QATAR UNIVERSITY

COLLEGE OF HEALTH SCIENCES

EPIDEMIOLOGY OF CHLAMYDIA TRACHOMATIS IN LATIN AMERICA AND THE CARIBBEAN: SYSTEMATIC REVIEW, META-ANALYSES, AND META-REGRESSIONS

BY

RASHA ABU-EL-RUZ

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COMMITTEE PAGE

The members of the Committee approve the Thesis of

Rasha Abu-El-Ruz defended on

10/05/202210/05/202210/05/202210/05/202210/05/202210/05/202210/05/202210/05/2022.

_____
Dr. Karam I. I. Adawi
Thesis/Dissertation Supervisor

_____
Prof. Laith Jamal Abu Raddad
Committee Member

_____
Dr. Gheyath Khaled Nasrallah
Committee Member

Approved:

_____

Hanan Abdul Rahim, Dean, College of Health Science

ABSTRACT

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Title: Epidemiology of Chlamydia trachomatis in Latin America and the Caribbean: Systematic Review, Meta-Analyses, and Meta-Regressions

Supervisor of Thesis: Dr. Karam I. I. Adawi.

Background: *Chlamydia trachomatis* (CT) is a Sexually Transmitted Disease (STD); it leads to health complications and infertility if not treated.

Aim: To provide a comprehensive epidemiological assessment of CT in Latin America and the Caribbean (LAC).

Methods: This study followed Cochran and PRISMA guidelines. We conducted the search in PubMed, Embase, and LILACS databases. We estimated the pooled-mean CT prevalence using random-effects meta-analyses. We conducted random-effects meta-regressions to identify sources of heterogeneity and possible predictors of high prevalence.

Results: The pooled-mean urogenital CT prevalence was 8.2% (95% CI: 7.5-9.1) for general populations, 14.0% (95%CI: 12.7-15.4) for female sex workers, 10.8% (95% CI: 8.4-13.4) for men who have sex with men, male sex workers, and transgenders, 16.1% (95% CI: 12.6-19.8) for symptomatic women, 25.4 (95% CI: 18.6-38.5) for symptomatic men, 9.7% (95%CI: 6.1-14) for HIV-positive individuals and individuals in HIV-discordant couples, and 11.9% (95 CI: 8.5-15.8) for STI clinic attendees. Urogenital CT prevalence appears to decrease with age, to be higher in women compared to men, and to increase by 1% yearly. Anorectal CT appears to be higher in men compared to women but shows no temporal trend.

Discussion: Urogenital CT prevalence among general populations is higher than that in other world regions.

Conclusion: LAC is burdened by CT infection. Public health response in LAC region is required to effectively tackle CT infection.

Keywords: *Chlamydia trachomatis*, Latin America and Caribbean, Sexually Transmitted Diseases.

DEDICATION

This work is sincerely, genuinely and principally dedicated to God, who drew my destiny with mercy

To my soulmate in heaven, my mom "Wesam", for her one and only unconditional love

To my dad "Sabri", for always believing in me and supporting me

To the love of my life, my husband "Mohamad", for all the sacrifices and for always backing me up with love & containment

To my precious kids "Sara and Adam", for the gorgeous means you bring to my life

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ABBREVIATIONS

CDC: Center of Diseases Control

CT: *Chlamydia trachomatis* (standard name of bacteria)

DFA: Direct Fluorescent Antibody

ELISA: Enzyme-Linked Immunosorbent Assay

FSWs: Female Sex Workers

GTI: Genital Tract Infection

GUM: Genitourinary Medicine

HIV: Human Immunodeficiency Virus

HPV: Human Papillomavirus

IgA: Immunoglobulin Type A (first line defense in mucous membrane)

IgG: Immunoglobulin Type G (detects ever infection)

IgM: Immunoglobulin Type M (detects recent infection)

IUD: Intrauterine Device

IVF: In vitro Fertilization

LAC: Latin America and the Caribbean

LGV: Lymphogranuloma Venereum

MCA: Monoclonal antibody

MSM: Men who have Sex with Men

MSWs: Male Sex Workers

NAAT: Nucleic Acid Amplification Test

NG: Neisseria gonorrhoeae (standard name of bacteria)

PCR: Polymerase Chain Reaction

PID: Pelvic Inflammatory Disease

STD: Sexually Transmitted Disease

STI: Sexually Transmitted Infection

WHO: World Health Organization

WSW: Women who have Sex with Women.

CHAPTER 1 : INTRODUCTION AND AIM OF THE WORK

1.1 Rationale and Public Health Importance

Chlamydia trachomatis is a sexually transmitted disease (1), and a public health concerns due to (2):

I. Concerns that *Chlamydia trachomatis* is highly prevalent particularly in Latin America and the Caribbean (LAC).

The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) published reports indicating that there is a significant disease burden of *Chlamydia trachomatis* in LAC (3-5). The epidemiology of *Chlamydia trachomatis* infection remains poorly characterized in this region, despite of this region comprising a considerable part (8.4%) of the world's population (3, 4, 6).

II. Various Risk Factors were Established and Linked to the Disease Burden.

Published studies and reports indicate that the risk factors associated with chlamydial infection vary between subpopulations and regions. Socioeconomic factors and sexual behaviors remain the main risk factors, however understanding these risk factors in depth to include; the population type, age, coinfection, testing and screening methods, LAC subregion and others is important to further address the epidemiology of *Chlamydia trachomatis* (7-9).

III. Tolerance and Resistance of *Chlamydia trachomatis*.

Chlamydia trachomatis is an obligate intracellular gram-negative bacterium that requires a living host to survive (10). This bacterium can resist and survive various antibacterial strategies (11, 12). *Chlamydia trachomatis* form "elementary bodies" which are surrounded by a rigid cell wall that allows them to survive outside the host and tolerate adverse conditions (13-16). Once the organism enters the cell, the elementary bodies initiate a new infection, and then become reticulate viable bodies. *Chlamydia trachomatis* is generally resistant to many antibiotics and no vaccine has been successfully developed against *Chlamydia trachomatis* (17, 18).

IV. Pathogenesis and Natural History of the Disease is Complexed

Chlamydia trachomatis infection appears to be greatly associated with other Sexually Transmitted

Diseases (STDs) such as Neisseria gonorrhea, Human Papilloma Virus (HPV), Human Immunodeficiency virus (HIV), genital herpes, *Trichomonas vaginalis*, and *Treponema palladium* (19, 20). Furthermore, *Chlamydia trachomatis* infection is asymptomatic in approximately 80% of women and 50% of men. This limits the chance to detect and prevent chlamydial infection, and appreciate its common transmission (4, 18, 21).

1.2 Evidence Before this Study

Prior to this study, we conducted a simple search in PubMed using the search terms ("Chlamydia"[MeSH] AND "Review" [Publication Type]) and found no comprehensive systematic reviews and meta-analysis previously published for LAC. There is no available systematic description for understanding *Chlamydia trachomatis* epidemiology in LAC among different at-risk populations.

1.3 Objectives

The primary objective of this study is to characterize *Chlamydia trachomatis* epidemiology in LAC by conducting random-effects meta-analyses and reporting pooled-mean prevalence of *Chlamydia trachomatis* by population type, assay type, and specimen type. Moreover, we will use univariable and multivariable random-effects meta-regression models to assess possible predictors of high prevalence and sources of between-study heterogeneity.

1.4 Research Question

What are the epidemiological characteristics of *Chlamydia trachomatis* (CT) in LAC?

1.5 Reason of Choosing this Topic

The disease burden of *Chlamydia trachomatis* is significantly increasing and becoming a public health concern across the globe (22, 23). To address this concern and to follow the 2030 Agenda of Sustainable Development, the WHO drafted the Global Health Sector Strategy on Sexually Transmitted Infections (STIs) (24). This strategy calls for a better understanding of STIs epidemiology, risk factors, and disease burden (24, 25).

1.6 Added Value of this Study to the Field

This study provided the first comprehensive epidemiological assessment of *Chlamydia trachomatis* infection in LAC for all population groups. It serves as one of the key references for *Chlamydia*

trachomatis epidemiology to be factored in WHO-led response to this infection. The reported findings may help in assessing whether the LAC region is on track in achieving WHO's Global Health Sector Strategy on STIs 2016–2021 (25), and the sustainable development goals by 2030 (26).

This comprehensive study will provide evidence for public health authorities in LAC to mobilize the resources and develop effective intervention programs according to priority regions and at-risk populations. This research is part of an international project to understand epidemiological characteristics of *Chlamydia trachomatis* worldwide.

CHAPTER 2 : LITERATURE REVIEW

The World Health Organization (WHO) estimates that there are more than 100 million *Chlamydia trachomatis* cases annually (27). Chlamydial infection clinical manifestations range from asymptomatic to severely symptomatic, it can lead to health complications if not treated. The diseases caused by *Chlamydia trachomatis* include; cervicitis, pelvic inflammatory disease (PID), tubal factor infertility, lymphogranuloma venereum (LGV) in females; in addition to urethritis, prostatitis, and epididymitis in males (19, 20, 28). Moreover, *Chlamydia trachomatis* can be vertically transmitted from mother to child putting the baby at risk of sepsis and conjunctivitis (29-31). Likewise, *Chlamydia trachomatis* can be transmitted orally and manifest pharyngeal infection (32-35). *Chlamydia trachomatis* infection can be detected molecularly using Nucleic Acid Amplification Tests (NAAT) (36, 37), serologically using Enzyme-Linked Immunosorbent Assay (ELISA) or Fluorescent Immunoassays (FIA) testing for antibodies such as IgA, IgG, and IgM (38, 39), and cell culture (40). The most reliable and highly sensitive and specific assay is NAAT (41, 42).

Chlamydia trachomatis is prevalent in sexually active individuals and commercial sex workers (8, 9). Despite many countries having laws that govern risky sexual behaviors and commercial sex, however STDs including *Chlamydia trachomatis* are still very common. Several international organizations operated campaigns to promote healthy sexual behaviors and advocated to source the appropriate interventions, however the Latin America and the Caribbean (LAC) countries are still lagging in that aspect (43). Generally, STDs, including *Chlamydia trachomatis* , remain a major cause of health burden in LAC (44-46). This region is characterized with multi-socioeconomic levels among its population which became a major challenge for public health campaigns, surveillance programs, and interventions concerning STDs (47, 48). The screening and detection of STDs in LAC region is far from reaching an adequate level. It has been documented that a large proportion of the population tends to avoid STDs clinics due to stigma (21, 49, 50). Healthcare providers such as dermatology or gynecology clinics are not considered primary sources of STD-related data (7, 49).

Chlamydia trachomatis is associated with an increased risk of several pregnancy and fertility-

related adverse outcomes, especially in low-income and middle-income countries with OR= 4.2% (51). Chlamydial prevalence is the highest among men (2.7% compared to less than 1% of other STIs) (52); the second highest after Trichomoniasis among women worldwide (3.8% C. trachomatis compared to 5.3% Trichomoniasis) (53).

The prevalence of *Chlamydia trachomatis* is the highest in the upper middle-income regions, approximately 7% (52). Chlamydia's annual incidence rate is 127.2 million for both genders globally (3, 54). *Chlamydia trachomatis* is also prevalent in the general population, not only the high or middle risk population in MENA countries (27). Smolak et al, 2019 reported the pooled-mean prevalence of the current Chlamydial genital infection at 3.0% in general populations, 2·.8% in intermediate-risk populations, 13.2% in female sex workers, 11.3% in infertility clinic attendees, 12.4% in women with miscarriage, 12.4% in symptomatic women, and 17.4% in symptomatic men (27).

Huai et al., 2020 published a more recent meta-analysis of 29 studies that reported *Chlamydia trachomatis* prevalence in 24 countries, the pooled-mean prevalence of *Chlamydia trachomatis* among the general population was 2.9% with estimates of 3.1% in females and 2.6% in males. Notably, the prevalence of *Chlamydia trachomatis* was the highest in region of America (4.5%), especially in Latin America (6.7%), followed by females in the region of Africa (3.8%), while South-East Asia had the lowest *Chlamydia trachomatis* prevalence (0.8%) (55).

Dielissen et al., 2013 systematic review that discussed *Chlamydia trachomatis* prevalence in the general population on the basis of 35 studies, the finding reported that gender is associated to chlamydial prevalence and that the prevalence ranged from 1.1-12.1%, the average chlamydial prevalence is highly variable between countries, and younger age has higher prevalence (22).

Davey et al., 2010 systematic review discussed the prevalence of curable sexually transmitted infections in pregnant women in low- and middle-income countries from 2010 to 2015, the study included a total of 75 observational studies, the LAC coverage included Peru, Brazil, Ecuador, Argentina, and Guatemala and reported the prevalence of *Chlamydia trachomatis* in Latin America is found to be at 11.2% (56).

Grillo-Ardila et al., 2020 systematic review discussed the rapid point of care test for detecting

urogenital *Chlamydia trachomatis* infection in women and men at reproductive age in America, Asia, Africa, Europe and Oceania, the review included a total of 19 studies and reported the prevalence at 10%.

Low et al., 2016 systematic review discussed the screening for genital chlamydial infection on the basis of six Randomized Control Trials, the finding reported reduced pelvic inflammatory disease among the intervention group (57). Nglazi et al., 2019 as systematic review and meta analyses studied "what works in partner notification for sexually transmitted infections, including HIV? systematic review and meta-analysis" utilizing 37 trails among and multiple mixed- STIs in 14 countries in Asia, Australia, Europe, South America, sub-Saharan Africa and USA, the findings revealed that the expedited partner therapy (EPT) for curable STI including chlamydia reduced the chances of repeat infection (58).

Newman et al., 2015 statistical modeling systematic review studied the global estimates of the prevalence and incidence of four curable sexually transmitted infections in 2012, the findings reported that the WHO's 2012 estimates were based upon literature reviews of prevalence data from 2005 through 2012 among general populations for genitourinary infection with *Chlamydia trachomatis*. Data were standardized for laboratory test type, geography, age, and high risk among women, the estimated global prevalence of *Chlamydia trachomatis* was at 4.2%, and the incidence of the new cases reached 131 million new cases annually (59).

The aforementioned systematic reviews and meta-analyses didn't include any comprehensive systematic review or meta-analyses article that is specific of the LAC region and including all the population groups; general low risk, intermediate and high risk groups.

To address the *C. trachomatis* diseases burden in LAC region and follow the 2030 Agenda of Sustainable Development (26), the WHO drafted the Global Health Sector Strategy on STIs (4, 25). The strategy navigated integrated approaches to design, develop, implement, and monitor cost-effective interventions on the basis of priorities, with the key target to rule out sexually transmitted infections as a public health problem by 2030 (25). This strategy calls for a better understanding of the epidemiology of STIs and their disease burden (4, 24). Against this background, this study aims to provide a

comprehensive epidemiological evaluation of *C. trachomatis* in LAC.

CHAPTER 3 : METHODOLOGY

3.1 Role of Funding and Ethical Approval

This study has been performed independently with no fund. Ethical approval is not required since the study utilized already published articles. The corresponding author had full access to all the data in the study and had the final responsibility for the decision to submit for publication.

3.2 Search Strategy and Selection Criteria

This study is a systematic review guided by the Cochrane Collaboration Handbook (63), and has been reported following the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines (64) (See **Appendix A** for PRISMA Checklist). This methodology is adapted from a previously conducted systematic review characterizing *Chlamydia trachomatis* in the Middle East and North Africa (27).

We did extensive searches using three different databases: PubMed (for biomedical, life sciences and online books), Embase (biomedical and pharmacological database), and LILACS (Literatura Latino Americana em Ciências da Saúde, a regional database for LAC). Our searches were conducted up to February 7, 2021, using broad search terms (MeSH and Emtree terms exploded to include all subheadings, titles, and free-text terms) (See **Appendix B** for Search Strategy and Search Priority). The citations obtained following the entry of our search strategy were imported to EndNote (version 9.3).

Based on the WHO and the United Nations definition for LAC, 46 countries were included in our search (65, 66). Latin America is a group of 20 countries that are mainly in South and Central America and the Caribbean is a group of 26 countries (See **Appendix C-1** for Latin America and the Caribbean Countries). These countries' native languages are diverse with the main spoken languages being either Spanish, Portuguese, or French (67). According to the latest United Nations estimates, the overall population of LAC is more than 663 million, thus comprising about 8.4% of the total world population (68) .

3.3 Inclusion and Eligibility Criteria

We included any publication reporting point prevalence or incidence rate for *Chlamydia*

trachomatis based on biological assays. Publications in a language other than English were translated by Google's instant translation services and validated whenever needed.

3.4 Exclusion Criteria

We excluded any publication not relying on primary data, case reports, case series, editorials, commentaries, reviews, and conference abstracts of peer reviewed publications. Self-reported infection, history of previous *Chlamydia trachomatis* infection, studies using tissue specimens from the upper genital tract, and studies among ten participants or less were also excluded.

3.5 Screening and Data Extraction

The citations obtained following the entry of our search strategy were imported to EndNote (version 9.3) where the screening was conducted. Duplicates were identified and deleted through the reference manager. The first screening entailed the identification of relevant and potentially relevant articles through title and abstract screening. The second screening entailed full text screening of relevant and potentially relevant articles. The second screening and extraction processes were performed alongside each other.

3.6 Extracted Measures

A spreadsheet for the extraction variables has been developed. The extracted variables include: author, publication title, publication year, year of data collection, country of origin, country of survey, Latin America and Caribbean subregion, city, study site, study design, study sampling procedure, study population, sex, diagnostic assay, sample size, sampling method, and response rate (See **Appendix C-2** for the List of Variables Extracted and Synthesized). The study populations have been classified and defined (See **Appendix D** for Definitions of Population Type Classifications). All measures reporting incidence or prevalence of *Chlamydia trachomatis* in urogenital, anorectal, blood, or oropharyngeal specimens using biological assays were extracted following a pre-set stratification hierarchy (See **Appendix E** for Extraction Priority).

3.7 Research Validity

In order to enhance the validity of our systematic approach, the first screening using the titles and abstract were done by Rasha Abu-El-Ruz with supervision of Manale Harfouche. Upon the first

screening, the citations were classified into relevant and potentially relevant articles. Then the citations were rescreened, extracted, and double extracted by Rasha Abu-El-Ruz and Aisha Osman. The double extracted data were reviewed and validated by Manale Harfouche with input from Laith Jamal Abu Raddad. If a discrepancy was detected, consensus was reached with input from Laith Jamal Abu Raddad (27).

3.8 Standardization

The systematic review was conducted following the guidance provided by the Cochrane Collaboration Handbook (63), and the findings were reported according to PRISMA guidelines (69). Population type classification was pre-defined in alignment with previously conducted studies (27, 71). Women and men were classified as symptomatic only if there was a clinical manifestation or indication of an STI infection that mandated their visit to healthcare provider (22, 72-81). The LAC region was defined according to the WHO and the United Nations definitions of the region (65, 66).

3.9 Specifications for Data Extraction Reporting

I. *Different biological specimens tested using the same assay*: have been considered once depending on a prioritized sequential order; for women (endocervical swabs, followed by vaginal, and urine samples), and for men (urethral swabs, followed by urine and semen samples).

II. *Different assays (detection methods) of the same biological specimen*: the studies that used Nucleic Acid Amplification Test (NAAT) and culture on the same biological specimen were both separately included. This inclusion is important in providing meaningful explanation through the subsequent meta-regressions at the analysis stage, for the effect of the detection method on observed CT prevalence. This inclusion will also facilitate generating *Chlamydia trachomatis* estimation correction factors on the basis of detection method (82, 83).

III. *Antigen detection assays of the same biological specimen:* the studies that used different assays based on antigen detection on the same biological specimen were included only once based on the assay's sensitivity. These assays included FIA and ELISA. Furthermore, all the immunoassays were prioritized over Giemsa staining.

IV. *Stratified analysis for sex:* if the study indicated an overall measure for the prevalence or incidence for both sexes, we classified the study given the predominant sex (≥ 60% of the total sample size) in the study population (See **Appendix E** for Extraction priority).

3.10 Precision and Risk of Biases (ROB)

The precision and risk of bias approach applied in this study was developed specifically for systematic reviews of STIs, the approach is informed by Cochrane and adopted by several STIs systematic reviews (27, 71, 84). Studies' precision has been classified based on its sample size; if the study's sample size is < 200, it is considered of low precision and a sample size ≥ 200 is considered of high precision.

ROB assessment was classified into low versus high based on two quality domains: **(1)** sampling methodology "probability based vs non-probability based"; and **(2)** response rate (≥80% versus < 80%). If no data was identified for any of the quality domains, the ROB will be classified as unclear for that quality domain.

3.11 Data Cleaning and Harmonization

The missing values of the year of data collection have been calculated using the year of publication adjusted by the median difference of the publication year and data collection year based on studies with available dates. In case of any missing prevalence, conversion or event number, it has been calculated based on the standard formulas; the point prevalence is the percentage of the positive cases to the total population at specific time. Conversion is the percentage of the conversions to the total population at risk at specific time (90, 91).

3.12 Systematic Review (Data Extraction Reporting)

We reported in our appendix tables the key variables of our extracted details including: the author, midpoint of data collection, country, study site, study design, sampling methodology, population, assay type, sample size, and *Chlamydia trachomatis* outcome measures (See table in **Appendix F** for *Chlamydia trachomatis* Conversion and Incidence Rate. See tables in **Appendix G** for *Chlamydia trachomatis* Prevalence Measures in LAC; **G-1** for Urogenital, **G-2** for Anorectal, **G-3** for Oropharyngeal, and **G-4** for Seroprevalence).

3.13 Meta-analyses

Meta-analyses were performed to estimate pooled-mean *Chlamydia trachomatis* prevalence by population type, stratified by the specimen tested and assay type. The estimates were reported along with their 95% CI. Forest plots were generated, visualized and examined during the data analysis phase. Given that STI studies exhibit high heterogeneity, we used DerSimonian-Laird random-effects model to conduct these analyses (92), with the Freeman-Tukey double arcsine transformation to stabilize the variance (93, 94).

For heterogeneity assessment, Cochran's Q statistic was used to test homogeneity across studies and have been reported along with its *p value*. The I^2 statistic was calculated to assess magnitude of between-study heterogeneity due to true differences in *Chlamydia trachomatis* prevalence rather than chance. The prediction interval was estimated to describe the distribution of true *Chlamydia trachomatis* prevalence around the pooled mean (95). Meta-analyses were conducted using meta package (96) in R version 3.4.1 (97).

3.14 Meta-regressions

Univariable and multivariable random-effects meta-regression analyses of log-transformed *Chlamydia trachomatis* proportions were conducted to assess the sources of between-study heterogeneity and possible predictors of *Chlamydia trachomatis* prevalence.

The following pre-set predictors were included in the analyses: population type classification, age group, sex, LAC subregion, country's income based on the world bank classifications (98), assay type, sample size, sampling method, response rate, year of data collection, and year of publication.

The univariable and multivariable meta-regression were performed separately for each specimen type: urogenital, anorectal, oropharyngeal, and blood.

Variables with a *p-value* ≤ 0.10 in the univariable analysis were included in the multivariable analysis. In this model, the threshold of significance was set at a *p value* ≤ 0.05 for the association between the prevalence and the predictors. Meta-regression analyses were conducted using the metareg package (99) in StataIC 16 (100).

3.15 Possible Limitations

Although the study follows a systematic well-designed approach, limitations are unavoidable. Some limitations include data availability in terms of geographic coverage and variation in quality and quantity of data reported. Moreover, the extracted measures from studies might be affected by different types of biases and may not be representative of the intended population.

3.16 Anticipated Outcomes

This study provides the first comprehensive epidemiological assessment of *Chlamydia trachomatis* infection in LAC. The primary outcome is the overall pooled-mean prevalence of *Chlamydia trachomatis* for each at-risk population by specimen type and by assay type. The secondary outcome is the identification of possible predictors of between-study heterogeneity and high prevalence. The study will present epidemiological evidence to develop a public health response and identify evidence-informed intervention strategies against *Chlamydia trachomatis* in this region.

CHAPTER 4 : RESULTS

4.1 Systematic Review Outcomes

The search yielded a total of 2,438 publications: 774 through PubMed, 844 through Embase, and 820 through LILACS. Of these, 883 publications were duplicates and deleted. Titles and abstracts of the remaining 1,555 were screened for relevance. A total of 753 citations were considered relevant and potentially relevant and their full text were screened for relevant data. This screening identified 384 publications as relevant. Twenty-eight additional publications were identified through screening the bibliographies of the extracted publications in our library (101-128). In total, 412 publications met the inclusion criteria and were extracted and included in this study (Figure 1).

The extracted measures encompassed 5 overall conversion rates, 16 overall incidence rates measures, 465 overall prevalence measures in urogenital specimens (852 stratified), 38 overall prevalence measures in anorectal specimens (43 stratified), 16 overall prevalence measures in oropharyngeal specimens (22 stratified), 136 overall seroprevalence measures (202 stratified), and 51 overall prevalence measures in mixed or unclear specimen types (56 stratified).

4.2 Comprehensive Design Illustration

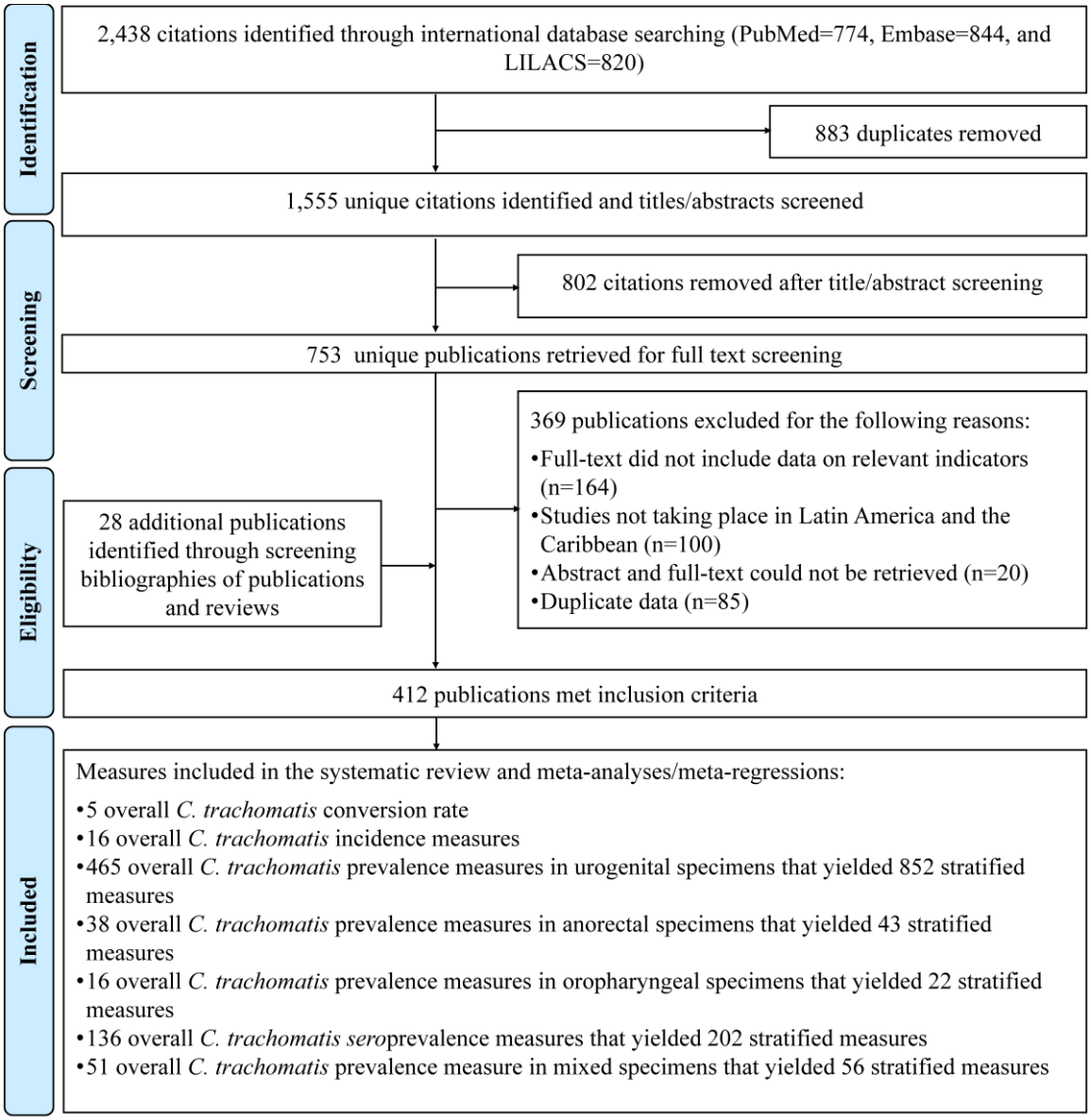

Figure 1. Flow Chart of Study Selection for the Systematic Review of *Chlamydia trachomatis* in LAC.

Data from the imported articles were extracted and double extracted as discussed earlier in the methods section. We synthesized data according to population type classification. Next, we stratified extracted measures according to specimen type (urogenital, oropharyngeal, anorectal, blood, and mixed or unclear mode), followed by assay type. The synthesized data are summarized in Tables 1, 2 and 3.

4.3 Descriptive Statistics

The studies reviewed concerned 32 (70%) of 46 countries; Brazil contributed the largest number of estimates (n=377), followed by Peru (n=258), Mexico (n=183), Argentina (n=102), Jamaica (n=67), Columbia (n=61), Venezuela (n=49) and Chile (n=48). In this study, the earliest extracted study was published in 1974. Most of the studies were cross-sectional in design and were based on convenience sampling (Appendix G?).

4.3.1 *Chlamydia trachomatis* Incidence Overview

The extracted conversion rates (n=5) and incidence rates (n=16) of *Chlamydia trachomatis* are summarized in the reporting appendix table (See **Appendix F**). The measures were extracted from cohort studies (n=11) and from randomized controlled trials (n=7) with follow-up duration ranging between 6 months to 3 years. *Chlamydia trachomatis* conversion ranged between 4.4-74.5% and the incidence rate ranged between 0-48.6 per 100 person-years across all population types.

4.3.2 Urogenital Mode of Transmission

Detection of *Chlamydia trachomatis* in urogenital specimens was the most reported type of prevalence measures in the studies included (n=852 estimates). Urogenital prevalence estimates accounted for 59% of the total number of prevalence estimates (Table 1). In general populations (n= 402 estimates), the prevalence of urogenital infection ranged between 0.0-73.1% with a 7.2% median. In intermediate risk populations (n=49 estimates), it ranged between 0.0-44.4% with a 7.2% median. In FSWs and WSW (n=113 estimates), it ranged between 0.0-48.6% with a 14.5% median. In MSM, MSW, and transgender populations (n=21 estimates) it ranged between 0.0-11.0% with a 3.5% median.

In symptomatic women (n=67 estimates), it ranged between 0.0-56.0% with a 15.4% median. In symptomatic men (n=22 estimates), it ranged between 1.8-63.0% with a 27.4% median. In HIV-positive individuals and individuals in HIV-discordant couples (n=32 estimates) it ranged between 0.0-23.1% with 4.5% median. In STI clinic attendees (n=58 estimates), it ranged between 0.0-78.0% with a 10.3% median. Other descriptive statistics for *Chlamydia trachomatis* prevalence in anorectal, oropharyngeal, blood, and mixed specimens are illustrated in detail in Tables 1, 2 and 3.

4.4 Pooled-Mean Estimates and Between-Study Heterogeneity

Tables 1, 2, and 3 show the meta-analyses results for the pooled-mean prevalence and between study heterogeneity of *Chlamydia trachomatis* for each at-risk population, stratified by specimen type and assay type used for infection ascertainment.

Among general populations, the pooled-mean *Chlamydia trachomatis* prevalence was estimated at 8.2% (95% CI: 7.5-9.1%) for urogenital CT, 37.7% (95% CI: 20.4-56.7%) for oropharyngeal CT, and 36.7% (95% CI: 31.7-41.8%) for CT seroprevalence (antibodies detected in the blood).
In FSWs and WSW, the pooled-mean prevalence was estimated at 14.0% (95% CI: 12.7-15.4%) for urogenital CT and at 76.4% (95% CI: 45.1-97.1%) for CT seroprevalence.

In MSM, MSW and transgenders, the pooled-mean prevalence was estimated at 3.5% (95% CI: 2.4-4.7%) for urogenital CT, 10.8% (95% CI: 8.4-13.5%) for anorectal CT, and 4.3% (95% CI: 3.4-5.4%) for oropharyngeal CT.

Among symptomatic women, the pooled-mean prevalence for urogenital CT was estimated at 16.1% (95% CI: 12.6-19.8%) whereas it was estimated at 25.4% (95% CI: 18.6-38.5%) among symptomatic men.

Among HIV-positive individuals and individuals in HIV-discordant couples, the pooled-mean prevalence was estimated at 5.2% (95% CI: 3.4-7.1%) for urogenital CT, 9.7% (95% CI: 6.1-14.0) for anorectal CT, and 3.1% (95% CI: 1.3-5.5%) for oropharyngeal CT.

Among STI clinic attendees, the pooled-mean prevalence was estimated at 11.9% (95% CI: 8.5-15.8%) for urogenital CT, and 2.0% (95% CI: 0.0-6.4%) for anorectal CT. The pooled-mean prevalence of *Chlamydia trachomatis* by specimen type, among other populations, and by assay type are detailed in Tables 1, 2, and 3.

Evidence for heterogeneity in *Chlamydia trachomatis* prevalence estimates was observed; *p values* for Cochran's Q tests of homogeneity were <0.001 for most meta-analyses. The prediction intervals were generally wide affirming high heterogeneity. I^2 was also greater than 80% for most of the measures, indicating that most variability is due to true differences in effect size across studies rather than chance. Further details about the heterogeneity measures are available in Tables 1, 2, and 3.

Table 1. Pooled-Mean Estimates for *Chlamydia trachomatis* Prevalence in General Populations, Intermediate Risk Populations, Infertility Clinic Attendees, Women with Miscarriages or Ectopic Pregnancies, and Other Populations.

Population type Stratified by the Specimen type		Outcome measures	Sample size	CT prevalence (%)		Pooled-mean CT prevalence	Heterogeneity measures		
		Total n	Total N	Range	Median	Mean (%) (95% CI)	Q[a] (*p-value*)	I²[b] (%) (95% CI)	Prediction interval[c] (%)
General populations									
Urogenital Specimen	NAAT	307	107,406	0.0-40.0	7.0	7.4 (6.8-8.0)	3,135.0 (p<0.001)	90.2 (89.4-91.0)	1.0-20.0
	Culture	16	3,095	0.6-51.5	22.7	25.0 (15.0-37.0)	493.2 (p<0.001)	97.0 (96.0-97.7)	0.0-79.0
	ELISA	30	8,647	1.3-52.1	9.5	11.4 (7.6-15.9)	437.8 (p<0.001)	93.4 (91.6-94.8)	0.0-41.0
	Immunofluorescent	22	3,867	0.0-73.1	12.2	11.9 (5.6-19.9)	410.8 (p<0.001)	94.9 (93.4-96.1)	0.0-58.0
	Monoclonal antibody	9	2,090	4.1-44.4	8.6	11.7 (6.2-18.5)	76.5 (p<0.001)	89.5 (82.4-93.8)	0.0-40.8
	Rapid test	5	908	2.7-13.0	11.7	7.8 (3.2-13.9)	31.7 (p<0.001)	87.4 (72.9-94.1)	0.0-33.8
	Gram stain	8	100,286	0.0-11.9	0.5	1.0 (0.02-2.9)	807.7 (p<0.001)	99.1 (98.9-99.3)	0.0-12.4
	DFA[d]	2	408	32.0-42.0	37.0	36.4 (26.7-46.7)	-	-	-
	Mixed/unclear assay	3	210	2.0-11.7	4.0	4.7 (0.8-10.8)	5.2 (p=0.074)	61.6 (0.0-89.0)	0.0-99.1
	Overall	402	226,917	0.0-73.1	7.2	8.2 (7.5-9.1)	16,722.0 (p<0.001)	97.6 (97.5-97.7)	0.0-28.8
Anorectal Specimen	NAAT[d]	1	112	-	-	10.7 (5.6-17.2)	-	-	-
	Overall[d]	1	112	-	-	10.7 (5.6-17.2)	-	-	-
Oropharyngeal Specimen	NAAT[d]	2	318	16.0-18.1	17.1	17.0 (13.0-21.3)	-	-	-
	Immunoflourescent	4	76	43.8-72.2	47.6	52.8 (40.3-65.2)	3.6 (p=0.307)	16.8 (0.0-87.3)	0.2-84.0
	Overall	6	394	16.0-72.2	45.7	37.7 (20.4-56.7)	41.0 (p<0.001)	87.8 (75.9-93.8)	0.0-95.0
Unspecified/mixed Specimen	NAAT	4	977	4.1-11.2	8.2	7.3 (4.3-10.9)	11.6 (p=0.009)	74.0 (27.4-90.7)	0.0-27.0
	Mixed/unclear assay	4	812	4.0-27.5	11.3	12.3 (4.4-23.3)	50.5 (p<0.001)	94.1 (87.9-97.1)	0.0-76.7
	Overall	8	1,789	4.0-27.5	8.6	9.8 (5.6-15.0)	82.1 (p<0.001)	91.5 (85.6-95.0)	0.0-0.3
Blood Specimen	IgG	35	4,320	2.2-77.8	27.5	33.8 (25.7-42.4)	860.0 (p<0.001)	96.1 (95.2-96.7)	0.0-84.0
	IgM	5	367	4.8-73.8	40.0	38.4 (13.1-67.4)	90.2 (p<0.001)	95.6 (92.2-97.5)	0.0-100.0
	IgA	11	903	1.8-39.0	21.9	18.1 (11.1-26.4)	78.9 (p<0.001)	87.3 (79.2-92.3)	0.0-51.0
	Mixed/unclear immunoglobulin[e]	71	8,308	0.0-97.1	47.1	41.0 (34.0-48.3)	2,116.2 (p<0.001)	96.7 (96.3-97.1)	0.0-94.0
	Overall	122	13,898	0.0-97.1	33.8	36.7 (31.7-41.8)	3,512.1 (p<0.001)	96.6 (96.2-96.9)	0.0-89.0
Intermediate risk populations									
Urogenital Specimen	NAAT	37	12,120	1.4-27.6	6.9	8.0 (5.9-10.3)	413.4 (p<0.001)	91.3 (89.0-93.1)	0.0-26.0
	Culture[d]	2	416	1.4-8.5	4.9	3.8 (0.0-13.7)	-	-	-
	ELISA[d]	2	148	11.0-23.3	17.2	15.3 (5.1-29.1)	-	-	-
	Immunofluorescent	8	304	0.0-44.4	23.9	20.1 (8.0-35.5)	39.1 (p<0.001)	82.1 (65.9-90.6)	0.0-75.0
	Overall	49	12,988	0.0-44.4	7.2	9.2 (6.8-12.0)	639.7 (p<0.001)	92.5 (90.9-93.8)	0.0-33.0
Blood Specimen	IgG[d]	2	84	72.0-82.4	77.2	77.7 (65.1-88.2)	-	-	-
	Mixed/unclear	2	126	35.7-76.2	56.0	57.0 (18.3-91.3)	-	-	-

Population type Stratified by the Specimen type		Outcome measures	Sample size	CT prevalence (%)		Pooled-mean CT prevalence	Heterogeneity measures		
		Total n	Total N	Range	Median	Mean (%) (95% CI)	Q[a] (*p-value*)	I^{2b} (%) (95% CI)	Prediction interval[c] (%)
	immunoglobulin[d]								
	Overall	4	210	35.7-82.4	74.1	67.7 (46.4-85.8)	25.7 (p<0.001)	88.3 (72.6-95.0)	0.0-100.0
Infertility clinic attendees									
Urogenital Specimen	NAAT	38	9,261	0.0-57.5	6.8	7.2 (4.7-10.1)	405.5 (p<0.001)	90.9 (88.5-92.8)	0.0-30.0
	Culture	3	120	0.0-10.0	6.5	5.2 (0.7-12.4)	3.6 (p=0.162)	45.0 (0.0-83.7)	0.0-99.0
	Immunofluorescent	6	751	16.4-49.5	29.4	30.8 (23.3-38.8)	19.7 (p<0.001)	74.6 (42.3-88.8)	0.09-58.0
	Mixed/unclear assay[d]	1	89	-	-	46.1 (35.8-56.5)	-	-	-
	Overall	48	10,221	0.0-57.5	7.9	10.0 (6.8-13.6)	949.1 (p<0.001)	95.1 (94.1-95.8)	0.0-41.0
Unspecified/mixed Specimen	ELISA[d]	2	101	61.9-67.8	64.9	65.4 (55.7-74.5)	-	-	-
	Overall	2	32	0.0-56.3	28.1	19.9 (0.0-88.4)	17.2 (p<0.001)	94.2 (81.7-98.2)	-
Blood	IgG	10	690	2.7-81.8	28.7	30.5 (13.5-50.6)	176.9 (p<0.001)	94.9 (92.4-96.6)	0.0-96.0
	IgM[d]	2	230	15.6-35.9	25.7	26.5 (9.8-47.6)	-	-	-
	IgA[d]	2	260	1.6-2.7	2.2	1.8 (0.4-4.0)	-	-	-
	Mixed/unclear immunoglobulin	3	176	12.0-61.0	30.0	33.2 (6.9-66.3)	46.6 (p<0.001)	95.7 (90.7-98.0)	0.0-100.0
	Overall	17	1,356	1.6-81.8	22.7	25.4 (13.6-39.2)	372.4 (p<0.001)	95.7 (94.3-96.8)	0.0-86.0
Women with miscarriage or ectopic pregnancy									
Urogenital Specimen	Immunofluorescent	2	32	0.0-56.3	28.1	19.9 (0.0-88.4)	17.2 (p<0.001)	94.2 (81.7-98.2)	-
	Overall	2	32	0.0-56.3	28.1	19.9 (0.0-88.4)	17.2 (p<0.001)	94.2 (81.7-98.2)	-
Blood Specimen	IgG	2	89	3.7-82.0	42.9	38.5 (0.0-100.0)	72.5 (p<0.001)	98.6 (97.1-99.4)	-
	IgA[d]	1	54	-	-	3.7 (0.1-10.8)	-	-	-
	Mixed/unclear immunoglobulin[d]	1	20	-	-	25.0 (8.1-46.6)	-	-	-
	Overall	4	163	3.7-82.0	14.4	24.2 (0.1-66.5)	91.0 (p<0.001)	96.7 (94.0-98.2)	0.0-100.0
Other populations[e]									
Urogenital Specimen	NAAT	31	4,882	0.0-77.1	21.1	24.6 (16.2-34.1)	1,035.9 (p<0.001)	97.1 (96.5-97.6)	0.0-81.0
	Immunofluorescent	2	70	80.0-80.0	80.0	80.0 (69.6-88.8)	-	-	-
	Overall	33	4,952	0.0-80.0	23.9	27.8 (18.6-38.0)	1,218.0 (p<0.001)	97.4 (96.9-97.8)	0.0-87.0
Unspecified/mixed Specimen	NAAT[d]	1	838	-	-	10.3 (8.3-12.4)	-	-	-
	ELISA[d]	1	142	-	-	12.7 (7.7-18.7)	-	-	-
	Mixed/unclear assay[d]	1	168	-	-	20.8 (15.0-27.3)	-	-	-
	Overall	3	1,148	10.3-20.8	12.6	14.0 (8.4-20.7)	12.6 (p=0.002)	84.2 (52.6-94.7)	0.0-99.0
Blood Specimen	IgG	12	1,136	26.0-71.9	37.7	44.2 (33.6-55.2)	116.2 (p<0.001)	90.5 (85.4-93.9)	0.09-83.0
	Mixed/unclear immunoglobulin	10	1,769	20.3-92.9	59.5	58.5 (39.6-76.3)	482.3 (p<0.001)	97.1 (96.5-97.6)	0.02-100.0
	Overall	22	2,905	20.3-92.9	46.2	51.0 (40.2-61.7)	694.2 (p<0.001)	97.0 (96.2-97.6)	0.06-95.0

[a] Q: The Cochran's Q statistic is a measure assessing the existence of heterogeneity in pooled outcome measures.

Population type Stratified by the Specimen type	Outcome measures	Sample size	CT prevalence (%)		Pooled-mean CT prevalence	Heterogeneity measures		
	Total n	Total N	Range	Median	Mean (%) (95% CI)	Q[a] (*p-value*)	I^{2b} (%) (95% CI)	Prediction interval[c] (%)

[b] I^2: A measure that assesses the magnitude of between-study variation that is due to actual differences in CT prevalence across studies rather than chance.
[c] Prediction interval: A measure that estimates the distribution 95% interval of the true CT prevalence around the estimated mean.
[d] No meta-analysis was done due to the small number of studies n<3.
[e] Other populations include populations with an undetermined risk of acquiring CT infection such as patients with cervical cancer and patients with Human Papilloma Virus (HPV)
Abbreviations: NAAT: Nucleic Acid Amplification Test, ELISA: Enzyme-Linked Immunosorbent Assay, DFA: Direct Fluorescent Antibody, NAAT: Nucleic Acid Amplification Test, IgG: Immunoglobulin Type G (detects ever infection, IgM: Immunoglobulin Type M (detects recent infection), IgA: Immunoglobulin Type A (first line defense in mucous membrane), CT: *Chlamydia trachomatis*, NG: *Neisseria gonorrhoeae.*

Table 2. Pooled Mean Estimates for *Chlamydia trachomatis* Prevalence in Female Sex Workers, and Women Who have Sex with Women, Men who have Sex with Men, Male Sex Workers and Transgenders, HIV-Positive Individuals and Individuals in HIV-discordant Couple and STI Clinic Attendes.

Population type Stratified by the Specimen type		Outcome measures	Sample size	CT prevalence (%)		Pooled-mean CT prevalence	Heterogeneity measures		
		Total n	Total N	Range	Total	Mean (%) (95% CI)	Q[a] (*p-value*)	I²[b] (%) (95% CI)	Prediction interval[c] (%)
Female sex workers and women who have sex with women									
Urogenital Specimen	NAAT	88	46,575	0.0-48.6	14.6	14.1 (12.7-15.6)	598.5 (p<0.001)	85.5 (82.7-87.8)	0.04-28.0
	Culture	8	1,971	1.6-25.0	12.7	10.8 (5.6-17.3)	151.0 (p<0.001)	95.4 (92.8-97.0)	0.0-38.0
	ELISA	11	2,442	1.5-33.0	13.0	13.2 (8.4-18.7)	90.0 (p<0.001)	88.9 (82.1-93.1)	0.0-37.0
	Immunofluorescent	4	116	24.4-40.0	37.2	32.4 (23.8-41.5)	2.2 (p=0.5398)	0.0 (0.0-84.7)	0.15-53.0
	Rapid test[d]	1	276	-	-	6.2 (3.6-9.3)	-	-	-
	DFA[d]	1	129	-	-	16.3 (10.4-23.2)	-	-	-
	Overall	113	51,509	0.0-48.6	14.5	14.0 (12.7-15.4)	978.2 (p<0.001)	88.6 (86.8-90.1)	0.0-30.0
Unspecified/mixed Specimen	NAAT	8	1,155	0.0-14.3	6.2	4.9 (3.7-6.3)	11.4 (p=0.124)	38.4 (0.0-72.8)	0.0-7.0
	Mixed/unclear assay[d]	1	220	-	-	20.0 (15.0-25.6)	-	-	-
	Overall	9	1,375	0.0-19.8	6.5	6.7 (3.5-10.9)	50.0 (p<0.001)	83.0 (71.2-91.1)	0.0-24.0
Blood Specimen	IgG	3	285	25.0-100.0	95.0	81.2 (24.8-100.0)	211.7 (p<0.001)	99.1 (98.5-99.4)	0.0-100.0
	IgA[d]	1	176	-	-	5.7 (2.7-9.7)	-	-	-
	Mixed/ unclear immunoglobulin	4	752	55.8-97.0	95.0	88.7 (67.7-99.6)	203.5 (p<0.001)	98.5 (97.7-99.1)	0.0-100.0
	Overall	8	1,213	5.7-100.0	94.8	76.4 (45.1-97.1)	822.9 (p<0.001)	99.2 (98.9-99.3)	0.0-100.0
Men who have sex with men, male sex workers, and transgenders									
Urogenital Specimen	NAAT	21	10,337	0.0-11.0	3.5	3.5 (2.4-4.7)	115.6 (p<0.001)	82.7 (74.6-88.2)	0.0-10.0
	Overall	21	10,337	0.0-11.0	3.5	3.5 (2.4-4.7)	115.6 (p<0.001)	82.7 (74.6-88.2)	0.0-10.0
Anorectal Specimen	NAAT	27	6,622	1.7-26.7	12.0	11.3 (8.7-14.1)	286.6 (p<0.001)	90.9 (88.0-93.1)	0.0-28.0
	Mixed/unclear assay	4	1,627	1.6-19.0	9.6	8.3 (2.7-16.5)	96.9 (p<0.001)	96.9 (94.5-98.3)	0.0-61.0
	Overall	31	8,249	1.6-26.7	11.0	10.8 (8.4-13.5)	388.0 (p<0.001)	92.3 (90.1-94.0)	0.0-28.0
Oropharyngeal Specimen	NAAT	12	4,190	1.6-11.2	4.5	4.3 (3.4-5.4)	24.7 (p=0.010)	55.5 (15.0-76.7)	0.0-80.0
	Overall	12	4,190	1.6-11.2	4.5	4.3 (3.4-5.4)	24.7 (p=0.010)	55.5 (15.0-76.7)	0.0-8.0
Unspecified/mixed Specimen	Mixed/unclear assay	3	654	8.0-19.4	14.6	13.9 (8.4-20.6)	7.9 (p=0.020)	74.6 (15.5-92.4)	0.0-98.0
	Overall	3	654	8.0-19.4	14.6	13.9 (8.4-20.6)	7.9 (p=0.020)	74.6 (15.5-92.4)	0.0-98.0
Blood Specimen	IgG[d]	1	113	-	-	16.8 (10.4-24.3)	-	-	-
	IgA[d]	1	113	-	-	7.1 (3.0-12.7)	-	-	-
	Overall	2	226	7.1-16.8	12.0	11.5 (3.7-22.6)	-	-	-
HIV-positive individuals and individuals in HIV-discordant couples									
Urogenital Specimen	NAAT	30	6,233	0.0-23.1	5.3	5.4 (3.6-7.6)	374.4 (p<0.001)	92.3 (90.0-94.0)	0.0-20.0
	Mixed/unclear assay	2	954	-	-	2.1 (1.3-3.2)	-	-	-
	Overall	32	7,187	0.0-23.1	4.5	5.1 (3.4-7.1)	394.5 (p<0.001)	92.1 (90.0-93.9)	0.0-19.0
Anorectal Specimen	NAAT	7	1,051	2.4-18.2	9.3	9.7 (6.1-14.0)	24.1 (p<0.001)	75.1 (47.2-88.3)	0.0-26.0

Population type Stratified by the Specimen type		Outcome measures	Sample size	CT prevalence (%)		Pooled-mean CT prevalence	Heterogeneity measures		
		Total n	Total N	Range	Total	Mean (%) (95% CI)	Q[a] (*p-value*)	I^{2}[b] (%) (95% CI)	Prediction interval[c] (%)
	Overall	7	1,051	2.4-18.2	9.3	9.7 (6.1-14.0)	24.1 (p<0.001)	75.1 (47.2-88.3)	0.0-26.0
Oropharyngeal Specimen	NAAT	3	310	1.6-4.6	4.1	3.1 (1.3-5.5)	1.9 (p=0.388)	0.0 (0.0-89.6)	0.0-28.0
	Overall	3	310	1.6-4.6	4.1	3.1 (1.3-5.5)	1.9 (p=0.388)	0.0 (0.0-89.6)	0.0-28.0
Unspecified/mixed Specimen	NAAT	9	830	0.0-19.8	3.1	4.2 (1.1-8.8)	54.6 (p<0.001)	85.3 (74.0-91.7)	0.0-26.0
	Mixed/unclear assay[d]	1	598	-	-	0.7 (0.1-1.5)	-	-	-
	Overall	10	1,428	0.0-19.8	2.6	3.6 (0.9-7.7)	82.6 (p<0.001)	89.1 (82.1-93.4)	0.0-24.0
Blood Specimen	IgG[d]	1	85	-	-	3.5 (0.4-8.8)	-	-	-
	IgA[d]	1	85	-	-	5.9 (1.7-12.1)	-	-	-
	Overall	2	170	3.6-6.1	4.9	4.6 (1.8-8.5)	0.5 (p=0.490)	0.0(-)	-
STI clinic attendees									
Urogenital Specimen	NAAT	26	4,294	0.0-23.1	12.5	10.2 (7.3-13.6)	302.9 (p<0.001)	91.8 (89.1-93.8)	0.0-30.0
	Culture	8	697	12.1-78.0	52.0	45.2 (28.3-62.7)	159.8 (p<0.001)	95.6 (93.3-97.2)	0.0-97.0
	ELISA	21	6,318	0.0-17.4	4.4	4.9 (3.1-7.2)	166.0 (p<0.001)	88.0 (83.0-91.5)	0.0-18.0
	Rapid test[d]	1	180	-	-	10.0 (6.0-14.9)	-	-	-
	DFA[d]	1	237	-	-	45.2 (38.9-51.5)	-	-	-
	Mixed/unclear assay[d]	1	166	-	-	21.7 (15.7-28.3)	-	-	-
	Overall	58	11,892	0.0-78.0	10.3	11.9 (8.5-15.8)	1087.9 (p<0.001)	94.8 (93.9-95.5)	0.0-49.0
Anorectal Specimen	NAAT	3	914	0.0-4.7	3.1	2..0 (0.0-6.4)	19.9 (p<0.001)	89.9 (73.1-96.2)	0.0-100.0
	Overall	3	914	0.0-4.7	3.1	2.0 (0.0-6.4)	19.9 (p<0.001)	89.9 (73.1-96.2)	0.0-100.0
Oropharyngeal Specimen	NAAT[d]	1	524	-	-	2.3 (1.2-3.8)	-	-	-
	Overall[d]	1	524	-	-	2.3 (1.2-3.8)	-	-	-
Unspecified/mixed Specimen	NAAT	6	3,782	3.8-24.3	11.1	11.2 (5.1-19.3)	148.4 (p<0.001)	96.6 (94.6-97.9)	0.0-47.0
	ELISA	2	1,000	3.6-24.0	13.8	11.6 (0.0-37.8)	55.0 (p<0.001)	98.2 (95.9-99.2)	-
	Immunofluorescent	3	493	6.5-16.0	10.0	11.0 (5.8-17.5)	7.8 (p=0.020)	74.4 (14.9-92.3)	0.0-97.0
	Mixed/unclear assay	6	895	0.8-11.6	4.2	4.6 (1.9-8.2)	23.0 (p<0.001)	78.2 (52-90.1)	0.0-19.0
	Overall	17	6,170	0.8-24.3	6.5	8.6 (5.5-12.4)	256.7 (p<0.001)	93.8 (91.4-95.5)	0.0-29.0
Blood Specimen	Mixed/unclear immunoglobulin	4	606	33.3-70.1	58.3	56.2 (42.0-70.0)	21.2 (p<0.001)	85.9 (65.3-94.2)	0.03-100.0
	Overall	4	606	33.3-70.1	58.3	56.2 (42.0-70.0)	21.2 (p<0.001)	85.9 (65.3-94.2)	0.03-100.0

[a] Q: The Cochran's Q statistic is a measure assessing the existence of heterogeneity in pooled outcome measures.
[b] I^{2}: A measure that assesses the magnitude of between-study variation that is due to actual differences in CT prevalence across studies rather than chance.
[c] Prediction interval: A measure that estimates the distribution 95% interval of the true CT prevalence around the estimated mean.
[d] No meta-analysis was done due to the small number of studies n<3.
Abbreviations: NAAT: Nucleic Acid Amplification Test, ELISA: Enzyme-Linked Immunosorbent Assay, DFA: Direct Fluorescent Antibody, NAAT: Nucleic Acid Amplification Test, IgG: Immunoglobulin Type G (detects ever infection, IgM: Immunoglobulin Type M (detects recent infection), IgA: Immunoglobulin Type A (first line defense in mucous membrane), CT: *Chlamydia trachomatis*, NG: *Neisseria gonorrhoeae.*

Table 3. Pooled Mean Estimates for *Chlamydia trachomatis* Prevalence in Symptomatic Populations (Women, Men, and Mixed Sexes) and Sexual Contacts of Persons with NG/CT and Other Populations.

Population type Stratified by the Specimen type		Outcome measures	Sample size	CT prevalence (%)		Pooled-mean CT prevalence	Heterogeneity measures		
		Total n	Total N	Range	Median	Mean (%) (95% CI)	Q[a] (p-value)	Total n	Prediction interval (95% CI)
Symptomatic women									
Urogenital Specimen	NAAT	30	4,854	0.0-26.6	8.2	7.6 (5.2-10.4)	259.4 (p<0.001)	88.8 (85.2-91.6)	0.0-30.0
	Culture	18	4,741	0.0-56.0	26.6	29.1 (23.5-34.9)	123.0 (p<0.001)	86.2 (79.6-90.6)	0.1-56.0
	ELISA	3	883	11.6-28.0	24.9	22.7 (15.4-30.8)	5.1 (p=0.080)	60.4 (0.0-88.7)	0.0-100.0
	Immunofluorescent	9	1,031	0.0-53.2	15.0	17.5 (6.4-32.4)	255.5 (p<0.001)	96.9 (95.5-97.8)	0.0-77.0
	Monoclonal antibody[d]	1	30	-	-	20.0 (7.3-36.5)	-	-	-
	Rapid test	2	266	8.4-53.0	30.7	27.7 (0.0-76.5)	-	-	-
	Mixed/unclear assay	4	318	17.0-44.0	18.0	23.2 (12.9-35.2)	16.7 (p<0.001)	82.0 (53.4-93.0)	0.0-80.0
	Overall	67	12,123	0.0-56.0	15.4	16.1 (12.6-19.8)	1,345.8 (p<0.001)	95.1 (94.3-95.8)	0.0-52.0
Unspecified/mixed Specimen	NAAT[d]	2	2,758	9.1-9.7	9.4	9.4 (8.3-10.5)	-	-	-
	ELISA[d]	1	369	-	-	15.2 (11.7-19.0)	-	-	-
	Overall	3	3,127	9.1-15.2	9.7	10.9 (7.8-14.6)	10.7 (p=0.005)	81.3 (41.8-94.0)	0.0-72.0
Blood Specimen	IgG	5	2,512	4.7-81.0	65.5	56.4 (25.9-84.5)	532.8 (p<0.001)	99.3 (99.0-99.5)	0.0-100.0
	IgM	2	742	61.4-64.3	62.9	62.8 (59.3-66.3)	-	-	-
	IgA	2	1,368	3.7-37.0	20.4	17.3 (0.0-59.4)	137.2 (p<0.001)	99.3 (98.7-99.6)	-
	Mixed/ unclear immunoglobulin[d]	1	150	-	-	2.7 (0.6-6.0)	-	-	-
	Overall	10	4,772	2.7-81.0	62.9	42.5 (21.2-65.4)	1,532.2 (p<0.001)	99.4 (99.3-99.5)	0.0-100.0
Symptomatic men									
Urogenital Specimen	NAAT	5	1,487	1.8-23.4	14.8	12.0 (5.1-21.1)	50.4 (p<0.001)	92.1 (84.5-96.0)	0.0-54.0
	Culture	16	1,933	2.5-63.0	29.9	30.5 (22.6-39.1)	234.4 (p<0.001)	93.6 (91.1-95.4)	0.0-68.0
	ELISA[d]	1	51	-	-	25.5 (14.4-38.5)		-	-
	Overall	22	3,471	1.8-63.0	27.4	25.4 (18.6-32.8)	451.3 (p<0.001)	95.4 (94.0-96.4)	0.0-64.0
Anorectal Specimen	NAAT[d]	1	34	-	-	47.1 (30.4-64.0)	-	-	-
	Overall[d]	1	34	-	-	47.1 (30.4-64.0)	-	-	-
Symptomatic mixed sexes									
Urogenital Specimen	NAAT	2	447	1.8-17.0	9.4	7.0 (0.0-28.7)	15.0 (p<0.001)	93.3 (78.2-98.0)	-
	Culture[d]	1	81	-	-	7.4 (2.5-14.3)	-	-	-
	Monoclonal antibody[d]	1	82	-	-	19.5 (11.6-28.9)	-	-	-
	Overall	4	610	1.8-19.5	12.2	9.6 (2.3-20.6)	40.4 (p<0.001)	92.6 (84.2-96.5)	0.0-74.0
Blood Specimen	IgG	2	138	19.2-93.4	56.3	59.9 (0.0-100.0)	88.5 (p<0.001)	98.9 (97.7-99.5)	-
	IgM[d]	1	91	-	-	3.3 (0.4-8.2)	-	-	-
	Overall	3	229	3.3-93.4	19.2	36.8 (0.0-93.9)	236.4 (p<0.001)	99.2 (98.7-99.5)	0.0-100.0
Sexual contact of persons with NG/CT									

Population type Stratified by the Specimen type		Outcome measures	Sample size	CT prevalence (%)		Pooled-mean CT prevalence	Heterogeneity measures		
		Total n	Total N	Range	Median	Mean (%) (95% CI)	Q[a] (p-value)	Total n	Prediction interval (95% CI)
Urogenital Specimen	Culture[d]	1	61	-	-	59.0 (46.4-71.1)	-	-	-
	Overall[d]	1	61	-	-	59.0 (46.4-71.1)	-	-	-
Blood Specimen	IgG	2	464	27.6-34.5	31.1	30.5 (24.1-37.3)	-	-	-
	IgG	2	440	35.7-38.6	37.2	37.0 (32.6-41.6)	-	-	-
	Overall	4	904	27.6-38.6	35.1	33.7 (28.8-38.7)	7.8 (p=0.049)	61.7 (0.0-87.2)	0.2-55.0

[a] Q: The Cochran's Q statistic is a measure assessing the existence of heterogeneity in pooled outcome measures.
[b] I^2: A measure that assesses the magnitude of between-study variation that is due to actual differences in CT prevalence across studies rather than chance.
[c] Prediction interval: A measure that estimates the distribution 95% interval of the true CT prevalence around the estimated mean.
[d] No meta-analysis was done due to the small number of studies n<3.
Abbreviations: NAAT: Nucleic Acid Amplification Test, ELISA: Enzyme-Linked Immunosorbent Assay, DFA: Direct Fluorescent Antibody, NAAT: Nucleic Acid Amplification Test, IgG: Immunoglobulin Type G (detects ever infection, IgM: Immunoglobulin Type M (detects recent infection), IgA: Immunoglobulin Type A (first line defense in mucous membrane), CT: *Chlamydia trachomatis*, NG: *Neisseria gonorrhoeae.*

4.5 Precision and Risk of Bias (ROB) Assessment

Table 4 summarizes the precision and ROB assessments of all studies reporting a *Chlamydia trachomatis* prevalence measure. Among all studies (n=412), 49.4% had high precision (n≥200), only 10.8% had low ROB in the sampling methodology domain, and 9.9% had low ROB in the response rate domain (≥80%). Only 18.3% of studies had at least one low ROB in one quality domain, and only 2.4% of the studies had low ROB in both quality domains. Most (87.2%) of the studies had an unclear ROB assessment in the response rate domain. While, 89.6% of studies had high ROB in at least one quality domain.

Table 4. Summary of the Precision Assessment and Risk of Bias Assessment for the Studies Reporting *Chlamydia trachomatis* Prevalence in Latin America and the Caribbean.

Quality assessment	***Chlamydia trachomatis* prevalence measures**	
	Number of studies	**%**
Precision of seroprevalence measures		
Low precision (<200)	361	50.6
High precision (≥200)	353	49.4
Risk of bias quality domain		
Sampling method		
Low risk of bias	77	10.8
High risk of bias	637	89.2
Response rate		
Low risk of bias (≥80%)	71	9.9
High risk of bias (<80%)	20	2.8
Unclear risk of bias	623	87.2
Summary of the risk of bias assessment		
Low risk of bias		
In at least one quality domain	131	18.3
In both quality domains	17	2.4
High risk of bias		
In at least one quality domain	640	89.6
In both quality domains	17	2.4
Studies where risk of bias assessment was possible	**714**	**100**

4.6 Predictors of Prevalence and Sources of Between-Study Heterogeneity

Tables 5-9 summarize the univariable and multivariable meta-regression analyses for each mode of transmission based on the specimen type. Predictors included in these models are: population type, age, sex, Latin America subregion, country's income, assay type, sample size, sampling method, response rate, and temporal variables including year of data collection (in its categorical and continuous forms) and year of publication (in its categorical and continuous forms). The significant variables in the univariate model at $p \leq 0.1$ were purposefully selected for the multivariable models. The significance threshold of the multivariable model is at $p < 0.05$.

4.6.1 Meta-regression Among Urogenital CT

Meta-regressions of urogenital *Chlamydia* measures are summarized in Table 5. The multivariable models included the population type, age group, sex, subregion, assay type, sample size, sampling method, response rate and temporal variable. These models explained around 41% of prevalence variation.

In model 1, compared to general populations, *Chlamydia trachomatis* prevalence was 1.81-fold (95% CI: 1.52-2.16) higher among FSWs and WSW, 1.66-fold (95% CI: 1.33-2.07) higher among symptomatic women, 3.14-fold (95% CI: 2.11-4.66) higher among symptomatic men, 1.53-fold (95% CI: 1.2-1.94) higher among STI clinic attendees, and 1.32-fold (95% CI: 1.01-1.74) higher among infertility clinic attendees.

By age, compared to <20 years old individuals, *Chlamydia trachomatis* prevalence was 0.62-fold (95% CI: 0.41-0.92) and 0.46-fold (95% CI: 0.30-0.71) lower in 30-40 and >40 years old individuals, respectively. *Chlamydia* in men was also found to be 0.63-fold (95% CI: 0.53-0.76) lower compared to women. The Caribbean has 1.75-fold (95% CI: 1.42-2.15) higher *Chlamydia trachomatis* prevalence compared to Central America.

By assay type, compared to *C. trachomatis* prevalence detected by NAAT; *Chlamydia trachomatis* prevalence was 1.94-fold (95% CI: 1.50-2.52) higher when detected by culture, 2.03-fold (95% CI: 1.54-2.66) higher when detected by immunofluorescent assays, and 1.81-fold (95% CI: 1.12-2.93)

higher when detected by a monoclonal assay.

Chlamydia trachomatis prevalence was 0.73-fold (95% CI: 0.64-0.84) lower in studies with sample size ≥200, compared to those with a sample size <200.

Model 2 including the year of data collection in its continuous form yielded similar results to those in model 1. *Chlamydia trachomatis* prevalence appear to be slightly increasing by 1.01-fold (95% CI: 1.00-1.02) yearly. Sensitivity analyses including "year of publication" *in lieu* of "year of data collection" were conducted and yielded similar results (See **Appendix H-1** for *Chlamydia trachomatis* Meta-regression Sensitivity Analyses, Urogenital)

Table 5. Univariable and Multivariable Meta-regression Analyses for CT Prevalence in Urogenital Specimens

Chlamydia in urogenital specimens			Outcome measures	Sample size	Univariable analysis				Multivariable analyses			
									Model 1		Model 2	
			n	Total N	RR	p-value	LT test p-value	Adjusted R^2	ARR	p-value	ARR	p-value
Population characteristics	**Population type**	General populations	402	226,917	1.00	-	<0.001	17.95	1.00	-	1.00	-
		Intermediate-risk populations	49	12,988	1.10 (0.84-1.43)	0.483			1.13 (0.88-1.46)	0.322	1.14 (0.89-1.47)	0.287
		FSWs and WSW	113	51,509	1.76 (1.47-2.12)	0.000			1.81 (1.52-2.16)	0.000	1.84 (1.54-2.19)	0.000
		MSM, MSW, and transgenders	21	10,337	0.49 (0.32-0.75)	0.001			0.75 (0.49-1.12)	0.168	0.72 (0.48-1.09)	0.123
		Symptomatic women	67	12,123	1.95 (1.54-2.46)	0.000			1.66 (1.33-2.07)	0.000	1.70 (1.36-2.12)	0.000
		Symptomatic men	22	3,471	3.00 (2.07-4.35)	0.000			3.14 (2.11-4.66)	0.000	3.16 (2.14-4.68)	0.000
		Symptomatic mixed sexes	4	610	1.07 (0.45-2.55)	0.873			1.17 (0.43-3.14)	0.755	1.30 (0.49-3.48)	0.592
		HIV-positive individuals and individuals in HIV-discordant couples	32	7,187	0.66 (0.47-0.93)	0.019			0.79 (0.58-1.08)	0.143	0.75 (0.55-1.02)	0.076
		STI clinic attendees	58	11,892	1.48 (1.15-1.91)	0.002			1.53 (1.20-1.94)	0.001	1.47 (1.15-1.87)	0.002
		Infertility clinic attendees	50	10,253	1.31 (0.99-1.74)	0.054			1.32 (1.01-1.74)	0.038	1.30 (0.99-1.70)	0.052
		Other populations[a]	34	5,013	2.98 (2.19-4.06)	0.000			2.72 (2.05-3.62)	0.000	2.70 (2.04-3.58)	0.000
	Age group	<20 years	50	11,990	1.00	-	0.006	0.97	1.00	-	1.00	-
		20-30 years	70	18,677	1.04 (0.73-1.49)	0.802			0.84 (0.62-1.14)	0.270	0.84 (0.62-1.13)	0.264
		30-40 years	31	3,171	0.69 (0.43-1.09)	0.117			0.62 (0.41-0.92)	0.019	0.60 (0.41-0.90)	0.014
		>40	33	2,964	0.47 (0.28-0.79)	0.004			0.46 (0.30-0.71)	0.001	0.44 (0.28-0.68)	0.000
		Mixed ages	668	315,498	0.78 (0.58-1.04)	0.092			0.63 (0.49-0.80)	0.000	0.62 (0.49-0.79)	0.000
	Sex	Women	688	290,445	1.00-	-	<0.001	4.07	1.00	-	1.00	-
		Men	171	59,301	0.62 (0.52-0.73)	0.000			0.63 (0.53-0.76)	0.000	0.64 (0.54-0.76)	0.000
		Mixed sexes	13	2,554	0.67 (0.39-1.15)	0.155			0.62 (0.34-1.11)	0.112	0.59 (0.33-1.06)	0.078
	Subregion	Central America	206	57,059	1.00	-	<0.001	4.95	1.00	-	1.00	-
		South America	504	274,419	0.93 (0.80-1.09)	0.388			0.99 (0.85-1.15)	0.973	1.01 (0.87-1.17)	0.861
		Caribbean	102	20,822	1.73 (1.38-2.17)	0.000			1.75 (1.42-2.15)	0.000	1.75 (1.42-2.14)	0.000
	Country's income	LMIC	72	21,537	1.00	-	0.867	0.00	-	-	-	-
		UMIC	732	325,163	1.06 (0.83-1.36)	0.599			-	-	-	-
		HIC	48	5,600	1.04 (0.72-1.51)	0.802			-	-	-	-
Study methodology characteristics	**Assay type**	NAAT	615	207,896	1.00	-	<0.001	16.53	1.00	-	1.00	-
		Culture	73	13,115	2.71 (2.18-3.35)	0.000			1.94 (1.50-2.52)	0.000	2.22 (1.71-2.88)	0.000
		ELISA	68	18,489	1.18 (0.93-1.48)	0.161			1.10 (0.86-1.40)	0.410	1.18 (0.93-1.50)	0.164
		Immunofluorescent	53	6,171	2.52 (1.92-3.31)	0.000			2.03 (1.54-2.66)	0.000	2.27 (1.72-2.99)	0.000
		Monoclonal Antibody	11	2,202	1.44 (0.86-2.41)	0.164			1.81 (1.12-2.93)	0.015	2.03 (1.26-3.28)	0.004
		Mixed/unclear assay	32	104,427	0.68 (0.49-0.93)	0.016			0.62 (0.46-0.83)	0.002	0.68 (0.50-0.91)	0.011
	Sample size	<200	249	18,612	1.00	-	<0.001	5.48	1.00	-	1.00	-

Chlamydia in urogenital specimens			Outcome measures	Sample size	Univariable analysis				Multivariable analyses			
									Model 1		Model 2	
			n	Total N	RR	p-value	LT test p-value	Adjusted R^2	ARR	p-value	ARR	p-value
		≥200	603	333,688	0.66 (0.57-0.76)	0.000			0.73 (0.64-0.84)	0.000	0.72 (0.63-0.83)	0.000
	Sampling method	Probability based	141	36,291	1.00	-	0.013	6.98	1.00	-	1.00	-
		Non-probability based	711	316,009	1.24 (1.04-1.47)	0.013			0.89 (0.75-1.06)	0.214	0.87 (0.73-1.04)	0.137
	Response rate	≥80%	175	43,536	1.00	-	<0.001	2.60	1.00	-	1.00	-
		<80%	23	5,453	0.94 (0.61-1.43)	0.774			0.90 (0.62-1.29)	0.570	0.87 (0.61-1.25)	0.461
		Unclear	654	303,311	1.36 (1.15-1.59)	0.000			1.06 (0.89-1.25)	0.489	1.03 (0.87-1.21)	0.691
Temporal trend	**Year of data collection category**	<2000	248	147,785	1.00	-	<0.001	5.73	1.00	-	-	-
		2000-2010	381	156,286	0.61 (0.52-0.71)	0.000			1.12 (0.94-1.34)	0.201	-	-
		>2010	223	48,229	0.64 (0.54-0.77)	0.000			1.19 (0.98-1.44)	0.067	-	-
	Year of data collection continuous		852	352,300	0.98 (0.97-0.99)	<0.001	<0.001	2.86	-	-	1.01 (1.00-1.02)	0.000

Adjusted R^2 in the final multivariable model 1 = 40.65%.
Adjusted R^2 in the final multivariable model 2 = 41.65%.
[a] Other populations include populations with an undetermined risk of acquiring CT infection such as patients with cervical cancer and patients with (Human Papilloma Virus) HPV
Abbreviations: ARR = Adjusted Risk Ratio, CI = Confidence Interval, HIC = High-Income Country, UMIC = Upper-Middle Income Country, LMIC = Low-Middle Income Country, LT test= Likelihood Ratio Test, RR = Risk Ratio, FSWs: Female Sex Workers, MSM: Men who have Sex with Men, WSW: Women who have Sex with Women, MSWs: Male Sex Workers, HIV: Human Immunodeficiency Virus, STI: Sexually Transmitted Infection, NAAT: Nucleic Acid Amplification Test, ELISA: Enzyme-Linked Immunosorbent Assay, CT: *Chlamydia trachomatis*, NG: *Neisseria gonorrhoeae*. For population type definition, see Appendix D.

4.6.2Meta-regression Among Anorectal CT

Meta-regressions of anorectal *Chlamydia* measures are summarized in Table 6. The multivariable models included population type, sex, subregion, assay, sampling method, and a temporal variable. These models explained around 47% of prevalence variation.

In model 1, compared to MSM, *Chlamydia trachomatis* prevalence was 2.7-fold (95% CI: 1.10-6.63) higher among mixed populations. By sex, men had 3.30-fold (95% CI: 1.73-7.60) higher *C. trachomatis* prevalence compared to women.

Model 2 including the year of data collection in its continuous form yielded similar results to those in model 1. Sensitivity analyses including "year of publication" in lieu of "year of data collection" were conducted, these analyses yielded similar results (See **Appendix H-2** for *Chlamydia trachomatis* Meta-regression Sensitivity Analyses, Anorectal).

Table 6. Univariable and Multivariable Meta-regression Analyses for CT prevalence in Anorectal specimens

Chlamydia detection in anorectal specimens			Outcome measures	Sample size	Univariable analysis				Multivariable analyses			
									Model 1		Model 2	
			n	Total N	RR	p-value	LT test p-value	Adjusted R^2	ARR	p-value	ARR	p-value
Population characteristics	Population type	MSM, MSW, and transgenders	31	8,249	1.00	-	0.090	11.53	1.00	-	1.00	-
		HIV-positive individuals and individuals in HIV-discordant couples	7	1,051	0.95 (0.52-1.72)	0.875			1.14 (0.66-1.99)	0.616	1.09 (0.61-1.94)	0.748
		STI clinic attendees	3	914	0.37 (0.13-1.04)	0.061			0.60 (0.20-1.77)	0.347	0.64 (0.21-1.89)	0.411
		Mixed populations	2	146	2.25 (0.84-6.04)	0.102			2.70 (1.10-6.63)	0.031	2.18 (0.82-5.82)	0.113
	Sex	Women	4	653	1.00	-	0.085	5.42	1.00	-	1.00	-
		Men	39	9,707	2.04 (0.90-4.62)	0.085			3.30 (1.43-7.60)	0.006	3.03 (1.28-7.12)	0.013
	Subregion	Central America	14	3,145	1.00	-	0.025	20.19	1.00	-	1.00	-
		South America	28	6,999	1.86 (1.19-2.93)	0.008			1.43 (0.61-3.35)	0.391	1.44 (0.61-3.37)	0.384
		Caribbean	1	216	1.16 (0.29-4.54)	0.825			0.74 (0.18-3.02)	0.668	0.56 (0.12-2.46)	0.436
	Country's income	LMIC	10	2,402	1.00	-	0.003	14.56	-	-	-	-
		UMIC	33	7,958	2.13 (1.31-3.47)	0.003			-	-	-	-
Study methodology characteristics	Assay	NAAT	39	8,733	1.00	-	0.371	0.00	-	-	-	-
		Mixed/unclear assay	4	1,627	0.71 (0.33-1.51)	0.371			-	-	-	-
	Precision	<200	17	1,805	1.00	-	0.997	0.00	-	-	-	-
		≥200	26	8,555	1.00 (0.62-1.61)	0.997			-	-	-	-
	Sampling method	Probability based	15	3,064	1.00	-	0.015	14.56	1.0	-	1.00	-
		Non-probability based	28	7,296	1.74 (1.12-2.73)	0.015			1.37 (0.60-3.14)	0.439	1.42 (0.62-3.24)	0.387
	Response	≥80%	6	1,199	1.00	-	0.562	0.00	-	-	-	-
		<80%	1	409	0.61 (0.13-2.80)	0.519			-	-	-	-
		Unclear	36	8,752	0.71 (0.37-1.37)	0.304			-	-	-	-
Temporal trend	Year of data collection category	2000-2010	14	3552	1.00	-	0.014	10.38	1.00	-	-	-
		>2010	29	6808	1.81 (1.13-2.89)	0.014			1.42 (0.93-2.18)	0.095	-	-
	Year of data collection continuous		43	10,360	1.09 (1.02-1.16)	0.011	0.011	11.9	-	-	1.05 (0.98-1.12)	0.096

Adjusted R^2 in the final multivariable model 1 = 47.36%.
Adjusted R^2 in the final multivariable model 2 = 47.73%.
[a] Other populations include populations with an undetermined risk of acquiring CT infection such as patients with cervical cancer and patients with HPV
Abbreviations: ARR = Adjusted Risk Ratio, CI = Confidence Interval, UMIC = Upper-Middle Income Country, LMIC = Low-Middle Income Country, LT test= Likelihood Ratio Test, RR = Risk ratio, FSWs: Female Sex Workers, MSM: Men who have Sex with Men, WSW: Women who have Sex with Women, MSWs: Male Sex Workers, HIV: Human Immunodeficiency Virus, STI: Sexually Transmitted Infection, NAAT: Nucleic Acid Amplification Test, CT: *Chlamydia trachomatis*, NG: *Neisseria gonorrhoeae*. For population type definition, see Appendix D.

4.6.3Meta-regression Among Seroprevalence CT

Meta-regressions of *Chlamydia* seroprevalence measures are summarized in Table 8. The multivariable model included the population type, age group, sex, subregion, income, assay type, sample size, sampling method, response rate and a temporal variable. These models explained around 44% of prevalence variation.

Compared to general populations, *Chlamydia trachomatis* seroprevalence was 1.67-fold (95% CI: 1.02-2.72) higher among FSWs and WSM.

By sex, men had a 0.59-fold (95% CI: 0.40-0.88) lower *Chlamydia trachomatis* seroprevalence compared to women. By region, South America has 2.13-fold (95% CI: 1.51-3.01) and the Caribbean has 3.36-fold (95% CI: 2.26-5.00) higher *Chlamydia trachomatis* seroprevalence compared to Central America.

By assay type, seroprevalence of IgA detection was 0.38-fold (95% CI: 0.25-0.57) lower compared seroprevalence of IgG detection.

Table 7. Univariable and Multivariable Meta-regression Analyses for CT Seroprevalence

		Blood specimens	Outcome measures	Sample size	Univariable analysis				Multivariable analyses	
			n	Total N	RR	p-value	LT test p-value	Adjusted R^2	Model 1	
									ARR	p-value
Population characteristics	Population type	General populations	122	13,898	1.00	-	0.005	8.60	1.00	-
		Intermediate-risk populations	4	210	1.97 (0.85-4.56)	0.111			1.80 (0.92-3.49)	0.082
		FSWs and WSW	8	1,213	1.71 (0.94-3.13)	0.078			1.67 (1.02-2.72)	0.039
		MSM, MSW, and transgenders	2	226	0.34 (0.10-1.18)	0.090			1.54 (0.52-4.55)	0.425
		Symptomatic women	10	4,772	0.93 (0.53-1.63)	0.819			0.84 (0.52-1.36)	0.482
		Symptomatic mix sexes	3	229	0.70 (0.24-1.98)	0.503			0.45 (0.17-1.21)	0.118
		HIV-positive individuals and individuals in HIV-discordant couples	2	170	0.14 (0.03-0.56)	0.006			0.70 (0.20-2.42)	0.575
		STI clinic attendees	4	606	1.65 (0.71-3.81)	0.239			1.64 (0.79-3.37)	0.177
		Infertility clinic attendees	17	1,356	0.64 (0.40-1.03)	0.067			0.76 (0.51-1.13)	0.179
		Women with miscarriage or ectopic pregnancy	4	163	0.55 (0.21-1.46)	0.237			0.66 (0.29-1.48)	0.319
		Sexual contacts of persons with NG/CT	4	904	1.04 (0.45-2.39)	0.926			1.46 (0.67-3.17)	0.338
		Other populations[a]	22	2,905	1.40 (0.95-2.06)	0.087			1.48 (1.06-2.06)	0.020
	Age group	<20 years	6	2,659	1.00	-	0.014	4.67	1.00	-
		≥20 years	13	760	0.44 (0.17-1.15)	0.098			0.61 (0.25-1.45)	0.266
		Mixed ages	183	23,233	1.11 (0.53-2.35)	0.769			0.97 (0.50-1.88)	0.930
	Sex	Women	120	17,911	1.00	-	<0.001	10.68	1.00	-
		Men	30	3,313	0.50 (0.34-0.72)	0.000			0.59 (0.40-0.88)	0.011
		Mixed sexes	52	5,428	1.36 (1.03-1.79)	0.027			1.10 (0.81-1.50)	0.519
	Subregion	Central America	30	5,044	1.00	-	<0.001	17.51	1.00	-
		South America	141	14,906	2.64 (1.87-3.72)	0.000			2.13 (1.51-3.01)	0.000
		Caribbean	31	6,702	3.71 (2.43-5.66)	0.000			3.36 (2.26-5.00)	0.000
	Country's income	LMIC	11	1,888	1.00	-	0.446	0.00	-	-
		UMIC	177	21,361	0.83 (0.48-1.44)	0.526			-	-
		HIC	14	3,403	1.11 (0.54-2.24)	0.769			-	-
Study methodology characteristics	Assay type	IgG	75	9,916	1.00	-	<0.001	15.80	1.00	-
		IgM	12	1,870	0.94 (0.56-1.58)	0.839			0.90 (0.57-1.42)	0.679
		IgA	19	2,959	0.34 (0.22-0.54)	0.000			0.38 (0.25-0.57)	0.000
		Mixed/unclear immunoglobulins	96	11,907	1.19 (0.92-1.54)	0.176			0.96 (0.73-1.25)	0.765
	Sample size[‡]	<200	123	10,554	1.00	-	0.116	0.54	-	-
		≥200	79	16,098	1.23 (0.94-1.58)	0.116			-	-
	Sampling method	Probability based	24	3,197	1.00	-	0.289	0.00	-	-
		Non-probability based	178	23,455	1.25 (0.82-1.91)	0.289			-	-
	Response	≥80%	17	1,114	1.00	-	0.002	7.37	1.00	-

	rate	<80%	7	953	1.34 (0.59-3.05)	0.473			1.27 (0.63-2.53)	0.494
		Unclear	178	24,585	2.33 (1.39-3.91)	0.001			1.92 (1.01-3.63)	0.044
Temporal trend	**Year of data collection category**	<2000	145	19,023	1.00	-	0.655	0.00	-	-
		2000-2010	25	1,871	0.97 (0.65-1.43)	0.882			-	-
		>2010	32	5,758	1.16 (0.82-1.64)	0.385			-	-
	Year of publication category	<2005	141	17,627	1.00	-	0.853	0.00	-	-
		2005-2015	39	4,977	1.09 (0.79-1.51)	0.589			-	-
		>2015	22	4,048	0.99 (0.65-1.49)	0.954			-	-
	Year of data collection continuous		202	26,652	0.99 (0.99-1.01)	0.975	0.975	0.00	-	-
	Year of publication continuous		202	26,652	0.99 (0.97-1.01)	0.286	0.286	0.38	-	-

Adjusted R^2 in the final multivariable model 1 = 44.73%.

[a] Other populations include populations with an undetermined risk of acquiring CT infection such as patients with cervical cancer and patients with HPV

Abbreviations: ARR = Adjusted Risk Ratio, CI = Confidence Interval, HIC = High-Income Country, UMIC = Upper-Middle Income Country, LMIC = Low-Middle Income Country, LT test= Likelihood Ratio Test, RR = Risk Ratio, FSWs: Female Sex Workers, MSM: Men who have Sex with Men, WSW: Women who have Sex with Women, MSWs: Male Sex Workers, HIV: Human Immunodeficiency Virus, STI: Sexually Transmitted Infection, NAAT: Nucleic Acid Amplification Test, IgG: Immunoglobulin Type G (detects ever infection), IgM: Immunoglobulin Type M (detects recent infection), IgA: Immunoglobulin Type A (first line defense in mucous membrane), CT: *Chlamydia trachomatis*, NG: *Neisseria gonorrhoeae*. For population type definition, see Appendix D.

CHAPTER 5 : DISCUSSION

This is a comprehensive systematic review and meta-analyses characterizing *Chlamydia trachomatis* epidemiology in the LAC region. A total of 412 articles including 1175 measures were extracted and analyzed to provide pooled-mean prevalence for various modes of CT transmission; urogenital, anorectal, and oropharyngeal. Most of the studies reported urogenital CT prevalence, which is the commonest mode of transmission in most populations (52, 129, 130). Overall, the evidence covered about 70% of LAC countries, Brazil contributed to the largest number of prevalence measures. The extracted measures for CT incidence were much less in number compared to the prevalence measures. This is consistent with the fact that cohort and RCT studies are expensive, logistically challenging, and difficult to conduct on STDs due to ethical and practical reasons, more so that CT is a curable infection (131-133).

The pooled-mean prevalence of urogenital *Chlamydia trachomatis* among the general population at 8.2% is higher than expected. It is higher than the global estimated prevalence (52), and that in the Middle East and North Africa (27), both of which are at about 3% (27, 52). However, this estimate is somehow consistent with a recent meta-analysis (Huai et al, 2020) that updated the estimates globally, the pooled prevalence of *Chlamydia trachomatis* among the general population, the prevalence of *Chlamydia trachomatis* was highest in region of America (4.5%), especially in Latin America (6.7%).

The higher prevalence may not necessarily reflect higher risky sexual behaviors. Instead, it may reflect the poor access to prevention, treatment, or screening programs for STIs in LAC. Our findings suggest that this high CT infection burden needs to be tackled effectively by LAC public health authorities through accessible prevention, treatment, and screening programs for wider population.

The oropharyngeal pooled-mean prevalence at 37.7% was very high, but this may just reflect bias due to the small number of available prevalence measures, some of which may have been affected by population selection bias. Also because of the small number of oropharyngeal prevalence studies, it was not possible to conduct meta-regressions for CT prevalence of this mode of transmission.

The pooled-mean seroprevalence was also relatively high at 36.7%, but interpreting this pooled

measure as ever infection is challenged by the fact that serology for this infection is still not a well-developed and standardized field (134-149). Therefore, caution is warranted in interpreting this level of prevalence.

The predictor that explained most of the urogenital *Chlamydia* prevalence variation was the population type. *Chlamydia trachomatis* prevalence was higher in sexual high-risk populations. This is consistent with the link between STI exposure and risky sexual behaviors (150, 151). Interestingly, the high prevalence of urogenital *Chlamydia* in fertility clinic attendees at 10.0% (95% CI: 6.8-13.6) further affirms a possible link between this infection and infertility in LAC (152, 153).

Urogenital *Chlamydia* prevalence was found to decrease with age, this supports build-up of at least partial immunity at young age against *Chlamydia trachomatis* reinfection at older age (153). *Chlamydia* in men was lower than in women, in line with previous global estimates (add references, e.g. the ones I have mentioned in evaluation form). This is probably due to the fact that CT infection in men is more symptomatic than in women. Therefore, men may seek medical treatment more often to cure this infection, which contributes to lowering its prevalence among men (154-156). This is further supported by the higher prevalence of urogenital *Chlamydia* in symptomatic men compared to symptomatic women (Table 3) (133).

Urogenital *Chlamydia* was found higher in the Caribbean than in Central and South America. This may be explained by lower access to CT prevention, treatment, and screening programs in the Caribbean than in the rest of the LAC region.

It is well established that NAAT offers the highest sensitivity in detecting current infection and is currently more frequently used to diagnose *Chlamydia trachomatis* in clinical settings (103, 114, 148, 157-170). Generally, the studies that used NAAT in CT detection tended to be of higher quality and better structured and standardized than studies that used culture (103, 114, 148, 157-170). Unexpectedly, CT prevalence, after adjustment for confounding factors in the meta-regressions, was higher in studies that used culture than in studies that used NAAT. This is maybe due to some form of residual confounding. Studies that used culture tended to be older and conducted before better standards became established for epidemiological studies. There might be also selection bias, as studies that used culture tended to be more

often related to STI clinics and sex working communities (171-193).

Urogenital *Chlamydia* prevalence was found to be increasing by 1% yearly. This is consistent with less adherence to preventive measures such as use of condoms, reduced concerns about HIV transmission, and a shift towards use of other modalities such as Pre-exposure Prophylaxis (PreP) that prevent HIV acquisition but not prevent CT acquisition (194-205).

Included studies in this review exhibited large heterogeneity. This is not unexpected as the studies differed in geographical and risk context, type of population, assay used, sampling method and other factors. There was evidence of a small study effect with studies that have higher sample sizes reporting lower CT prevalence, as observed for other STIs (206, 207). Many of the studies did not have optimal quality, as they did not use probability-based sampling, had low response rate, or did not even report the response rate. It is essential to raise the quality standard of CT epidemiologic studies in this region for a better quantification of CT infection burden in this part of the world. Nevertheless, none of the quality domains were associated with CT prevalence in the meta-regression analyses suggesting that these quality limitations do not seem to have affected the findings of this study.

A strength of this systematic review is the identification of a large number of CT studies that allowed conducting an array of meta-analyses and meta-regressions. These analyses were critical in understanding levels and trends of CT prevalence and in explaining the heterogeneity in available CT prevalence measures.

The ongoing surveillance programs and intervention initiatives in LAC region need to be re-evaluated and improved. These programs also need to be adequately resourced to enhance their effectiveness and coverage of different population groups. The recommendations of the WHO Global Health Sector Strategy on STIs need to be better advocated to the stakeholders and local authorities to invest in tackling chlamydial infection (208-210).

Conclusion

The LAC region is burdened by *Chlamydia trachomatis* infection, but the public health response remains far from achieving WHO's Global Health Sector Strategy on STIs (208). Urogenital *Chlamydia*

prevalence in this region is higher than that in other world regions and appears to be increasing by 1% per year. The LAC region needs the resources to implement much more accessible prevention, treatment, and screening programs for the wider population. The quality of CT epidemiological research also need improvement, coverage for more geographies, and better reach the marginalized communities.

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APPENDIXES

Appendix A: PRISMA Checklist

Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) checklist 2020 (69).

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Pages 1,5,6
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Pages 1-9
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 1
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Page 1,2
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Page 5
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Pages 5, 6
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Pages 5, 6
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Pages 5, 6
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Pages 6,7
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Page 7
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Pages 7,8
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Page 7
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Pages 7-9
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Pages 7-9
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Pages 7-9
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Page 9
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Pages 10-12
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Pages 11-12
	13f	Describe any sensitivity analyses conducted to assess robustness of the	Pages 11-12

Section and Topic	Item #	Checklist item	Location where item is reported
		synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Page 11
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Pages 10-12
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Page 10
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Pages 10-12
Study characteristics	17	Cite each included study and present its characteristics.	Page 22
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Pages 10-12
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Pages 12-21
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Page 22
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Pages 23-32
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Pages 23-32
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Pages 23-32
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Pages 23-32
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Pages 23-32
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Pages 33-36
	23b	Discuss any limitations of the evidence included in the review.	Pages 33-36
	23c	Discuss any limitations of the review processes used.	Pages 33-36
	23d	Discuss implications of the results for practice, policy, and future research.	Page 36
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Page 37
Competing interests	26	Declare any competing interests of review authors.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

Appendix B: Search Strategy

Data sources and search criteria for systematically reviewing *Chlamydia trachomatis* epidemiology in Latin America and the Caribbean (LAC).

PubMed (last searched: February 7, 2021)
(“chlamydia trachomatis”[Mesh] OR “chlamydia”[Mesh] OR “pelvic inflammatory disease”[Mesh] OR "chlamydia trachomatis"[Text] OR “chlamydia”[Text] OR "pelvic inflammatory disease"[Text]) **AND** (“Latin America”[MeSH] OR “Central America"[MeSH] OR “South America”[Mesh] OR “Caribbean Region”[MeSH] OR “Mexico”[MeSH]) OR (Anguilla*[Text] OR Aruba*[Text] OR Antigua and Barbuda[Text] OR Argentin*[Text] OR Bahamas*[Text] OR Barbados*[Text] OR Beliz*[Text] OR Bermuda*[Text] OR Bolivia*[Text] OR Brazil*[text] OR “British Virgin Islands”[Text] OR Latin America[Text] OR Latin American*[Text] OR Caribbean*[Text] OR Cayman Islands[Text] OR Chile*[Text] OR Colombia*[Text] OR Costa Rica*[Text] OR Cuba*[Text] OR Curacao*[Text] OR Central America[Text] OR Central American*[text] OR Dominica*[Text] OR Dominican republic[Text] OR Ecuador*[Text] OR El Salvador[Text] OR French Guiana[Text] OR Grenad*[Text] OR Guadeloup*[Text] OR Guatemal*[Text] OR Guyan*[Text] OR Haiti*[Text] OR Honduras*[Text] OR Jamaic*[Text] OR Martiniqu*[Text] OR Montserrat*[Text] OR Mexic*[Text] OR Nicaragua*[Text] OR Panama*[Text] OR Paraguay*[Text] OR Peru*[Text] OR Puerto Rico[Text] OR Puerto Rica*[text] OR Saint Kitts and Nevis[Text] OR Saint Lucia[Text] OR Saint Vincent and the Grenadines[Text] OR Suriname*[Text] OR Saint Martin[Text] OR Sint Maarten[Text] OR South America[Text] OR South American*[Text] OR Trinidad and Tobago[Text] OR Turks and Caicos[Text] OR Uruguay*[Text] OR United States Virgin Islands[Text] OR Venezuel*[Text])
Embase (last searched:)
(exp chlamydia/ or exp chlamydia trachomatis/ or (chlamydia* or chlamydia trachomatis* or trachomatis*).mp.) **And** (exp "Antigua and Barbuda"/ or exp Argentina/ or exp Aruba/ or exp Bahamas/ or exp Barbados/ or exp Belize/ or exp Bermuda/ or exp Brazil/ or exp "Virgin Islands (British)"/ or exp Cayman Islands/ or exp Chile/ or exp Colombia/ or exp Costa Rica/ or exp Cuba/ or exp Curacao/ or exp Dominica/ or exp Dominican Republic/ or exp Ecuador/ or exp El Salvador/ or exp French Guiana/ or exp Grenada/ or exp Guadeloupe/ or exp Guatemala/ or exp Guyana/ or exp Haiti/ or exp Honduras/ or exp Jamaica/ or exp Martinique/ or exp Mexico/ or exp Montserrat/ or exp Nicaragua/ or exp Panama/ or exp Paraguay/ or exp Peru/ or exp Puerto Rico/ or exp Saint Lucia/ or exp "saint martin (dutch)"/ or exp "saint martin (french)"/ or exp Suriname/) or (exp "Trinidad and Tobago"/ or exp "Virgin Islands (U.S.)"/ or exp Uruguay/ or exp Venezuela/ or exp South America/ or exp Central America/ or exp Caribbean/ or exp "Caribbean (person)"/ or exp Caribbean Netherlands/ or exp Caribbean Islands/ or exp South American/ or exp Central American/ or exp Latin America/) or (Antigua or Argentina or Argentinian or Aruba or Aruban or Bahamas or Belize or belizian or Bermuda or Bolivia or Bolivian or Brazil or Brazilian or British virgin islands or Cayman islands or Chile or Chilean or Colombia or Colombian or Costa Rica or costa Rican or Cuba or Cuban or Curacao or Dominica or Dominican or Dominican republic or Ecuador or Ecuadorian or el Salvador or el Salvadorian).mp. or (French Guiana or Grenada or Guadeloupe or Guatemala or Guatemalan or Guyana or Haitian or Honduras or Honduran or Jamaica or Jamaican or Martinique or Mexico or Mexican or Montserrat or Nicaragua or Nicaraguan or panama or Panamanian or Paraguay or Paraguayans or Peru or Peruvian or Puerto Rico or Puerto Ricans or saint Lucia or saint Lucian or Latin American or south American or central american).mp. or ((Turks and caicos) or (saint vincents and the grenadines) or (saint kitts and the nevis)).mp.
LILACS (Last searched:)

(chlamydia OR Chlamydia trachomatis) **AND** (pais_assunto:("america do sul" OR "brasil" OR "oceania" OR "mexico" OR "argentina" OR "caribe ingles" OR "caribe" OR "chile" OR "america central" OR "colombia" OR "venezuela" OR "jamaica" OR "peru" OR "cuba" OR "costa rica" OR "puerto rico" OR "panama" OR "bolivia" OR "haiti" OR "ecuador" OR "guyana francesa" OR "guyana" OR "barbados" OR "trinidad y tobago" OR "uruguay" OR "honduras" OR "el salvador" OR "guatemala" OR "paraguay" OR "nicaragua" OR "republica dominicana" OR "dominica" OR "bahamas" OR "grenada" OR "martinica" OR "santa lucia" OR "suriname"))

Appendix C: Extraction Variables and LAC subregions

Appendix C-1: List of the 46 Countries Included for the Latin America and the Caribbean

- **Central America:** Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama.
- **South America:** Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Surinam, Uruguay, Venezuela.
- **Caribbean:** Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Cuba, Curacao, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, St. Barthelemy, St. Martin, Trinidad and Tobago, Turks and Caicos.

Appendix C-2: List of Variables Extracted and Synthesized

1. Author(s)
2. Publication title
3. Publication year
4. Year(s) of data collection
5. Country of origin
6. Country of survey
7. Latin America and the Caribbean subregion
8. City
9. Study site
10. Study design
11. Study sampling procedure
12. Study population
13. Sex
14. Diagnostic assay:
    - NAAT / PCR
    - Culture
    - Gram stain
    - Serological assay (eg. ELISA)
15. Sample size:
    - ≥200
    - <200
16. Sampling method;
    - Probability-based sampling
    - Non-probability based sampling
17. Response rate:
    - ≥80%
    - <80%
18. Unclear

Appendix D: Definitions of Population Type Classifications

General populations (populations at low risk): these include populations at lower risk of exposure to CT, such as antenatal clinic attendees, blood donors, and pregnant women, among others.

Intermediate-risk populations: these include populations who presumably have frequent sexual contacts with populations engaging in high sexual risk behavior and have therefore a higher risk of exposure to CT than the general population. These comprise prisoners, people who inject drugs, and truck drivers, among others.

Men who have sex with men, male sex workers, and transgender: these include men who engage in same-sex sexual activities, specifically anal sex, men who are engaged in providing sexual services in return for payment, and populations whose gender identity is different from the sex that they were assigned at birth.

Female sex workers and women who have sex with women: these include reproductive-age women that are engaged in sex work, that is the exchange of sex for money (sex work as a profession).

Symptomatic women: these include women with clinical manifestations related to CT or suspected of having CT, such as those with vaginal discharge that mandated their visit to healthcare provider.

Symptomatic men: these include men with clinical manifestations related to CT or suspected of having CT, such as those with urethral discharge that mandated their visit to healthcare provider.

Symptomatic mixed sexes: these include men and/or women with clinical manifestations related to *Chlamydia* or suspected of having CT, such as those with urethral discharge.

HIV-positive individuals and individuals in HIV-discordant couples: these include populations who are HIV-positive or are in a spousal relationship with an HIV-positive individual.

STI clinic attendees: these include patients attending STI clinics, or have clinical manifestations related to an STI.

Infertility clinic attendees: these were included in a separate category given the uncertainty around their risk of exposure to CT, and the possible biological link between CT and infertility.

Women with miscarriage or ectopic pregnancy: these were included in a separate category given the uncertainty around their risk of exposure to CT, and the possible biological link between CT and miscarriage or ectopic pregnancy.

Sexual contact of persons with NG/CT: these include populations who are in sexual contact with persons infected with NG and/or CT.

Other populations: these include populations not satisfying above definitions, or populations with an undetermined risk of acquiring CT infection such as cervical cancer patients or victims of sexual assault.

Appendix E: Extraction Priority

- The specimen tested indicated below in coded order. Studies applying the same assay to different biological specimens were included only once, based on a sequential order.
  - For women: 1-endocervical swabs, 2-vaginal, 3-urine samples
  - For men: 1-in urethral swabs, 2-urine, 3-semen samples.

- Different assay to test the same specimen were included separately given our interest in studying their contribution to heterogeneity in CT prevalence or incidence, and in generating STI-estimation correction factors based on assay type.
- The studies that used Nucleic Acid Amplification Test (NAAT) and culture on the same biological specimen were both separately included.
- Antigen detection assays of the same biological specimen were prioritized based on sensitivity (Fluorescence Immunoassays (FIA) and Enzyme Immunoassay (EIA) such as linked immunoassays (ELISA))
- All immunoassays were prioritized over Giemsa staining.

Stratified analysis for sex is based on the predominant sex (≥ 60% of the total sample size) in the study population

Appendix F: *Chlamydia trachomatis* Conversion and Incidence Rate in LAC

Author, year	Year(s) of data collection	Country	Original study design	Population characteristics	Assay type	Sample size	Follow-up duration	Person-years of follow-up	CT conversion rate (%)	CI incidence rate (per 100 person-years)
Intermediate-risk populations										
Bazzi, 2015 (211)	2010-13	Mexico	Cohort	Male Partners of FSW	NAAT/PCR		3 years	371		4.59
Female sex workers and women who have sex with women										
Bazzi, 2015 (212)	2010-13	Mexico	Cohort	FSWs	NAAT/PCR		3 years	371		13.79
Men who have sex with men, male sex workers, and transgender										
Moreira, 2020 (213)		Brazil	Cohort	MSM on PrEP	Unclear	108	12 months		12	
Ganley, 2021 (214)	2012-14	Mexico	RCT	Men sex workers	NAAT/PCR	227		194.12	4.4	5.15
Allan-Blitz, 2018 (215)	2013-16	Peru	Cohort	MSM and transgender women with rectal swab	NAAT/PCR	404	3 years		48.762376	37.3
Allan-Blitz, 2018 (215)	2013-16	Peru	Cohort	MSM and transgender women with pharyngeal swab	NAAT/PCR	404	3 years	531	12.623762	9.6
Castillo, 2015 (216)	2009-12	Peru	RCT	MSM and transgender people tested for anal chlamydia	NAAT/PCR		18 months			16.3
Castillo, 2015 (216)	2009-12	Peru	RCT	MSM and transgender people tested for pharyngeal chlamydia	NAAT/PCR		18 months			3.4
Mixed high risk populations										
Detels, 2011 (217)		Peru	Cohort	Populations with higher risk of acquiring chlamydia at 12 months	NAAT/PCR	2590	1 year			3.7
Detels, 2011 (218)		Peru	Cohort	Populations with higher risk of acquiring chlamydia at 24 months	NAAT/PCR	2360	1 year			3.1
HIV-positive individuals and individuals in HIV-discordant couples										
Montano, 2020 (219)	2013-17	Peru	RCT	HIV positive MSM/transgender women with rectal swab in deferred ART study arm	NAAT/PCR	105	336 days			48.6
Montano, 2020 (219)	2013-17	Peru	RCT	HIV positive MSM/transgender women with urethral sample in deferred ART study arm	NAAT/PCR	105	336 days			12.6
Montano, 2020 (219)	2013-17	Peru	RCT	HIV positive MSM/transgender women with rectal swab in immediate ART study arm	NAAT/PCR	99	336 days			25.6
Montano, 2020 (219)	2013-17	Peru	RCT	HIV positive MSM/transgender women with urethral sample in immediate ART study arm	NAAT/PCR	99	336 days			0
STI clinic attendees										
Sabido, 2009 (220)	2005-08	Guatemala	Cohort	FSWs attending STI clinic for 1st follow-up visit	EIA	741	6 months			10.71

Author, year	Year(s) of data collection	Country	Original study design	Population characteristics	Assay type	Sample size	Follow-up duration	Person-years of follow-up	CT conversion rate (%)	CI incidence rate (per 100 person-years)
Sabido, 2009 (220)	2005-08	Guatemala	Cohort	FSWs attending STI clinic for 2nd follow-up visit	EIA	445	6 months			7.17
Sabido, 2009 (220)	2005-08	Guatemala	Cohort	FSWs attending STI clinic for 3rd follow-up visit	EIA	293	6 months			6.21
Other populations										
Quinonez-Calvache, 2016 (221)	2007-10	Colombia	Cohort	HPV positive women	NAAT/PCR	157	2 years		74.52	

Abbreviations: ANC = Antenatal clinic, CB-VCT = Community-based voluntary counselling and testing sites, CC = Case control, CF = Compliment fixation, CR = Czech Republic, CS = Cross sectional, Conv = Convenience, CRS = Cluster random sampling, CT = *Chlamydia trachomatis*, DFA = Direct fluorescent antibody, ED = Emergency department, FC = Fertility clinic, FPC = Family planning clinic, FSWs = Female sex workers, GP = General practice, GS = Gram stain, GTI = Genital tract infection, GUM = Genitourinary medicine, HIV = Human immunodeficiency virus, HPV = Human papillomavirus, IDU = Intravenous-drug users, IUD = Intrauterine device, IVF = In vitro fertilization, LGV = lymphogranuloma Venereum, MCA = Monoclonal antibody, MSM = Men who have sex with men, MSWs = Male sex workers, NAAT = Nucleic acid amplification test, NG = Neisseria gonorrhoeae, OBGYN = Obstetrics gynecology, OC = Oral contraceptive, OPC = Outpatient clinic, PBS = Population based sampling, PEP: Post-exposure prophylaxis, PID = Pelvic inflammatory disease, RCT = Randomized controlled trial, RDS = Respondent driven sapling, Rehab = Rehabilitation, RF = Russian Federation, RS = Random sampling, SHC = Sexual health center, SHS = Sexual health services, SR = Slovak Republic, SRS = Stratified random sampling, SS = Snowball sampling, STD = Sexually transmitted disease, STI = Sexually transmitted infection, TOP = Termination of pregnancy, UK = United Kingdom, UTI = Urinary tract infection, VCT = Voluntary counselling and testing, WSW = Women who have sex with women.

Appendix G: *Chlamydia trachomatis* Prevalence in LAC

Appendix G-1. *Chlamydia trachomatis* Urogenital Measures

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
General populations									
Acosta-Cazares, 1996 (222)	1994	Mexico	Hospital	CS	Conv	Women attended the Rural Hospital of Oaxaca	Monoclonal	559	7.3
Adams, 2008 (223)		Barbados	Community	CS	RS	18-35 years healthy men	NAAT/PCR	190	12.1
Adams, 2008 (223)		Barbados	Community	CS	RS	18-35 years healthy women	NAAT/PCR	207	10.6
Almaza, 2011		Cuba	Hospital	CS	Conv	Pregnant women	Unclear	100	2.0
Alvis, 2007 (224)	2004	Colombia	Outpatient clinic	CC	Conv	Housewives	NAAT/PCR	16	12.5
Amaral, 1995 (225)		Brazil	Antenatal clinic	CS	Conv	Pregnant women attending the pre-natal care clinic	ELISA	122	9.0
Amorim, 2017 (226)		Brazil	Community	CC	Conv	Healthy controls	NAAT/PCR	70	1.4
Ampuero, 2016 (227)	2015	Argentina	Community	CS	Conv	Urban women population in of San Luis	EIA	315	45.1
Araujo, 2006 (228)	2000.5	Brazil	Outpatient clinic	CS	Conv	Sexually active adolescents and young women	NAAT/PCR	296	19.6
Araujo, 2014 (229)	2011	Brazil	Community	CS	Conv	Female athletes	NAAT/PCR	50	2.0
Arraiz Rodriguez, 2007 (141)	2005	Venezuela, RB	Outpatient clinic	CS	Conv	Asymptomatic women attended gynecological consultation	NAAT/PCR	54	7.4
Arráiz, 2006 (230)		Venezuela, RB	OBGYN	CS	Conv	Asymptomatic women attended gynecological consultation	IF	33	0.0
Arraiz, 2008 (231)	2006.5	Venezuela, RB	OBGYN	CS	Conv	Asymptomatic women attended gynecological consultation	NAAT/PCR	87	5.8
Asin (232), 1993	1991	Curaçao	Outpatient clinic	CS	Conv	Women of reproductive age	EIA	205	5.4
Attapattu, 1999 (233)	1997	Barbados	Outpatient clinic	CS	Conv	Women undergoing a pap smear	ELISA	167	11.4
Barberis, 1996 (234)	1993.5	Argentina	Hospital	CS	Conv	Women attending the Central Hospital of Río Cuarto	Rapid test	179	11.7
Barberis, 1998 (235)	1995.5	Argentina	Hospital	CS	Conv	Women in Río Cuarto	EIA	824	11.3
Barcelos, 2008 (124)	2003.5	Brazil	Outpatient clinic	CS	Conv	Sexually active women	NAAT/PCR	299	7.4
Behets, 1995 (236)	1993	Haiti	Antenatal clinic	CS	Conv	Pregnant women	EIA	901	10.1
Behets, 1998 (237)	1995	Jamaica	Outpatient clinic	CS	Conv	Women attending family planning clinics	EIA	765	12.2
Bernal}, 1989 (238)	1987.5	Chile	Hospital	CS	RS	<19 years old pregnant adolescents	Culture	85	6.0
Bom, 2013 (239)	2009	Suriname	Outpatient clinic	CS	Conv	Men	NAAT/PCR	415	23.0
Bom, 2013 (239)	2009	Suriname	Outpatient clinic	CS	Conv	Women	NAAT/PCR	1,093	12.0
Brasiliense, 2016 (240)	2012.5	Brazil	Hospital	CS	Conv	Women attending a family planning	NAAT/PCR	72	6.9

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
						clinic			
Brasiliense, 2016 (240)	2012.5	Brazil	Hospital	CS	Conv	Pregnant women	NAAT/PCR	18	11.1
Bristow, 2017 (241)	2015.5	Haiti	Antenatal clinic	CS	Conv	Pregnant women	NAAT/PCR	300	14.0
Brito, 2006 (242)	2000	Brazil	Outpatient clinic	CS	Conv	Sexually active women of the Parakana tribe	NAAT/PCR	49	8.2
Cabeza, 2015 (243)	2013	Peru	Hospital	Cohort	Conv	Pregnant women	NAAT/PCR	600	10.0
Canas Posada, 1992 (244)	1989	El Salvador	Hospital	CS	Conv	Pregnant women in labour	EIA	129	46.5
Canas Posada, 1992 (244)	1989	El Salvador	Hospital	CS	Conv	Pregnant women in labour	IF	78	73.1
Cañas Posada, 1993 (245)	1989	El Salvador	Community	CS	Conv	Healthy male medical students	EIA	67	2.0
Canchihuaman, 2010 (246)	2002	Peru	Community	CS	CRS	Men general population	NAAT/PCR	1,947	4.1
Canchihuaman, 2010 (246)	2002	Peru	Community	CS	CRS	Women general population	NAAT/PCR	2,080	5.8
Canto-de Cetina, 2003 (247)	1998	Mexico	Fertility clinic	CS	Conv	Women attending family planning clinics	ELISA	1,100	6.7
Cárcamo, 2012 (248)	2002	Peru	Community	CS	CRS	18-29 years old women	NAAT/PCR	6,442	6.0
Cárcamo, 2012 (248)	2002	Peru	Community	CS	CRS	18-29 years old men	NAAT/PCR	6,237	4.0
Carrasco, 2001 (128)	1992	Mexico	Hospital	CS	Conv	Males attending the urology department	Gram stain microscopy	77	11.7
Casillas-Vega, 2017 (249)	2013.5	Mexico	OBGYN	CS	Conv	Women's endocervical samples tested using direct fluorescence assay (DFA)	Monoclonal	662	16.7
Casillas-Vega, 2017 (249)	2013.5	Mexico	OBGYN	CS	Conv	Women's endocervical samples tested using PCR assay that amplify the OmpA genes	NAAT/PCR	662	14.5
Cavaliere, 1993 (120)		Brazil	Outpatient clinic	CS	Conv	Pregnant women	IF	130	31.5
Chout, 1995 (186)	1989	Martinique	Antenatal clinic	CS	Conv	Pregnant women with cervical sample	Culture	1,411	24.5
Christofolini, 2012 (250)		Brazil	Community	CS	Conv	Female university students and workers	NAAT/PCR	106	2.8
Claeys, 2002 (251)	1999.5	Nicaragua	Outpatient clinic	CS	Conv	Sexually active women	NAAT/PCR	969	4.1
Codes, 2002 (127)		Brazil	Outpatient clinic	CS	Conv	Women attending a family planning clinic	NAAT/PCR	202	11.4
Conde-Ferraez, 2017 (252)	2010.5	Mexico	OBGYN	CS	Conv	Women attending OBGYN clinic	NAAT/PCR	230	6.5
Conejero, 2013 (253)	2011	Chile	Community	CS	Conv	18-25 years women	NAAT/PCR	344	7.9
Conejero, 2013 (253)	2011	Chile	OBGYN	CS	Conv	Women university students attended gynecology clinics	NAAT/PCR	344	8.0
Cook, 2004 (254)	2001	Brazil	Outpatient clinic	CS	Conv	Young women seeking HIV testing	NAAT/PCR	200	8.5
Corrales, 2003 (255)	2000	Venezuela, RB	Hospital	CS	Conv	Pregnant women with obstetric complications	IF	60	13.3
Costa Lira, 2017 (256)	2013.5	Brazil	Outpatient clinic	CC	Conv	Women with normal cytology	NAAT/PCR	133	9.0
Costapinto, 2013 (257)	2009.5	Brazil	Outpatient clinic	CC	Conv	Women with SLE	NAAT/PCR	105	3.0
Costapinto, 2013 (257)	2009.5	Brazil	Outpatient clinic	CC	Conv	Healthy women	NAAT/PCR	104	5.0
Cuffini, 2012 (105)		Argentina	Community	CS	Conv	Asymptomatic young individuals	NAAT/PCR	427	8.7
Cunha Machado, 2012 (258)	2009	Brazil	OBGYN	CS	Conv	Sexually active female adolescents	NAAT/PCR	100	31.0
da Silva, 2004 (109)	2000.5	Brazil	Outpatient clinic	CC	Conv	Pregnant Women without Human Papillomavirus	NAAT/PCR	26	7.7

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Daniel Deluca, 2011 (259)	2008	Argentina	Community	CS	Conv	Sexually active aboriginal women	NAAT/PCR	227	26.4
De Abreu, 2012 (260)	2010.5	Brazil	Community	CS	Conv	Women getting teste fro HPV	NAAT/PCR	622	12.7
De Azevedo, 2019 (261)	2016.5	Brazil	Outpatient clinic	CS	Conv	Pregnant women's cervical specimens	NAAT/PCR	100	11.0
De Borborema-Alfaia 2013 (262)	2005	Brazil	Antenatal clinic	CS	Conv	Women in the final trimester of pregnancy	NAAT/PCR	100	11.0
De Codes, 2006 (263)	2000	Brazil	Outpatient clinic	CS	Conv	Women attending family planning clinic	NAAT/PCR	202	11.4
De Codes, 2006 (263)	2000	Brazil	Community	CS	Conv	Secondary school students	NAAT/PCR	225	12.9
De Lima Soares, 2003 (264)	1997	Brazil	Community	CS	Conv	Women	NAAT/PCR	325	6.4
De Lima, 2014 (265)	2008	Brazil	Community	CS	RS	15-24 years old women	NAAT/PCR	574	9.6
de Lucena, 2008 (266)	2006.5	Brazil	Outpatient clinic	CS	Conv	Women without intra-epithelial cervical lesions tested by PCR	NAAT/PCR	35	40.0
de Lucena, 2008 (266)	2006.5	Brazil	Outpatient clinic	CS	Conv	Women without intra-epithelial cervical lesions tested by DIF	IF	35	14.3
de Paula, 2007 (267)		Brazil	Outpatient clinic	CS	Conv	Women undergoing cervical screening	NAAT/PCR	250	9.2
Diaz-Barreiro, 1997 (268)	1994	Mexico	Hospital	CS	Conv	Pregnant women	IF	80	10.0
Dos Santos, 2018 (6)	2014	Brazil	Community	CS	Conv	>18 years old women	NAAT/PCR	393	4.1
Dowe, 1998 (269)		Jamaica	Antenatal clinic	CS	Conv	Pregnant women	IF	200	16.0
Dowe, 1999 (184)		Jamaica	Outpatient clinic	CS	Conv	women attending a family planning clinic	Culture	238	34.0
Dowe, 1999 (184)		Jamaica	OBGYN	CS	Conv	Women attending a gynecological clinic	Culture	170	46.0
Dowe, 1999 (184)		Jamaica	Outpatient clinic	CS	Conv	Women clients of urban family planning clinics	DFA	238	32.0
Dowe, 1999 (270)		Jamaica	OBGYN	CS	Conv	Women clients of a gynecology clinic	DFA	170	42.0
Downey, 2015 (271)	2013	Haiti	Outpatient clinic	CS	Conv	Men in Grand'Anse department	NAAT/PCR	205	4.4
Echaniz-Aviles, 1992 (272)	1990.5	Mexico	Community	CS	Conv	Sexually active women in Cuernavaca, Morelos	IF	2,407	4.0
Eleuterio, 2015 (273)	2011.5	Brazil	Outpatient clinic	CS	Conv	14-24 years old women	NAAT/PCR	142	13.4
Entrocassi, 2017 (274)	2016	Argentina	Hospital	Cohort	Conv	Pregnant women	NAAT/PCR	119	18.5
Espinosa, 2004 (275)	2002	Brazil	Community	CS	RS	15-19 years old adolescent women	NAAT/PCR	461	8.9
Faundes, 1998 (276)	1991.5	Brazil	Hospital	CS	Conv	Women with an IUD	Monoclonal	407	6.7
Fernandes, 2009 (119)	2001.5	Brazil	Outpatient clinic	CS	Conv	Adolescent and young women in a family planning outpatient clinic	NAAT/PCR	230	13.5
Filho, 2010 (277)	2008	Brazil	Outpatient clinic	CS	Conv	Pregnant women	Rapid test	521	2.7
Fitzgerald, 2000 (278)	1996	Haiti	Hospital	CS	Conv	Pregnant women	NAAT/PCR	475	10.7
Franceschi, 2007 (279)	1998.5	Argentina	Community	CS	Conv	Healthy women from Argentina	NAAT/PCR	542	5.0
Franceschi, 2007 (279)	1998.5	Colombia	Community	CS	Conv	Healthy women from Colombia	NAAT/PCR	1,245	5.0
Frias, 2001 (111)		Brazil	OBGYN	CS	Conv	Sexually active women	ELISA	100	5.0
Frontela Noda, 2006 (280)	2002.5	Cuba	Outpatient clinic	CS	Conv	Women attended gynecological consultation	NAAT/PCR	105	1.9
Frontela Noda, 2006 (280)	2002.5	Cuba	Outpatient clinic	CS	Conv	Women undergoing abortions	NAAT/PCR	38	28.9

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Fuentes, 1986 (281)		Costa Rica	Outpatient clinic	CS	Conv	Women attending family planning clinics	Culture	511	0.6
Gabster, 2020 (44)	2016.5	Panama	Community	CS	MSCS	> 14 years old student	NAAT/PCR	1,924	15.8
Garcês, 2013 (102)	2009	Brazil	OBGYN	CS	Conv	Women attended OBGYN clinic	NAAT/PCR	200	11.0
Garcia, 2004 (282)	1997.5	Peru	Community	CS	Conv	Rural women	NAAT/PCR	752	6.8
Garcia,2012 (283)	2002	Peru	Community	RCT	Conv	Young adults in general population in control cities in 2002	NAAT/PCR	6,307	5.8
Garcia,2012 (283)	2002	Peru	Community	RCT	Conv	Young adults in general population in intervention cities in 2002	NAAT/PCR	6,298	4.9
Garcia,2012 (284)	2006	Peru	Community	RCT	Conv	Young adults in general population in control cities in 2006	NAAT/PCR	6,945	6.2
Garcia,2012 (284)	2006	Peru	Community	RCT	Conv	Young adults in general population in intervention cities in 2006	NAAT/PCR	6,838	4.7
Giovannini, 1991 (285)		Argentina	Outpatient clinic	CS	Conv	Male patients attended urogenital clinic	Culture	29	20.7
Giovannini, 1991 (285)		Argentina	OBGYN	CS	Conv	Female patients attended gynecology clinic	Culture	15	13.3
Giuliano, 2001 (286)	1997.5	Mexico	Outpatient clinic	CS	Conv	Women receiving routine gynecological care, Mexico-US border, 1997–1998	EIA	1,033	4.4
Giuliano, 2001 (286)	1997.5	Mexico	Outpatient clinic	CS	Conv	Women receiving routine gynecological care, Mexico-US border, 1997–1998	NAAT/PCR	1,285	9.7
Golijow, 2005 (287)	1999	Argentina	Hospital	CS	Conv	Women with normal cervical cytology	NAAT/PCR	79	11.4
Gomez, 2016 (288)	2015	Brazil	Hospital	CS	Conv	Urine specimens tested from pregnant women	NAAT/PCR	60	0.0
González, 1998 (112)		Chile	Outpatient clinic	CS	Conv	Women attending birth control facility	IF	200	24.0
Guilarte-Garcia, 2020 (289)	2015	Cuba	Outpatient clinic	CS	Conv	Healthy women	NAAT/PCR	500	1.0
Guimaraes, 2009 (290)	2002.5	Brazil	Community	CS	Conv	Sexually active female adolescents	NAAT/PCR	914	14.5
Gutierrez, 2006 (291)		Mexico	Community	CS	RS	15-21 years male and female	NAAT/PCR	1,241	8.0
Heredia, 1990	1987	Colombia	OBGYN	CS	Conv	Sexually active women	Culture	112	21.0
Herkenhoff, 2013	2010	Brazil	Health registries	CS	Conv	Women referred to laboratories for Ct. exam	NAAT/PCR	287	56.5
Herkenhoff, 2013	2010	Brazil	Health registries	CS	Conv	Swab from women referred to laboratories for Ct. exam	NAAT/PCR	40	75.0
Herkenhoff, 2013	2010	Brazil	Health registries	CS	Conv	Endocervical scrapping from women referred to laboratories for Ct. exam	NAAT/PCR	247	53.4
Herrmann, 1996 (14)	1992.5	Nicaragua	Outpatient clinic	CS	Conv	Women attending outpatient clinics	NAAT/PCR	863	4.3
Huneeus, 2009 (292)	2006.5	Chile	Outpatient clinic	CS	Conv	<25 years old women	NAAT/PCR	203	6.9
Hunneeus, 2018 (293)		Chile	Community	CS	Conv	<24 years old healthy adults	NAAT/PCR	286	8.7
Igansi, 2005 (101)	2004	Brazil	Outpatient clinic	CS	Conv	Asymptomatic women	NAAT/PCR	1,208	12.6
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Women attending a gynecology clinic	Culture	82	4.9
Jalil, 2008 (294)	2004.5	Brazil	Antenatal clinic	CS	Conv	Pregnant women in six Brazilian cities	NAAT/PCR	3,303	9.4

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Jobe, 2014 (295)	2012	Haiti	Outpatient clinic	CS	Conv	Women attending health clinics in Grand'Anse department, Haiti, 2012	NAAT/PCR	297	8.4
Jorda, 2018 (296)	2012.5	Argentina	Community	CS	Conv	Asymptomatic women attending laboratory welfare, Argentina 2012-2013	NAAT/PCR	240	5.4
Kiguen, 2016 (297)	2013.5	Argentina	Outpatient clinic	CS	Conv	Pregnant women	NAAT/PCR	509	6.9
Kiguen, 2019 (298)	2014.5	Argentina	Antenatal clinic	CS	Conv	pregnant women (35-37 weeks of gestation), Argentina 2014-2015	NAAT/PCR	509	6.9
Kouri, 2002 (299)	1996.5	Cuba	Community	CS	Conv	HIV seronegative women	NAAT/PCR	60	6.6
Levett, 1995 (77)		Barbados	Hospital	CS	Conv	Women attending antenatal clinic	EIA	55	23.6
Llovera, 2010 (300)	2008	Venezuela, RB	Outpatient clinic	CS	Conv	Women attended the cancer screening	NAAT/PCR	100	18.0
Luppi, 2011 (301)	2004.5	Brazil	Outpatient clinic	CS	Conv	18-40 years women	NAAT/PCR	781	8.4
Machado, 2007 (302)	2001	Brazil	Fertility clinic	CS	Conv	Parous women tested with NAAT	NAAT/PCR	55	0.0
Magalhaes, 2015 (303)	2010	Brazil	Community	CS	Conv	Women participating in cervical screening	NAAT/PCR	1,134	10.9
Magana, 2015 (304)	2013.5	Mexico	Outpatient clinic	CS	Conv	Women visiting a gynecological clinic	NAAT/PCR	201	1.5
Marconi, 2014 (305)	2010	Brazil	Outpatient clinic	CS	RS	Healthy controls	NAAT/PCR	256	26.6
Martinez, 2008 (306)	2004	Chile	OBGYN	CS	Conv	Women seeking gynecological consultation	NAAT/PCR	403	4.7
Medina, 2009 (307)	2006	Ecuador	Hospital	CS	Conv	Pregnant women in preterm labor	NAAT/PCR	158	8.2
Melles, 2000 (121)		Brazil	OBGYN	CS	Conv	Asymptomatic women who attended the Gynecology Outpatient Clinic	Rapid test	23	13.0
Melo, 2016 (308)	2013.5	Chile	Community	CS	Conv	Sexually active university students	NAAT/PCR	151	11.2
Mendoza, 2013 (309)		Paraguay	Community	CS	Conv	Indigenous Paraguayan women	NAAT/PCR	181	9.9
Mesenburg, 2013	2012	Brazil	Hospital	CS	Conv	Pregnant women	NAAT/PCR	361	15.0
Miguel, 2020 (159)	2017	Brazil	Outpatient clinic	CS	Conv	Women in Lages, Santa Catarina	NAAT/PCR	126	39.7
Miranda, 2009 (310)	2004	Brazil	Community	CS	RS	Women of reproductive age	Gram stain microscopy	209	3.3
Molano, 2003 (311)	1993.5	Colombia	Community	CS	Conv	Low income women invited to participate in cervical cancer screening program, Colombia 1993-1995	NAAT/PCR	1,813	5.0
Monica, 2012 (312)		Chile	Hospital	CS	Conv	Victims of child abuse	NAAT/PCR	40	2.5
Monroy, 2009 (114)	2005.5	Mexico	OBGYN	CS	Conv	Women attended Gynecology outpatient clinic	NAAT/PCR	98	20.4
Mucci, 2016 (313)	2012.5	Argentina	Hospital	CS	Conv	Pregnant women	IF	210	1.4
Narvaez, 1989 (314)	1986	Ecuador	Antenatal clinic	CS	Conv	Pregnant women	IF	61	1.6
Neves, 2016 (315)	2012.5	Brazil	Outpatient clinic	CS	Conv	Asymptomatic women	NAAT/PCR	1,169	13.1
Nonato, 2016 (316)	2008	Brazil	Community	CS	RS	Sexually active young women	NAAT/PCR	276	9.1
Nuñez Troconis, 1995 (317)		Venezuela, RB	OBGYN	CS	Conv	Patients attending a gynecological clinic	NAAT/PCR	77	10.4
Occhionero, 2015 (318)	2010	Argentina	Community	CS	Conv	University students	NAAT/PCR	114	3.5
Oliveira, 2007 (319)		Brazil	Community	CS	Conv	Women of reproductive age	NAAT/PCR	579	4.5

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Oliveira, 2008 (320)	2006.5	Brazil	OBGYN	CS	Conv	Healthy women	IF	35	14.3
Orozco-Hoyos, 2020 (321)	2009	Colombia	Outpatient clinic	CS	Conv	Asymptomatic women in Medellin	NAAT/PCR	1,087	4.1
Ovalle, 2012 (322)	2010.5	Chile	OBGYN	CS	RS	Pregnant women	NAAT/PCR	255	5.9
Ovalle, 2012 (322)	2010.5	Chile	Antenatal clinic	CS	Conv	Pregnant women attended in the High Risk Obstetric Office (ARO)	NAAT/PCR	255	5.9
Pajaro, 2001 (323)	1996.5	Argentina	Hospital	CS	Conv	Patients attending Gynecology and Urology Service	ELISA	2,055	6.1
Paredes, 2013 (324)		Colombia	Community	CS	Conv	Sexually active high school students	NAAT/PCR	972	2.2
Paredes, 2015 (325)	2011	Colombia	Community	CS	Conv	Schoolchildren sexually active	NAAT/PCR	972	2.1
Passos, 1995 (110)	1987.5	Brazil	Outpatient clinic	CS	Conv	Asymptomatic sexually active women	Unclear	55	11.7
Passos, 1995 (110)	1987.5	Brazil	Outpatient clinic	CS	Conv	Asymptomatic women	Unclear	55	4.0
Paul, 2009 (326)	2003	Peru	Antenatal clinic	CS	Conv	Women tested 48 hrs after delivery	NAAT/PCR	1,290	7.6
Paz-Bailey, 2009 (327)	2006	Honduras	Community	CS	MSCS	Men and women population in Garı´funa	NAAT/PCR	791	6.8
Pereira, 2010 (328)	2003	Brazil	Community	CS	Conv	Pregnant women	ELISA	371	8.9
Piazzetta, 2011 (329)		Brazil	Community	CS	Conv	Sexually active women	NAAT/PCR	335	10.7
Pinto, 2012 (330)	2009	Brazil	Hospital	CS	Conv	Parturient women	NAAT/PCR	2,071	9.8
Porras, 2008 (331)		Costa Rica	Community	RCT	Conv	Young Women recruited for HPV vaccine trial	NAAT/PCR	5,829	14.2
Posada, 1992 (9)	1989	El Salvador	OBGYN	CC	Conv	Healthy women	EIA	100	5.0
Raddi, 1993 (332)		Brazil	OBGYN	CS	Conv	Women attending the Public Gynecologic Service	Culture	142	18.0
Ramos, 2002 (158)	2002	Brazil	OBGYN	CS	Conv	Pregnant adolescent	NAAT/PCR	68	14.7
Ramos, 2002 (158)	2002	Brazil	OBGYN	CS	Conv	Symptomatic women	NAAT/PCR	72	4.2
Ramos, 2003 (162)	2001	Brazil	Community	CS	RS	Women living in a poor neighborhood	NAAT/PCR	161	0.6
Ramos, 2011 (333)	2007	Brazil	OBGYN	CS	Conv	Pregnant women	NAAT/PCR	101	25.7
Rampersad, 2007 (334)	2004	Trinidad and Tobago	Outpatient clinic	CS	Conv	Pregnant women	NAAT/PCR	273	20.9
Robial, 2017 (335)		Brazil	Outpatient clinic	CS	Conv	Asymptomatic women	NAAT/PCR	1,481	15.9
Robledo, 1987 (336)		Colombia	Antenatal clinic	CS	Conv	Group 3: Pregnant women	IF	30	3.3
Rocha, 2014 (337)	2010	Brazil	Outpatient clinic	CS	Conv	Woman attended primary healthcare services	NAAT/PCR	361	6.4
Rocha, 2019 (338)	2016	Brazil	Community	CS	Conv	Sexually active women living in riverine communities in Coari	NAAT/PCR	299	3.7
Rodrigues, 2019 (20)	2015.5	Brazil	Outpatient clinic	CS	Conv	HIV-uninfected women with cervical scraping in Tapajo´s, Amazon	NAAT/PCR	112	13.4
Rosas Arceo, 1993 (339)		Mexico	Hospital	CS	Conv	Asymptomatic women	Monoclonal	27	44.4
Rosas Arceo, 1993 (339)		Mexico	Hospital	CS	Conv	Women referred to the hospital	Monoclonal	36	25.0
Ruiz, 2005 (163)	2004	Colombia	OBGYN	CS	Conv	Pregnant women	NAAT/PCR	50	4.0
Safaeian, 2010 (340)	1993.5	Costa Rica	Community	CC	Conv	Cervical swabs of healthy women	NAAT/PCR	946	8.9
Sanchez, 1998 (341)		Peru	OBGYN	CS	Conv	Asymptomatic women	NAAT/PCR	224	9.4
Sánchez, 2006 (342)	2004	Colombia	Community	CS	Conv	Asymptomatic women	NAAT/PCR	175	2.9
Sanchez-Aleman, 2005 (343)	2003	Mexico	Community	CS	Conv	Female and male 15-21 years	NAAT/PCR	1,220	4.8

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Sanchez-Anguiano, 2019 (344)	2015	Mexico	Outpatient clinic	CC	Conv	Women attending family planning clinic	NAAT/PCR	201	3.0
Sanchez-Garcia, 2019 (345)	2017	Mexico	Outpatient clinic	CS	Conv	Asymptomatic women	NAAT/PCR	201	3.0
Scheidell, 2016 (346)		Haiti	Outpatient clinic	CS	Conv	Men and women visiting health clinic	NAAT/PCR	1,352	6.0
Scheidell, 2018 (347)	2013	Haiti	Antenatal clinic	CS	Conv	Pregnant women	NAAT/PCR	200	8.0
Schlegel, 1998 (188)	1996	Martinique	Community	CS	Conv	Young women- samples tested by NAAT	NAAT/PCR	370	10.8
Schlegel, 1998 (188)	1996	Martinique	Community	CS	Conv	Young women- samples tested by Cell culture	Culture	370	7.3
Schmidt, 2015 (348)	2012.5	Brazil	Hospital	CS	Conv	Parturient women delivering preterm babies in Vitoria	NAAT/PCR	323	13.9
Shamomesh, 1994 (349)		El Salvador	Community	CS	Conv	Refugee women	EIA	28	28.6
Silva Garcia, 2011 (164)		Venezuela, RB	Antenatal clinic	CS	Conv	Women obstetric attending a prenatal and pediatric wards	NAAT/PCR	63	19.0
Silva, 2013 (350)		Chile	Outpatient clinic	CS	Conv	women from the Araucanía Region	NAAT/PCR	87	11.5
Silva, 2013 (350)		Chile	OBGYN	CS	Conv	Asymptomatic women provided endocervical swab	NAAT/PCR	87	11.5
Silveira, 2017 (351)	2012	Brazil	Hospital	CS	Conv	Pregnant women admitted for childbirth in Pelotas	NAAT/PCR	562	12.3
Silveira, 2020 (352)	2015.5	Brazil	OBGYN	CS	Conv	Women attended a gynecological and obstetrical care unit	NAAT/PCR	498	6.8
Simoes, 1998 (353)	1992	Brazil	Antenatal clinic	CS	Conv	Pregnant women attending antenatal clinic	IF	328	2.1
Smith Fawzi, 2003 (354)	2000	Haiti	OBGYN	CS	RS	Women attending women's health clinic in rural Haiti	NAAT/PCR	1,742	4.8
Snead, 2016 (355)	2013	Jamaica	Community	RCT	Conv	Women initiating contraceptive implants	NAAT/PCR	335	29.0
Souza, 2013 (356)	2011.5	Brazil	HIV clinic	CC	RS	HIV negative group (control)	NAAT/PCR	152	28.9
Suehiro, 2021 (357)	2014.5	Brazil	Community	CS	Conv	asymptomatic women in a Brazilian University	NAAT/PCR	210	6.7
Tabora, 2005 (358)		Honduras	Outpatient clinic	CS	Conv	Female university students	ELISA	100	6.0
Tafuri, 1992 (359)	1986.5	Brazil	Outpatient clinic	CS	Conv	Women performed gynecological exams from 1984-1989	Gram stain microscopy	100,000	0.6
Taruvinga, 1993 (360)		Barbados	Antenatal clinic	CS	Conv	Pregnant women tested with EIA	EIA	56	23.0
Teles, 1997 (122)	1991.5	Brazil	Outpatient clinic	CS	Conv	Women attending family planning clinic	Monoclonal	407	6.7
Thompson, 2000 (125)	1996	Peru	Outpatient clinic	CS	Conv	Women from antenatal clinic and family planning clinic	NAAT/PCR	358	5.3
Tomioka, 1987 (176)	1985	Brazil	OBGYN	CS	Conv	Women without symptoms of upper or lower genital tract	Culture	15	6.7
Van Der Helm, 2011 (129)	2009	Suriname	Outpatient clinic	CC	Conv	Women at birth control clinic in Paramaribo	NAAT/PCR	828	9.8
Veronica Gaete, 1999 (361)	1993.5	Chile	Community	CS	Conv	Adolescent males	NAAT/PCR	154	1.3

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Veronica Gaete, 1999 (361)	1993.5	Chile	Community	CS	Conv	Adolescent males	EIA	154	1.3
Villegas-Castano, 2016 (362)	2011.5	Colombia	Community	CS	RS	Sexually active school adolescents in Medellin	Rapid test	185	11.4
Weill, 2010 (363)	2000	Guadeloupe	Outpatient clinic	CS	Conv	General population	NAAT/PCR	971	10.5
Yeganeh, 2020 (364)	2018.5	Brazil	Antenatal clinic	CS	Conv	Pregnant women	NAAT/PCR	400	9.0
Zamboni, 2016 (365)	2013.5	Chile	Outpatient clinic	CS	Conv	Asymptomatic women	NAAT/PCR	181	5.5
Zeiguer, 1993 (173)	1988.5	Argentina	Outpatient clinic	CS	Conv	Symptomatic girls	Culture	65	15.4
Zucotti, 2018 (366)	2016.5	Argentina	Outpatient clinic	CS	Conv	First trimester pregnant women	NAAT/PCR	348	2.0
Intermediate-risk populations									
Andrinopoulos, 2010 (367)	2006	Jamaica	Correctional centre/prison	CS	Conv	Jamaican men in prison	NAAT/PCR	396	2.5
Bazzi, 2015 (212)	2011.5	Mexico	Community	Cohort	SS	Male Partners of FSW	NAAT/PCR	212	4.3
Benzaken, 2012 (368)	2009	Brazil	Community	CS	Conv	People attending the "leisure circuit"	NAAT/PCR	598	3.2
Clark, 2009 (369)	2004	Peru	Community	CS	Conv	Heterosexual men living in slums	NAAT/PCR	2,424	5.2
Clark, 2009 (369)	2004	Peru	Community	CS	Conv	Heterosexual women living in slums	NAAT/PCR	320	14.1
de Castro, 2000 (117)	1996.5	Brazil	Rehab center	CS	Conv	Military attending Medical Clinic of the Health Corps of a Military Unit	ELISA	30	23.3
De Codes, 2006 (263)	2000	Brazil	Community	CS	Conv	Slum	NAAT/PCR	199	11.6
Fioravante, 2005 (370)	2000	Brazil	Community	CS	RS	Military personnel	NAAT/PCR	523	5.0
Garaycochea, 2013 (371)	2010.5	Peru	Prison	CS	RS	Women prisoners	IF	168	42.3
Garcia, 2017 (372)	2014	Peru	Community	CS	Conv	Truck drivers and drivers' assistants	NAAT/PCR	1,083	2.0
Leon, 2009 (33)	2004	Peru	Community	CS	Conv	Young unemployed men socializing on street corners	NAAT/PCR	2,145	5.5
Leon, 2009 (33)	2004	Peru	Community	CS	Conv	Young women socializing and engaging in casual sex.	NAAT/PCR	295	14.9
Miller, 2004 (373)	2002	Peru	Community	CS	TLS	Clients of FSWs	NAAT/PCR	407	2.0
Miranda,2000 (374)	1997	Brazil	Prison	CS	Conv	Female prisoners	ELISA	118	11.0
Narvaez, 1989 (314)	1986	Ecuador	Outpatient clinic	CS	Conv	Women with multiple sexual partners attending PAP test	IF	136	13.2
Paris, 2001 (375)		Peru	Community	CS	Conv	Moto-taxis drivers	NAAT/PCR	203	2.5
Reeves, 1987 (376)	1983.5	Panama	Sexual health center	CS	Conv	Women working in bars and cabaret	Culture	416	2.4
Sabido, 2011 (377)	2008.5	Guatemala	Community	CS	RS	Clients of FSWs	NAAT/PCR	494	5.5
Stewart, 2018 (378)	2012.5	Peru	Community	CS	Conv	Male clients of FSWs	NAAT/PCR	148	4.1
Tobin, 2020 (379)	2016.5	Belize	Correctional centre/prison	CS	Conv	Military men in Belize	NAAT/PCR	412	11.4
Tobin, 2020 (379)	2016.5	Dominican Republic	Millitary	CS	Conv	Military men in Dominican Republic	NAAT/PCR	1,216	7.2
Weir, 2018 (380)	2011	Jamaica	Community	CS	RS	Overall female workers (FW), female patrons (FP) at streets, clubs, and other venues in Jamaica 2011.	NAAT/PCR	717	19.5
Weir, 2018(380)	2011	Jamaica	Community	CS	RS	Overall male patrons (MP) at streets, clubs, and other venues in Jamaica 2011.	NAAT/PCR	274	21.2

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Female sex workers and women who have sex with women									
Al-Kuhlani, 2014 (381)	2003.5	Ecuador	Outpatient clinic	CS	Conv	FSWs	NAAT/PCR	751	16.7
Alvarado Esquivel, 2000 (382)	1997.5	Mexico	Outpatient clinic	CS	Conv	FSWs in Durango	EIA	247	16.6
Alvarado Esquivel, 2003 (383)	1999.5	Mexico	Outpatient clinic	CS	Conv	registered FSWs in Durango	EIA	354	12.4
Alvis, 2007 (224)	2004	Colombia	Sexual health center	CC	Conv	FSWs	NAAT/PCR	69	15.9
Arráiz, 2011 (384)	2009	Venezuela, RB	Outpatient clinic	CS	Conv	FSWs from Zulia State	NAAT/PCR	78	12.8
Bazzi, 2015 (212)	2011.5	Mexico	Community	Cohort	SS	FSWs	NAAT/PCR	212	7.5
Bristow, 2019 (198)	2013.5	Mexico	FSWs center	Cohort	TLS	FSWs participants	NAAT/PCR	300	27.0
Campos, 2013 (385)	2002.5	Peru	Community	CS	Conv	FSWs	NAAT/PCR	23,065	13.5
Cárcamo, 2012 (248)	2002.5	Peru	Community	CS	CRS	18-29 years old FSW	NAAT/PCR	4,263	15.0
Dowe, 1997 (386)		Jamaica	Community	CS	Conv	FSWs	DFA	129	16.0
Dowe, 1997 (386)		Jamaica	Community	CS	Conv	FSWs	Culture	129	25.0
García, 2005	1998.5	Costa Rica	Sexual health center	CS	Conv	FSWs with endocervical swab	NAAT/PCR	457	13.1
Garcia,2012 (283)	2002.5	Peru	Community	RCT	Conv	FSW in control cities (2002)	NAAT/PCR	1,844	15.5
Garcia,2012 (283)	2002.5	Peru	Community	RCT	Conv	FSW in intervention cities (2002)	NAAT/PCR	1,888	13.8
Garcia,2012 (284)	2006	Peru	Community	RCT	Conv	FSW in control cities (2006)	NAAT/PCR	2,063	14.5
Garcia,2012 (284)	2006	Peru	Community	RCT	Conv	FSW in intervention cities (2006)	NAAT/PCR	2,093	9.9
Gotuzo, 1994	1991.5	Peru	Outpatient clinic	CS	Conv	FSWs	Culture	398	13.8
Gunn, 1995 (387)	1993	Mexico	Community	CS	Conv	FSWs in Tijuana	EIA	604	13.2
Ignacio, 2018 (388)	2016	Brazil	Community	CS	Conv	WSW	NAAT/PCR	150	2.0
Inostroza, 2015 (389)		Chile	Sexual health center	CS	Conv	Sex workers who are checked in the sexual health care units of Chilean hospitals	NAAT/PCR	162	16.2
Inostroza, 2015 (389)		Chile	Sexual health center	CS	Conv	FSWS	NAAT/PCR	148	6.8
Kerrigan, 2006 (390)	1999.5	Dominican Republic	FSWs center	RCT	RS	FSWs in Santo Domingo Pre-intervention	NAAT/PCR	210	16.4
Kerrigan, 2006 (390)	1999.5	Dominican Republic	FSWs center	RCT	RS	FSWs in Puerto Plata Pre-intervention	NAAT/PCR	200	14.6
Levine, 1998 (391)	1992	Bolivia	Community	CS	Conv	FSW tested in 1992	NAAT/PCR	132	17.4
Levine, 1998 (391)	1993	Bolivia	Community	CS	Conv	FSW tested in 1993	NAAT/PCR	99	19.2
Levine, 1998 (391)	1994	Bolivia	Community	CS	Conv	FSW tested in 1994	NAAT/PCR	92	10.9
Loza, 2010 (392)	2005	Mexico	Community	CS	Conv	FSWs from Tijuana and Ciudad Juarez	NAAT/PCR	798	13.0
Lugo, 2018 (393)	2011	Brazil	Community	CS	Conv	FSWs	NAAT/PCR	67	25.4
Martinez, 1986 (394)	1984	Chile	STD clinic	CS	RS	FSWs	Culture	192	15.6
Narvaez, 1989 (314)	1986	Ecuador	Outpatient clinic	CS	Conv	FSW attending STD center	IF	116	32.8
Occhionero, 2007 (395)	2006	Argentina	Community	CS	Conv	Female sex workers	NAAT/PCR	85	8.2
Paris, 1999 (396)		Peru	Community	CS	Conv	Female Sex Workers	NAAT/PCR	100	22.0
Patterson, 2008 (397)	2005	Mexico	Community	CS	Conv	FSWs in Tijuana and Ciudad Juarez	NAAT/PCR	924	13.0
Patterson, 2019 (398)	2013	Mexico	Outpatient clinic	CS	TLS	FSWs in Mexico at 13 sites, 2011-2015	NAAT/PCR	1,092	15.3
Pinto, 2005 (399)	2002.5	Brazil	Community	CS	Conv	WSW	ELISA	134	1.5
Pollett, 2013 (400)	2009.5	Peru	Sexual health center	CS	Conv	FSWs without cervicitis presenting to	NAAT/PCR	298	4.9

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						sexual health clinic in Callao-Lima			
Reeves, 1987 (376)	1983.5	Panama	Sexual health center	CS	Conv	FSWs	Culture	958	1.7
Sabido, 2009a (401)	2007	Guatemala	STD clinic	CS	Conv	FSWs tested with PCR	NAAT/PCR	276	9.8
Sabido, 2009a (220)	2007	Guatemala	STD clinic	CS	Conv	FSWs tested with Chlamydia test card	Rapid test	276	6.2
Sanchez, 2003 (402)	1994.5	Peru	FSWs center	CS	Conv	FSWs attending health centers	ELISA	875	12.8
Sanchez-Anguiano, 2019 (344)	2015	Mexico	Outpatient clinic	CC	Conv	FSWs in Durango	NAAT/PCR	201	15.9
Soto, 2007 (403)	2001.5	El Salvador	Community	CS	Conv	FSWs	NAAT/PCR	491	23.3
Soto, 2007 (403)	2001.5	Guatemala	Community	CS	Conv	FSWs	NAAT/PCR	533	20.5
Soto, 2007 (403)	2001.5	Honduras	Community	CS	Conv	FSWs	NAAT/PCR	520	14.7
Soto, 2007 (403)	2001.5	Nicaragua	Community	CS	Conv	FSWs	NAAT/PCR	461	23.3
Soto, 2007 (403)	2001.5	Panama	Community	CS	Conv	FSWs	NAAT/PCR	432	19.9
Strathdee, 2011 (8)	2008.5	Mexico	Community	RCT	Conv	FSW-IDU in Tijuana and Cd. Juarez	NAAT/PCR	620	13.0
Tinajeros, 2012 (404)	2007	Honduras	STD clinic	Cohort	Conv	FSW attending STI clinic at baseline	NAAT/PCR	950	6.1
Uribe-Salas, 2003 (405)	1998	Mexico	Community	CS	Conv	FSW in Soconusco, Chiapas	NAAT/PCR	388	14.4
Uribe-Salas,1997 (190)	1993	Mexico	Community	CS	RS	FSWs	Culture	294	11.1
Venegas, 1991 (406)	1989	Honduras	STD clinic	CS	Conv	FSWs	EIA	233	31.0
Zunt, 2002 (407)	1995	Peru	Outpatient clinic	CS	Conv	FSWs with positive HTLV-I	NAAT/PCR	63	17.5
Men who have sex with men, male sex workers, and transgenders									
Bristow, 2019 (198)		Mexico	Unclear	CS	RDS	HIV-negative MSM & TW's urine samples	NAAT/PCR	125	5.6
Cabeza, 2015 (243)	2013	Peru	Sexual health center	Cohort	Conv	Urine specimens from MSM and TW	NAAT/PCR	834	3.5
Clark, 2009 (369)	2004	Peru	Community	CS	Conv	MSM	NAAT/PCR	541	1.1
Creswell, 2012 (408)	2008	El Salvador	Community	CS	RDS	MSM with urine samples in San Salvador	NAAT/PCR	460	3.4
Creswell, 2012 (408)	2008	El Salvador	Community	CS	RDS	MSM with urine samples in San Miguel	NAAT/PCR	188	1.3
Cunha, 2015 (409)	2011	Brazil	Outpatient clinic	CS	Conv	Urethral specimens tested from HIV negative MSM	NAAT/PCR	76	2.2
Detels, 2011 (410)		Peru	Unclear	CS	Conv	MSM, transgender people, and sex workers	NAAT/PCR	2,956	4.8
Figueroa, 2012 (411)	2007.5	Jamaica	Community	CS	Conv	MSM	NAAT/PCR	201	11.0
Galarraga, 2014 (412)	2014	Mexico	HIV clinic	RCT	Conv	MSM and MSWs	NAAT/PCR	267	9.8
Ham, 2015 (413)	2007.5	El Salvador	Community	CS	RDS	Transgender from el Salvador	NAAT/PCR	79	1.3
Ham, 2015 (413)	2007.5	El Salvador	Community	CS	RDS	MSM from el Salvador	NAAT/PCR	584	2.7
Ham, 2015 (413)	2012	Honduras	Community	CS	RDS	Transgender from Honduras	NAAT/PCR	126	1.6
Ham, 2015 (413)	2012	Honduras	Community	CS	RDS	MSM from Honduras	NAAT/PCR	562	4.6
Ham, 2015 (413)	2009.5	Nicaragua	Community	CS	RDS	Transgender from Nicaragua	NAAT/PCR	62	0.0
Ham, 2015 (413)	2009.5	Nicaragua	Community	CS	RDS	MSM from Nicaragua	NAAT/PCR	590	1.9
Inostroza, 2015 (389)		Chile	Sexual health center	CS	Conv	Male sex workers	NAAT/PCR	14	0.0
Jean Louis, 2020 (414)	2018.5	Haiti	Sexual health center	CS	Conv	MSM with urine specimens, Haiti 2018-2019	NAAT/PCR	216	3.7

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Morales-Miranda, 2013 (415)	2012	Belize	Community	CS	RDS	MSM with genital specimen	NAAT/PCR	130	6.9
Passaro, 2018 (416)	2013	Peru	Community	CS	Conv	MSM with urine sample, Peru 2012-2014	NAAT/PCR	787	3.6
Perez-Brumer, 2013 (417)	2007	Peru	Community	CS	Conv	MSM enrolled during community outreach visits	NAAT/PCR	122	5.7
Soto, 2007 (403)	2001.5	Mixed	Community	CS	Conv	MSM in 5 Central American countries	NAAT/PCR	1,417	7.2
Female symptomatic patients									
Ampuero, 2020 (418)	2018	Argentina	Unclear	CS	Conv	Symptomatic women	Rapid test	100	53.0
Angel-Muller, 2012 (419)	2010	Colombia	Outpatient clinic	CS	Conv	Women with lower genital infection	NAAT/PCR	1,385	9.7
Arraiz Rodriguez, 2007 (141)	2005	Venezuela, RB	Outpatient clinic	CS	Conv	Symptomatic women attended gynecological consultation	NAAT/PCR	51	13.7
Arráiz, 2006 (230)		Venezuela, RB	OBGYN	CS	Conv	Symptomatic women attended gynecological consultation	IF	21	14.3
Arraiz, 2008 (420)	2006.5	Venezuela, RB	OBGYN	CS	Conv	Symptomatic women attended gynecological consultation	NAAT/PCR	81	9.9
Behets, 1995 (236)	1994	Jamaica	STD clinic	CS	Conv	Symptomatic women attending STD clinic	EIA	740	24.9
Bristow, 2014 (80)	2013	Haiti	Outpatient clinic	CS	Conv	Symptomatic women	NAAT/PCR	203	5.4
Crenn, 1986 (182)		French Guiana	OBGYN	CS	Conv	Females suffering from pelvic inflammations	Culture	150	49.3
Crenn, 1986 (182)		French Guiana	OBGYN	CS	Conv	Females suffering from pelvic inflammations	IF	150	50.7
De Cristofano, 1997 (421)	1990.5	Argentina	Outpatient clinic	CS	Conv	Women with lower genital tract disease in 1986-1995	Culture	4,128	25.6
de Nader, 1992 (422)	1988.5	Argentina	OBGYN	CS	Conv	Sexually active women with cervicitis	IF	122	53.2
Di Bartolomeo, 2001 (423)	1999	Argentina	Hospital	CS	Conv	Symptomatic pregnant women	NAAT/PCR	198	2.5
Garcia, 2007 (424)	2002.5	Peru	Outpatient clinic	CS	Conv	Women with symptoms of abnormal vaginal discharge	NAAT/PCR	121	9.1
Garcia-Gonzalez, 2017 (425)	2014	Mexico	Outpatient clinic	CS	Conv	Symptomatic patients	NAAT/PCR	147	3.4
Gorozpe Calvillo, 2005 (426)		Mexico	OBGYN	CS	Conv	Women with cervico-vaginitis and pelvic inflammatory disease	IF	141	26.2
Heredia, 1990 (180)	1987	Colombia	OBGYN	CS	Conv	Symptomatic sexually active women	Culture	242	25.0
Hernández-Méndez, 2000 (106)		Mexico	Outpatient clinic	CS	Conv	Women with leucorrhoea	IF	200	15.0
Hobbs, 2011 (427)	2010.5	Jamaica	STD clinic	CS	Conv	Women presenting with cervicitis or vaginitis syndromes, Jamaica, 2010-2011	NAAT/PCR	258	20.7
Jorda, 2018 (296)	2012.5	Argentina	Community	CS	Conv	Symptomatic women attending laboratory welfare, Argentina 2012-2013	NAAT/PCR	265	11.3
King, 1992 (185)		Jamaica	STD clinic	CS	RS	Symptomatic patients	Culture	216	52.3
Levett, 1995 (77)		Barbados	Hospital	CS	Conv	Symptomatic pregnant women	EIA	43	11.6
Lobao, 2017 (428)	2011.5	Brazil	Outpatient clinic	CS	Conv	Symptomatic women	NAAT/PCR	302	1.7

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López-Hurtado, 2018 (429)	2015	Mexico	OBGYN	CS	Conv	Symptomatic pregnant women	NAAT/PCR	594	6.7
Marconi, 2012 (430)	2007	Brazil	Outpatient clinic	CS	Conv	Symptomatic women	NAAT/PCR	142	23.9
Marconi, 2014 (305)	2010	Brazil	Outpatient clinic	CS	Conv	Symptomatic women	NAAT/PCR	256	26.6
Melles, 2000 (121)		Brazil	OBGYN	CS	Conv	Symptomatic women who attended the Gynecology Outpatient Clinic	Rapid test	166	8.4
Occhionero, 2007 (395)	2006	Argentina	Community	CS	Conv	Symptomatic women	NAAT/PCR	140	2.2
Occhionero, 2018 (431)		Argentina	OBGYN	CS	Conv	Women attended the gynecological consultation	NAAT/PCR	295	3.1
Pollett, 2013 (400)	2009.5	Peru	Sexual health center	CS	Conv	FSWs with cervicitis presenting to sexual health clinic in Callao-Lima	NAAT/PCR	87	4.6
Posada, 1992 (9)	1989	El Salvador	OBGYN	CC	Conv	Women with cervicitis	EIA	100	28.0
Quiróz R, 1989 (191)	1986	Panama	OBGYN	CS	Conv	Women with PID	Culture	16	0.0
Reyes-Maldonado, 1996 (432)		Mexico	Hospital	CS	Conv	Women with vaginal discharge	IF	245	2.9
Robledo, 1987 (336)		Colombia	STD clinic	CS	Conv	Group 1: symptomatic & venereal disease center attendees	IF	30	20.0
Robledo, 1987 (336)		Colombia	OBGYN	CS	Conv	Group 2: symptomatic & gynecological clinic attendees	IF	17	0.0
Rodrigues, 2011 (433)	2005.5	Brazil	OBGYN	CS	Conv	Women with vaginal discharge	NAAT/PCR	65	10.8
Rosas Arceo, 1993 (339)		Mexico	Hospital	CS	Conv	Women with genital symptoms	Monoclonal	30	20.0
Sanchez, 1998 (341)		Peru	OBGYN	CS	Conv	Symptomatic women	NAAT/PCR	406	11.8
Sánchez, 2006 (342)	2004	Colombia	Community	CS	Conv	Symptomatic women	NAAT/PCR	180	7.8
Santos, 2003 (434)	2002	Brazil	OBGYN	CS	Conv	Women with vaginal discharge	IF	105	2.8
Sereno Colo, 1990 (435)		Mexico	OBGYN	CS	Conv	Women attending gynecology or birth control clinics	Mixed	318	23.5
Tomioka, 1987 (176)	1985	Brazil	OBGYN	CS	Conv	Women with cervicitis	Culture	25	12.0
Tomioka, 1987 (176)	1985	Brazil	OBGYN	CS	Conv	Women with acute salpingitis	Culture	37	37.8
Velarde-Jurado, 2003 (436)	1997	Mexico	Hospital	CS	Conv	> 10 years old girls with vulvovaginitis	Mixed	258	8.9
Male symptomatic patients									
Cañas Posada, 1993 (245)	1989	El Salvador	Outpatient clinic	CS	Conv	Male patients with urethritis	EIA	51	25.0
Crenn, 1986 (182)		French Guiana	Outpatient clinic	CS	Conv	Males suffering from urethritis	Culture	150	27.5
De Cristofano, 1997 (421)	1990.5	Argentina	Outpatient clinic	CS	Conv	Men with lower genital tract disease in 1986-1995	Culture	1,206	29.5
De Menezes Filho, 2017 (437)	2013	Brazil	STD clinic	Cohort	Conv	Men with urethritis or genital ulcer	NAAT/PCR	800	14.8
Dowe, 2000 (154)		Jamaica	STD clinic	CC	Conv	Men with non-gonococcal urethritis	Culture	339	63.0
Dowe, 2000 (154)		Jamaica	STD clinic	CC	Conv	Men with gonococcal urethritis	Culture	61	48.0
Fuentes, 1986 (281)		Costa Rica	STD clinic	CS	Conv	Men with non-gonococcal urethritis attending STI clinic	Culture	79	2.5
Fuentes, 1986 (281)		Costa Rica	Outpatient clinic	CS	Conv	Men with urethral symptoms	Culture	25	4.0
Garcia, 2007 (74)	2002.5	Peru	Outpatient clinic	CS	Conv	Men with symptoms of urethral discharge or dysuria or both	NAAT/PCR	106	17.0

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Noda, 2016 (438)	2013.5	Cuba	Outpatient clinic	CS	Conv	Men with genital ulcers	NAAT/PCR	113	1.8
Steiner, 2006 (439)	2003	Jamaica	STD clinic	RCT	Conv	Men with urethral discharge	NAAT/PCR	414	23.4
Symptomatic patients									
Bauwens, 2002 (440)	1992	Bahamas, The	STD clinic	CS	Conv	Patients with lymphogranuloma Venereum	NAAT/PCR	47	17.0
Di Bartolomeo, 2002 (441)	1997.5	Argentina	Hospital	CS	Conv	Adult symptomatic patients	NAAT/PCR	400	1.8
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Patients with urethritis	Culture	81	7.4
Schuster, 1989 (442)		Chile	Dermatovenerologic clinic	CS	Conv	Patients with urethritis	Monoclonal	82	19.5
HIV-positive individuals and individuals in HIV-discordant couples									
Adachi, 2015 (443)	2007	Argentina	Hospital	RCT	Conv	HIV-infected pregnant women	NAAT/PCR	19	10.5
Adachi, 2015 (443)	2007	Brazil	Hospital	RCT	Conv	HIV-infected pregnant women	NAAT/PCR	938	17.1
Boldrini, 2018 (444)	2014.5	Brazil	HIV clinic	CS	Conv	HIV positive women	NAAT/PCR	151	3.0
Bristow, 2019 (198)		Mexico	Unclear	CS	RDS	HIV-positive MSM & TW's urine samples	NAAT/PCR	98	9.2
Bristow, 2021 (445)	2016.5	Mexico	Community	CS	RDS	HIV positive MSM and transgender women with urine sample	NAAT/PCR	88	10.2
Bristow, 2021 (445)	2016.5	Mexico	Community	CS	RDS	HIV positive MSM and transgender women with urine sample	NAAT/PCR	124	5.7
Cunha, 2015 (409)	2011	Brazil	Outpatient clinic	CS	Conv	Urethral specimens tested from HIV positive MSM	NAAT/PCR	197	2.2
Da Silva, 2018 (446)	2015	Brazil	Hospital	CS	Conv	Male patients who were diagnosed with HIV	NAAT/PCR	115	5.2
Figueroa, 2015 (447)	2011	Jamaica	Community	CS	Conv	HIV positive MSM	NAAT/PCR	449	8.9
Grinsztejn, 2006 (448)	2000	Brazil	Hospital	Cohort	Conv	Women with HIV/AIDS taking antiretroviral therapy	NAAT/PCR	400	3.0
Jalkh, 2014 (449)	2009.5	Brazil	Outpatient clinic	CS	Conv	HIV positive MSM	NAAT/PCR	276	12.0
Kouri, 2002 (299)	1996.5	Cuba	Community	CS	RS	HIV seropositive women	NAAT/PCR	60	10.0
Miranda, 2017 (450)		Brazil	HIV clinic	CS	Conv	HIV positive pregnant women	Unclear	802	2.1
Miranda, 2017 (450)	2015	Brazil	Community	CS	Conv	HIV positive women	NAAT/PCR	802	2.1
Pinto, 2016 (451)	2013.5	Brazil	Outpatient clinic	CS	Conv	HIV positive women in São Paulo	NAAT/PCR	836	1.8
Rodrigues, 2019 (20)	2015.5	Brazil	HIV clinic	CS	Conv	HIV-infected women with cervical scraping in Tapajo´s, Amazon	NAAT/PCR	41	17.1
Souza, 2013 (356)	2011.5	Brazil	HIV clinic	CC	RS	HIV positive group (cases)	NAAT/PCR	78	23.1
Tosato Boldrini, 2021 (452)	2014.5	Brazil	STD clinic	CS	Conv	HIV positive women	NAAT/PCR	151	3.0
Travassos, 2012 (453)	2010.5	Brazil	STD clinic	CS	Conv	HIV positive pregnant women	NAAT/PCR	63	11.1
Travassos, 2013 (454)	2010.5	Brazil	OBGYN	CS	Conv	HIV infected women attending gynecology and prenatal care clinics	NAAT/PCR	112	5.4
Travassos, 2016 (455)	2014	Brazil	STD clinic	CS	Conv	HIV positive males, urine sample	NAAT/PCR	193	1.6
Travassos, 2016 (456)	2014	Brazil	STD clinic	CS	Conv	HIV positive females, endocervical sample	NAAT/PCR	305	3.6
Villaran, 2013 (200)	2012	Peru	Community	CS	Conv	HIV Positive MSM	Unclear	152	2.6
STI clinic attendees									

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Baltazar Reyes, 2005 (457)	1998	Mexico	STD clinic	CS	Conv	FSWs attending an STI clinic	EIA	100	1.0
Barbosa, 2010 (458)	2005	Brazil	STD clinic	CS	Conv	Men attending STD clinics	NAAT/PCR	767	13.1
Benzaken, 2010 (123)	2008	Brazil	STD clinic	CS	Conv	STD Clinic attendees	NAAT/PCR	239	13.0
Borges, 2011 (459)	2009.5	Brazil	STD clinic	CS	Conv	Women attending STI clinic	NAAT/PCR	28	10.7
Brasiliense, 2016 (240)	2012.5	Brazil	Hospital	CS	Conv	Women attending an STI clinic	NAAT/PCR	64	15.6
Clark, 2008 (460)	2007	Peru	STD clinic	CS	Conv	MSM attending an STI clinic	NAAT/PCR	124	1.6
Dowe, 1999 (184)		Jamaica	STD clinic	CS	Conv	Women clients of STD clinics	Culture	237	52.0
Dowe, 1999 (184)		Jamaica	STD clinic	CS	Conv	Women clients of STD clinics	DFA	237	45.0
Dowe, 2000 (154)		Jamaica	STD clinic	CC	Conv	Asymptomatic men attending an STI clinic	Culture	32	78.0
Edwards, 2019 (461)	2014	Trinidad and Tobago	STD clinic	CS	Conv	STI clinic attendees	NAAT/PCR	205	5.9
Garcia, 2018 (462)	2008.5	Guatemala	STD clinic	CS	Conv	FSWs attending an STI clinic tested between 2005-2012	EIA	5,330	7.8
Garcia, 2018 (462)	2009.5	Guatemala	STD clinic	CS	Conv	MSM attending an STI clinic tested between 2007-2012	EIA	349	0.9
Garcia, 2018 (462)	2009.5	Guatemala	STD clinic	CS	Conv	Heterosexual STI clinic attendees tested between 2007-2012	EIA	539	6.9
Giovannini, 1991 (285)		Argentina	STD clinic	CS	Conv	Male patients attended STI clinic	Culture	40	50.0
Goffe, 2017 (463)		Jamaica	STD clinic	CS	Conv	Women attending an STI clinic	Rapid test	180	10.0
Herrmann, 1996 (14)	1992.5	Nicaragua	STD clinic	CS	Conv	FSWs attending STI clinics from Corinto and Bluefields. Nicaragua: 1992-1993	NAAT/PCR	63	14.3
Lima, 2007 (148)		Brazil	STD clinic	CS	Conv	Women attending an STI clinic	NAAT/PCR	100	19.0
Manca, 2020 (464)	2017	French Guiana	STD clinic	CS	Conv	Men attending an STI clinic	NAAT/PCR	192	12.0
Manca, 2020 (464)	2017	French Guiana	STD clinic	CS	Conv	Vaginal swabs collected in an STI clinic tested in August	NAAT/PCR	212	21.2
Mendizabal-Burastero, 2015 (465)	2014	Guatemala	STD clinic	CS	Conv	MSM with urethral samples from an STI clinic	NAAT/PCR	524	1.9
Nelson, 2007 (466)	2002	Peru	STD clinic	CS	Conv	Urethral specimen from Heterosexual men attending STD clinic	NAAT/PCR	195	2.1
Nelson, 2007 (467)	2002	Peru	STD clinic	CS	Conv	Genital specimen from Heterosexual men attending STD clinic	NAAT/PCR	195	4.6
Perez-Brumer, 2013 (417)	2007	Peru	STD clinic	CS	Conv	MSM enrolled from a municipal STI clinic	NAAT/PCR	438	3.7
Pizarro V, 2015 (468)	2014	Chile	STD clinic	CS	Conv	Female sex workers attending STD clinic	Unclear	166	21.7
Sanchez, 1998 (341)	1991.5	Peru	STD clinic			FSWs attending STD clinic	Culture	398	13.8
Santos, 2003 (434)		Brazil	STD clinic	CS	RS	Women attending an STI clinic	NAAT/PCR	121	20.7
Van Der Helm, 2011 (469)	2009	Suriname	STD clinic	CC	Conv	STI clinic attendees in Paramaribo	NAAT/PCR	728	21.6
Infertility clinic attendees									
Almaza, 2011		Cuba	Hospital	CS	Conv	Infertile women	Unclear	89	46.1
Bustos, 1995 (189)		Mexico	Fertility clinic	CS	Conv	Women with infertility	Culture	50	10.0

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
De Jesus, 2011 (470)		Mexico	Fertility clinic	CS	Conv	Infertile women	NAAT/PCR	152	15.8
De Lima, 2011 (160)	2005.5	Brazil	Fertility clinic	CS	Conv	Women attending infertility clinic	NAAT/PCR	106	52.8
de Nader, 1992 (422)	1988.5	Argentina	OBGYN	CS	Conv	Sexually active sterile women	IF	130	31.7
de Nader, 1992 (422)	1988.5	Argentina	OBGYN	CS	Conv	Sexually active women with infertility	IF	28	49.5
Fernandes, 2014 (471)	2010.5	Brazil	Hospital	CS	Conv	Infertile women aged 20-47 years	NAAT/PCR	340	10.9
Frontela Noda, 2006 (280)	2002.5	Cuba	Outpatient clinic	CS	Conv	Women with infertility	NAAT/PCR	81	3.7
Giovannini, 1991 (285)		Argentina	Fertility clinic	CS	Conv	Patients attending infertility clinic	Culture	70	4.3
Gomez, 2016 (288)	2015	Brazil	Hospital	CS	Conv	Urine specimens tested from infertile women	NAAT/PCR	77	1.3
Guerra-Infante, 2003 (472)	1998	Mexico	Fertility clinic	CS	Conv	Women attending infertility clinic	IF	309	24.9
Guerra-Infante, 2005 (473)	2000.5	Mexico	Fertility clinic	CS	Conv	Men attending infertility clinic	NAAT/PCR	384	3.6
Guerra-Infante, 2005 (473)	2000.5	Mexico	Fertility clinic	CS	Conv	Women attending infertility clinic	NAAT/PCR	384	3.6
Lopez, 2020 (474)	2018	Mexico	Outpatient clinic	CS	Conv	Infertile patients	NAAT/PCR	1,336	8.7
López-Hurtado, 2018 (429)	2015	Mexico	OBGYN	CS	Conv	Infertile women	NAAT/PCR	1,758	3.5
Machado, 2007 (302)	2001	Brazil	Fertility clinic	CS	Conv	Infertile women tested with NAAT	NAAT/PCR	55	3.6
Marques, 2007 (108)	2005.5	Brazil	Fertility clinic	CS	Conv	Couples attending infertility clinic	NAAT/PCR	200	9.5
Monetti, 2013 (113)	2012	Argentina	Fertility clinic	CS	Conv	Infertile men and women attending infertility health center	NAAT/PCR	660	7.3
Pantoja, 2012 (475)	2008.5	Brazil	Fertility clinic	CS	Conv	Women candidates for in vitro fertilization	NAAT/PCR	176	1.1
Peralta-Arias, 2013 (476)	2011	Venezuela, RB	Fertility clinic	CS	Conv	Women attending a fertility institute	NAAT/PCR	3,358	1.7
Piscopo, 2018 (477)	2016.5	Brazil	Fertility clinic	CS	Conv	Women attending infertility clinic	NAAT/PCR	156	3.2
Vigil, 2002 (478)		Chile	Fertility clinic	CS	Conv	Male partners of infertile couples	IF	284	38.6
Zesati, 2013 (104)	2010	Mexico	Fertility clinic	CS	Conv	Women with unknown cause of infertility	NAAT/PCR	38	26.3
Women with miscarriages or ectopic pregnancies									
Gorozpe Calvillo, 2005 (426)		Mexico	OBGYN	CS	Conv	Women with miscarriages and ectopic pregnancies	IF	16	56.3
Robledo, 1987 (336)		Colombia	Fertility clinic	CS	Conv	Groups 4&5: Infertile and ectopic pregnancy women	IF	16	0.0
Sexual contact with patients positive for CT/NG									
Dowe, 2000 (154)		Jamaica	STD clinic	CC	Conv	Male contacts of STD positive patient	Culture	61	59.0
Other populations									
Alberts, 2013 (479)	2007	Brazil	Community	Cohort	Conv	Men with HPV infection	NAAT/PCR	1,387	2.3
Alberts, 2013 (479)	2007	Mexico	Community	Cohort	Conv	Men with HPV infection	NAAT/PCR	1,314	1.3
Amorim, 2017 (480)		Brazil	Community	CC	Conv	Cases with cervical lesions	NAAT/PCR	62	3.2
Calil, 2011 (481)	2003	Brazil	Outpatient clinic	CS	Conv	Women with cervical lesions	NAAT/PCR	86	19.0
Castle, 2003 (482)	1995	Jamaica	Outpatient clinic	CC	Conv	Women with CIN 1	NAAT/PCR	201	9.2
Castle, 2003 (482)	1995	Jamaica	Outpatient clinic	CC	Conv	Women with CIN 2	NAAT/PCR	117	10.2
Castle, 2003 (482)	1995	Jamaica	Outpatient clinic	CC	Conv	Women with CIN 3+	NAAT/PCR	92	9.4
Costa Lira, 2017 (483)	2013.5	Brazil	Outpatient clinic	CC	Conv	Women with abnormal cytology	NAAT/PCR	47	0.0
da Silva, 2004 (109)	2000.5	Brazil	Outpatient clinic	CC	Conv	Pregnant Women with Human Papillomavirus	NAAT/PCR	26	34.6

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
de Lucena, 2008 (266)	2006.5	Brazil	Outpatient clinic	CS	Conv	Women with intra-epithelial cervical lesions tested by PCR	NAAT/PCR	35	77.1
de Lucena, 2008 (266)	2006.5	Brazil	Outpatient clinic	CS	Conv	Women with intra-epithelial cervical lesions tested by DIF	IF	35	80.0
Deluca, 2006 (484)	2004.5	Argentina	Outpatient clinic	CS	Conv	Women with abnormal cervical cytology	NAAT/PCR	189	24.9
Escarcega, 2020 (485)		Mexico	Outpatient clinic	CS	Conv	Women with suspected HPV infection	NAAT/PCR	189	67.7
Golijow, 2005 (287)	1999	Argentina	Hospital	CS	Conv	Women with abnormal cervical cytology	NAAT/PCR	200	39.5
Marcolino, 2008 (118)	2007	Brazil	Outpatient clinic	CS	Conv	Women with condyloma acuminatum	NAAT/PCR	30	33.3
Navarrete Fernandez, 2005 (116)	2003	Brazil	Outpatient clinic	CS	Conv	Patients with Spondyloarthropathies and Rheumatoid Arthritis	NAAT/PCR	30	6.7
Nuñez Troconis, 1995 (317)		Venezuela, RB	OBGYN	CS	Conv	Patients with Cervical Intraepithelial Neoplasia (CIN)	NAAT/PCR	103	14.6
Oliveira, 2008 (486)	2006.5	Brazil	OBGYN	CS	Conv	Women with cervical lesions	IF	35	80.0
Quinonez-Calvache, 2016 (487)	2008.5	Colombia	Community	Cohort	Conv	HPV positive women	NAAT/PCR	219	28.0
Rodrigues, 2011 (433)	2005.5	Brazil	OBGYN	CS	Conv	Women with abnormal cervical cytology	NAAT/PCR	109	5.5
Rodrigues, 2011 (433)	2005.5	Brazil	OBGYN	CS	Conv	Women with cervical cancer	NAAT/PCR	50	2.0
Safaeian, 2010 (340)	1993.5	Costa Rica	Community	CC	Conv	Cervical swabs of women with cervical cancer	NAAT/PCR	284	14.8
Tavares, 2014 (488)	2008.5	Brazil	Outpatient clinic	CS	Conv	Women with cervical neoplasia	NAAT/PCR	142	24.7

Abbreviations: ANC = Antenatal clinic, CB-VCT = Community-based voluntary counselling and testing sites, CC = Case control, CF = Compliment fixation, CR = Czech Republic, CS = Cross sectional, Conv = Convenience, CRS = Cluster random sampling, CT = *Chlamydia trachomatis*, DFA = Direct fluorescent antibody, ED = Emergency department, FC = Fertility clinic, FPC = Family planning clinic, FSWs = Female sex workers, GP = General practice, GS = Gram stain, GTI = Genital tract infection, GUM = Genitourinary medicine, HIV = Human immunodeficiency virus, HPV = Human papillomavirus, IDU = Intravenous-drug users, IUD = Intrauterine device, IVF = In vitro fertilization, LGV = lymphogranuloma Venereum, MCA = Monoclonal antibody, MSM = Men who have sex with men, MSWs = Male sex workers, NAAT = Nucleic acid amplification test, NG = Neisseria gonorrhoeae, OBGYN = Obstetrics gynecology, OC = Oral contraceptive, OPC = Outpatient clinic, PBS = Population based sampling, PEP: Post-exposure prophylaxis, PID = Pelvic inflammatory disease, RCT = Randomized controlled trial, RDS = Respondent driven sapling, Rehab = Rehabilitation, RF = Russian Federation, RS = Random sampling, SHC = Sexual health center, SHS = Sexual health services, SR = Slovak Republic, SRS = Stratified random sampling, SS = Snowball sampling, STD = Sexually transmitted disease, STI = Sexually transmitted infection, TOP = Termination of pregnancy, UK = United Kingdom, UTI = Urinary tract infection, VCT = Voluntary counselling and testing, WSW = Women who have sex with women.

Appendix G-2. *Chlamydia trachomatis* Anorectal Measures

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
General populations									
Rodrigues, 2019 (20)	2015.5	Brazil	Outpatient clinic	CS	Conv	HIV-uninfected women with anal scraping in Tapajo´s, Amazon	NAAT/ PCR	112	10.7
Men who have sex with men, male sex workers, and transgender									
Bristow, 2019 (198)		Mexico	Unclear	CS	RDS	HIV-negative MSM & TW's rectal samples	NAAT/ PCR	125	7.2
Cabeza, 2015 (243)	2013	Peru	Sexual health center	Cohort	Conv	Rectal specimens from MSM and TW	NAAT/ PCR	834	15.6
Castillo, 2015 (216)	2010.5	Peru	Community	RCT	SS	MSM and transgender people tested for anal chlamydia	NAAT/ PCR	718	19.0
Chow, 2017 (489)	2013.5	Peru	STD clinic	CS	Conv	MSM	NAAT/ PCR	312	13.8
Chow, 2017 (489)	2013.5	Peru	STD clinic	CS	Conv	Male transgender	NAAT/ PCR	89	12.0
Creswell, 2012 (408)	2008	El Salvador	Community	CS	RDS	MSM with anal swabs in San Salvador	Unclear	390	1.6
Creswell, 2012 (408)	2008	El Salvador	Community	CS	RDS	MSM with anal swabs in San Miguel	Unclear	110	11.0
Cunha, 2015 (409)	2011	Brazil	Outpatient clinic	CS	Conv	Rectal specimens tested from HIV negative MSM	NAAT/ PCR	77	10.0
Grinsztejn, 2017	2015.5	Brazil	Community	CS	RDS	Transgender women	NAAT/ PCR	345	14.6
Ham, 2015 (413)	2007.5	El Salvador	Community	CS	RDS	Transgender from el Salvador	NAAT/ PCR	64	4.7
Ham, 2015 (413)	2007.5	El Salvador	Community	CS	RDS	MSM from el Salvador	NAAT/ PCR	448	2.9
Ham, 2015 (413)	2012	Honduras	Community	CS	RDS	Transgender from Honduras	NAAT/ PCR	113	15.0
Ham, 2015 (413)	2012	Honduras	Community	CS	RDS	MSM from Honduras	NAAT/ PCR	411	10.7
Ham, 2015 (413)	2009.5	Nicaragua	Community	CS	RDS	Transgender from Nicaragua	NAAT/ PCR	54	7.4
Ham, 2015 (413)	2009.5	Nicaragua	Community	CS	RDS	MSM from Nicaragua	NAAT/ PCR	466	3.0
Hoagland, 2015 (490)	2014.5	Brazil	Community	CS	Conv	MSM and transgender	Unclear	409	8.2
Jean Louis, 2020 (414)	2018.5	Haiti	Sexual health center	CS	Conv	MSM with anal swabs, Haiti 2018-2019	NAAT/ PCR	216	7.9

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Kojima, 2017 (491)	2013.5	Peru	STD clinic	Cohort	Conv	MSM with anal swabs	NAAT/ PCR	312	14.1
Kojima, 2017 (491)	2013.5	Peru	STD clinic	Cohort	Conv	Transgender women with anal swabs	NAAT/ PCR	89	13.5
Leon, 2016 (492)	2008.5	Peru	Community	CS	SS	MSM and TW provided anal swabs	NAAT/ PCR	701	19.0
Morales-Miranda, 2013 (415)	2012	Belize	Community	CS	RDS	MSM with anal specimen	NAAT/ PCR	130	4.3
Moriarty, 2019 (493)	2017	Peru	HIV clinic	CS	SS	Transgender women in Lima, 2017	NAAT/ PCR	120	26.7
Pando, 2012 (494)	2008	Argentina	Community	CS	RDS	MSM in in Buenos Aires	NAAT/ PCR	98	1.7
Passaro, 2018 (416)	2013	Peru	Community	CS	Conv	MSM with rectal swab, Peru 2012-2014	NAAT/ PCR	787	15.9
Ponce De Leon, 2011 (495)	2008	Peru	Community	RCT	Conv	Gay/homo/bisexual or transgender Men	Unclear	718	19.0
Ramos Farías, 2012 (496)	2007.5	Argentina	Community	CS	Conv	Male-to-female trans sex workers (TSW)	NAAT/ PCR	113	4.4
Male symptomatic patients									
Svidler Lopez, 2019 (497)	2017.5	Argentina	Outpatient clinic	CS	Conv	Men with proctitis in Buenos Aires	NAAT/ PCR	34	47.0
HIV-positive individuals and individuals in HIV-discordant couples									
Bristow, 2019 (198)		Mexico	Unclear	CS	RDS	HIV-positive MSM & TW's rectal samples	NAAT/ PCR	98	17.3
Bristow, 2021 (445)	2016.5	Mexico	Community	CS	RDS	HIV positive MSM and transgender women with rectal swab	NAAT/ PCR	88	18.2
Bristow, 2021 (445)	2016.5	Mexico	Community	CS	RDS	HIV positive MSM and transgender women with rectal swab	NAAT/ PCR	124	7.3
Cunha, 2015 (409)	2011	Brazil	Outpatient clinic	CS	Conv	Rectal specimens tested from HIV positive MSM	NAAT/ PCR	202	10.0
Rodrigues, 2019 (20)	2015.5	Brazil	HIV clinic	CS	Conv	HIV-infected women with anal scraping in Tapajo´s, Amazon	NAAT/ PCR	41	2.4
Travassos, 2016 (455)	2014	Brazil	STD clinic	CS	Conv	HIV positive males, anal sample	NAAT/ PCR	193	9.3
Travassos, 2016 (455)	2014	Brazil	STD clinic	CS	Conv	HIV positive females, anal sample	NAAT/ PCR	305	5.3
STI clinic attendees									
Mendizabal-Burastero, 2015 (465)	2014	Guatemala	STD clinic	CS	Conv	MSM with anal samples from an STI clinic	NAAT/ PCR	524	4.7
Nelson, 2007 (466)	2002	Peru	STD clinic	CS	Conv	rectal specimen from Heterosexual men attending STD clinic	NAAT/ PCR	195	0.0
Nelson, 2007 (466)	2002	Peru	STD clinic	CS	Conv	rectal specimen from Heterosexual men attending STD	NAAT/	195	3.1

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
						clinic	PCR		

Abbreviations: ANC = Antenatal clinic, CB-VCT = Community-based voluntary counselling and testing sites, CC = Case control, CF = Compliment fixation, CR = Czech Republic, CS = Cross sectional, Conv = Convenience, CRS = Cluster random sampling, CT = *Chlamydia trachomatis*, DFA = Direct fluorescent antibody, ED = Emergency department, FC = Fertility clinic, FPC = Family planning clinic, FSWs = Female sex workers, GP = General practice, GS = Gram stain, GTI = Genital tract infection, GUM = Genitourinary medicine, HIV = Human immunodeficiency virus, HPV = Human papillomavirus, IDU = Intravenous-drug users, IUD = Intrauterine device, IVF = In vitro fertilization, LGV = lymphogranuloma Venereum, MCA = Monoclonal antibody, MSM = Men who have sex with men, MSWs = Male sex workers, NAAT = Nucleic acid amplification test, NG = Neisseria gonorrhoeae, OBGYN = Obstetrics gynecology, OC = Oral contraceptive, OPC = Outpatient clinic, PBS = Population based sampling, PEP: Post-exposure prophylaxis, PID = Pelvic inflammatory disease, RCT = Randomized controlled trial, RDS = Respondent driven sapling, Rehab = Rehabilitation, RF = Russian Federation, RS = Random sampling, SHC = Sexual health center, SHS = Sexual health services, SR = Slovak Republic, SRS = Stratified random sampling, SS = Snowball sampling, STD = Sexually transmitted disease, STI = Sexually transmitted infection, TOP = Termination of pregnancy, UK = United Kingdom, UTI = Urinary tract infection, VCT = Voluntary counselling and testing, WSW = Women who have sex with women.

Appendix G-3. *Chlamydia trachomatis* Oropharyngeal Measures

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
General populations									
Coronado-Cerda, 2020 (498)		Mexico	Outpatient clinic	CS	RS	Male patients attending dental clinic	Immunofluorescence	34	58.8
Coronado-Cerda, 2020 (498)		Mexico	Outpatient clinic	CS	RS	Female patients atteding dental clinic	Immunofluorescence	42	47.6
Mosmann, 2019 (35)		Argentina	Outpatient clinic	CS	Conv	Oral swabs from healthy patients	NAAT/PCR	318	17.0
Men who have sex with men, male sex workers, and transgender									
Bristow, 2019 (198)		Mexico	Unclear	CS	RDS	HIV-negative MSM & TW's pharyngeal samples	NAAT/PCR	125	1.6
Cabeza, 2015 (243)	2013	Peru	Sexual health center	Cohort	Conv	Pharyngeal specimens from MSM and TW	NAAT/PCR	834	4.5
Castillo, 2015 (216)	2010.5	Peru	Community	RCT	SS	MSM and transgender people tested for pharyngeal chlamydia	NAAT/PCR	718	4.8
Ham, 2015 (413)	2012	Honduras	Community	CS	RDS	Transgender from Honduras	NAAT/PCR	112	5.4
Ham, 2015 (413)	2012	Honduras	Community	CS	RDS	MSM from Honduras	NAAT/PCR	501	2.6
Kojima, 2017 (491)	2013.5	Peru	STD clinic	Cohort	Conv	MSM with pharyngeal specimens	NAAT/PCR	312	4.5
Kojima, 2017 (491)	2013.5	Peru	STD clinic	Cohort	Conv	Transgender women with pharyngeal specimens	NAAT/PCR	89	11.2
Leon, 2016 (492)	2008.5	Peru	Community	CS	SS	MSM and TW provided pharyngeal swabs	NAAT/PCR	712	4.8
Passaro, 2018 (416)	2013	Peru	Community	CS	Conv	MSM with pharyngeal swab, Peru 2012-2014	NAAT/PCR	787	3.9
HIV-positive individuals and individuals in HIV-discordant couples									
Bristow, 2019 (198)		Mexico	Unclear	CS	RDS	HIV-positive MSM & TW's pharyngeal samples	NAAT/PCR	98	4.1
Bristow, 2021 (445)	2016.5	Mexico	Community	CS	RDS	HIV positive MSM and transgender women with pharyngeal swab	NAAT/PCR	88	4.6
Bristow, 2021 (445)	2016.5	Mexico	Community	CS	RDS	HIV positive MSM and transgender women with pharyngeal swab	NAAT/PCR	124	1.6
STI clinic attendees									
Mendizabal-Burastero, 2015 (465)	2014	Guatemala	STD clinic	CS	Conv	MSM with oropharyngeal samples from an STI clinic	NAAT/PCR	524	2.2

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)

Abbreviations: ANC = Antenatal clinic, CB-VCT = Community-based voluntary counselling and testing sites, CC = Case control, CF = Compliment fixation, CR = Czech Republic, CS = Cross sectional, Conv = Convenience, CRS = Cluster random sampling, CT = *Chlamydia trachomatis*, DFA = Direct fluorescent antibody, ED = Emergency department, FC = Fertility clinic, FPC = Family planning clinic, FSWs = Female sex workers, GP = General practice, GS = Gram stain, GTI = Genital tract infection, GUM = Genitourinary medicine, HIV = Human immunodeficiency virus, HPV = Human papillomavirus, IDU = Intravenous-drug users, IUD = Intrauterine device, IVF = In vitro fertilization, LGV = lymphogranuloma Venereum, MCA = Monoclonal antibody, MSM = Men who have sex with men, MSWs = Male sex workers, NAAT = Nucleic acid amplification test, NG = Neisseria gonorrhoeae, OBGYN = Obstetrics gynecology, OC = Oral contraceptive, OPC = Outpatient clinic, PBS = Population based sampling, PEP: Post-exposure prophylaxis, PID = Pelvic inflammatory disease, RCT = Randomized controlled trial, RDS = Respondent driven sapling, Rehab = Rehabilitation, RF = Russian Federation, RS = Random sampling, SHC = Sexual health center, SHS = Sexual health services, SR = Slovak Republic, SRS = Stratified random sampling, SS = Snowball sampling, STD = Sexually transmitted disease, STI = Sexually transmitted infection, TOP = Termination of pregnancy, UK = United Kingdom, UTI = Urinary tract infection, VCT = Voluntary counselling and testing, WSW = Women who have sex with women.

Appendix G-4. *Chlamydia trachomatis* Seroprevalence Measures

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
General populations									
Alcivar, 2020 (499)	2018	Venezuela, RB	Community	CC	Conv	Healthy women	Mixed immunoglobulin	42	7.1
Almeida, 2019 (500)	2011	Brazil	Hospital	CC	Conv	Control group	Mixed immunoglobulin	281	36.7
Bernal, 1989 (501)	1987.5	Chile	Hospital	CS	RS	<19 years old pregnant adolescents	IgM	85	6.0
Cabada, 2007 (502)	2004	Peru	Community	CS	Conv	Mixed sex tour guides	Mixed immunoglobulin	161	15.5
Cabada, 2009 (503)	2001	Peru	Community	CS	SS	18-50 years old Peruvian subjects	IgG	88	25.0
Castellsague´, 2005 (504)	1991	Brazil	Hospital	CC	Conv	Women controls of case-control studies of invasive cervical cancer	IgG	66	16.7
Castellsague´, 2005 (504)	1991	Colombia	Hospital	CC	Conv	Women controls of case-control studies of invasive cervical cancer	IgG	29	55.2
Chout, 1988 (505)		Martinique	Antenatal clinic	CS	Conv	Pregnant women	Mixed immunoglobulin	714	58.8
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Pregnant women	IgG	110	3.6
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Women who underwent an abortion	IgG	56	3.6
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Healthy men	IgG	91	2.2
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Women with first pregnancy (3rd trimester) or in labor	IgA	110	9.1
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Women with abortion	IgA	56	1.8
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Healthy men	IgA	91	5.5
De Freitas, 2009 (507)	2006	Venezuela, RB	Antenatal clinic	CS	Conv	Pregnant women with IgA anti-CT	IgA	84	19.1
De Freitas, 2009 (507)	2006	Venezuela, RB	Antenatal clinic	CS	Conv	Pregnant women with IgM anti-CT	IgM	84	65.5
De oliveira, 2015 (508)		Brazil	Hospital	CS	RS	Individuals from ten human population groups	Mixed immunoglobulin	1,710	50.2
De Sanjose, 1994 (509)	1986.5	Colombia	Hospital	CC	RS	Healthy women	Mixed immunoglobulin	135	40.8
De Sanjose, 1994	1986.5	Colombia	Hospital	CC	Conv	Healthy women	Mixed	236	25.4

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
(509)							immunoglobulin		
Dowe, 1995 (510)		Jamaica	Outpatient clinic	CS	Conv	Blood donors	Mixed immunoglobulin	175	52.6
Dowe, 1995 (510)		Jamaica	Outpatient clinic	CS	Conv	Gynecology patients	Mixed immunoglobulin	175	60.0
Dowe, 1995 (510)		Jamaica	Outpatient clinic	CS	Conv	Family planning clinic attendees	Mixed immunoglobulin	175	59.8
Dowe, 1995 (510)		Jamaica	Outpatient clinic	CS	Conv	Pregnant women	Mixed immunoglobulin	176	51.0
Dowe, 1995 (510)		Jamaica	Outpatient clinic	CS	Conv	Students attending tertiary health institutions	Mixed immunoglobulin	176	25.0
Dowe, 1997 (386)		Jamaica	Community	CS	Conv	Blood donors	IgG	435	53.0
Ferrera, 1997 (511)		Honduras	Outpatient clinic	CC	Conv	Controls of women with CIN	IgG	82	68.3
Ferrera, 1997 (511)		Honduras	Outpatient clinic	CC	Conv	Controls without cervical cancer	IgG	95	62.1
Gomez, 2016 (288)	2015	Brazil	Hospital	CS	Conv	serum specimens tested from pregnant women	Mixed immunoglobulin	60	56.7
González, 1998 (112)		Chile	Outpatient clinic	CS	Conv	Women attending birth control facility	IgG	200	35.5
González, 1998 (112)		Chile	Outpatient clinic	CS	Conv	Women attending birth control facility	IgM	200	25.0
Hernandez-Trejo, 2014 (512)		Mexico	Hospital	CS	Conv	Hospitalized pregnant women	IgG	110	5.5
Ishak, 1988 (513)		Brazil	Community	CS	Conv	General population in Belém	IgG	97	53.6
Ishak, 1988 (513)	1974	Brazil	Community	CS	Conv	Xicrin Indians population	IgG	76	51.3
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Urban community	Mixed immunoglobulin	97	53.6
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Gynecology clinic attendees	Mixed immunoglobulin	35	60.0
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Antenatal clinic attendees	Mixed immunoglobulin	45	42.2
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Xicrin Indians	Mixed immunoglobul	76	51.3

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Parakena Indians	Mixed immunoglobulin	105	97.1
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Kubenkroke Indians	Mixed immunoglobulin	65	35.7
Ishak, 2001 (514)	1989.5	Brazil	Community	CS	Conv	indigenous population groups in the Brazilian Amazon	Mixed immunoglobulin	2,086	48.6
Levett, 1994 (515)		Barbados	Community	CS	Conv	Blood donors	IgG	75	70.0
Levett, 1994 (515)		Barbados	Community	CS	Conv	Blood donors	IgA	75	39.0
Levett, 1994 (515)		Barbados	Community	CS	Conv	Children tested for chlamydia	IgG	105	18.1
Levett, 1994 (515)		Barbados	Community	CS	Conv	Children tested for chlamydia	IgA	105	1.0
Levett, 1995 (77)		Barbados	Hospital	CS	Conv	Women attending antenatal clinic	IgG	55	74.5
Levett, 1995 (77)		Barbados	Hospital	CS	Conv	Pregnant women	IgA	98	22.5
Machado, 2007 (516)	2001	Brazil	Fertility clinic	CS	Conv	Fertile women tested with immunoflourescent	IgG	55	31.0
Mantilla, 2016 (517)		Colombia	Community	CC	Conv	Women with arthritis	IgG	41	2.4
Mantilla, 2016 (517)		Colombia	Community	CC	Conv	Healthy women	IgG	76	22.4
Munoz, 1996 (518)	1986.5	Colombia	Outpatient clinic	CC	Conv	Husbands of control women	Mixed immunoglobulin	262	11.5
Safaeian, 2010 (340)	1993.5	Costa Rica	Community	CC	Conv	Blood samples of healthy women	IgG	995	19.5
Sanchez, 1996 (519)	1991.5	Peru	Outpatient clinic	CS	RS	Men and women visiting health center	Mixed immunoglobulin	600	2.8
Smith, 2002 (520)	1990.5	Brazil	Hospital	CC	Conv	Healthy women controls	IgG	173	20.2
Smith, 2004 (521)		Brazil	Hospital	CC	Conv	Healthy women	IgG	180	19.4
Smith, 2004 (521)		Colombia	STD clinic	CC	Conv	Healthy women	IgG	64	50.0
Smith, 2004 (521)		Peru	Hospital	CC	Conv	Controls without ICC	IgG	169	40.8
Stone, 1995 (522)	1984.5	Costa Rica	Community	CC	RS	Control group of women without cervical cancer	Mixed immunoglobulin	764	50.3
Taruvinga, 1993 (360)		Barbados	Antenatal clinic	CS	Conv	Pregnant women tested serologically	IgA	56	23.0
Taruvinga, 1993 (360)		Barbados	Antenatal clinic	CS	Conv	Pregnant women tested serologically	IgG	56	75.0
Videla, 1994 (523)	1988	Argentina	OBGYN	CS	Conv	Pregnant women with IgM results	IgM	83	4.8
Videla, 1994 (523)	1988	Argentina	OBGYN	CS	Conv	Pregnant women with IgG results	IgG	83	20.5
Vinagre, 2019 (524)		Brazil	Hospital	CC	Conv	Women with open fallopian tubes	IgG	75	24.0
Warnecke, 2020 (525)	2015.5	Brazil	Unclear	CC	Conv	Women in childbearing age	IgG	160	46.8
Warnecke, 2020 (525)	2018	Mexico	Unclear	CS	Conv	Women in childbearing age	IgG	100	14.8

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Weill, 2010 (526)	2000	Guadeloupe	Outpatient clinic	CS	Conv	Men	IgA	30	30.0
Weill, 2010 (526)	2000	Guadeloupe	Outpatient clinic	CS	Conv	Women	IgA	303	29.4
Weill, 2010 (526)	2000	Guadeloupe	Outpatient clinic	CS	Conv	Men	IgG	30	50.0
Weill, 2010 (526)	2000	Guadeloupe	Outpatient clinic	CS	Conv	Women	IgG	303	52.5
Intermediate-risk populations									
Alcivar, 2020 (499)	2018	Venezuela, RB	Correctional centre/prison	CC	Conv	Women prisoners (cases)	Mixed immunoglobulin	42	35.7
Ishak, 1988 (527)		Brazil	Community	CS	Conv	Promiscuous population in Serra Norte	IgG	84	76.2
Ishak, 1993 (174)		Brazil	Community	CS	Conv	Miners	Mixed immunoglobulin	84	76.2
Female sex workers and women who have sex with women									
Araujo, 1990 (528)		Brazil	Community	CS	Conv	FSWs	IgG	45	100.0
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	FSWs	IgG	176	25.0
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	FSWs	IgA	176	5.7
Dowe, 1995 (510)		Jamaica	Outpatient clinic	CS	Conv	FSWs	Mixed immunoglobulin	175	95.3
Dowe, 1997 (386)		Jamaica	Community	CS	Conv	FSWs	IgG	64	95.0
Golenbock, 1988 (529)	1986	Peru	Community	CS	Conv	FSWs in Peru	Mixed immunoglobulin	140	97.0
Gotuzo, 1994	1991.5	Peru	Outpatient clinic	CS	Conv	FSWs	Mixed immunoglobulin	400	55.8
Ishak, 1993 (174)		Brazil	Community	CS	Conv	FSWs	Mixed immunoglobulin	37	94.6
Men who have sex with men, male sex workers, and transgender									
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	MSM	IgG	113	16.8
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	MSM	IgA	113	7.1
Female symptomatic patients									
Cardona-Arias, 2016 (530)	2013.5	Colombia	Community	CS	Conv	Women tested by IgG from Bogota	IgG	791	72.4
Cardona-Arias, 2016 (530)	2013.5	Colombia	Community	CS	Conv	Women tested by IgM from Bogota	IgM	365	64.3
Cardona-Arias, 2016 (530)	2013.5	Colombia	Community	CS	Conv	Women tested by IgG from Medellin	IgG	310	65.5

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Cardona-Arias, 2016 (530)	2013.5	Colombia	Community	CS	Conv	Women tested by IgM from Medellin	IgM	377	61.4
Crenn, 1986 (182)		French Guiana	OBGYN	CS	Conv	Females suffering from pelvic inflammations	Mixed immunoglobulin	150	2.7
Levett, 1994 (515)		Barbados	Community	CS	Conv	Symptomatic populations	IgG	1,179	81.0
Levett, 1994 (515)		Barbados	Community	CS	Conv	symptomatic populations	IgA	1,179	37.0
Levett, 1995 (77)		Barbados	Hospital	CS	Conv	Symptomatic pregnant women	IgG	43	65.1
Melles, 2000 (121)		Brazil	OBGYN	CS	Conv	Symptomatic and asymptomatic women who attended the Gynecology Outpatient Clinic	IgG	189	4.7
Melles, 2000 (121)		Brazil	OBGYN	CS	Conv	Symptomatic and asymptomatic women who attended the Gynecology Outpatient Clinic	IgA	189	3.7
Symptomatic patients									
Bauwens, 2002 (440)	1992	Bahamas, The	STD clinic	CS	Conv	Patients with lymphogranuloma Venereum	IgG	47	19.1
Behets, 1999 (531)	1996	Jamaica	Outpatient clinic	CS	Conv	Patients with genital ulcers tested for IgG	IgG	91	93.4
Behets, 1999 (531)	1996	Jamaica	Outpatient clinic	CS	Conv	Patients with genital ulcers tested for IgM	IgM	91	3.3
HIV-positive individuals and individuals in HIV-discordant couples									
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Men with AIDS	IgG	85	3.6
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Men with AIDS	IgA	85	6.1
STI clinic attendees									
Dowe, 1995 (510)		Jamaica	Outpatient clinic	CS	Conv	Patients attending STD clinics	Mixed immunoglobulin	176	70.1
Ishak, 1993 (174)		Brazil	Community	CS	Conv	STI clinic attendees	Mixed immunoglobulin	39	33.3
Sanchez, 1998 (341)	1991.5	Peru	STD clinic			Registered FSWs attending STD clinic	Mixed immunoglobulin	391	57.0
Infertility clinic attendees									
Alfieri, 2005 (532)	2003	Venezuela, RB	Fertility clinic	CS	Conv	Women and men attending infertility clinic in Valencia	IgG	34	26.4
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Infertile women with and without tubal damage	IgG	186	8.1
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Infertile men	IgG	74	2.7
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Infertile women with and without tubal damage	IgA	186	1.6
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Infertile men	IgA	74	2.7
Crenn, 1986 (182)		French Guiana	OBGYN	CS	Conv	Women with primary or secondary infertility	Mixed immunoglobulin	89	12.0
Gomez, 2016 (288)	2015	Brazil	Hospital	CS	Conv	Serum specimen tested from infertile women	Mixed	77	61.0

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Hernandez-Marin, 2016+C1159 (533)	2014	Mexico	Fertility clinic	CS	Conv	Infertile women	Mixed immunoglobulin IgG	46	8.7
Joya, 2014 (37)	2010	Venezuela, RB	Fertility clinic	CS	Conv	Sexually active women attending fertility clinic	IgG	198	38.4
Joya, 2014 (37)	2010	Venezuela, RB	Fertility clinic	CS	Conv	Sexually active women attending fertility clinic	IgM	198	35.9
Machado, 2007 (302)	2001	Brazil	Fertility clinic	CS	Conv	Infertile women tested with immunoflourescent	IgG	55	56.4
Robledo, 1987 (336)		Colombia	Fertility clinic	CS	Conv	Infertile women	Mixed immunoglobulin	10	30.0
Videla, 1994 (523)	1990	Argentina	OBGYN	CS	Conv	Women with tubal obstruction with IgM results	IgM	32	15.6
Videla, 1994 (523)	1990	Argentina	OBGYN	CS	Conv	Women with tubal obstruction with IgG results	IgG	32	75.0
Vinagre, 2019 (524)		Brazil	Hospital	CC	Conv	Women with blocked fallopian tubes	IgG	75	22.7
Women with miscarriages or ectopic pregnancies									
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Women with ectopic pregnancy	IgG	54	3.7
Cravioto, 2003 (506)	1992.5	Mexico	Community	CS	Conv	Women with ectopic pregnancy	IgA	54	3.7
Robledo, 1987 (336)		Colombia	Fertility clinic	CS	Conv	women with ectopic pregnancies	Mixed immunoglobulin	20	25.0
Taruvinga, 1992 (534)	1991	Barbados	Hospital	CC	Conv	Women with ectopic pregnancy	IgG	35	82.0
Sexual contact with patients positive for CT/NG									
Cardona-Arias, 2016 (530)	2013.5	Colombia	Community	CS	Conv	Men tested by IgG from Bogota	IgG	301	27.6
Cardona-Arias, 2016 (530)	2013.5	Colombia	Community	CS	Conv	Men tested by IgM from Bogota	IgM	203	35.7
Cardona-Arias, 2016 (530)	2013.5	Colombia	Community	CS	Conv	Men tested by IgG from Medellin	IgG	163	34.5
Cardona-Arias, 2016 (530)	2013.5	Colombia	Community	CS	Conv	Men tested by IgM from Medellin	IgM	237	38.6
Other populations									
Almeida, 2019 (500)	2011	Brazil	Hospital	CC	Conv	Patients with coronary artery disease (CAD)	Mixed immunoglobulin	157	30.6
Almeida, 2019 (500)	2011	Brazil	Hospital	CC	Conv	Patients with heart valve disease (HVD)	Mixed immunoglobulin	69	20.3
Castle, 2003 (482)	1995	Jamaica	Outpatient clinic	CC	Conv	Women with CIN 1	Mixed immunoglobulin	201	90.1
Castle, 2003 (482)	1995	Jamaica	Outpatient clinic	CC	Conv	Women with CIN 2	Mixed immunoglobul	117	89.7

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)
Castle, 2003 (482)	1995	Jamaica	Outpatient clinic	CC	Conv	Women with CIN 3+	Mixed immunoglobulin	92	92.9
da Silva, 2012 (535)	2008	Brazil	Outpatient clinic	CS	Conv	Women with cervical neoplasia	IgG	131	26.0
De Sanjose, 1994 (509)	1986.5	Colombia	Hospital	CC	Conv	Women with invasive cervical cancer	Mixed immunoglobulin	117	53.2
De Sanjose, 1994 (509)	1986.5	Colombia	Hospital	CC	Conv	Women with CIN III	Mixed immunoglobulin	242	48.3
Ferrera, 1997 (511)		Honduras	Outpatient clinic	CC	Conv	Women with CIN	IgG	42	71.4
Ferrera, 1997 (511)		Honduras	Outpatient clinic	CC	Conv	Cervical cancer cases	IgG	50	70.0
Munoz, 1996 (518)	1986.5	Colombia	Outpatient clinic	CC	Conv	Husbands of women with invasive squamous cell carcinoma	Mixed immunoglobulin	210	21.4
Navarrete Fernandez, 2005 (116)	2003	Brazil	Outpatient clinic	CS	Conv	Patients with Spondyloarthropathies and Rheumatoid Arthritis	IgG	30	26.7
Safaeian, 2010 (340)	1993.5	Costa Rica	Community	CC	Conv	Blood samples of women with cervical cancer	IgG	306	27.1
Smith, 2002 (536)	1990.5	Brazil	Hospital	CC	Conv	Women with squamous carcinoma	IgG	137	38.0
Smith, 2002 (536)	1990.5	Brazil	Hospital	CC	Conv	Women with adenocarcinoma/adenosquamous carcinoma	IgG	13	30.8
Smith, 2004 (537)		Brazil	Hospital	CC	Conv	Cases of Squamous cell carcinoma ICC	IgG	155	37.4
Smith, 2004 (537)		Brazil	Hospital	CC	Conv	Cases of Adeno- or adenosquamous carcinoma ICC	IgG	14	28.6
Smith, 2004 (537)		Colombia	STD clinic	CC	Conv	Cases of Squamous cell carcinoma ICC	IgG	64	71.9
Smith, 2004 (537)		Peru	Hospital	CC	Conv	Cases of Squamous cell carcinoma ICC	IgG	169	55.0
Smith, 2004 (537)		Peru	Hospital	CC	Conv	Cases of Adeno-or adenosquamous carcinoma ICC	IgG	25	44.0
Stone, 1995 (522)	1984.5	Costa Rica	Health registries	CC	Conv	cases of cervical carcinoma in situ (CIS)	Mixed immunoglobulin	415	65.8
Stone, 1995 (522)	1984.5	Costa Rica	Health registries	CC	Conv	cases of invasive cervical cancer (ICC)	Mixed immunoglobulin	149	67.1

Abbreviations: ANC = Antenatal clinic, CB-VCT = Community-based voluntary counselling and testing sites, CC = Case control, CF = Compliment fixation, CR = Czech Republic, CS = Cross sectional, Conv = Convenience, CRS = Cluster random sampling, CT = *Chlamydia trachomatis*, DFA = Direct fluorescent antibody, ED = Emergency department, FC = Fertility clinic, FPC = Family planning clinic, FSWs = Female sex workers, GP = General practice, GS = Gram stain, GTI = Genital tract infection, GUM = Genitourinary medicine, HIV = Human immunodeficiency virus, HPV = Human papillomavirus, IDU = Intravenous-drug users, IUD = Intrauterine device, IVF = In vitro fertilization, LGV = lymphogranuloma Venereum, MCA = Monoclonal antibody, MSM = Men who have sex with men, MSWs = Male sex workers, NAAT =

Author, year	Midpoint of data collection	Country	Study site	Original study design*	Sampling method	Population	Assay type	Sample size	CT prevalence (%)

Nucleic acid amplification test, NG = Neisseria gonorrhoeae, OBGYN = Obstetrics gynecology, OC = Oral contraceptive, OPC = Outpatient clinic, PBS = Population based sampling, PEP: Post-exposure prophylaxis, PID = Pelvic inflammatory disease, RCT = Randomized controlled trial, RDS = Respondent driven sapling, Rehab = Rehabilitation, RF = Russian Federation, RS = Random sampling, SHC = Sexual health center, SHS = Sexual health services, SR = Slovak Republic, SRS = Stratified random sampling, SS = Snowball sampling, STD = Sexually transmitted disease, STI = Sexually transmitted infection, TOP = Termination of pregnancy, UK = United Kingdom, UTI = Urinary tract infection, VCT = Voluntary counselling and testing, WSW = Women who have sex with women.

Appendix H: *Chlamydia trachomatis* Meta-regression Sensitivity Analyses (per Year of Publication)

Appendix H-1. Meta-regression Analyses for CT Prevalence in Urogenital Specimens

Chlamydia detection in urogenital specimens			Outcome measures	Sample size	Univariable analysis				Multivariable analyses			
			n	Total N	RR	p-value	LT test p-value	Adjusted R2	Model 1		Model 2	
									ARR	p-value	ARR	p-value
Population characteristics	Population type	General populations	402	226,917	1.00	-	<0.001	17.95	1.00	-	1.00	-
		Intermediate-risk populations	49	12,988	1.10 (0.84-1.43)	0.483			1.14 (0.88-1.46)	0.310	1.15 (0.89-1.48)	0.256
		FSWs	113	51,509	1.76 (1.47-2.12)	0.000			1.80 (1.51-2.14)	0.000	1.82 (1.53-2.16)	0.000
		MSM	21	10,337	0.49 (0.32-0.75)	0.001			0.75 (0.50-1.13)	0.173	0.74 (0.49-1.11)	0.157
		Symptomatic women	67	12,123	1.95 (1.54-2.46)	0.000			1.68 (1.35-2.10)	0.000	1.71 (1.37-2.14)	0.000
		Symptomatic men	22	3,471	3.00 (2.07-4.35)	0.000			3.16 (2.13-4.69)	0.000	3.16 (2.13-4.67)	0.000
		Symptomatic mixed sexes	4	610	1.07 (0.45-2.55)	0.873			1.28 (0.47-3.44)	0.619	1.29 (0.48-3.46)	0.604
		HIV positive individuals and individuals in HIV-discordant couples	32	7,187	0.66 (0.47-0.93)	0.019			0.79 (0.58-1.08)	0.149	0.77 (0.56-1.04)	0.095
		STI clinic attendees	58	11,892	1.48 (1.15-1.91)	0.002			1.48 (1.16-1.89)	0.001	1.45 (1.14-1.85)	0.002
		Infertility clinic attendees	50	10,253	1.31 (0.99-1.74)	0.054			1.31 (1.00-1.72)	0.043	1.31 (1.00-1.72)	0.043
		Other populations[a]	34	5,013	2.98 (2.19-4.06)	0.000			2.64 (1.99-3.51)	0.000	2.65 (2.00-3.51)	0.000
	Age group	<20 years	50	11,990	1.00	-	0.006	0.97	1.00	-	1.00	-
		20-30 years	70	18,677	1.04 (0.73-1.49)	0.802			0.82 (0.61-1.11)	0.219	0.83 (0.61-1.12)	0.230
		30-40 years	31	3,171	0.69 (0.43-1.09)	0.117			0.60 (0.40-0.90)	0.014	0.60 (0.40-0.90)	0.013
		>40	33	2,964	0.47 (0.28-0.79)	0.004			0.45 (0.29-0.70)	0.000	0.44 (0.28-0.67)	0.000
		Mixed ages	668	315,498	0.78 (0.58-1.04)	0.092			0.61 (0.48-0.78)	0.000	0.61 (0.48-0.78)	0.000
	Sex	Women	688	290,445	1.00-	-	<0.001	4.07	1.00	-	1.00	-
		Men	171	59,301	0.62 (0.52-0.73)	0.000			0.63 (0.53-0.75)	0.000	0.64 (0.53-0.76)	0.000
		Mixed sexes	13	2,554	0.67 (0.39-1.15)	0.155			0.59 (0.33-1.05)	0.077	0.58 (0.32-1.03)	0.067
	Latin America Subregions	Central America	206	57,059	1.00	-	<0.001	4.95	1.00	-	1.00	-
		South America	504	274,419	0.93 (0.80-1.09)	0.388			0.99 (0.85-1.15)	0.899	1.00 (0.86-1.16)	0.976
		Caribbean	102	20,822	1.73 (1.38-2.17)	0.000			1.78 (1.45-2.18)	0.000	1.75 (1.43-2.15)	0.000
	Income	LMIC	72	21,537	1.00	-	0.867	0.00	-	-	-	-
		UMIC	732	325,163	1.06 (0.83-1.36)	0.599			-	-	-	-
		HIC	48	5,600	1.04 (0.72-1.51)	0.802			-	-	-	-

Chlamydia detection in urogenital specimens			Outcome measures	Sample size	Univariable analysis				Multivariable analyses			
			n	Total N	RR	p-value	LT test p-value	Adjusted R2	Model 1		Model 2	
									ARR	p-value	ARR	p-value
Study methodology characteristics	Assay type	NAAT	615	207,896	1.00	-	<0.001	16.53	1.00	-	1.00	-
		Culture	73	13,115	2.71 (2.18-3.35)	0.000			2.13 (1.63-2.79)	0.000	2.20 (1.69-2.86)	0.000
		ELISA	68	18,489	1.18 (0.93-1.48)	0.161			1.17 (0.91-1.50)	0.199	1.17 (0.92-1.49)	0.188
		Immunofluorescent	53	6,171	2.52 (1.92-3.31)	0.000			2.18 (1.65-2.88)	0.000	2.26 (1.71-2.98)	0.000
		Monoclonal	11	2,202	1.44 (0.86-2.41)	0.164			1.97 (1.21-3.19)	0.006	2.02 (1.25-3.27)	0.004
		Mixed/unclear assays	32	104,427	0.68 (0.49-0.93)	0.016			0.66 (0.49-0.89)	0.007	0.67 (0.50-0.91)	0.010
	Sample size‡	<200	249	18,612	1.00	-	<0.001	5.48	1.00	-	1.00	-
		≥200	603	333,688	0.66 (0.57-0.76)	0.000			0.72 (0.63-0.82)	0.000	0.71 (0.62-0.81)	0.000
	Sampling method	Probability based	141	36,291	1.00	-	0.013	6.98	1.00	-	1.00	-
		Non-probability based	711	316,009	1.24 (1.04-1.47)	0.013			0.91 (0.76-1.09)	0.322	0.91 (0.76-1.08)	0.286
	Response rate	≥80%	175	43,536	1.00	-	<0.001	2.60	1.00	-	1.00	-
		<80%	23	5,453	0.94 (0.61-1.43)	0.774			0.88 (0.61-1.27)	0.517	0.90 (0.62-1.29)	0.570
		Unclear	654	303,311	1.36 (1.15-1.59)	0.000			1.04 (0.88-1.23)	0.575	1.04 (0.88-1.23)	0.578
Temporal trend	Year of publication category	<2005	243	14,986	1.00	-	<0.001	4.68	1.00	-	-	-
		2005-2015	422	165,390	0.64 (0.55-0.75)	<0.001			1.01 (1.00-1.02)	0.010	-	-
		>2015	187	39,924	0.68 (0.56-0.82)	<0.001			1.29 (1.05-1.58)	0.013	-	-
	Year of publication linear		852	352,300	0.97(0.97-0.99)	<0.001	<0.001	4.21	-	-	1.01 (1.00-1.02)	0.001

Adjusted R^2 in the final multivariable model 1 = 41.15%.
Adjusted R^2 in the final multivariable model 2 = 41.40%.
[a] Other populations include populations with an undetermined risk of acquiring CT infection such as patients with cervical cancer and patients with Human Papilloma Virus (HPV)
Abbreviations: ARR = Adjusted Risk Ratio, CI = Confidence Interval, HIC = High-Income Country, UMIC = Upper-Middle Income Country, LMIC = Low-Middle Income Country, LT test= Likelihood Ratio Test, RR = Risk Ratio, FSWs: Female Sex Workers, MSM: Men who have Sex with Men, WSW: Women who have Sex with Women, MSWs: Male Sex Workers, HIV: Human Immunodeficiency Virus, STI: Sexually Transmitted Infection, NAAT: Nucleic Acid Amplification Test, ELISA: Enzyme-Linked Immunosorbent Assay, CT: *Chlamydia trachomatis* or *C. trachomatis*, NG: *Neisseria gonorrhoeae*. For population type definition, see Appendix D.

Appendix H-2. Meta-regression Analyses for CT Prevalence in Anorectal Specimens

Chlamydia detection in anorectal specimens			Outcome measures	Sample size	Univariable analysis				Multivariable analyses			
			n	Total N	RR	p-value	LT test p-value	Adjusted R2	Model 1		Model 2	
									ARR	p-value	ARR	p-value
Population characteristics	Population type	MSM	31	8,249	1.00	-	0.090	11.53	1.00	-	1.00	-
		HIV positive individuals and individuals in HIV-discordant couples	7	1,051	0.95 (0.52-1.72)	0.875			1.13 (0.65-1.93)	0.647	1.03 (0.59-1.79)	0.912
		STI clinic attendees	3	914	0.37 (0.13-1.04)	0.061			0.68 (0.23-1.97)	0.469	0.83 (0.28-2.47)	0.737
		Mixed populations[a]	2	146	2.25 (0.84-6.04)	0.102			2.60 (1.07-6.29)	0.035	2.06 (0.81-5.22)	0.123
	Sex	Females	4	653	1.00	-	0.085	5.42	1.00	-	1.00	-
		Males	39	9,707	2.04 (0.90-4.62)	0.085			3.55 (1.57-7.99)	0.003	2.92 (1.28-6.67)	0.012
	Region	Central America	14	3,145	1.00	-	0.025	20.19	1.00	-	1.00	-
		South America	28	6,999	1.86 (1.19-2.93)	0.008			1.23 (0.52-2.89)	0.619	1.61 (0.70-3.69)	0.246
		Caribbean	1	216	1.16 (0.29-4.54)	0.825			0.59 (0.14-2.44)	0.458	0.61 (0.15-2.44)	0.476
	Income	LMIC	10	2,402	1.00	-	0.003	14.56	-	-	-	-
		UMIC	33	7,958	2.13 (1.31-3.47)	0.003			-	-	-	-
Study methodology characteristics	Assay	NAAT	39	8,733	1.00	-	0.371	0.00	-	-	-	-
		Mixed/unclear assays	4	1627	0.71 (0.33-1.51)	0.371			-	-	-	-
	Precision	<200	17	1,805	1.00	-	0.997	0.00	-	-	-	-
		>200	26	8,555	1.00 (0.62-1.61)	0.997			-	-	-	-
	Probability	Probability	15	3,064	1.00	-	0.015	14.56	1.0	-	1.00	-
		Non-probability	28	7,296	1.74 (1.12-2.73)	0.015			1.51 (0.67-3.39)	0.308	1.31 (0.58-2.92)	0.498
	Response	>=80	6	1,199	1.00	-	0.562	0.00	-	-	-	-
		<80%	1	409	0.61 (0.13-2.80)	0.519			-	-	-	-
		Unclear	36	8,752	0.71 (0.37-1.37)	0.304			-	-	-	-
Temporal trend	Year of publication category	2005-2015	21	6,269	1.00	-	0.004	17.45	1.00	-	-	-
		>2014	22	4,091	1.86 (1.23-2.81)	0.004			1.49 (1.00-2.22)	0.050	-	-
	Year of data publication linear		43	10,360	1.12 (1.04-1.21)	0.004	0.004	17.39	-	-	1.09 (1.00-1.19)	0.030

Adjusted R^2 in the final multivariable model 1 = 48.77%.
Adjusted R^2 in the final multivariable model 2 = 51.59%.
[a] Other populations include populations with an undetermined risk of acquiring CT infection such as patients with cervical cancer and patients with HPV
Abbreviations: ARR = Adjusted Risk Ratio, CI = Confidence Interval, HIC = High-Income Country, UMIC = Upper-Middle Income Country, LMIC = Low-Middle Income Country, LT test= Likelihood Ratio Test,

RR = Risk Ratio, FSWs: Female Sex Workers, MSM: Men who have Sex with Men, WSW: Women who have Sex with Women, MSWs: Male Sex Workers, HIV: Human Immunodeficiency Virus, STI: Sexually Transmitted Infection, NAAT: Nucleic Acid Amplification Test, ELISA: Enzyme-Linked Immunosorbent Assay, CT: *Chlamydia trachomatis* or *C. trachomatis*, NG: *Neisseria gonorrhoeae*. For population type definition, see Appendix D.