso NEAR/1 America\*) OR (Middle NEAR/1 America\*) OR (South NEAR/1 America\*) OR South America\* OR South America\* OR (NEAR America/1 South) OR Caribbean\* OR (West NEAR/1 Indi\*) OR Antill\* OR Amerindians\* OR Indians OR (Near American/11 Indian\*) OR (Near Near/1 America\*) OR Patagoni\* OR Andes OR Andean\* OR Amazon\* OR Argentin\* OR Bolivia\* OR Brazil\* OR Brazil\* Colombia\* OR Colombia\* OR Colombia OR Chile\* OR Ecuador\* OR Guyana\* OR Guyan\* OR Guyan\* OR Paraguay\* OR Paraguay\* OR Peru\* OR Suriname\* OR Suriname\* OR Uruguay\* OR Venezuela\* OR Belize\* OR (Costa NEAR/1 Ric\*) OR Costa Rica\* OR Costa Ric\* OR Costa Ric\* OR Costarric\* OR Salvador\* OR Salvador\* OR Guatemala\* OR Guatemala\* OR Guatemala\* OR Guatemala OR Hondur\* OR Nicaragua\* OR Panam\* OR Mexic\* O Cuba\* O Dominic\* O Dominic\* O Haiti\* O Jamaic\* O (NEAR Port/1 Ric\*) O Puertorric\* Or Puerto Rican\*

S11(MH "West Indies+") S10(MH "South America+")

S9(MH "Central America+") S8(MH "Latin America") S7(MM "America")

S6S1 OR S2 OR S3 OR S4 OR S5

S5TI Gonococc\* OR AB Gonococc\* S4TI N.Gonorrhoea\* OR AB N.Gonorrhoea\*

S3(MH "Neisserial Infections+") Gonorrhoea S2TI\* OR GONORRHEA AB\* S1 (MH "Gonorrhoea +")

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## 6. CRD York 08/31/2020

1Recor MESH DESCRIPTOR Gonorrhoea BLOWS UP ALL TREES

2(Gonorrhoea\*)

3MeSH DESCRIPTOR Neisseria gonorrhoeae EXPLOIT ALL TREES 4 (N.Gonorrhoea\*)

5(Gonococc\*)

6#1 O #2 O #3 O #4 O #5

7MeSH DESCRIPTOR Americas

8MESH DESCRIPTOR Latin America EXPLOITS ALL THE TREES

9(Latin America\*) 10(Latin America\*) 11(Latin America\*) 12(Ibero America\*) 13(Ibero America\*) 14(Pan American\*)

15MeSH DESCRIPTOR Central America EXPLOITS ALL THE TREES

16(Central America\*) 17(Central America\*) 18(Mesoamerica\*) 19(Central America\*)

DESCRIPTOR 20MeSH South America EXPLODES ALL THE TREES

21(South America\*) 22(South America\*) 23(South America\*)

24MeSH DESCRIPTOR Caribbean Region EXPLOITS ALL TREES

25(Caribbean) 26(Caribbean\*)

27MeSH DESCRIPTOR WEST INDIES EXPLODE ALL THE TREES

28(West India\*) 29(Antill\*)

30MESH DESCRIPTOR Indians, South American EXPLOIT ALL TREES

31MESH DESCRIPTOR Indians, Central Americans EXPLOIT ALL THE TREES 32(Amerindian\*)

33(American Indian\*) 34(Native America\*) 35(Patagoni\*) 36(Andes) 37(Andean\*) 38(Amazon\*)

39(Argentin\* OR Bolivia\* OR Brazil\* OR Brazil\* Colombia\* OR Colombia\* OR Colombia OR Chile\* OR Ecuador\* OR Guyana\* OR Guyan\* OR Guyan\* OR Paraguay\* OR Paraguay\* OR Peru\* OR Suriname\* OR Suriname\* OR Uruguay\* OR Venezuela\* OR Belize\* OR Costa Ric\* OR Costa Ric\* OR Costa Rica\* OR Costa Ric\* OR Costa Rica\* OR Salvador\* OR Salvador\* OR Salvador\* OR Salvador\* OR Guatemala\* OR Guatemala\* OR Guatemala OR Honduras\* OR Nicaragu\* Panam\* OR Mexic\* OR Cuba\* OR Dominic\* OR Dominic\* OR Haiti\* OR Jamaic\* OR Puerto Ric\* OR Puertorric\* OR Puertoric\*)

40#7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR

#25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39

41#6 Y #40

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## 7. LILACS (BVS-ES)

(MH Gonorrhoea[Mesh] OR Gonorrhoea\$ OR Gonorrhoea OR Gonorrhoea OR MH Neisseria Gonorrhoeae OR N.Gonorrhoea\$ OR Gonococ\$) [Words] and 2011 OR 2012 OR 2013 OR 2014 OR 2015 OR 2016 OR 2017 OR 2018 OR 2019 OR 2020 [Country, year of publication]

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**Supplementary Material Table S2 Studies excluded at full-text review**

Covidence ID	Study ID	Reason for exclusion
1312	Abreu 2015	Duplicate
1271	Angel-Muller 2013	Duplicate
1260	Araya 2010	Duplicate
1144	Bristow 2019	Duplicate
1021	Caracas 2014	Duplicate
828	García 2016	Wrong outcomes (not enough information)
600	Gianecini 2017	Duplicate
1086	Grinsztejn 2018	Duplicate
1315	Ignacio 2017	Duplicate
	Korenromp 2018	Wrong study design (modelling exercise with no primary data)
813	Mejía 2011	Wrong outcomes (not enough information)
790	Miranda 2017	Duplicate
221	Qquellon 2019	Wrong outcomes (not enough information)
219	Quimbert Montes 2013	Wrong design (case report)
126	Sanchez 2013	Duplicate
97	Serván-Mori 2013	Wrong outcomes
40	Starmino 2012	Wrong setting
3	Teglia 2016	Wrong outcomes (not enough information)
392	Tinajeros 2011	Wrong outcomes (not enough information)
381	Tosato Boldrini 2021	Duplicate
339	Veloso 2018	Duplicate
336	Vera 2012	Duplicate
273	Zia 2018	Duplicate

**Supplementary Material Table S3 Characteristics of included studies**

Author and year of publication	Publication type	Country	Source type	Sampling type	Study start date (dd/mm/yy)	Study end date (dd/mm/yy)	Study duration (months)	Study design <sup>a</sup>
Adachi 2015 <sup>25</sup>	Full text	Brazil	Hospitalised	Convenience (health system)	1/4/2004	31/7/2010	76	Cross-sectional
Alcántara 2019 <sup>26</sup>	Abstract	Brazil	NR	Convenience (health system)	1/1/2010	31/12/2018	108	Cross-sectional
Allan-Blitz 2018 <sup>27</sup>	Full text	Peru	Ambulatory	Convenience (health system)	1/6/2013	31/7/2016	38	Cohort study
Andrade 2020 <sup>28</sup>	Full text	Brazil	Ambulatory	Convenience (community)	1/1/2015	30/4/2017	28	Cross-sectional
Baldin-DalPogetto 2011 <sup>29</sup>	Full text	Brazil	Ambulatory	Convenience (community)	1/8/2008	31/3/2009	8	Cross-sectional
Barbosa 2011 <sup>30</sup>	Abstract	Brazil	NR	Convenience (health system)	1/1/2005	31/12/2005	12	Cross-sectional
Bastos 2019 <sup>31</sup>	Abstract	Brazil	Hospitalised	Convenience (health system)	1/1/2009	31/12/2019	132	Case series
Bazzi 2015 <sup>32</sup>	Full text	Mexico	Ambulatory	Convenience (community)	1/1/2010	31/12/2013	48	Cohort study
Benzaken 2012 <sup>33</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/2/2009	31/7/2009	6	Cross-sectional
Boldrini 2018 <sup>34</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/2/2014	31/10/2015	21	Cross-sectional
Bristow 2021 <sup>35</sup>	Full text	Mexico	Ambulatory	Convenience (community)	1/2/2017	30/11/2018	22	Cross-sectional
Bristow 2017 <sup>36</sup>	Abstract	Mexico	Ambulatory	NR	NR	NR	NR	Cross-sectional
Bristow 2014 <sup>37</sup>	Full text	Haiti	Ambulatory	Convenience (health system)	1/3/2013	31/3/2013	1	Cross-sectional
Bristow 2017 <sup>a38</sup>	Full text	Haiti	Ambulatory	Convenience (health system)	26/10/2015	14/1/2016	3	Cross-sectional

Burgos 2010 <sup>139</sup>	Full text	Mexico	Ambulatory	NR	NR	NR	NR	Economic evaluation
Cabeza 2015 <sup>39</sup>	Abstract	Peru	Ambulatory	Convenience (health system)	1/10/2012	1/7/2014	30	Cross-sectional
Cáceres-Burton 2012 <sup>40</sup>	Other	Chile	NR	Convenience (health system)	1/1/2011	31/12/2011	12	Epidemiological surveillance study
Cáceres-Burton 2019 <sup>41</sup>	Other	Chile	NR	Convenience (health system)	1/1/2013	31/12/2017	60	Epidemiological surveillance study
Cáceres-Burton 2018 <sup>42</sup>	Other	Chile	NR	Convenience (health system)	1/1/2012	31/12/2012	12	Epidemiological surveillance study
Campos 2015 <sup>43</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/5/2011	31/1/2012	9	Cross-sectional
Campos 2013 <sup>44</sup>	Full text	Peru	Ambulatory	Convenience (community)	1/11/2002	31/12/2006	50	Cross-sectional
Cárcamo 2012 <sup>45</sup>	Full text	Peru	Ambulatory	Randomised representative	15/8/2002	15/11/2002	3	Cross-sectional
Cardona Arango 2012 <sup>46</sup>	Full text	Colombia	Ambulatory	Convenience (health system)	1/1/2002	31/12/2006	60	Cross-sectional
Casco 2011 <sup>47</sup>	Full text	Argentina	Ambulatory	Convenience (health system)	1/1/2005	30/12/2009	60	Cross-sectional
Casillas-Vega 2016 <sup>48</sup>	Full text	Mexico	Ambulatory	Convenience (health system)	1/9/2013	1/8/2014	11	Cross-sectional
Castillo 2015 <sup>49</sup>	Full text	Peru	Ambulatory	Convenience (community)	1/3/2008	NR	NR	Cohort study
Chacón-Cruz 2018 <sup>50</sup>	Abstract	Mexico	Hospitalised	Convenience (health system)	1/1/2012	31/12/2017	72	Epidemiological surveillance study
Christofolini 2012 <sup>51</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	NR	NR	NR	Cross-sectional
Clark 2017 <sup>52</sup>	Full text	Peru	Ambulatory	Convenience (community and patients)	1/10/2012	31/7/2014	22	Cross-sectional
Creswell 2012 <sup>53</sup>	Full text	El Salvador	Ambulatory	Convenience (health system)	1/3/2008	30/9/2008	7	Cross-sectional
Cunha 2015 <sup>24</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	2/8/2010	30/6/2012	23	Cross-sectional

da Silva 2018 <sup>54</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/2/2018	31/3/2018	2	Cross-sectional
de Abreu 2016 <sup>55</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/8/2012	31/3/2013	8	Cross-sectional
de Lima 2014 <sup>56</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/1/2007	31/12/2009	36	Cross-sectional
de Menezes Filho 2017 <sup>57</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/1/2013	31/12/2013	12	Cross-sectional
Detels 2011 <sup>58</sup>	Full text	Peru	Ambulatory	Convenience (community)	NR	NR	NR	Cohort study
Downey 2015 <sup>59</sup>	Full text	Haiti	Ambulatory	Convenience (health system)	21/10/2013	27/10/2013	0	Cross-sectional
Duncan 2014 <sup>60</sup>	Full text	Jamaica	Ambulatory	Convenience (community)	1/8/2008	1/11/2008	3	Cross-sectional
Edwards 2019 <sup>61</sup>	Full text	Trinidad and Tobago	NR	Convenience (health system)	1/1/2012	31/12/2012	12	Cross-sectional
Edwards 2019 <sup>a62</sup>	Full text	Trinidad and Tobago	Ambulatory	Convenience (health system)	1/4/2014	30/9/2014	6	Cross-sectional
Fernandes 2014 <sup>63</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/1/2009	31/12/2012	48	Cross-sectional
Figueroa 2012 <sup>64</sup>	Full text	Jamaica	Ambulatory	Convenience (community)	1/3/2007	31/1/2008	11	Cross-sectional
Gabster 2019a <sup>65</sup>	Abstract	Panama	Ambulatory	Randomised representative	1/1/2015	1/1/2018	36	Cross-sectional
Gabster 2019b <sup>66</sup>	Full text	Panama	Ambulatory	Randomised representative	1/7/2018	30/11/2018	5	Cross-sectional
Galárraga 2014 <sup>67</sup>	Full text	Mexico	Ambulatory	Convenience (community and patients)	NR	NR	NR	Cross-sectional
Ganley 2016 <sup>68</sup>	Full text	Mexico	Ambulatory	Convenience (community)	1/1/2012	31/5/2014	29	Cohort study
García 2018 <sup>69</sup>	Full text	Guatemala	Ambulatory	Convenience (health system)	1/1/2005	31/12/2012	96	Cross-sectional



García 2017 <sup>70</sup>	Full text	Peru	Ambulatory	Convenience (community)	1/8/2014	30/9/2014	2	Cross-sectional
García-González 2017 <sup>71</sup>	Full text	Mexico	Ambulatory	Convenience (health system)	1/5/2013	31/7/2015	27	Cross-sectional
Goins 2011 <sup>72</sup>	Abstract	Nicaragua	Ambulatory	Convenience (health system)	NR	NR	NR	Cross-sectional
González 2014 <sup>73</sup>	Abstract	Argentina	Ambulatory	Convenience (health system)	1/12/2012	31/1/2014	14	Cross-sectional
Grinsztejn 2017 <sup>74</sup>	Full text	Brazil	Ambulatory	Convenience (community)	1/8/2015	29/1/2016	6	Cross-sectional
Gutiérrez-Sandi 2016 <sup>75</sup>	Full text	Costa Rica	Ambulatory	Convenience (health system)	1/1/2002	31/5/2012	125	Epidemiological surveillance study
Ham 2014 <sup>76</sup>	Abstract	El Salvador	NR	Convenience (community)	NR	NR	NR	Cross-sectional
Ham 2015 <sup>77</sup>	Abstract	El Salvador, Nicaragua, Guatemala, Honduras	Ambulatory	Convenience (community)	1/1/2007	31/12/2012	72	Cross-sectional
Hernández 2011 <sup>78</sup>	Abstract	Nicaragua	NR	Convenience (community)	1/9/2009	28/2/2010	6	Cross-sectional
Hernández-Martínez 2013 <sup>79</sup>	Full text	Mexico	Ambulatory	Convenience (community)	NR	NR	NR	Cross-sectional
Hoagland 2015 <sup>80</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/4/2014	24/8/2015	17	Cross-sectional
Hobbs 2011 <sup>81</sup>	Abstract	Jamaica	Ambulatory	Convenience (health system)	1/8/2010	31/1/2011	6	Cohort study
Huneus 2018 <sup>82</sup>	Full text	Chile	Ambulatory	Convenience (health system)	NR	NR	NR	Cross-sectional
Jean Louis 2020 <sup>83</sup>	Full text	Haiti	Ambulatory	Convenience (health system)	1/9/2018	31/7/2019	11	Cross-sectional
Lima 2018 <sup>84</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/3/2014	30/9/2015	19	Cross-sectional
Luchiari 2016 <sup>85</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/9/2012	31/10/2013	14	Cross-sectional

Luppi 2011 <sup>86</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/4/2004	31/3/2005	12	Cross-sectional
Manca 2020 <sup>87</sup>	Full text	French Guiana	Ambulatory	Convenience (health system)	1/2/2017	31/12/2017	11	Cross-sectional
Marchezini 2018 <sup>88</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/1/2013	31/12/2015	36	Cross-sectional
Melo 2019 <sup>89</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	2/2/2014	9/12/2016	34	Cohort study
Mendizábal-Burastero 2015 <sup>90</sup>	Abstract	Guatemala	Ambulatory	Convenience (health system)	1/6/2014	31/12/2014	7	Cross-sectional
Mendoza 2013 <sup>91</sup>	Full text	Paraguay	Ambulatory	Convenience (health system)	NR	NR	NR	Cross-sectional
Miranda 2017 <sup>92</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/3/2015	31/12/2015	10	Cross-sectional
Montano 2020 <sup>93</sup>	Full text	Peru	Ambulatory	Convenience (health system)	1/1/2013	31/12/2017	60	Cohort study
Morales-Miranda 2013 <sup>94</sup>	Abstract	Belize	Ambulatory	Convenience (health system)	1/1/2012	31/7/2012	7	Cross-sectional
Morales-Miranda 2013 <sup>95</sup>	Abstract	Belize	Ambulatory	Convenience (health system)	1/1/2012	31/12/2012	12	Cross-sectional
Moriarty 2019 <sup>96</sup>	Full text	Peru	Ambulatory	NR	1/6/2017	31/12/2017	7	Cross-sectional
Mucci 2016 <sup>98</sup>	Full text	Argentina	NR	Convenience (health system)	1/8/2012	31/1/2013	6	Cross-sectional
Núñez-Forero 2012 <sup>97</sup>	Full text	Colombia	Ambulatory	Convenience (health system)	1/1/2010	31/12/2010	12	Cross-sectional
Occhionero 2018 <sup>99</sup>	Full text	Argentina	Ambulatory	Convenience (health system)	NR	NR	NR	Cross-sectional
Ovalle 2012 <sup>100</sup>	Full text	Chile	Ambulatory	Convenience (health system)	1/4/2010	31/10/2011	19	Cross-sectional
Pantoja 2012 <sup>101</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/4/2008	31/10/2009	19	Cross-sectional
Paredes 2015 <sup>102</sup>	Full text	Colombia	Ambulatory	Randomised representative	NR	NR	NR	Cross-sectional

Passaro 2018 <sup>103</sup>	Full text	Peru	Ambulatory	Convenience (community and patients)	1/8/2012	30/6/2014	23	Cross-sectional
Patterson 2019 <sup>104</sup>	Full text	Mexico	Ambulatory	Convenience (community)	1/1/2011	31/12/2015	60	Cross-sectional
Paz-Bailey 2012 <sup>105</sup>	Full text	El Salvador	Ambulatory	Convenience (health system)	1/3/2008	30/9/2008	7	Cross-sectional
Peña-Toribio 2019 <sup>106</sup>	Abstract	Mexico	Ambulatory	Convenience (health system)	1/1/2018	1/1/2019	12	Cross-sectional
Pérez-Brumer 2013 <sup>107</sup>	Full text	Peru	Ambulatory	Convenience (community and patients)	1/5/2007	31/12/2007	8	Cross-sectional
Piazzetta 2011 <sup>108</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	NR	NR	NR	Cross-sectional
Pinto 2011 <sup>109</sup>	Full text	Brazil	NR	Randomised representative	1/3/2009	30/11/2009	9	Cross-sectional
Pinto 2016 <sup>110</sup>	Full text	Brazil	NR	Convenience (health system)	1/10/2013	31/3/2014	6	Cross-sectional
Piscopo 2018 <sup>111</sup>	Abstract	Brazil	Ambulatory	Convenience (health system)	1/1/2016	31/12/2017	24	Cross-sectional
Pollett 2013 <sup>112</sup>	Full text	Peru	Ambulatory	Convenience (health system)	1/11/2008	31/1/2011	27	Cross-sectional
Rahman 2015 <sup>113</sup>	Full text	Argentina	Ambulatory	Convenience (health system)	1/1/2003	31/12/2013	132	Cross-sectional
Reyes 2020 <sup>114</sup>	Full text	Chile	Ambulatory	Convenience (health system)	1/6/2013	31/12/2013	7	Cross-sectional
Ribas 2011 <sup>115</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/1/2003	30/12/2007	60	Cross-sectional
Rocha 2014 <sup>116</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/5/2010	30/11/2010	7	Cross-sectional
Rodrigues 2019 <sup>117</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/8/2015	31/7/2016	12	Cross-sectional
Rodrigues 2011 <sup>118</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/1/2005	31/12/2005	12	Cross-sectional

Rodríguez 2018 2020 <sup>119</sup>	Full text	Cuba	NR	Convenience (health system)	1/6/2018	30/6/2018	1	Epidemiological surveillance study
Rojas 2012 <sup>120</sup>	Full text	Colombia	NR	Convenience (health system)	1/1/2005	31/12/2009	60	Cross-sectional
Sabidó 2011 <sup>121</sup>	Full text	Guatemala	Ambulatory	Convenience (health system)	1/1/2008	31/12/2009	24	Cross-sectional
Sánchez Palencia 2017 <sup>122</sup>	Full text	Peru	NR	Convenience (health system)	1/1/2012	31/12/2013	24	Cross-sectional
Scheidell 2018 <sup>123</sup>	Full text	Haiti	Ambulatory	Convenience (health system)	1/8/2013	31/10/2013	3	Cross-sectional
Scheidell 2016 <sup>124</sup>	Abstract	Haiti	NR	Convenience (health system)	NR	NR	NR	Cross-sectional
Silveira 2020 <sup>125</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/8/2015	31/12/2016	17	Cross-sectional
Snead 2017 <sup>126</sup>	Full text	Jamaica	Ambulatory	Convenience (health system)	1/9/2012	31/1/2014	17	Cross-sectional
Souza 2013 <sup>127</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/4/2011	31/5/2012	14	Cross-sectional
Strathdee 2011 <sup>128</sup>	Full text	Mexico	Ambulatory	Convenience (community)	1/10/2008	31/10/2009	13	Cross-sectional
Tinajeros 2012 <sup>129</sup>	Full text	Honduras	Ambulatory	Convenience (health system)	1/3/2006	31/12/2008	36	Cross-sectional
Travassos 2016 <sup>130</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/6/2013	31/5/2015	24	Cross-sectional
Veloso 2020 <sup>131</sup>	Abstract	Brazil, Mexico, Peru	Ambulatory	Convenience (health system)	1/2/2018	30/11/2019	22	Cross-sectional
Villarán 2013 <sup>132</sup>	Abstract	Peru	NR	Convenience (health system)	1/1/2012	31/12/2012	12	Cross-sectional
Villegas 2018 <sup>133</sup>	Abstract	Colombia	NR	NR	NR	NR	NR	Cross-sectional
Villegas-Castaño 2016 <sup>134</sup>	Full text	Colombia	Ambulatory	Randomised representative	1/1/2010	31/12/2013	48	Cross-sectional
Weir 2015 <sup>135</sup>	Full text	Jamaica	Ambulatory	Convenience (community)	NR	NR	NR	Cross-sectional

Wohlmeister 2016 <sup>136</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/3/2014	30/11/2014	9	Cross-sectional
Yeganeh 2021 <sup>137</sup>	Full text	Brazil	Ambulatory	Convenience (health system)	1/9/2018	31/10/2019	14	Cross-sectional
Zotta 2014 <sup>138</sup>	Full text	Argentina	Ambulatory	Convenience (health system)	1/1/2005	31/12/2010	72	Cross-sectional

NR, Not reported

<sup>a</sup>There were 100 cross-sectional studies (two were designed as randomised controlled trials, but for the purpose of this analysis the control arms were considered to be cross-sectional studies), 8 cohort studies, 6 epidemiological surveillance studies, 1 case series, and 1 economic evaluation. Six studies had randomised sampling and 106 had convenience sampling, 83 of which involved patients receiving medical care. Of the 23 studies with convenience sampling including individuals outside the health system, 19 predominantly recruited high-risk groups. Of the six studies with randomised sampling, one represented the general population<sup>45</sup> and five represented specific populations such as pregnant women or adolescent students.

.;b=:

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**Supplementary Material Table S4 Risk of bias assessment for cross-sectional and cohort studies**

Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Adacchi 2015 <sup>1</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Alcántara 2019 <sup>2</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	NR	NA	NA	NA	FAIR
Allan-Blitz 2018 <sup>3</sup>	Yes	Yes	No	Yes	No	Yes	Yes	NA	Yes	Yes	Yes	NA	Yes	Yes	FAIR
Andrade 2020 <sup>4</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Baldin-Dal Pogetto 2011 <sup>5</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Barbosa 2011 <sup>6</sup>	Yes	Yes	No	NR	No	No	NA	NA	CD	NA	Yes	NA	NA	No	POOR
Bazzi 2015 <sup>7</sup>	Yes	Yes	No	Yes	No	Yes	Yes	NA	Yes	Yes	Yes	NA	No	Yes	FAIR
Benzaken 2012 <sup>8</sup>	Yes	Yes	No	Yes	Yes	NA	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Boldrini 2018 <sup>9</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Bristow 2014 <sup>10</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Bristow 2017 <sup>11</sup>	Yes	No	NA	CD	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Bristow 2017 <sup>a11</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Bristow 2021 <sup>12</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Cabeza 2015 <sup>13</sup>	Yes	Yes	No	Yes	No	NA	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Campos 2013 <sup>14</sup>	Yes	Yes	CD	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Campos 2015 <sup>15</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Cárcamo 2012 <sup>16</sup>	Yes	Yes	Yes	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	GOOD
Cardona Arango 2012 <sup>17</sup>	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA	CD	NA	NA	NA	FAIR
Casco 2011 <sup>18</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Casillas-Vega 2016 <sup>19</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	Yes	NA	NA	Yes	FAIR
Castillo 2015 <sup>20</sup>	Yes	Yes	No	Yes	No	Yes	Yes	NA	Yes	Yes	Yes	NA	Yes	Yes	FAIR

Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Chacón-Cruz 2018 <sup>21</sup>	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	GOOD
Christofolini 2012 <sup>22</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Clark 2017 <sup>23</sup>	Yes	Yes	No	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	NA	FAIR
Creswell 2012 <sup>24</sup>	Yes	Yes	No	Yes	Yes	Yes	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Cunha 2015 <sup>25</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NR	NA	Yes	FAIR
da Silva 2018 <sup>26</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
de Abreu 2016 <sup>27</sup>	Yes	Yes	No	Yes	No	NA	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
de Lima 2014 <sup>28</sup>	Yes	Yes	No	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
de Menezes Filho 2017 <sup>29</sup>	Yes	Yes	No	Yes	No	No	Yes	NA	Yes	NA	Yes	NA	Yes	Yes	FAIR
Detels 2011 <sup>30</sup>	Yes	Yes	No	CD	No	Yes	Yes	NA	Yes	Yes	Yes	NA	No	Yes	FAIR
Downey 2015 <sup>31</sup>	Yes	Yes	No	Yes	No	Yes	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Duncan 2014 <sup>32</sup>	Yes	Yes	No	Yes	No	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Edwards 2019 <sup>33</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Edwards 2019a <sup>33</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Fernandes 2014 <sup>34</sup>	Yes	Yes	No	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	NA	FAIR
Figueroa 2012 <sup>35</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Gabster 2019a <sup>36</sup>	Yes	Yes	Yes	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	GOOD

Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Gabster 2019b <sup>36</sup>	Yes	Yes	Yes	Yes	Yes	NA	NA	NA	Yes	NA	Yes	NA	NA	Yes	GOOD
Galárraga 2014 <sup>37</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	NA	FAIR
Ganley 2016 <sup>38</sup>	Yes	Yes	No	Yes	No	Yes	Yes	NA	Yes	Yes	Yes	NA	Yes	Yes	FAIR
García 2017 <sup>39</sup>	Yes	Yes	No	Yes	Yes	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
García 2018 <sup>40</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
García-González 2017 <sup>41</sup>	Yes	No	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Goins 2011 <sup>42</sup>	No	Yes	No	Yes	No	No	NA	NA	Yes	NA	No	NA	NA	No	POOR
González 2014 <sup>43</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Grinsztejn 2017 <sup>44</sup>	Yes	Yes	No	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Gutiérrez-Sandí <sup>45</sup>	Yes	No	CD	CD	NA	NA	NA	NA	NA	NA	No	NA	NA	NA	POOR
Ham 2014 <sup>46</sup>	Yes	Yes	No	NR	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Ham 2015 <sup>31</sup>	Yes	No	NA	CD	No	NA	NA	NA	Yes	NA	Yes	NA	NA	NA	FAIR



Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Hernández 2011 <sup>47</sup>	Yes	Yes	No	NR	NA	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Hernández-Martínez 2013 <sup>48</sup>	Yes	Yes	No	CD	No	No	NA	NA	CD	NA	Yes	NA	NA	No	POOR
Hoagland 2015 <sup>49</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Hobbs 2011 <sup>50</sup>	Yes	Yes	No	Yes	No	Yes	Yes	NA	Yes	No	Yes	NA	CD	No	POOR
Huneus 2018 <sup>51</sup>	Yes	Yes	No	CD	No	Yes	NA	NA	Yes	No	Yes	NA	NA	Yes	FAIR
Jean Louis 2020 <sup>52</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	No	Yes	NA	NA	Yes	FAIR
Lima 2018 <sup>53</sup>	Yes	No	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	POOR
Luchiari 2016 <sup>54</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Luppi 2011 <sup>55</sup>	Yes	Yes	No	Yes	No	Yes	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Manca 2020 <sup>56</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	No	NA	NA	Yes	POOR
Marchezini 2018 <sup>57</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FAIR
Melo 2019 <sup>58</sup>	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	Yes	FAIR

Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Mendizábal-Burastero 2015 <sup>59</sup>	Yes	Yes	No	Yes	No	NA	NA	NA	Yes	NA	Yes	NA	NA	NA	FAIR
Mendoza 2013 <sup>60</sup>	Yes	Yes	No	CD	Yes	NA	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Miranda 2017 <sup>61</sup>	Yes	Yes	No	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Montano 2020 <sup>62</sup>	Yes	Yes	No	Yes	No	Yes	NA	NA	Yes	No	Yes	NA	NA	Yes	FAIR
Morales-Miranda 2013 <sup>63</sup>	Yes	No	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Morales-Miranda 2013 <sup>64</sup>	Yes	No	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Moriarty 2019 <sup>65</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Mucci 2016 <sup>66</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Núñez-Forero 2012 <sup>67</sup>	Yes	Yes	No	Yes	Yes	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Occhionero 2018 <sup>68</sup>	Yes	Yes	No	CD	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Ovalle 2012 <sup>69</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR

Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Pantoja 2012 <sup>70</sup>	Yes	Yes	No	Yes	Yes	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Paredes 2015 <sup>71</sup>	Yes	Yes	Yes	CD	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	No	FAIR
Passaro 2018 <sup>72</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Patterson 2019 <sup>73</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Paz-Bailey 2012 <sup>24</sup>	Yes	Yes	No	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Peña-Toribio 2019 <sup>74</sup>	Yes	No	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	POOR
Pérez-Brumer 2013 <sup>75</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Piazzetta 2011 <sup>76</sup>	Yes	Yes	No	CD	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Pinto 2011 <sup>6</sup>	Yes	Yes	Yes	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	GOOD
Pinto 2016 <sup>77</sup>	Yes	Yes	No	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Piscopo 2018 <sup>78</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Pollet 2013 <sup>79</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Rahman 2015 <sup>80</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	No	Yes	NA	NA	No	POOR

Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Reyes 2020 <sup>81</sup>	Yes	Yes	No	Yes	No	NA	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Ribas 2011 <sup>82</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	NR	NA	NA	NA	FAIR
Rocha 2014 <sup>83</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Rodrigues 2011 <sup>84</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Rodrigues 2019 <sup>85</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Rodríguez 2020 <sup>86</sup>	Yes	Yes	No	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	FAIR
Rojas 2012 <sup>87</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FAIR
Sabidó 2011 <sup>88</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Sánchez Palencia 2017 <sup>89</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Scheidell 2016 <sup>90</sup>	Yes	No	No	NR	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Scheidell 2018 <sup>91</sup>	Yes	Yes	No	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Silveira 2020 <sup>92</sup>	Yes	Yes	No	Yes	NA	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR

Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Snead 2017 <sup>93</sup>	Yes	CD	No	CD	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	POOR
Souza 2013 <sup>94</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Strathdee 2011 <sup>95</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	No	NA	NA	Yes	FAIR
Tinajeiros 2012 <sup>96</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Travassos 2016 <sup>97</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR
Veloso 2020 <sup>98</sup>	Yes	No	No	Yes	NR	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	POOR
Villarán 2013 <sup>99</sup>	Yes	Yes	No	NR	No	No	NA	NA	Yes	NA	Yes	NA	NA	NR	POOR
Villegas 2018 <sup>100</sup>	Yes	No	CD	CD	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	No	POOR
Villegas Cataño 2016 <sup>101</sup>	Yes	Yes	Yes	Yes	Yes	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	GOOD
Weir 2015 <sup>1</sup>	Yes	No	No	NR	No	NA	NA	NA	Yes	NA	Yes	NA	NA	NA	POOR
Wohlmeister 2016 <sup>102</sup>	Yes	Yes	No	Yes	No	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR
Yeganeh 2021 <sup>103</sup>	Yes	Yes	No	Yes	No	No	NA	NA	Yes	NA	Yes	NA	NA	Yes	FAIR

Author and year of publication	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality rating
Zotta 2014 <sup>104</sup>	Yes	Yes	No	Yes	NA	NA	NA	NA	NA	NA	Yes	NA	NA	NA	FAIR

CD, cannot be determined; NA, not applicable; NR, not reported

1. Was the question or research objective clearly stated in this study?
2. Was the study population clearly specified and defined?
3. Was the participation of eligible people at least 50%?
4. Were all subjects selected or recruited from the same population or from similar populations (including the same time period)? Were the inclusion and exclusion criteria for participation in the study uniformly pre-specified and applied to all participants?
5. Were a sample size justification, power description, or variance and effect estimates provided?
6. For the analysis in this study, were the exposure(s) of interest measured before the outcome(s) were measured?
7. Was the follow-up period sufficient for one to reasonably expect to see an association between exposure and outcome if it existed?
8. For exposures that may vary in quantity or level, did the study examine different levels of exposure in relation to the outcome (e.g., exposure categories or exposure measured as a continuous variable)?
9. Were exposure measures (independent variables) clearly defined, valid, reliable, and consistently implemented across all study participants?
10. Were exposures evaluated more than once over time?
11. Were outcome measures (dependent variables) clearly defined, valid, reliable, and consistently implemented across all study participants?
12. Were outcome evaluators blinded to participants' exposure status?
13. Was the loss of follow-up after study initiation 20% or less?

14. Were potential key confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?

**Supplementary Material Table S5 Risk of bias assessment for case series**

Author and date of publication	1	2	3	4	5	6	7	8	9	Quality rating
Bastos 2019 <sup>105</sup>	Yes	No	Yes	CD	NA	CD	NA	No	Yes	FAIR

NA: not applicable, NR: not reported, CD: cannot be determined

1. Was the question or objective of the study clearly stated?
2. Was the study population clearly and completely described, including a case definition?
3. Were the cases consecutive?
4. Were the subjects comparable?
5. Was the exposure clearly described?
6. Were outcome measures clearly defined, valid, reliable, and consistently implemented across all study participants?
7. Was the duration of follow-up adequate?
8. Were the statistical methods well described?
9. Were the results well described?



**Supplementary Material Table S6 Number of cases of gonococcal genital discharge, Argentina, 2011–2018**

<b>Year</b>	<b>Cases in women, N (%)</b>	<b>Cases in men, N (%)</b>	<b>Total number of cases</b>	<b>Rate per 100 000 inhabitants</b>
2011	-	-	2680	6.68
2012	-	-	2670	6.66
2013	-	-	3551	8.85
2014	-	-	3246	8.09
2015	395 (46)	466 (54)	861	-
2016	228 (40)	348 (60)	576	-
2017	231 (38)	383 (62)	614	-
2018	3618 (22)	12 532 (78)	16 150	-

**Supplementary Material Table S7 Total and average days of hospitalisation due to gonococcal infection in Chile, by gender, 2012–2018<sup>106</sup>**

Year	Total population		Women		Men	
	Total days	Average	Total days	Average	Total days	Average
2012	290	7.6	210	7.8	80	7.3
2013	183	4.2	94	4.1	89	4.2
2014	271	7.1	60	3.2	211	11.1
2015	225	6.8	126	7.3	99	7.6
2016	223	6.6	162	7.7	61	4.7
2017	268	5.5	154	7	114	4.2
2018	306	7.01	229	8.8	77	4.5

**Supplementary Material Table S8 Number of new cases of gonococcal infection diagnosed in Chile,  
2000—2017<sup>106</sup>**

<b>Year</b>	<b>Total new cases</b>	<b>Cases per 100 000 inhabitants</b>
2000	2488	16.2
2001	2385	13.8
2002	2014	12.8
2003	1918	12.1
2004	1718	10.7
2005	1720	10.7
2006	1293	8
2007	1251	7.6
2008	1028	6.2
2009	1065	6.3
2010	1290	7.6
2011	1428	8.3
2012	1470	8.4
2013	1533	8.7
2014	1473	8.3
2015	1797	10
2016	2042	11.2
2017	2768	15.1

**Supplementary Material Table S9 Number of deaths due to gonococcal infection in Colombia, 2011—  
2020<sup>107</sup>**

ICD-10	2017		2018	2019		2020	Total
	Male, 15–19 years	Male, 65–69 years	Male, 70–74 years	Male, 75–79 years	Male, ≥80 years	Male, 55–59 years	
A540	0	0	0	1	0	0	1
A542	0	0	0	0	1	0	1
A548	1	1	1	0	0	0	3
A549	0	0	0	0	0	1	1
Total	1	1	1	1	1	1	6

ICD-10, International Classification of Diseases Tenth Revision; A540, Gonococcal lower genitourinary tract infection without periurethral or accessory gland abscess; A542, Gonococcal pelvi-peritonitis and other genitourinary gonococcal infections; A548, Other gonococcal infections; A549, Gonococcal infection, unspecified

**Supplementary Material Table S10 Number of reported cases of gonococcal infection of the genitourinary tract (ICD-10 A54.0-A54.2) in Mexico, 2011–2021<sup>108</sup>**

<b>Year</b>	<b>Men, N (%)</b>	<b>Women, N (%)</b>	<b>Total</b>
2011	509 (36)	890 (64)	1399
2012	550 (39)	854 (61)	1404
2013	500 (38)	828 (62)	1328
2014	796 (37)	1354 (63)	2150
2015	845 (40)	1285 (60)	2130
2016	878 (44)	1133 (56)	2011
2017	2588 (54)	2176 (46)	4764
2018	2417 (57)	1859 (43)	4276
2019	2767 (62)	1728 (38)	4495
2020	2505 (36)	4496 (64)	7001
2021	1739 (28)	4403 (72)	6142
<b>Total</b>	<b>16 094 (43)</b>	<b>21 006 (57)</b>	<b>37 100</b>

ICD-10, International Classification of Diseases Tenth Revision

**Supplementary Material Table S11 Number of hospital discharges due to gonococcal infection.**

**Uruguay, 2015—2019**

<b>Year</b>	<b>Number of discharges</b>
2015	5
2016	9
2017	11
2018	19
2019	9
<b>Total</b>	<b>53</b>

## Supplementary Figures

### Supplementary Material Figure S1 Gonorrhoea risk. Population with non-high risk for gonorrhoea

Fixed effects (inverse variance)

Pooled proportion = 0.008478 (95% CI = 0.007639 to 0.009359)

Non-combinability of studies

Cochran Q = 774.356402 (df = 47) P < 0.0001

Moment-based estimate of between studies variance = 0.018318

I<sub>2</sub> (inconsistency) = 93.9% (95% CI = 93% to 94,7%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.014604 (95% CI = 0.010034 to 0.020014)

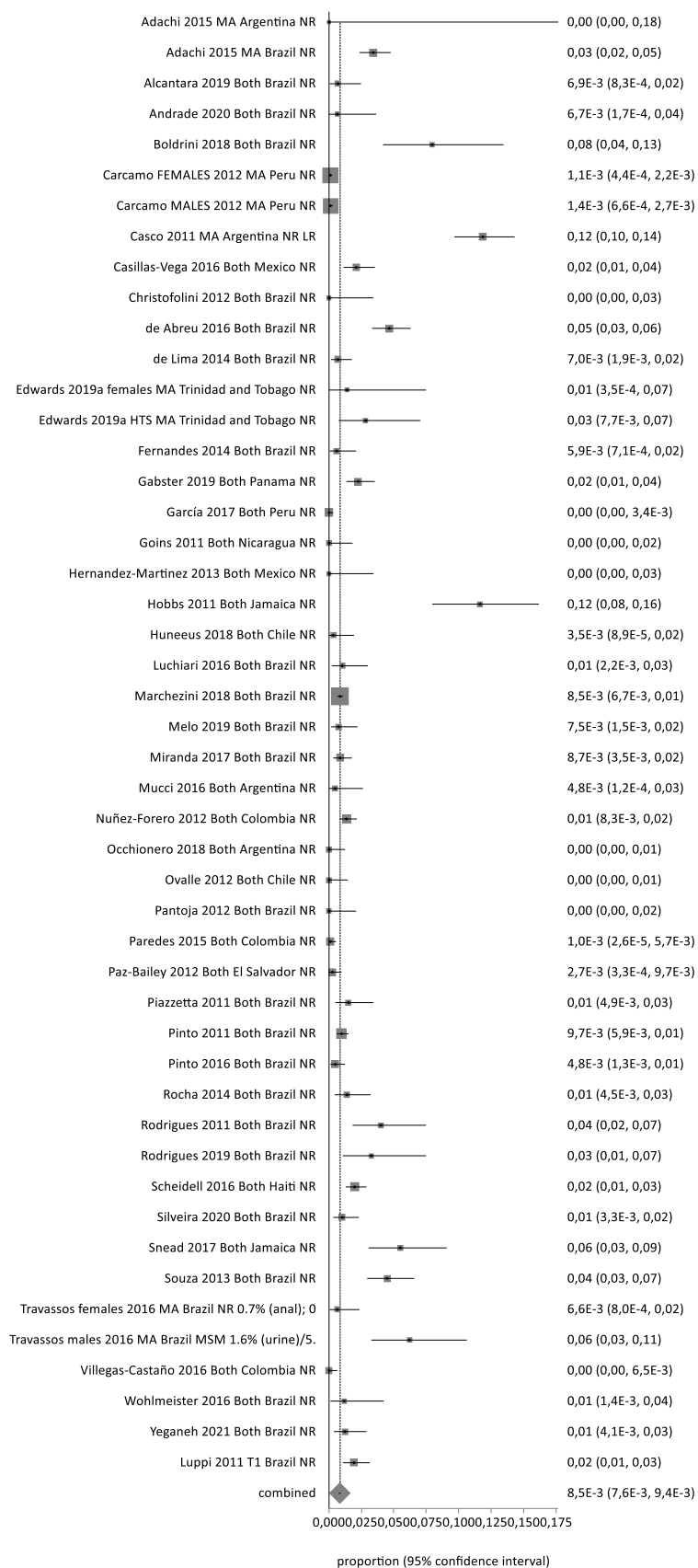
Bias indicators

Begg-Mazumdar: Kendall's 0.301418 P = 0.0023

Egger: bias = 2.335282 (95% CI = 1,530674 to 3.13989) P < 0.0001

Harbord: bias = 3.704995 (92.5% CI = 0.736516 to 6.673475) P = 0.0277

Proportion meta-analysis plot [fixed effects]





**Supplementary Material Figure S2 Gonorrhoea risk. Population at high-risk of gonorrhoea**

Fixed effects (inverse variance)

Pooled proportion = 0.048744 (95% CI = 0.046949 to 0.05057)

Non-combinability of studies

Cochran Q = 2.924,646457 (df = 57) P < 0.0001

Moment-based estimate of between studies variance = 0.063572

I<sub>2</sub> (inconsistency) = 98.1% (95% CI = 97.9% to 98.2%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.056772 (95% CI = 0.042309 to 0.073214)

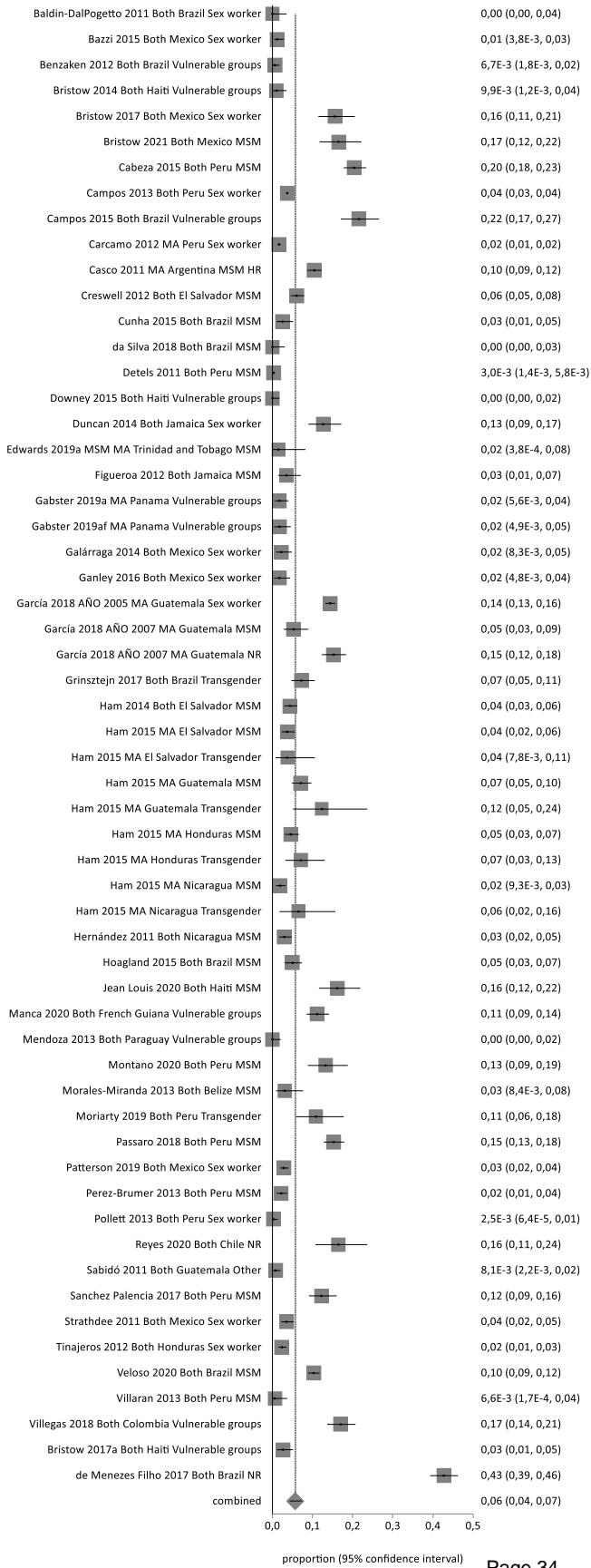
Bias indicators

Begg-Mazumdar: Kendall's 0.372051 P < 0.0001

Egger: bias = 4.413633 (95% CI = 2.437426 to 6.38984) P < 0.0001

Harbord: bias = 2.865768 (92.5% CI = -0.595493 to 6.327029) P = 0.1387

Proportion meta-analysis plot [random effects]



**Supplementary Material Figure S3 Gonorrhoea risk. Population with unreported risk for gonorrhoea**

Fixed effects (inverse variance)

Pooled proportion = 0.078676 (95% CI = 0.070495 to 0.087265)

Non-combinability of studies

Cochran Q = 171.552151 (df = 6) P < 0.0001

Moment-based estimate of between studies variance = 0.054625

I<sub>2</sub> (inconsistency) = 96.5% (95% CI = 95.1% to 97.3%)

Random effects (DerSimonian-Laird)

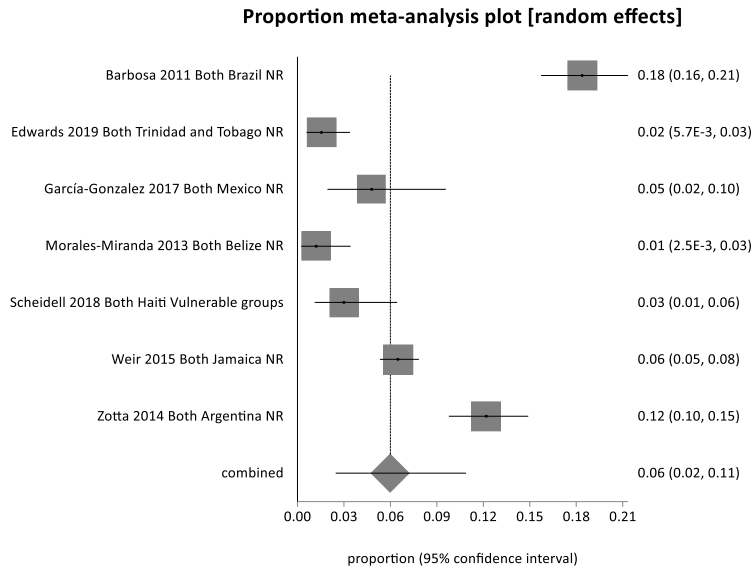
Pooled proportion = 0.05974 (95% CI = 0.024749 to 0.108627)

Bias indicators

Begg-Mazumdar: Kendall's 0.333333 P = 0.3813

Egger: bias = 6.287107 (95% CI = -8.081175 to 20.655388) P = 0.3117

Harbord: bias = -4.453726 (92.5% CI = -17.362304 to 8.454852) P = 0.4741



**Supplementary Material Figure S4 Type of study sampling and risk for gonorrhoea. Random sampling and population with non-high risk**

Fixed effects (inverse variance)

Pooled proportion = 0.002422 (95% CI = 0.001741 to 0.003214)

Non-combinability of studies

Cochran Q = 65.871673 (df = 5)  $P < 0.0001$

Moment-based estimate of between studies variance = 0.005061

$I^2$  (inconsistency) = 92.4% (95% CI = 86.7% to 95%)

Random effects (DerSimonian-Laird)

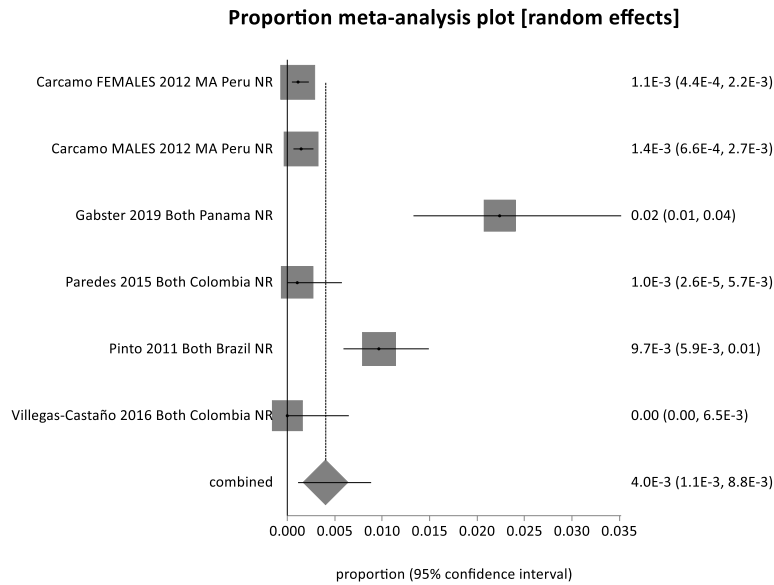
Pooled proportion = 0.004021 (95% CI = 0.001086 to 0.008799)

Bias indicators

Begg-Mazumdar: Kendall's 0.6  $P = 0.1361$

Egger: bias = 2.526567 (95% CI = -1.052122 to 6.105256)  $P = 0.1215$

Harbord: bias = 6.769478 (92.5% CI = -5.988104 to 19.52706)  $P = 0.2732$



**Supplementary Material Figure S5. Type of study sampling and risk for gonorrhoea. Random sampling and population with high risk**

Fixed effects (inverse variance)

Pooled proportion = 0.01661 (95% CI = 0.013181 to 0.020427)

Non-combinability of studies

Cochran Q = 0.244741 (df = 2) P = 0.8848

Moment-based estimate of between studies variance = 0

I<sup>2</sup> (inconsistency) = 0% (95% CI = 0% to 72.9%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.01661 (95% CI = 0.013181 to 0.020427)

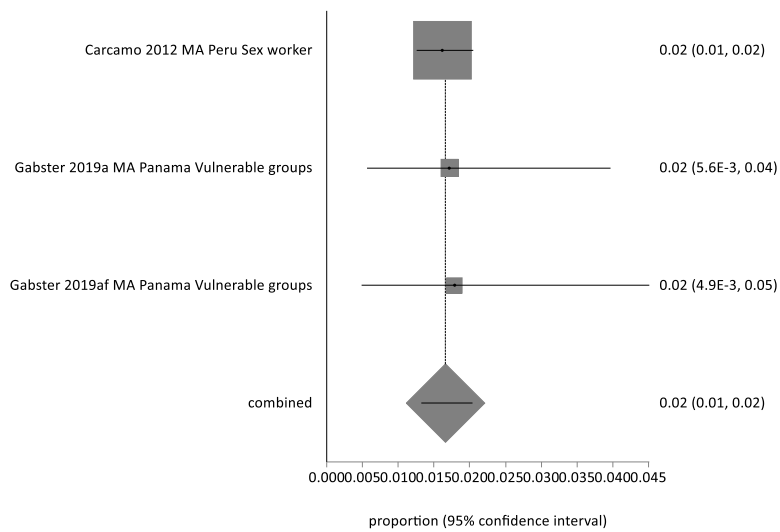
Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = 0.218928 (92.5% CI = -0.11104 to 0.548897) P = 0.1124

**Proportion meta-analysis plot [random effects]**



**Supplementary Material Figure S6 Type of study sampling and risk for gonorrhoea. Convenience sampling in a population with non-high risk that seeks medical help within the health system**

Fixed effects (inverse variance)

Pooled proportion = 0.015412 (95% CI = 0.013925 to 0.016974)

Non-combinability of studies

Cochran Q = 447.054281 (df = 37) P < 0.0001

Moment-based estimate of between studies variance = 0,018888

I<sub>2</sub> (inconsistency) = 91.7% (95% CI = 90% to 93%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.018217 (95% CI = 0.012394 to 0.025134)

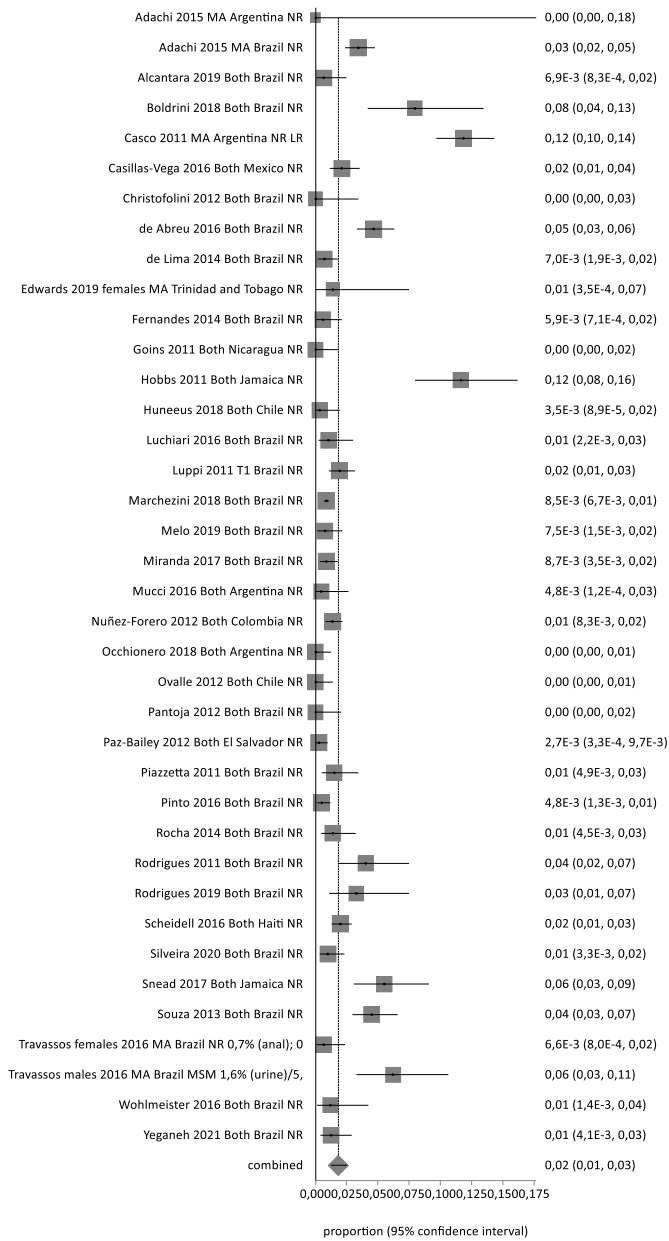
Bias indicators

Begg-Mazumdar: Kendall's 0.445235 P < 0.0001

Egger: bias = 1.954313 (95% CI = 0.768232 to 3.140394) P = 0.002

Harbord: bias = 1.937949 (92.5% CI = -0.930142 to 4.806039) P = 0.2234

Proportion meta-analysis plot [random effects]



**Supplementary Material Figure S7 Type of study sampling and risk for gonorrhoea. Convenience sampling in a population with high/unreported risk that seeks medical help within the health system**

Fixed effects (inverse variance)

Pooled proportion = 0.093153 (95% CI = 0.088981 to 0.097411)

Non-combinability of studies

Cochran Q = 1.649,072953 (df = 35) P < 0.0001

Moment-based estimate of between studies variance = 0.094407

I<sub>2</sub> (inconsistency) = 97.9% (95% CI = 97.7% to 98.1%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.06162 (95% CI = 0.039353 to 0.088473)

Bias indicators

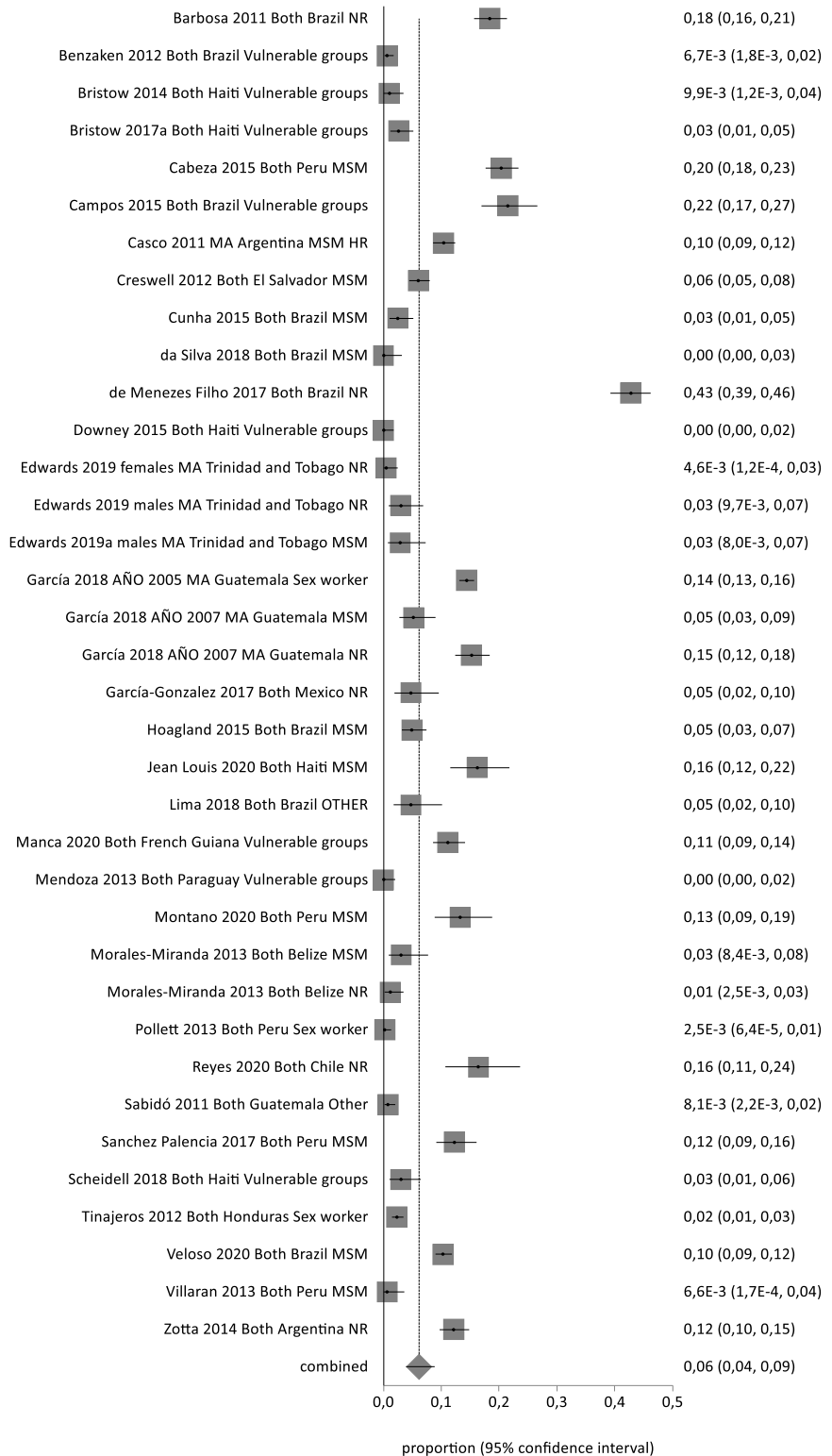
Begg-Mazumdar: Kendall's 0.438095 P = 0.0001

Egger: bias = 8.031752 (95% CI = 4.153658 to 11.909846) P = 0.0002

Harbord: bias = -5.833542 (92.5% CI = -10.715138 to -0.951946) P = 0.0351



Proportion meta-analysis plot [random effects]



**Supplementary Material Figure S8 Type of study sampling and risk for gonorrhoea. Convenience sampling in a population with non-high risk for gonorrhoea (with or without concomitant convenience sampling in a population that seeks medical help within the health system)**

Fixed effects (inverse variance)

Pooled proportion = 0.000738 (95% CI = 1.578410E-007 to 0.002908)

Non-combinability of studies

Cochran Q = 3.871562 (df = 2) P = 0.1443

Moment-based estimate of between studies variance = 0.004274

I<sub>2</sub> (inconsistency) = 48.3% (95% CI = 0% to 84.2%)

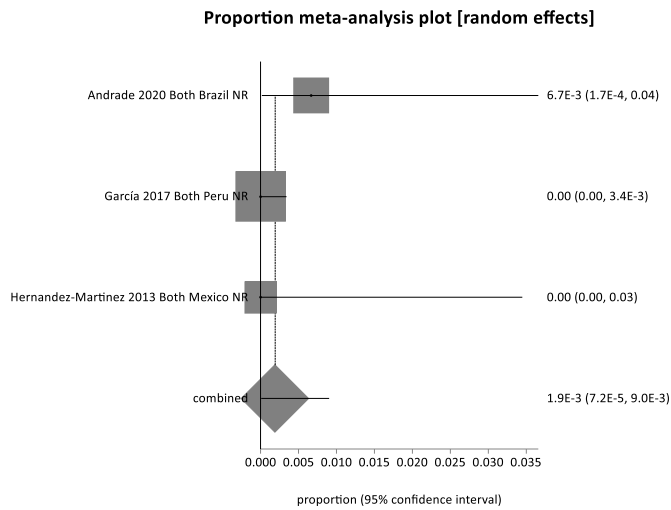
Random effects (DerSimonian-Laird)

Pooled proportion = 0.00188 (95% CI = 0.000072 to 0.009047)

Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \* Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = 2.099037 (92.5% CI = -20.193923 to 24.391996) P = 0.5722



**Supplementary Material Figure S9 Type of study sampling and risk for gonorrhoea. Convenience sampling in a population with high/unreported risk for gonorrhoea (with or without concomitant convenience sampling in a population that seeks medical help within the health system)**

Fixed effects (inverse variance)

Pooled proportion = 0.036332 (95% CI = 0.034386 to 0.038328)

Non-combinability of studies

Cochran Q = 531.673992 (df = 25) P < 0.0001

Moment-based estimate of between studies variance = 0.023964

I<sub>2</sub> (inconsistency) = 95.3% (95% CI = 94.4% to 96%)

Random effects (DerSimonian-Laird)

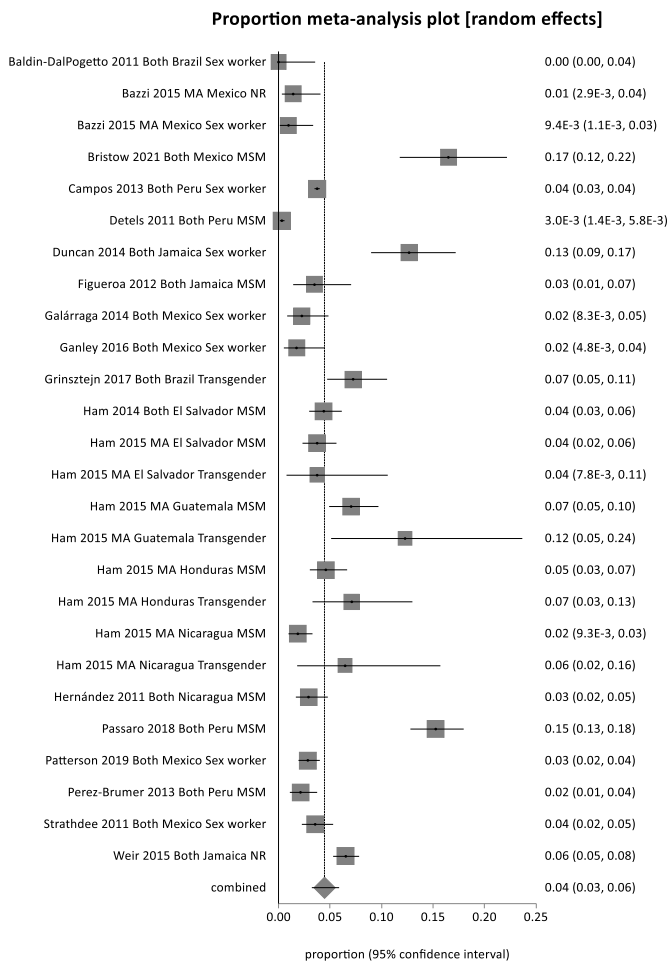
Pooled proportion = 0.044643 (95% CI = 0.032357 to 0.058796)

Bias indicators

Begg-Mazumdar: Kendall's 0.169231 P = 0.2365

Egger: bias = 2.86229 (95% CI = 0.419578 to 5.305003) P = 0.0235

Harbord: bias = 1.732223 (92.5% CI = -0.870364 to 4.33481) P = 0.2274



**Supplementary Material Figure S10. Symptoms. Population with symptoms compatible with gonorrhoea and non-high risk**

Fixed effects (inverse variance)

Pooled proportion = 0.047551 (95% CI = 0.039476 to 0.056337)

Non-combinability of studies

Cochran Q = 130.217913 (df = 2) P < 0.0001

Moment-based estimate of between studies variance = 0.0935

I<sub>2</sub> (inconsistency) = 98.5% (95% CI = 97.7% to 98.9%)

Random effects (DerSimonian-Laird)

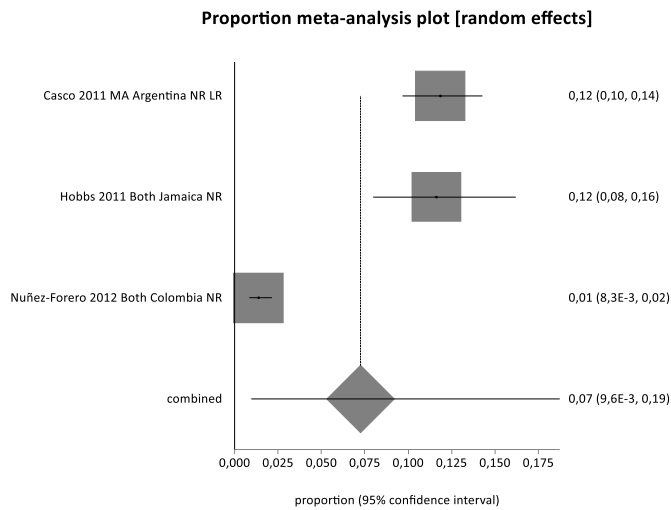
Pooled proportion = 0.072575 (95% CI = 0.009571 to 0.187277)

Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = 15.736545 (92,5% CI = -123.734366 to 155.207455) P = 0.5152



**Supplementary Material Figure S11. Symptoms. Population with symptoms compatible with gonorrhoea and high/unreported risk**

Fixed effects (inverse variance)

Pooled proportion = 0.182348 (95% CI = 0.168711 to 0.196393)

Non-combinability of studies

Cochran Q = 406.4268 (df = 4) P < 0.0001

Moment-based estimate of between studies variance = 0.185187

I<sup>2</sup> (inconsistency) = 99% (95% CI = 98.8% to 99.2%)

Random effects (DerSimonian-Laird)

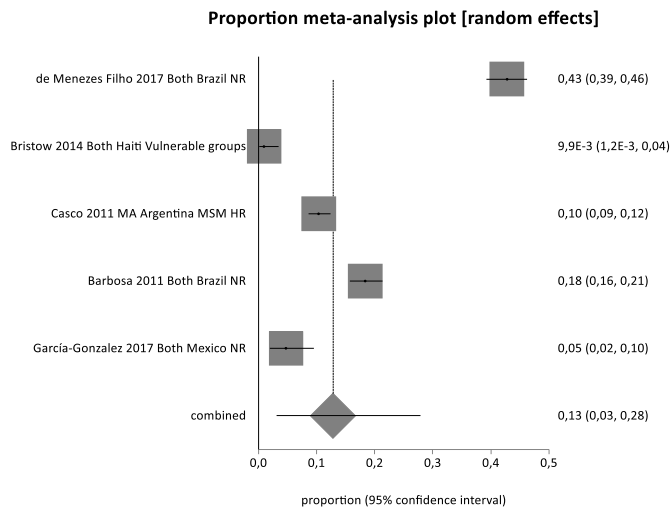
Pooled proportion = 0.128247 (95% CI = 0.030701 to 0.278899)

Bias indicators

Begg-Mazumdar: Kendall's 0.4 P = 0.4833

Egger: bias = 20.703743 (95% CI = -24.019507 to 65.426992) P = 0.2371

Harbord: bias = -8.842993 (92.5% CI = -48.528091 to 30.842104) P = 0.5924



**Supplementary Material Figure S12. Symptoms. Asymptomatic population with non-high risk**

Fixed effects (inverse variance)

Pooled proportion = 0.006465 (95% CI = 0.005678 to 0.007302)

Non-combinability of studies

Cochran Q = 407.63028 (df = 35) P < 0.0001

Moment-based estimate of between studies variance = 0.011309

I<sub>2</sub> (inconsistency) = 91.4% (95% CI = 89.5% to 92.8%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.010957 (95% CI = 0.007272 to 0.015384)

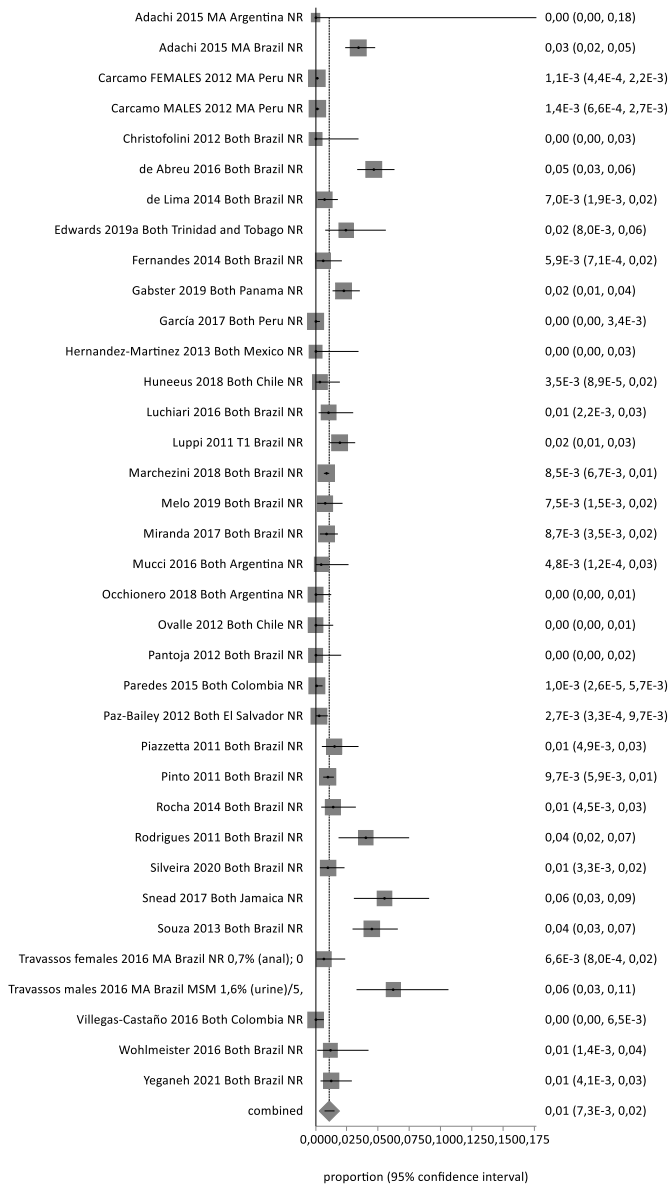
Bias indicators

Begg-Mazumdar: Kendall's 0.342857 P = 0.003

Egger: bias = 1.96617 (95% CI = 1.128007 to 2.804333) P < 0.0001

Harbord: bias = 2.912658 (92.5% CI = 0.586025 to 5.239292) P = 0.0278

Proportion meta-analysis plot [random effects]



**Supplementary Material Figure S13. Symptoms. Asymptomatic population with high/not reported risk**

Fixed effects (inverse variance)

Pooled proportion = 0.04988 (95% CI = 0.04739 to 0.052429)

Non-combinability of studies

Cochran Q = 1.739,435392 (df = 45) P < .0001

Moment-based estimate of between studies variance = 0,062985

I<sub>2</sub> (inconsistency) = 97.4% (95% CI = 97.2% to 97.6%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.05366 (95% CI = 0.038076 to 0.071738)

Bias indicators

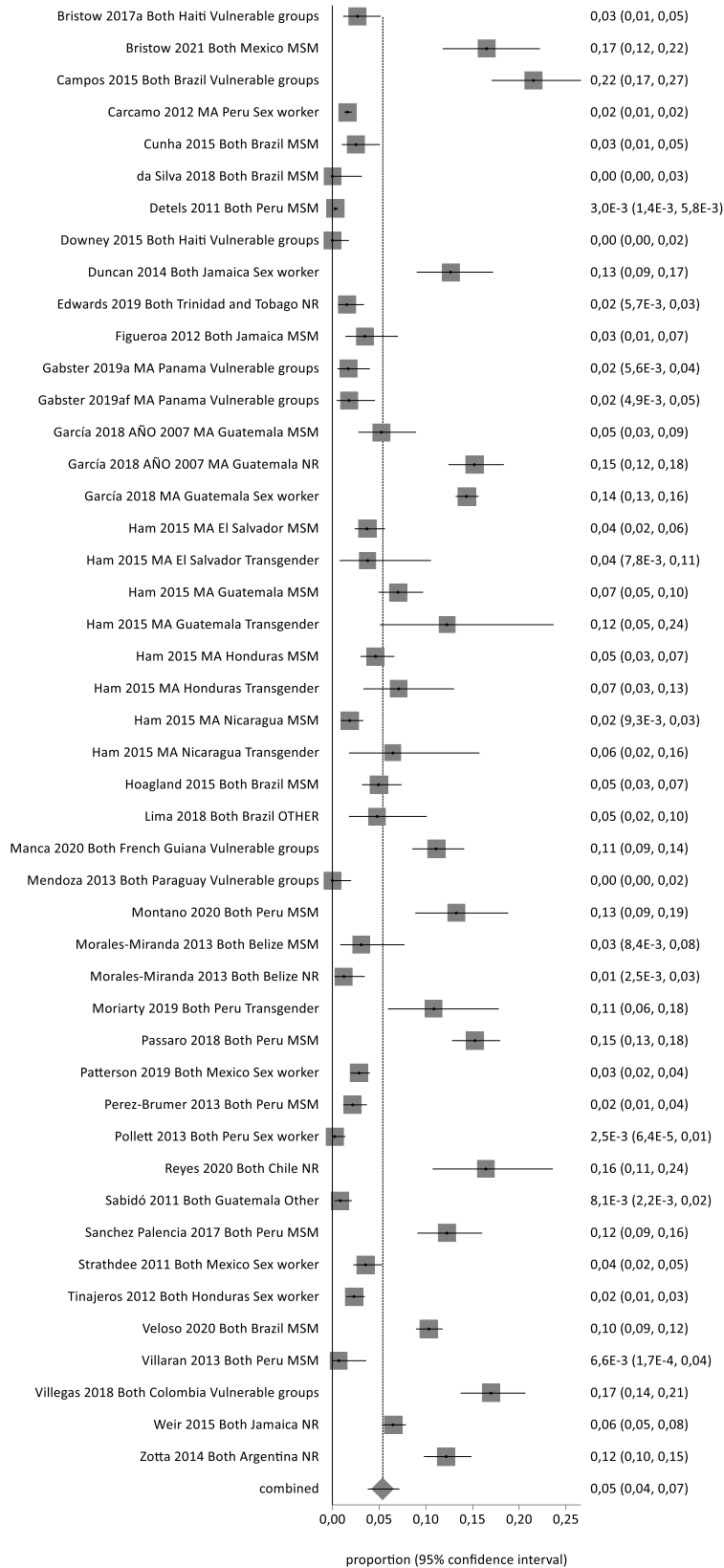
Begg-Mazumdar: Kendall's 0.33913 P = 0.0008

Egger: bias = 5.035271 (95% CI = 3.296188 to 6.74354) P < 0.0001

Harbord: bias = 0.806998 (92.5% CI = -2.804875 to 4.418871) P = 0.6856



Proportion meta-analysis plot [random effects]



**Supplementary Material Figure S14. HIV status. HIV-positive population**

Fixed effects (inverse variance)

Pooled proportion = 0.015521 (95% CI = 0.0125 to 0.018864)

Non-combinability of studies

Cochran Q = 133.243318 (df = 16) **P < 0.0001**

Moment-based estimate of between studies variance = 0.022482

I<sub>2</sub> (inconsistency) = 88% (95% CI = 82.7% to 91.1%)

Random effects (DerSimonian-Laird)

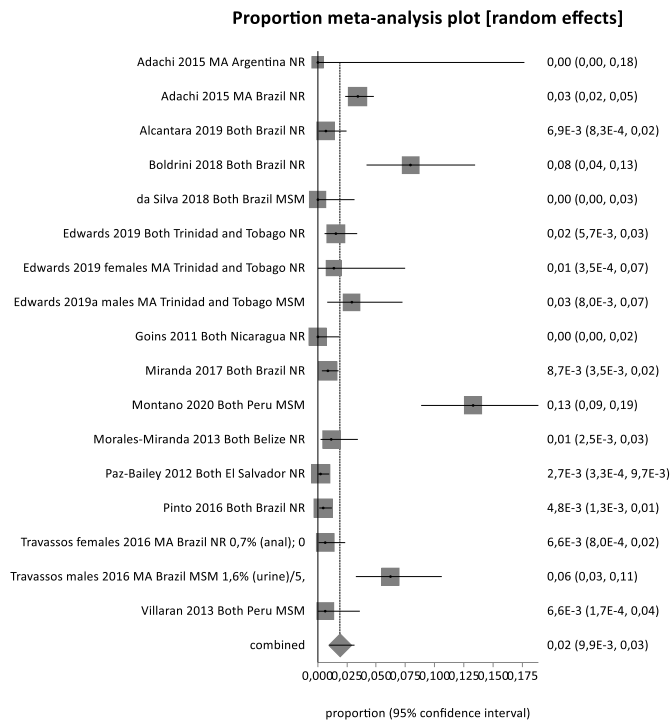
Pooled proportion = 0.019296 (95% CI = 0.009894 to 0.031732)

Bias indicators

Begg-Mazumdar: Kendall's 0.441176 **P = 0.0134**

Egger: bias = 2.211374 (95% CI = 0.745849 to 3.676898) **P = 0.0058**

Harbord: bias = 2.381137 (92.5% CI = -2.507849 to 7.270123) **P = 0.3662**



## Supplementary Material Figure S15. Pregnant women. Pregnant women with non-high risk

### Fixed effects (inverse variance)

Pooled proportion = 0.013676 (95% CI = 0.010269 to 0.017562)

### Non-combinability of studies

Cochran Q = 29.436007 (df = 5)  $P < 0.0001$

Moment-based estimate of between studies variance = 0.009778

$I^2$  (inconsistency) = 83% (95% CI = 58.5% to 90.5%)

### Random effects (DerSimonian-Laird)

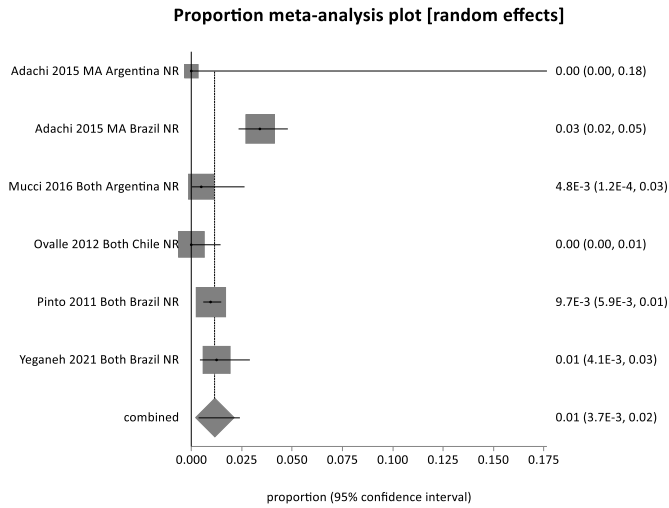
Pooled proportion = 0.01162 (95% CI = 0.003682 to 0.023924)

### Bias indicators

Begg-Mazumdar: Kendall's -0.066667  $P = 0.7194$

Egger: bias = 0.720355 (95% CI = -4.229361 to 5.67007)  $P = 0.7068$

Harbord: bias = -0.797351 (92.5% CI = -6.413125 to 4.818423)  $P = 0.7512$



## Supplementary Material Figure S16. Pregnant women. Pregnant women with high/not reported risk

### Fixed effects (inverse variance)

Pooled proportion = 0.029815 (95% CI = 0.016743 to 0.04649)

### Non-combinability of studies

Cochran Q = 0.068195 (df = 1) P = 0.794

Moment-based estimate of between studies variance = 0

I<sub>2</sub> (inconsistency) = 0% (95% CI = \*% to \*%)

### Random effects (DerSimonian-Laird)

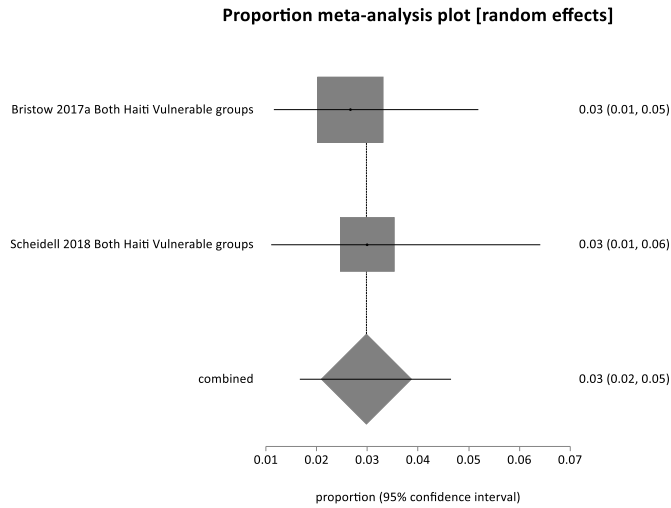
Pooled proportion = 0.029815 (95% CI = 0.016743 to 0.04649)

### Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = 1.510447 (92.5% CI = \* to \*) P = \*



## Supplementary Material Figure S17. Biological sex. Men with non-high risk

### Fixed effects (inverse variance)

Pooled proportion = 0.005063 (95% CI = 0.003652 to 0.006703)

### Non-combinability of studies

Cochran Q = 319.255435 (df = 3)  $P < 0.0001$

Moment-based estimate of between studies variance = 0.092593

$I^2$  (inconsistency) = 99.1% (95% CI = 98.8% to 99.2%)

### Random effects (DerSimonian-Laird)

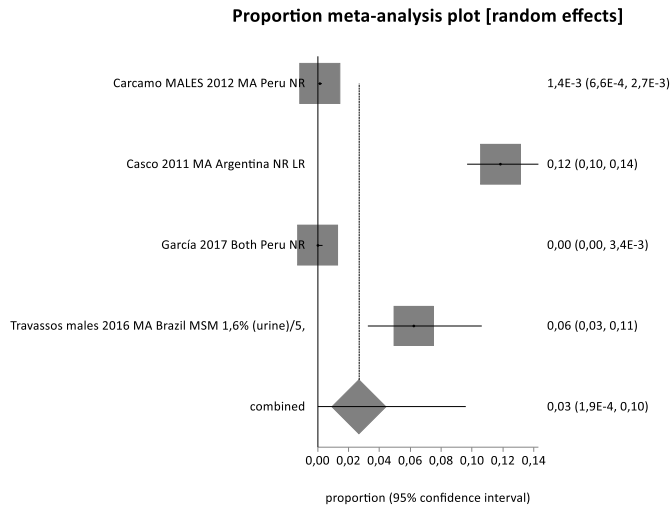
Pooled proportion = 0.026755 (95% CI = 0.000189 to 0.095914)

### Bias indicators

Begg-Mazumdar: Kendall's 0.333333  $P = 0.75$

Egger: bias = 6.261805 (95% CI = -6.98287 to 19.506481)  $P = 0.1789$

Harbord: bias = 26.876584 (92.5% CI = -53.180949 to 106.934117)  $P = 0.3672$



**Supplementary Material Figure S18. Biological sex. Men with high/not reported risk**

Fixed effects (inverse variance)

Pooled proportion = 0.080423 (95% CI = 0.07647 to 0.084467)

Non-combinability of studies

Cochran Q = 1.527,679721 (df = 44) P < 0.0001

Moment-based estimate of between studies variance = 0.086805

I<sub>2</sub> (inconsistency) = 97.1% (95% CI = 96.8% to 97.4%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.065727 (95% CI = 0.045556 to 0.089285)

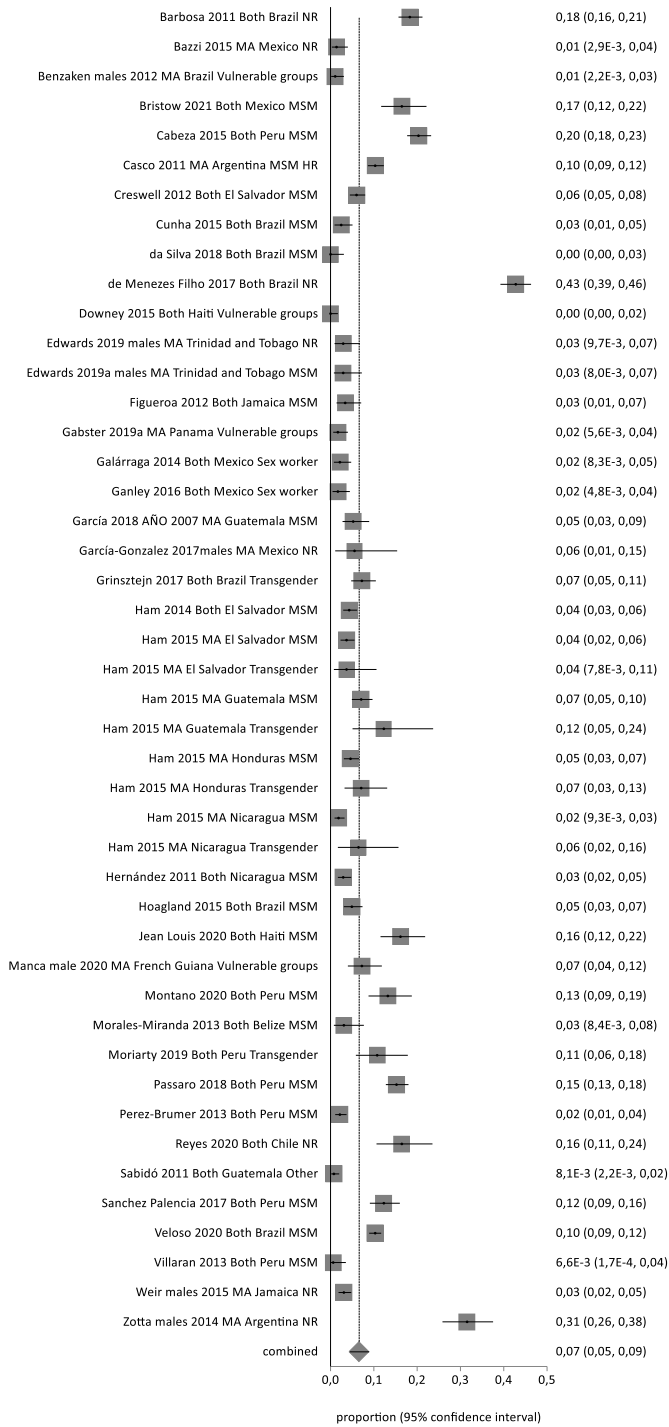
Bias indicators

Begg-Mazumdar: Kendall's 0.418182 P < 0.0001

Egger: bias = 6.381469 (95% CI = 3.449375 to 9.313563) P < 0.0001

Harbord: bias = -4.255989 (92.5% CI = -9.257303 to 0.745324) P = 0.1278

Proportion meta-analysis plot [random effects]



**Supplementary Material Figure S19. Biological sex. Women with non-high risk**

Fixed effects (inverse variance)

Pooled proportion = 0.008967 (95% CI = 0.007662 to 0.010373)

Non-combinability of studies

Cochran Q = 324.835149 (df = 27) P < 0.0001

Moment-based estimate of between studies variance = 0.018896

I<sub>2</sub> (inconsistency) = 91.7% (95% CI = 89.6% to 93.2%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.016055 (95% CI = 0.009757 to 0.023884)

Bias indicators

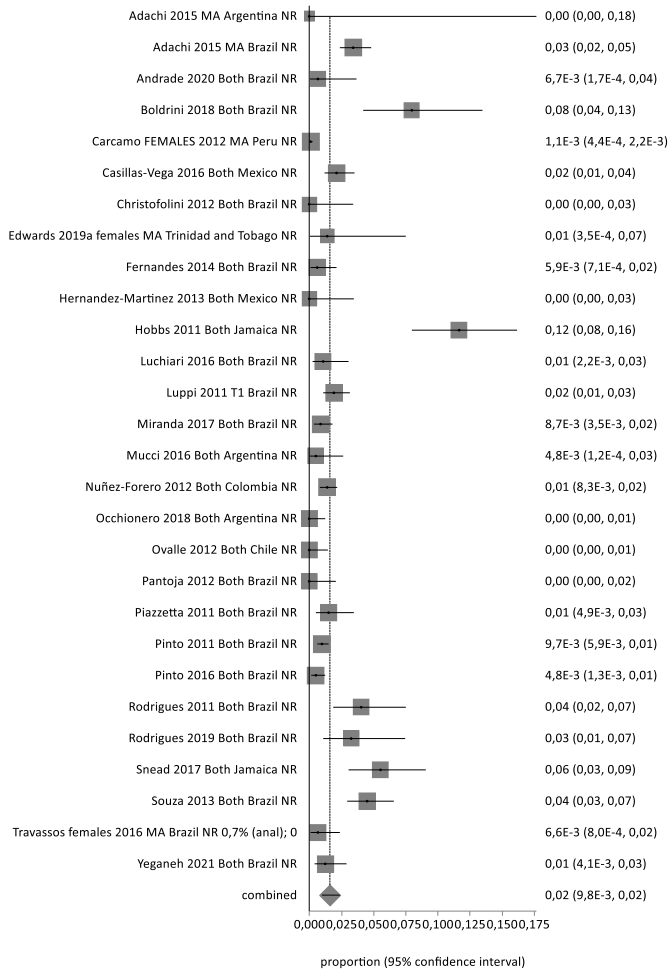
Begg-Mazumdar: Kendall's 0.185185 P = 0.1744

Egger: bias = 2.090217 (95% CI = 1.278495 to 2.901938) P < 0.0001

Harbord: bias = 3.663497 (92.5% CI = 0.657145 to 6.669849) P = 0.0324



Proportion meta-analysis plot [random effects]



**Supplementary Material Figure S20. Biological sex. Women with high/not reported risk**

Fixed effects (inverse variance)

Pooled proportion = 0.041205 (95% CI = 0.039173 to 0.043285)

Non-combinability of studies

Cochran Q = 903.531181 (df = 21)  $P < 0.0001$

Moment-based estimate of between studies variance = 0.039341

$I^2$  (inconsistency) = 97.7% (95% CI = 97.3% to 97.9%)

Random effects (DerSimonian-Laird)

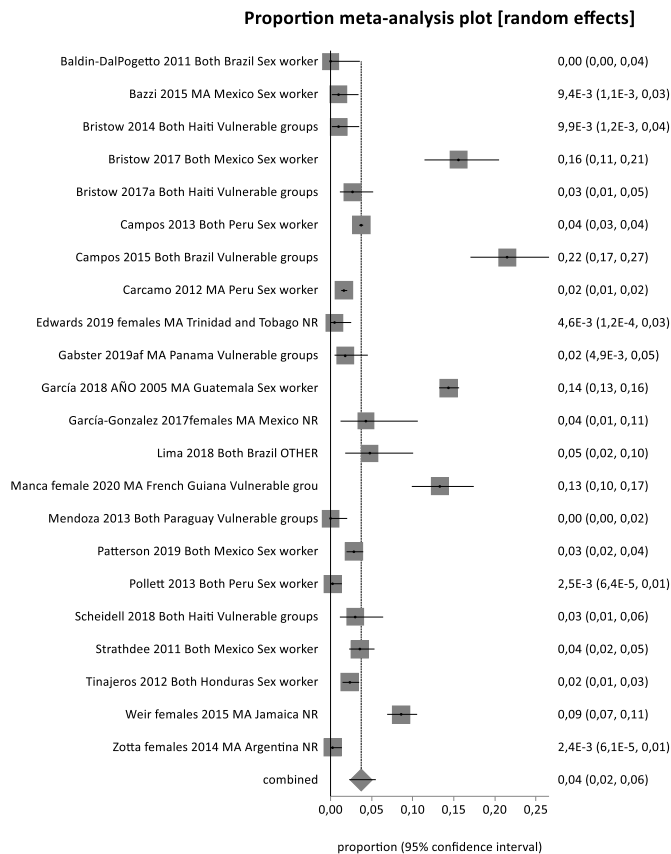
Pooled proportion = 0.037285 (95% CI = 0.022648 to 0.055382)

Bias indicators

Begg-Mazumdar: Kendall's 0.411255  $P = 0.0069$

Egger: bias = 1.291726 (95% CI = -2.625213 to 5.208665)  $P = 0.4994$

Harbord: bias = 1.127056 (92.5% CI = -3.523926 to 5.778038)  $P = 0.6539$



## Supplementary Material Figure S21. Risk categories. Sex workers

### Fixed effects (inverse variance)

Pooled proportion = 0.040566 (95% CI = 0.038467 to 0.042717)

### Non-combinability of studies

Cochran Q = 689.789898 (df = 12) P < 0.0001

Moment-based estimate of between studies variance = 0.036524

I<sub>2</sub> (inconsistency) = 98.3% (95% CI = 98% to 98.5%)

### Random effects (DerSimonian-Laird)

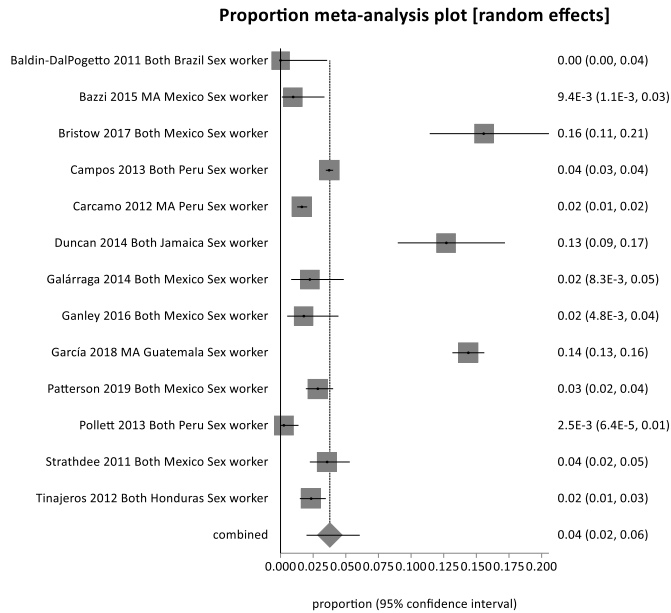
Pooled proportion = 0.037732 (95% CI = 0.019941 to 0.060873)

### Bias indicators

Begg-Mazumdar: Kendall's 0.25641 P = 0.2519

Egger: bias = 1.351749 (95% CI = -4.855828 to 7.559327) P = 0.6411

Harbord: bias = 1.351351 (92.5% CI = -6.405449 to 9.108152) P = 0.7384



**Supplementary Material Figure S22. Risk categories. Men who have sex with men**

Pooled proportion = 0.071141 (95% CI = 0.065959 to 0.076503)

Non-combinability of studies

Cochran Q = 273.871861 (df = 17) P < 0.0001

Moment-based estimate of between studies variance = 0.030979

I<sub>2</sub> (inconsistency) = 93.8% (95% CI = 92% to 95%)

Random effects (DerSimonian-Laird)

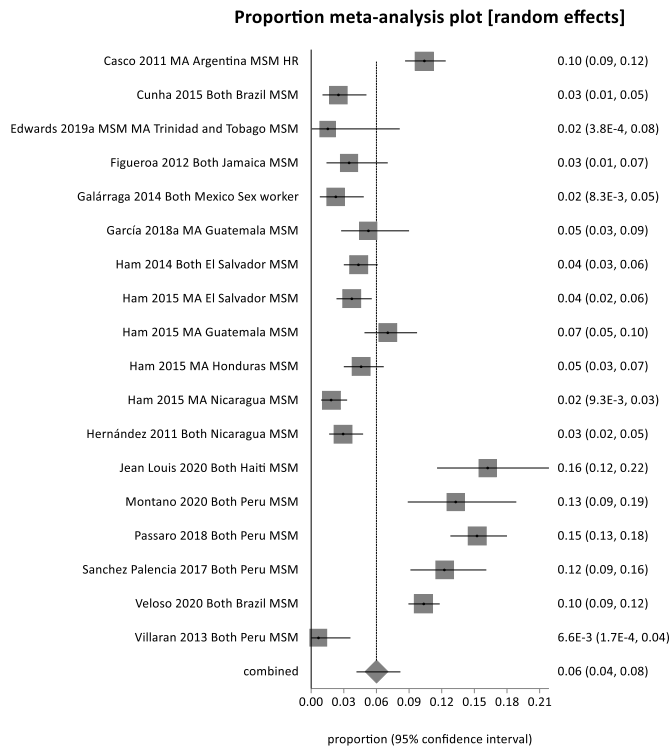
Pooled proportion = 0.060073 (95% CI = 0.041381 to 0.081982)

Bias indicators

Begg-Mazumdar: Kendall's 0.30719 P = 0.0813

Egger: bias = 4.148286 (95% CI = -1.254437 to 9.551008) P = 0.1231

Harbord: bias = -3.676583 (92.5% CI = -8.496702 to 1.143536) P = 0.1657



## Supplementary Material Figure S23. Risk categories. Transgender women

### Fixed effects (inverse variance)

Pooled proportion = 0.078868 (95% CI = 0.061153 to 0.098618)

### Non-combinability of studies

Cochran Q = 5.160877 (df = 5) P = 0.3966

Moment-based estimate of between studies variance = 0.000274

I<sub>2</sub> (inconsistency) = 3.1% (95% CI = 0% to 62.2%)

### Random effects (DerSimonian-Laird)

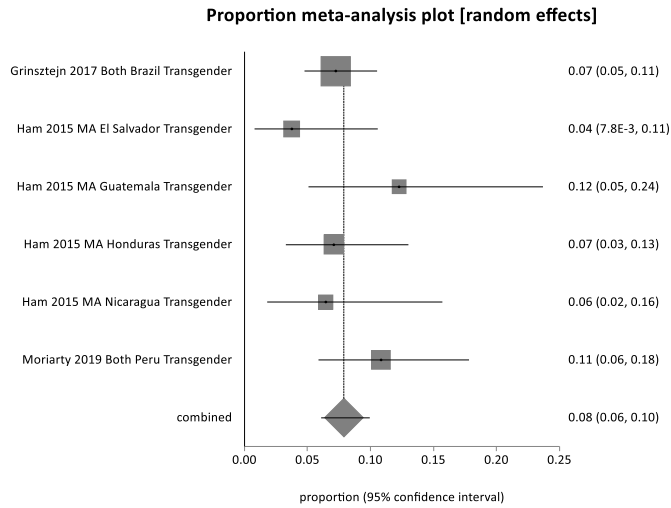
Pooled proportion = 0.079002 (95% CI = 0.060817 to 0.099335)

### Bias indicators

Begg-Mazumdar: Kendall's 0.066667 P > 0.9999

Egger: bias = 0.822058 (95% CI = -2.330975 to 3.97509) P = 0.5092

Harbord: bias = 0.449193 (92.5% CI = -2.968558 to 3.866943) P = 0.7689



**Supplementary Material Figure S24. Risk categories. Vulnerable groups**

Fixed effects (inverse variance)

Pooled proportion = 0.098096 (95% CI = 0.089193 to 0.107376)

Non-combinability of studies

Cochran Q = 934.184336 (df = 10) P < 0.0001

Moment-based estimate of between studies variance = 0.25394

I<sub>2</sub> (inconsistency) = 98.9% (95% CI = 98.8% to 99.1%)

Random effects (DerSimonian-Laird)

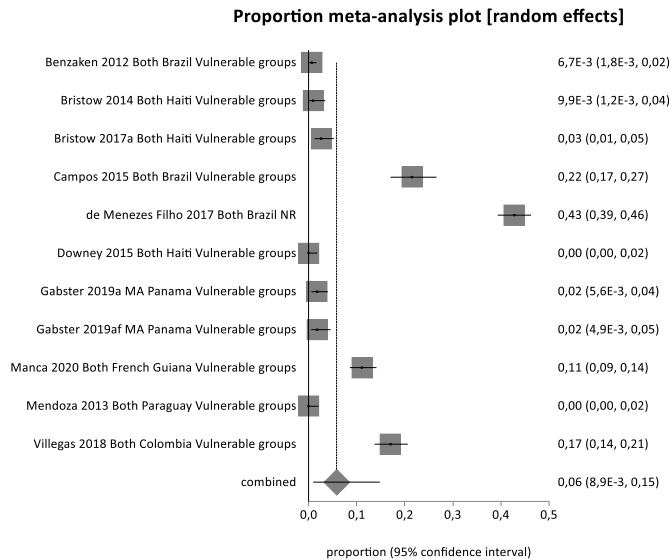
Pooled proportion = 0.05857 (95% CI = 0.008917 to 0.147588)

Bias indicators

Begg-Mazumdar: Kendall's 0.818182 P = 0.0001

Egger: bias = 12.541895 (95% CI = 4.366709 to 20.71708) P = 0.007

Harbord: bias = -27.11519 (92.5% CI = -48.954111 to -5.276269) P = 0.0339



**Supplementary Material Figure S25. Sample type. Urine sample. Women with non-high risk**

Fixed effects (inverse variance)

Pooled proportion = 0.012505 (95% CI = 0.010229 to 0.015005)

Non-combinability of studies

Cochran Q = 61.631074 (df = 10) P < 0.0001

Moment-based estimate of between studies variance = 0,007238

I<sub>2</sub> (inconsistency) = 83.8% (95% CI = 71.4% to 89.3%)

Random effects (DerSimonian-Laird)

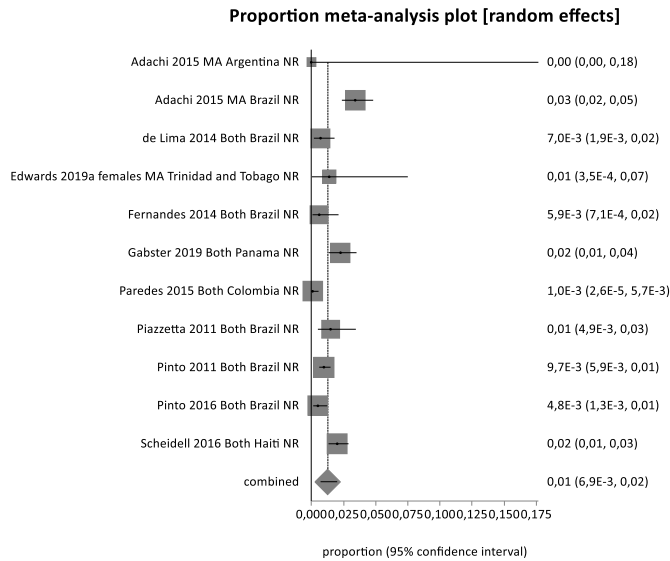
Pooled proportion = 0.012568 (95% CI = 0.00685 to 0.01998)

Bias indicators

Begg-Mazumdar: Kendall's 0.127273 P = 0.6481

Egger: bias = 2.333971 (95% CI = 0.017342 to 4.6506) P = 0.0486

Harbord: bias = -0.374398 (92.5% CI = -4.303191 to 3.554394) P = 0.8522



**Supplementary Material Figure S26. Sample type. Urine sample. Women with high/not reported risk**

Fixed effects (inverse variance)

Pooled proportion = 0.03353 (95% CI = 0.027225 to 0.040465)

Non-combinability of studies

Cochran Q = 47.568804 (df = 5) P < 0.0001

Moment-based estimate of between studies variance = 0.019702

I<sup>2</sup> (inconsistency) = 89.5% (95% CI = 79.3% to 93.5%)

Random effects (DerSimonian-Laird)

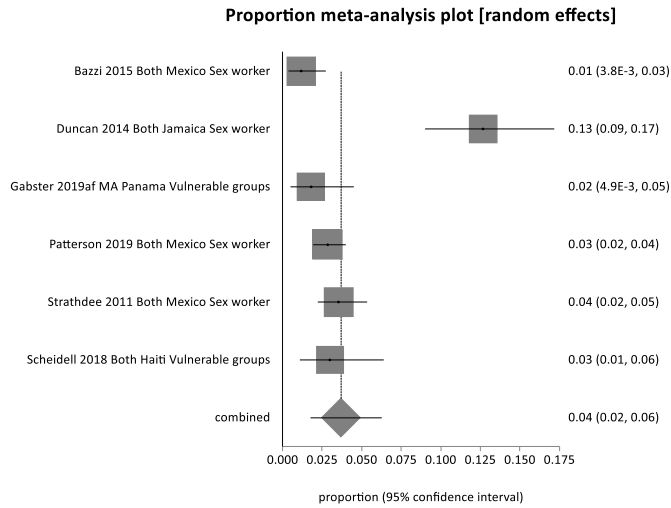
Pooled proportion = 0.036869 (95% CI = 0.017604 to 0.062825)

Bias indicators

Begg-Mazumdar: Kendall's 0.333333 P = 0.4694

Egger: bias = 3.788139 (95% CI = -2.363532 to 9.939811) P = 0.1625

Harbord: bias = 3.497402 (92.5% CI = -10.449375 to 17.44418) P = 0.5809





**Supplementary Material Figure S27. Sample type. Vaginal/endocervical sample. Women with non-high risk**

Fixed effects (inverse variance)

Pooled proportion = 0.019775 (95% CI = 0.017043 to 0.022706)

Non-combinability of studies

Cochran Q = 166.793947 (df = 22) P < 0.0001

Moment-based estimate of between studies variance = 0,016729

I<sub>2</sub> (inconsistency) = 86.8% (95% CI = 81.8% to 89.9%)

Random effects (DerSimonian-Laird)

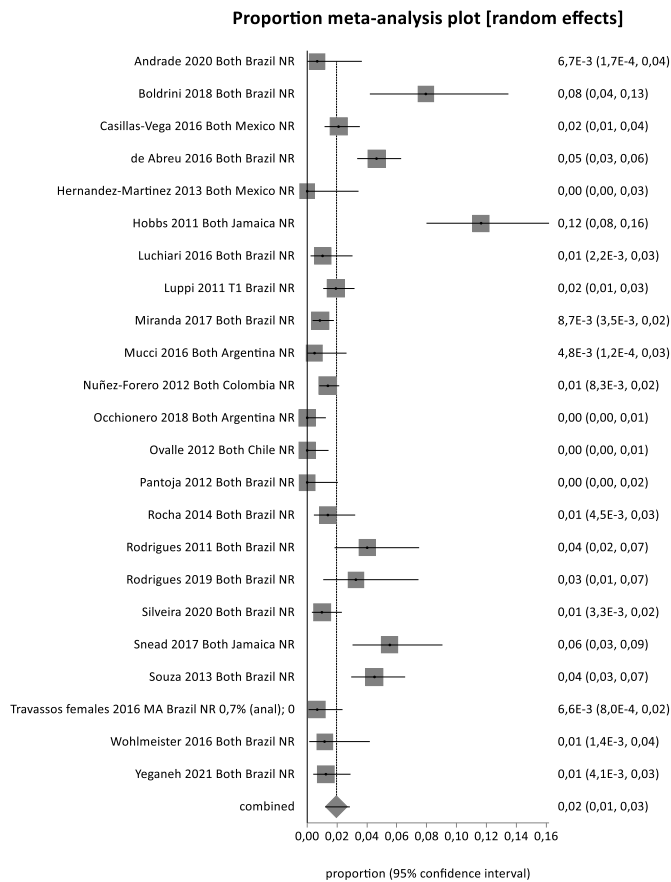
Pooled proportion = 0.019538 (95% CI = 0.0123 to 0.028403)

Bias indicators

Begg-Mazumdar: Kendall's 0.44664 P = 0.0024

Egger: bias = 3.37231 (95% CI = 1.692683 to 5.051937) P = 0.0004

Harbord: bias = 0.863183 (92.5% CI = -3.211478 to 4.937843) P = 0.6955



**Supplementary Material Figure S28. Sample type. Vaginal/endocervical sample. Women with high/not reported risk**

Fixed effects (inverse variance)

Pooled proportion = 0.040945 (95% CI = 0.038824 to 0.043121)

Non-combinability of studies

Cochran Q = 862.790748 (df = 15) P < 0.0001

Moment-based estimate of between studies variance = 0.047153

I<sub>2</sub> (inconsistency) = 98.3% (95% CI = 98% to 98.5%)

Random effects (DerSimonian-Laird)

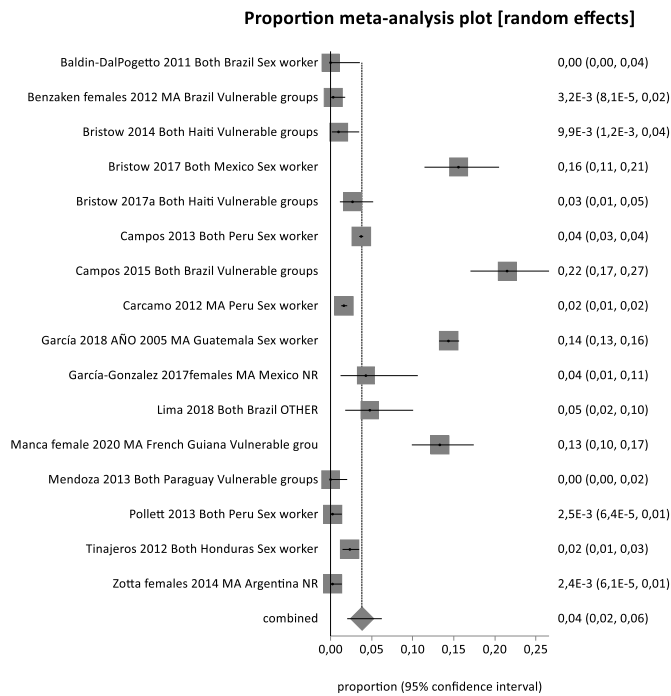
Pooled proportion = 0.038381 (95% CI = 0.020013 to 0.062378)

Bias indicators

Begg-Mazumdar: Kendall's 0,483333 P = 0.0086

Egger: bias = 1.378629 (95% CI = -4.167144 to 6.924401) P = 0.6023

Harbord: bias = 1.86011 (92.5% CI = -4.489311 to 8.209532) P = 0.582



**Supplementary Material Figure S29. Age. 15–29 years**

Fixed effects (inverse variance)

Pooled proportion = 0.008439 (95% CI = 0.007398 to 0.009548)

Non-combinability of studies

Cochran Q = 500.558889 (df = 10) P < 0.0001

Moment-based estimate of between studies variance = 0.029169

I<sub>2</sub> (inconsistency) = 98% (95% CI = 97.6% to 98.3%)

Random effects (DerSimonian-Laird)

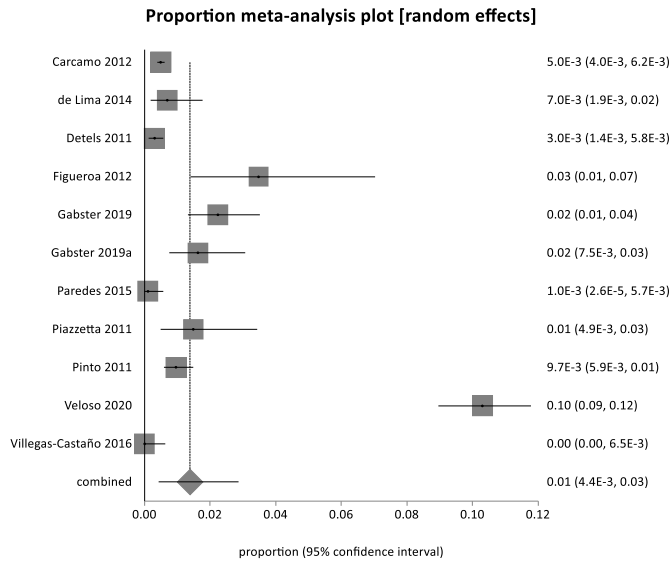
Pooled proportion = 0.013936 (95% CI = 0.004428 to 0.028642)

Bias indicators

Begg-Mazumdar: Kendall's 0.381818 P = 0.121

Egger: bias = 3.318433 (95% CI = -0.845929 to 7.482794) P = 0.105

Harbord: bias = 5.80984 (92.5% CI = -8.39909 to 20.018771) P = 0.4318



### Supplementary Material Figure S30. Age. 30–50 years

#### Fixed effects (inverse variance)

Pooled proportion = 0.00744 (95% CI = 0.003577 to 0.012689)

#### Non-combinability of studies

Cochran Q = 9.256797 (df = 2) P = 0.0098

Moment-based estimate of between studies variance = 0.008889

I<sub>2</sub> (inconsistency) = 78.4% (95% CI = 0% to 91.3%)

#### Random effects (DerSimonian-Laird)

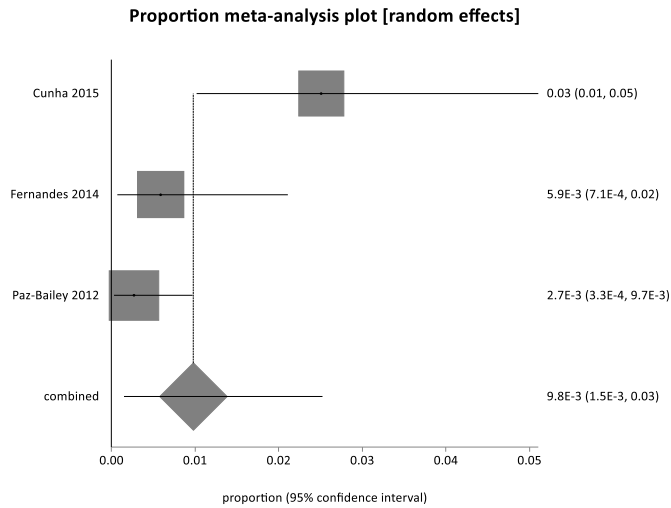
Pooled proportion = 0.009796 (95% CI = 0.001493 to 0.025263)

#### Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = 7.976086 (92.5% CI = -42.465189 to 58.417362) P = 0.4091



**Supplementary Material Figure S31. Age. 18–50 years**

Fixed effects (inverse variance)

Pooled proportion = 0.019709 (95% CI = 0.016193 to 0.023562)

Non-combinability of studies

Cochran Q = 101.686303 (df = 11) P < 0.0001

Moment-based estimate of between studies variance = 0,019149

I<sub>2</sub> (inconsistency) = 89.2% (95% CI = 83.4% to 92.3%)

Random effects (DerSimonian-Laird)

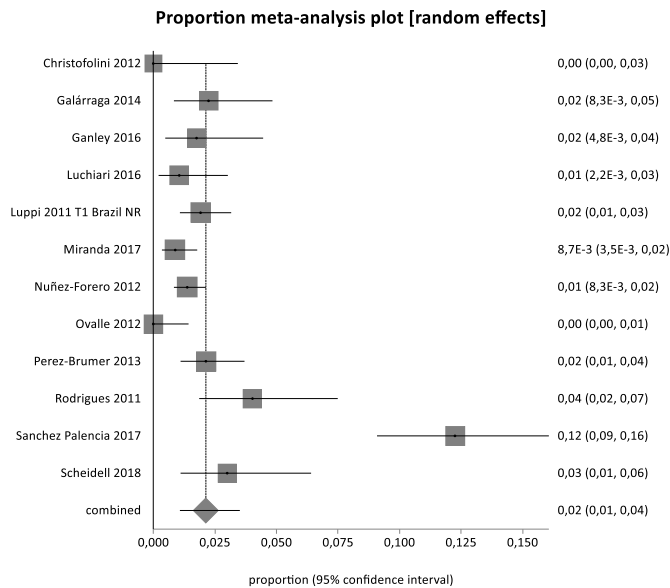
Pooled proportion = 0.021265 (95% CI = 0.010768 to 0.035202)

Bias indicators

Begg-Mazumdar: Kendall's 0.484848 P = 0.0311

Egger: bias = 3.109832 (95% CI = 0.503366 to 5.716299) P = 0.024

Harbord: bias = 2.221748 (92.5% CI = -5.39476 to 9.838257) P = 0.575



## Supplementary Material Figure S32. Studies reporting more than one anatomical site of infection.

### Gonocervicitis

#### Fixed effects (inverse variance)

Pooled proportion = 0.065241 (95% CI = 0.034936 to 0.104119)

#### Non-combinability of studies

Cochran Q = 20.361252 (df = 6) P = 0.0024

Moment-based estimate of between studies variance = 0.100446

I<sub>2</sub> (inconsistency) = 70.5% (95% CI = 13.4% to 84.7%)

#### Random effects (DerSimonian-Laird)

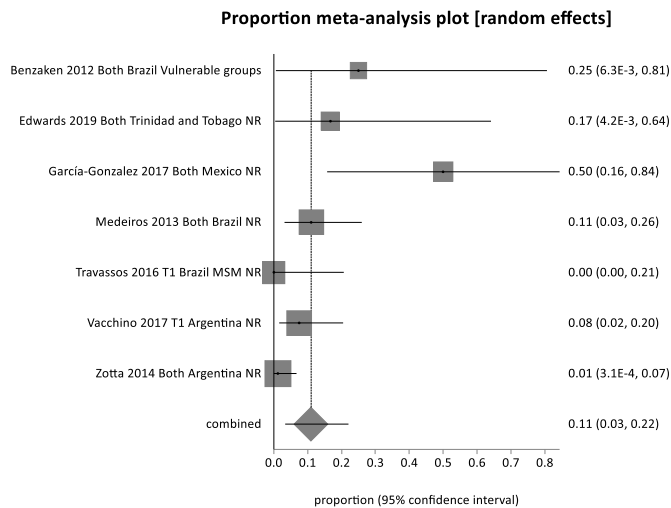
Pooled proportion = 0.109609 (95% CI = 0.034614 to 0.219617)

#### Bias indicators

Begg-Mazumdar: Kendall's 0.52381 P = 0.1361

Egger: bias = 1.679467 (95% CI = 0.364853 to 2.994082) P = 0.0219

Harbord: bias = 3.343638 (92.5% CI = -0.201762 to 6.889037) P = 0.0881



**Supplementary Material Figure S33. Studies reporting more than one anatomical site of infection.**

**Positive cervical swab**

Fixed effects (inverse variance)

Pooled proportion = 0.067966 (95% CI = 0.038995 to 0.104222)

Non-combinability of studies

Cochran Q = 0 (df = 0) P = \*

Moment-based estimate of between studies variance = 0

I<sub>2</sub> (inconsistency) = % (95% CI = % to %)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.067966 (95% CI = 0.038995 to 0.104222)

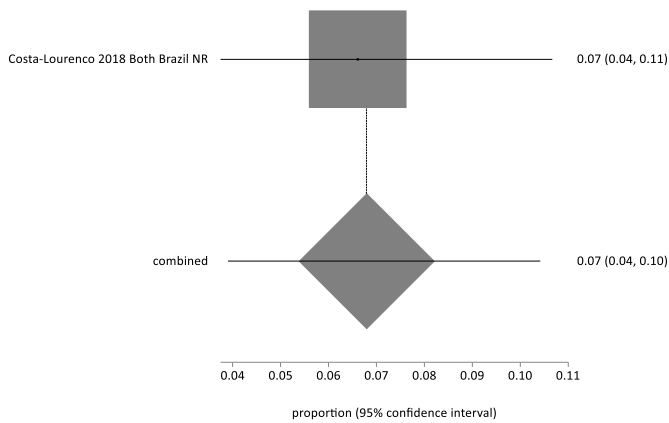
Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = \* (92.5% CI = \* to \*) P = \*

**Proportion meta-analysis plot [random effects]**



**Supplementary Material Figure S34. Studies reporting more than one anatomical site of infection.**

**Gono-urethritis**

Fixed effects (inverse variance)

Pooled proportion = 0.594601 (95% CI = 0.585466 to 0.603705)

Non-combinability of studies

Cochran Q = 9,284.134223 (df = 17) P < 0.0001

Moment-based estimate of between studies variance = 1.401053

I<sub>2</sub> (inconsistency) = 99.8% (95% CI = 99.8% to 99.8%)

Random effects (DerSimonian-Laird)

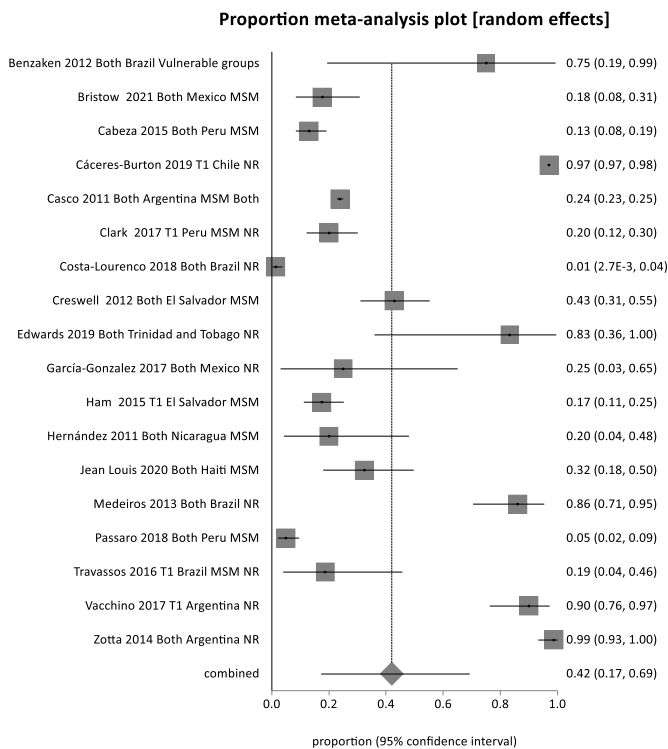
Pooled proportion = 0.42026 (95% CI = 0.172219 to 0.692219)

Bias indicators

Begg-Mazumdar: Kendall's 0.385621 P = 0.0264

Egger: bias = -16.71634 (95% CI = -37.603803 to 4.171123) P = 0.1091

Harbord: bias = -3.435706 (92.5% CI = -14.362001 to 7.490589) P = 0.5577





## Supplementary Material Figure S35. Studies reporting more than one anatomical site of infection.

### Positive urethral swab/urine sample

#### Fixed effects (inverse variance)

Pooled proportion = 0.003622 (95% CI = 0.00224 to 0.005332)

#### Non-combinability of studies

Cochran Q = 478.437165 (df = 4) P < 0.0001

Moment-based estimate of between studies variance = 0.549192

I<sup>2</sup> (inconsistency) = 99.2% (95% CI = 99% to 99.3%)

#### Random effects (DerSimonian-Laird)

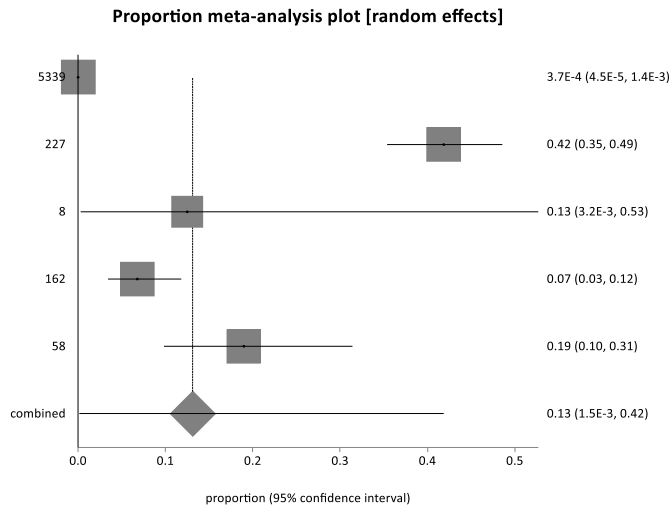
Pooled proportion = 0.13143 (95% CI = 0.001489 to 0.418335)

#### Bias indicators

Begg-Mazumdar: Kendall's 0.2 P = 0.8167

Egger: bias = 5.023264 (95% CI = -3.139493 to 13.186022) P = 0.1451

Harbord: bias = 38.914525 (92.5% CI = -36.617389 to 114.446439) P = 0.2611



**Supplementary Material Figure S36. Studies reporting more than one anatomical site of infection.**

**Gono-rectitis**

Fixed effects (inverse variance)

Pooled proportion = 0.044475 (95% CI = 0.039302 to 0.049951)

Non-combinability of studies

Cochran Q = 1,724.251472 (df = 11) P < 0.0001

Moment-based estimate of between studies variance = 0.87045

I<sup>2</sup> (inconsistency) = 99.4% (95% CI = 99.3% to 99.4%)

Random effects (DerSimonian-Laird)

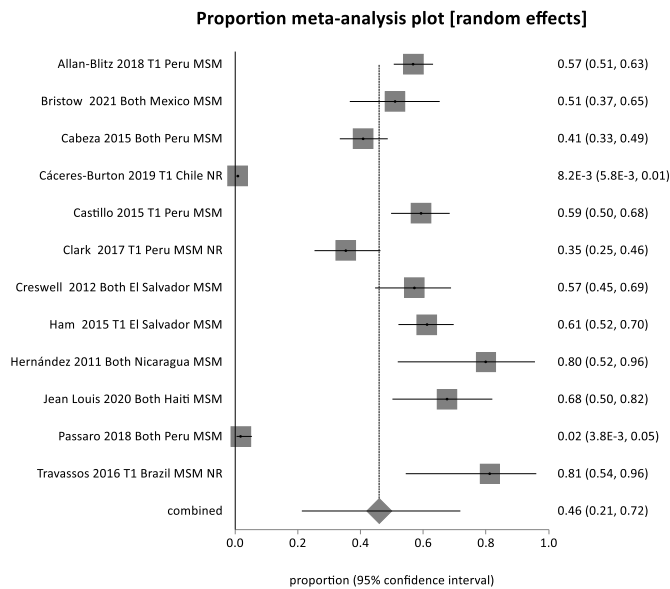
Pooled proportion = 0.459817 (95% CI = 0.211943 to 0.71886)

Bias indicators

Begg-Mazumdar: Kendall's -0.060606 P = 0.7373

Egger: bias = 9.40069 (95% CI = 6.423898 to 12.377482) P < 0.0001

Harbord: bias = 23.96246 (92.5% CI = 14.982495 to 32.942426) P = 0.0003



**Supplementary Material Figure S37. Studies reporting more than one anatomical site of infection.**

**Positive rectal swab**

Fixed effects (inverse variance)

Pooled proportion = 0.181632 (95% CI = 0.171807 to 0.191669)

Non-combinability of studies

Cochran Q = 142.550667 (df = 3) P < 0.0001

Moment-based estimate of between studies variance = 0.164535

I<sub>2</sub> (inconsistency) = 97.9% (95% CI = 97% to 98.4%)

Random effects (DerSimonian-Laird)

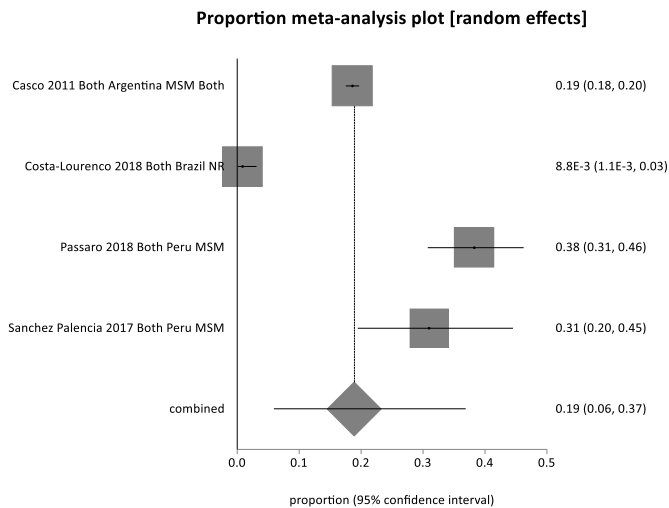
Pooled proportion = 0.189189 (95% CI = 0.059878 to 0.368927)

Bias indicators

Begg-Mazumdar: Kendall's -0.333333 P = 0.3333

Egger: bias = 1.995232 (95% CI = -46.300745 to 50.291209) P = 0.8753

Harbord: bias = 1.059069 (92.5% CI = -15.768682 to 17.88682) P = 0.8486



## Supplementary Material Figure S38. Studies reporting more than one anatomical site of infection.

### Gono-pharyngitis

#### Fixed effects (inverse variance)

Pooled proportion = 0.050246 (95% CI = 0.044688 to 0.056112)

#### Non-combinability of studies

Cochran Q = 1,043.213239 (df = 7) P < 0.0001

Moment-based estimate of between studies variance = 0.59723

I<sup>2</sup> (inconsistency) = 99.3% (95% CI = 99.2% to 99.4%)

#### Random effects (DerSimonian-Laird)

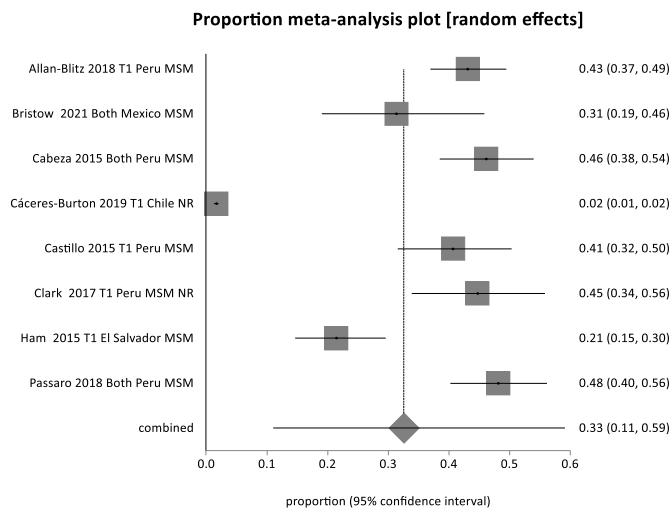
Pooled proportion = 0.326204 (95% CI = 0.110185 to 0.591517)

#### Bias indicators

Begg-Mazumdar: Kendall's -0.142857 P = 0.5484

Egger: bias = 9.098992 (95% CI = 5.809111 to 12.388874) P = 0.0005

Harbord: bias = 23.314506 (92.5% CI = 13.718283 to 32.910729) P = 0.002



## Supplementary Material Figure S39. Studies reporting more than one anatomical site of infection.

### Positive pharyngeal swab

#### Fixed effects (inverse variance)

Pooled proportion = 0.196931 (95% CI = 0.186431 to 0.207646)

#### Non-combinability of studies

Cochran Q = 25.07914 (df = 1) P < 0.0001

Moment-based estimate of between studies variance = 0.208059

I<sup>2</sup> (inconsistency) = 96% (95% CI = \*% to \*%)

#### Random effects (DerSimonian-Laird)

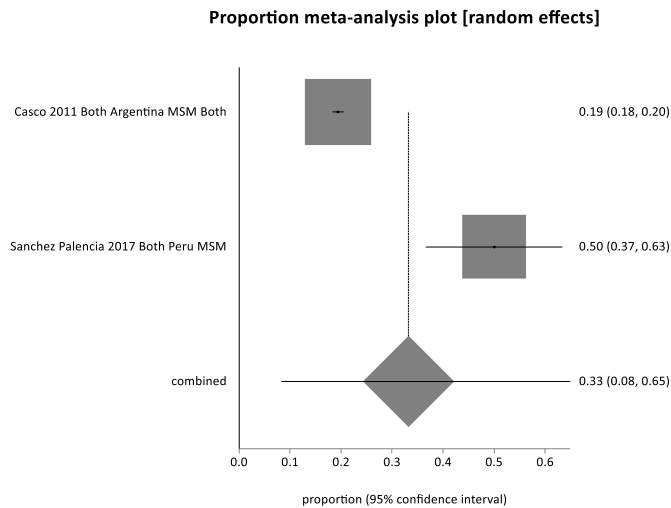
Pooled proportion = 0.332311 (95% CI = 0.082903 to 0.649028)

#### Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = 6.540975 (92.5% CI = \* to \*) P = \*



**Supplementary Material Figure S40. Studies reporting more than one anatomical site of infection.**

**Gono conjunctivitis**

Fixed effects (inverse variance)

Pooled proportion = 0.004468 (95% CI = 0.002768 to 0.006569)

Non-combinability of studies

Cochran Q = 5.111542 (df = 2) P = 0.0776

Moment-based estimate of between studies variance = 0.020455

I<sub>2</sub> (inconsistency) = 60.9% (95% CI = 0% to 86.9%)

Random effects (DerSimonian-Laird)

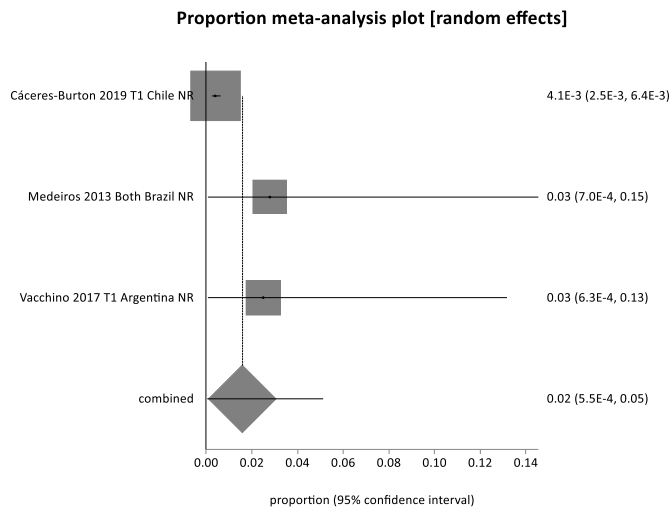
Pooled proportion = 0.015777 (95% CI = 0.00055 to 0.051279)

Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = 2.262194 (92.5% CI = 1.619113 to 2.905274) P = 0.0214



## Supplementary Material Figure S41. Asymptomatic carriers

### Fixed effects (inverse variance)

Pooled proportion = 0.613384 (95% CI = 0.597546 to 0.629103)

### Non-combinability of studies

Cochran Q = 264.84065 (df = 3) P < 0.0001

Moment-based estimate of between studies variance = 0.404709

I<sup>2</sup> (inconsistency) = 98.9% (95% CI = 98.5% to 99.1%)

### Random effects (DerSimonian-Laird)

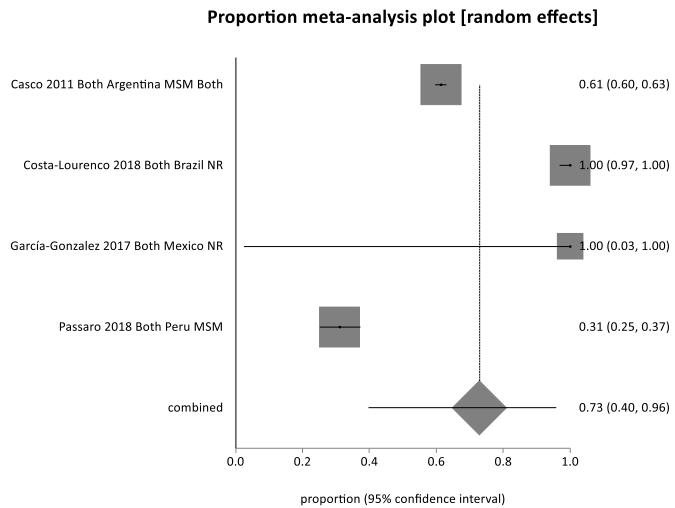
Pooled proportion = 0.728621 (95% CI = 0.397316 to 0.957725)

### Bias indicators

Begg-Mazumdar: Kendall's  $\tau$  P = 0.75

Egger: bias = -7.8612 (95% CI = -96.307914 to 80.585514) P = 0.739

Harbord: bias = 0.460977 (92.5% CI = -21.102569 to 22.024523) P = 0.948



**Supplementary Material Figure S42. Incidence: Gonorrhoea cases per 100 person-years.**

**Summary meta-analysis**

Study	* Difference	SE	Approximate 95% CI		
1	2.53	0.798484	0.96	4.09	Bazzi 2015 MA Mexico Sex worker
2	0.89	0.456641	0.12	1.91	Bazzi 2015 MA Mexico NR
3	3.93	1.517885	1.88	7.83	Ganley 2016 Both Mexico Sex worker

CI, confidence interval; NR, not reported

Stratum	Standardized effect	Standard Error	% Weights (fixed, random)		
1	2.53	0.798484	23.071549	35.451906	Bazzi 2015 MA Mexico Sex worker
2	0.89	0.456641	70.543883	45.385885	Bazzi 2015 MA Mexico NR
3	3.93	1.517885	6.384568	19.162208	Ganley 2016 Both Mexico Sex worker

Fixed effects (inverse variance)

Pooled \* difference = 1.462464 (95% CI = 0.71075 to 2.214178)

Z (test \* Difference differs from 0) = 3.813121 P = 0.0001

Non-combinability of studies

Cochran Q = 6.001769 (df = 2) P = 0.0497

Moment-based estimate of between studies variance = 1.322672

I<sub>2</sub> (inconsistency) = 66.7% (95% CI = 0% to 88.3%)

Random effects (DerSimonian-Laird)

Pooled \* difference = 2.053942 (95% CI = 0.42005 to 3.687835)

Z (test \* Difference) = 2.463842 P = 0.0137

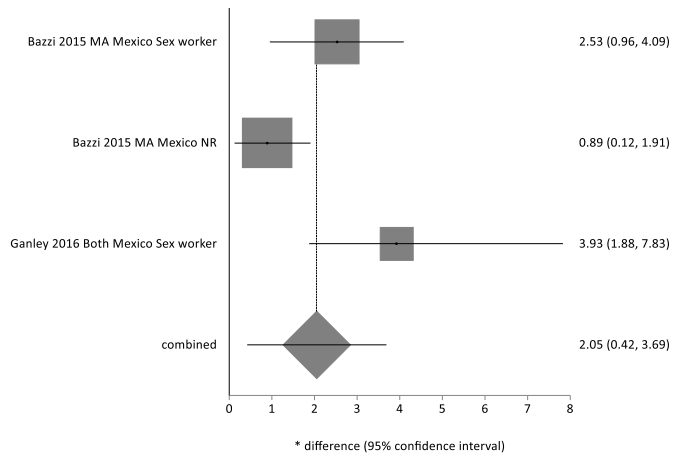
Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*



Summary meta-analysis plot [random effects]



**Supplementary Material Figure S43. Burden of gonorrhoea in five years. Period 2010–2019. Prevalence of gonorrhoea in the non-high-risk population from 2010 to 2014**

Fixed effects (inverse variance)

Pooled proportion = 0.018205 (95% CI = 0.016335 to 0.020174)

Non-combinability of studies

Cochran Q = 1.370,764157 (df = 20) P < 0.0001

Moment-based estimate of between studies variance = 0.094343

I<sub>2</sub> (inconsistency) = 98.5% (95% CI = 98.4% to 98.7%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.027315 (95% CI = 0.009848 to 0.053166)

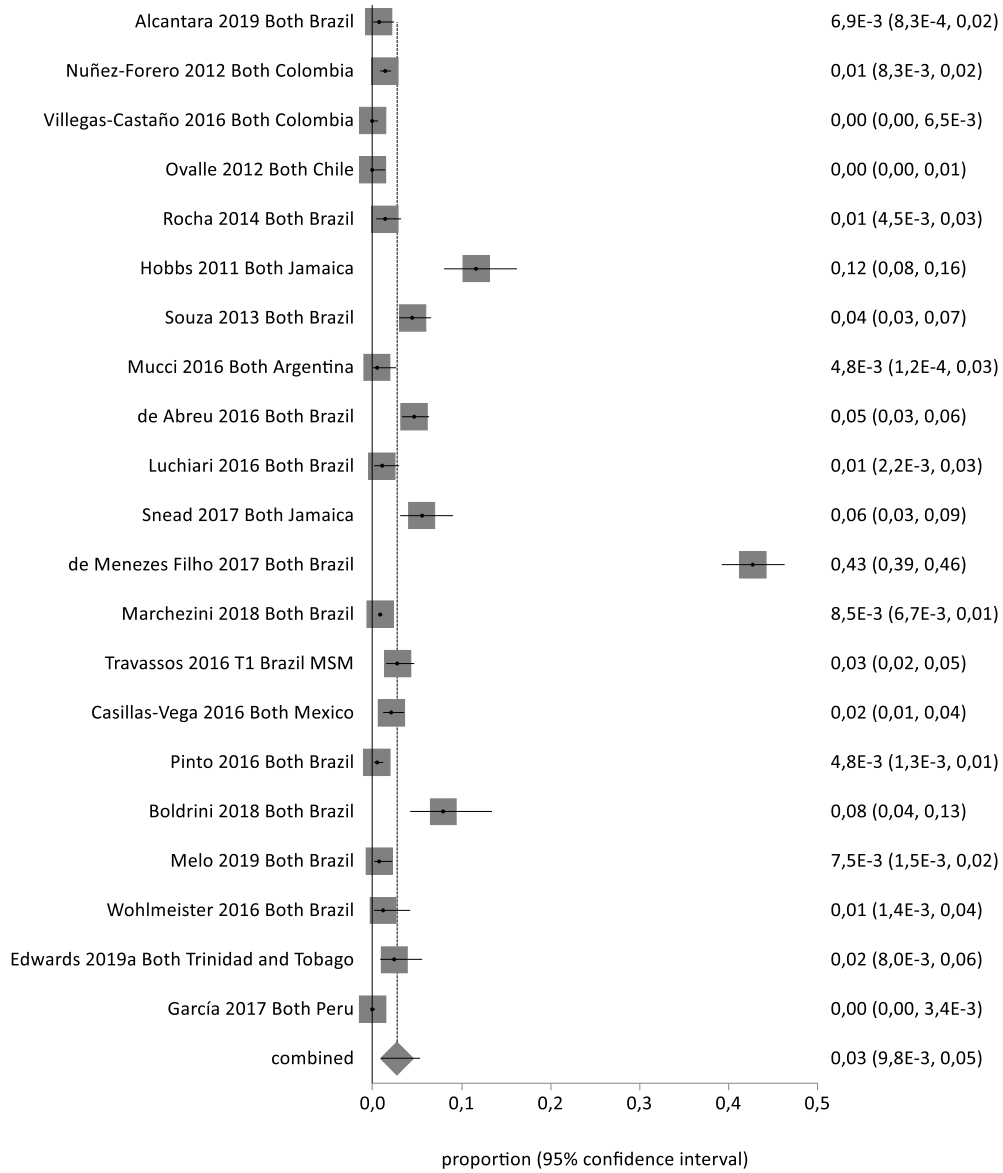
Bias indicators

Begg-Mazumdar: Kendall's 0.495238 P = 0.0013

Egger: bias = 4.381767 (95% CI = 1.21027 to 7.553264) P = 0.0093

Harbord: bias = 5.950532 (92.5% CI = -8.610824 to 20.511888) P = 0.4509

### Proportion meta-analysis plot [random effects]



**Supplementary Material Figure S44. Burden of gonorrhoea in five years. Period 2010–2019. Prevalence of gonorrhoea in the non-high-risk population from 2015 to 2019**

Fixed effects (inverse variance)

Pooled proportion = 0.014857 (95% CI = 0.010716 to 0.019661)

Non-combinability of studies

Cochran Q = 8.752636 (df = 5) P = 0.1193

Moment-based estimate of between studies variance = 0.001715

I<sub>2</sub> (inconsistency) = 42.9% (95% CI = 0% to 75.9%)

Random effects (DerSimonian-Laird)

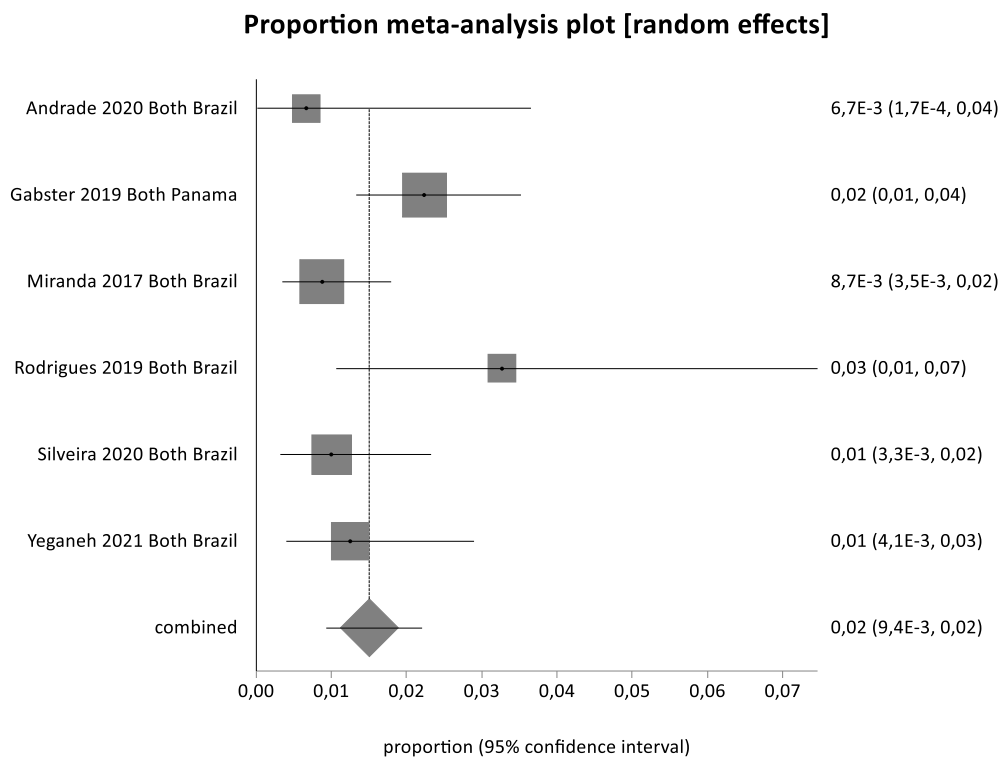
Pooled proportion = 0.015054 (95% CI = 0.009385 to 0.022031)

Bias indicators

Begg-Mazumdar: Kendall's 0.333333 P = 0.4694

Egger: bias = 1.29618 (95% CI = -2.0009 to 4.59326) P = 0.3364

Harbord: bias = 0.541323 (92.5% CI = -4.513584 to 5.596229) P = 0.8105



**Supplementary Material Figure S45. Burden of gonorrhoea in five years. Period 2010–2019. Prevalence of gonorrhoea in the high-risk population from 2010 to 2014**

Fixed effects (inverse variance)

Pooled proportion = 0.074555 (95% CI = 0.067931 to 0.081461)

Non-combinability of studies

Cochran Q = 477.64544 (df = 14) P < 0.0001

Moment-based estimate of between studies variance = 0.089203

I<sub>2</sub> (inconsistency) = 97.1% (95% CI = 96.5% to 97.5%)

Random effects (DerSimonian-Laird)

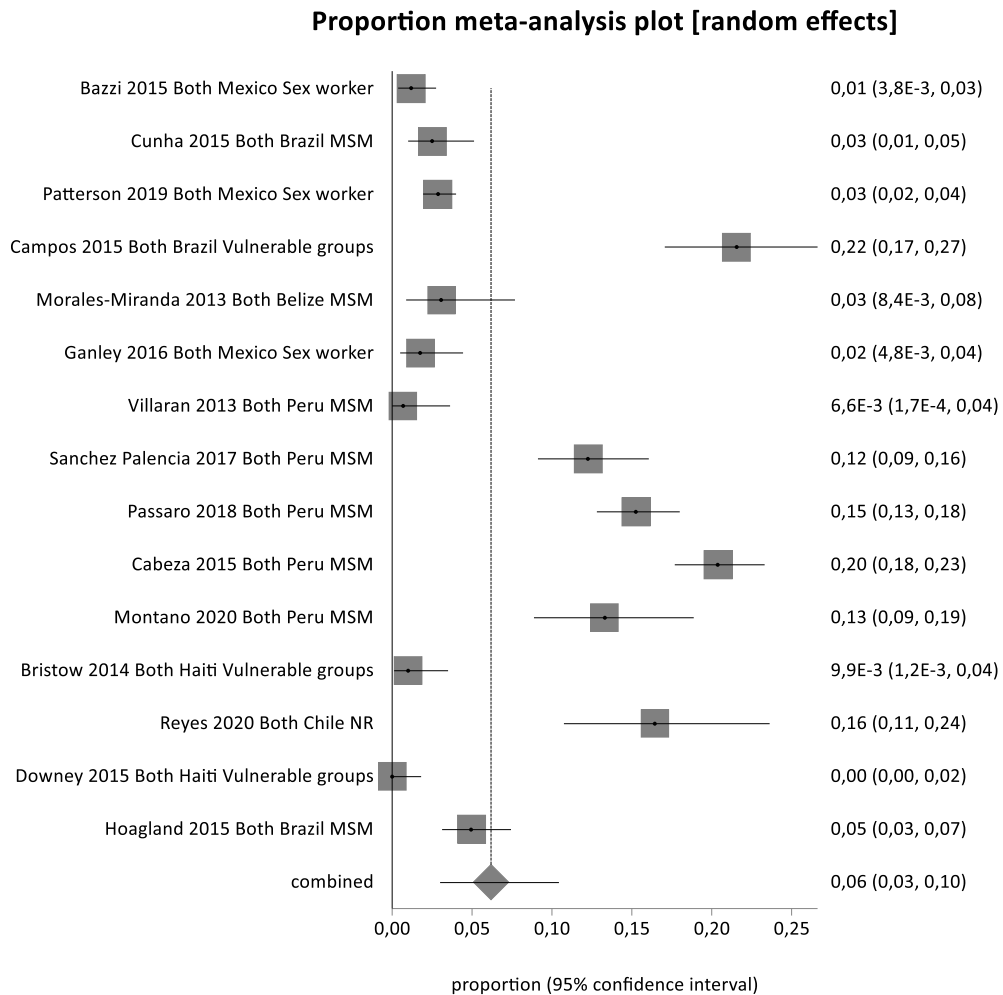
Pooled proportion = 0.06175 (95% CI = 0.029954 to 0.103967)

Bias indicators

Begg-Mazumdar: Kendall's 0.6 P = 0.0013

Egger: bias = 7.996518 (95% CI = 3.578907 to 12.41413) P = 0.0018

Harbord: bias = -4.008238 (92.5% CI = -13.161985 to 5.14551) P = 0.4121



**Supplementary Material Figure S46. Burden of gonorrhoea in five years. Period 2010–2019. Prevalence of gonorrhoea in the high-risk population from 2015 to 2019**

Fixed effects (inverse variance)

Pooled proportion = 0.082805 (95% CI = 0.074663 to 0.091328)

Non-combinability of studies

Cochran Q = 139.531511 (df = 8) P < 0.0001

Moment-based estimate of between studies variance = 0.041327

I<sub>2</sub> (inconsistency) = 94.3% (95% CI = 91.7% to 95.7%)

Random effects (DerSimonian-Laird)

Pooled proportion = 0.074205 (95% CI = 0.041994 to 0.114631)

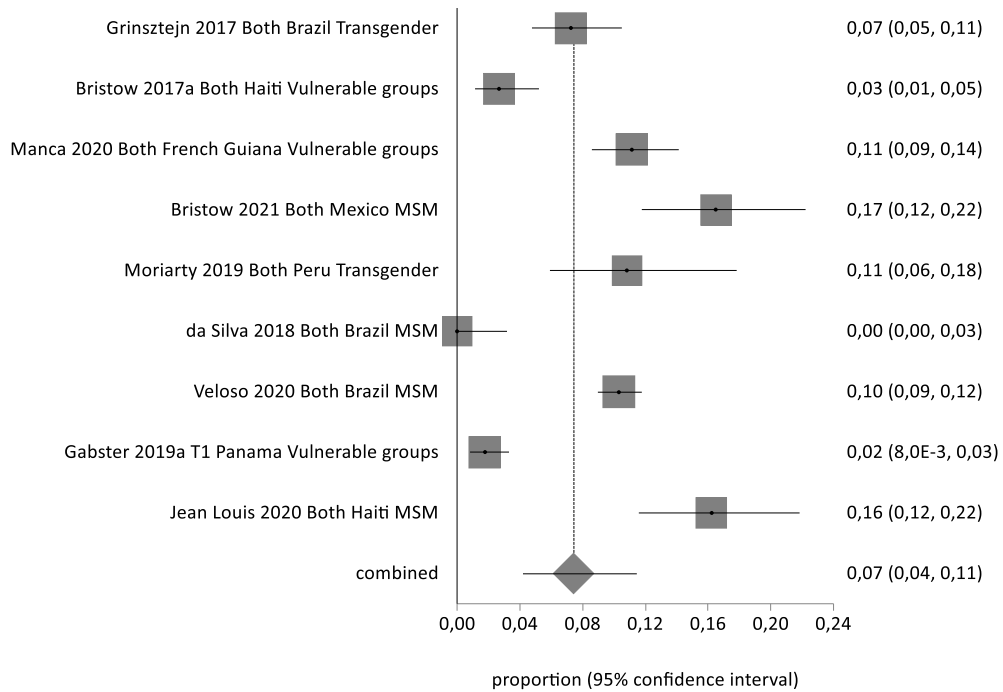
Bias indicators

Begg-Mazumdar: Kendall's 0.222222 P = 0.4767

Egger: bias = 5.230363 (95% CI = -2.261257 to 12.721983) P = 0.1427

Harbord: bias = -1.038545 (92.5% CI = -7.21777 to 5.14068) P = 0.7358

**Proportion meta-analysis plot [random effects]**



**Supplementary Material Figure S47. Sensitivity analysis. Studies with low risk of bias and non-high-risk population**

Fixed effects (inverse variance)

Pooled proportion = 0.002484 (95% CI = 0.001775 to 0.003312)

Non-combinability of studies

Cochran Q = 65.415069 (df = 4)  $P < 0,0001$

Moment-based estimate of between studies variance = 0.005682

$I^2$  (inconsistency) = 93.9% (95% CI = 89.2% to 96%)

Random effects (DerSimonian-Laird)

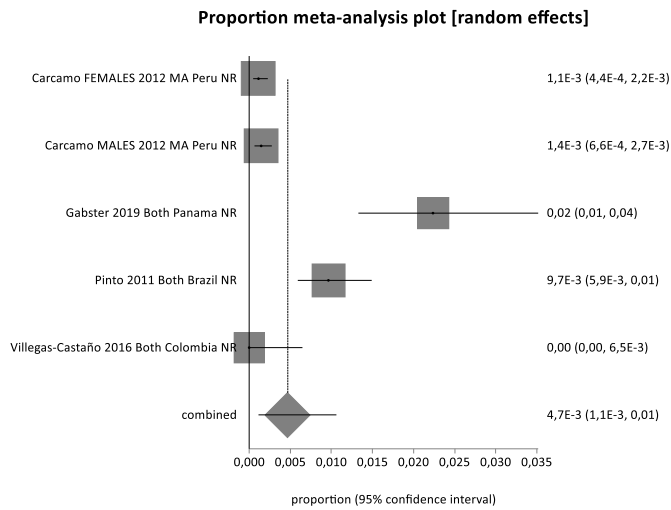
Pooled proportion = 0.004651 (95% CI = 0.001104 to 0.010625)

Bias indicators

Begg-Mazumdar: Kendall's 0.8  $P = 0.0833$

Egger: bias = 3.063876 (95% CI = -1.407425 to 7.535177)  $P = 0.1173$

Harbord: bias = 9.209387 (92.5% CI = -6.993954 to 25.412729)  $P = 0.225$



**Supplementary Material Figure S48. Sensitivity analysis. Studies with low risk of bias and high-risk population**

Fixed effects (inverse variance)

Pooled proportion = 0.01661 (95% CI = 0.013181 to 0.020427)

Non-combinability of studies

Cochran Q = 0.244741 (df = 2) P = 0.8848

Moment-based estimate of between studies variance = 0

I<sub>2</sub> (inconsistency) = 0% (95% CI = 0% to 72.9%)

Random effects (DerSimonian-Laird)

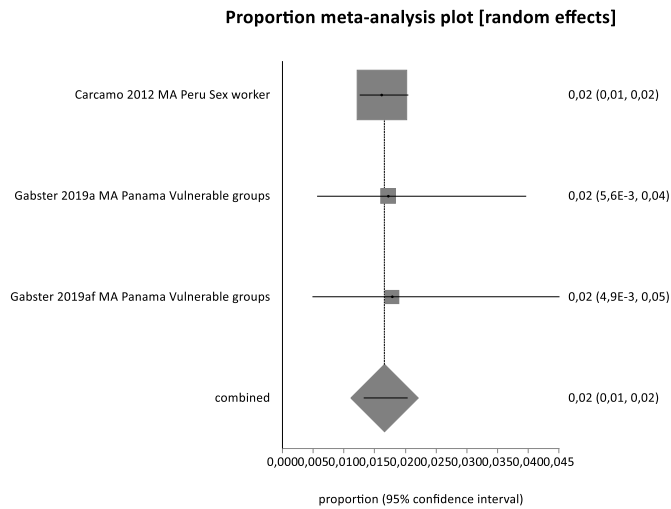
Pooled proportion = 0.01661 (95% CI = 0.013181 to 0.020427)

Bias indicators

Begg-Mazumdar: Kendall's <too few strata> P = \*

Egger: bias = \* (95% CI = \* to \*) P = \*

Harbord: bias = 0.218928 (92.5% CI = -0.11104 to 0.548897) P = 0.1124





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