

The relationship between HIV status and clinical manifestations of urogenital infections in women during pregnancy: a scoping review

A relação entre o status de HIV e as manifestações clínicas das infecções urogenitais em mulheres durante o período gravídico: uma revisão de escopo

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ABSTRACT

Introduction: Maternal and child health are essential to public health, especially during pregnancy, where urogenital infections can affect mothers and fetuses. Sexually transmitted infections (STIs) increase obstetric risks and have complex connections with the human immunodeficiency virus — HIV. In Brazil, pregnant women with HIV are a growing concern, requiring focus and appropriate interventions. **Objective:** This study aimed to examine the clinical and epidemiological characteristics of urogenital infections in pregnant women with and without HIV and to assess whether there are notable differences between these groups. **Methods:** A scoping review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses — Extension for Scoping Reviews (PRISMA-ScR) and Joanna Briggs Institute guidelines. Databases such as Medical Literature Analysis and Retrieval System Online (MEDLINE), *Literatura Latino-Americana e do Caribe em Ciências da Saúde* (LILACS), and Scientific Electronic Library Online (SciELO) were explored using relevant terms. Inclusion/exclusion criteria selected nine studies for analysis. A Population, Intervention, Comparison, Outcome, and Study Design (PICOS) approach directed the search. **Results:** Pregnant women with HIV had a high prevalence of STIs, including *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, and bacterial vaginosis. HIV infection appears to influence the risk and severity of urogenital infections. Pregnancy increases the risk of STIs, regardless of HIV status. Male partners may also influence the presence of STIs in pregnant women, especially those with HIV. **Conclusion:** This study highlights the association between HIV status and urogenital infections in pregnant women, indicating the need for appropriate screening and care. Prevention and treatment of STIs in pregnant women are essential for maternal and child health, regardless of HIV status. An in-depth understanding of these issues can improve public policies, clinical practices, and preventive interventions that target the overall health of these vulnerable populations. **Keywords:** HIV. Signs and symptoms. Female urogenital diseases and pregnancy complications. Pregnant women. Sexually transmitted infections.

RESUMO

Introdução: A saúde materna e infantil é essencial na saúde pública, especialmente durante a gravidez, quando infecções urogenitais podem afetar mães e fetos. Infecções sexualmente transmissíveis (IST) aumentam riscos obstétricos e têm conexões complexas com o vírus da imunodeficiência humana (HIV). No Brasil, gestantes com HIV são uma preocupação crescente, requerendo foco e intervenções adequadas. **Objetivo:** Este estudo teve como objetivo examinar as características clínicas e epidemiológicas das infecções urogenitais em mulheres grávidas com e sem HIV, avaliando se há diferenças notáveis entre esses grupos. **Métodos:** Uma revisão de escopo foi conduzida, seguindo as diretrizes *Preferred Reporting Items for Systematic Reviews and Meta-Analyses - Extension for Scoping Reviews* (PRISMA-ScR) e Joanna Briggs Institute. Bases de dados como *Medical Literature Analysis and Retrieval System Online* (MEDLINE), *Literatura Latino-Americana e do Caribe em Ciências da Saúde* (LILACS), and *Scientific Electronic Library Online* (SciELO) foram exploradas com termos relevantes. Os critérios de inclusão/exclusão selecionaram nove estudos para análise. Uma abordagem do tipo População, Intervenção, Comparação, Desfecho e Desenho do Estudo (PICOS) direcionou a pesquisa. **Resultados:** Mulheres grávidas com HIV apresentaram alta prevalência de IST, incluindo *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Trichomonas vaginalis* e vaginose bacteriana. A infecção por HIV parece influenciar o risco e a gravidade das infecções urogenitais. A gravidez aumentou o risco de IST, independentemente do status de HIV. Os parceiros masculinos também podem influenciar a presença de IST em mulheres grávidas, especialmente aquelas com HIV. **Conclusão:** A associação entre o status de HIV e as infecções urogenitais em mulheres grávidas indica a necessidade de rastreamento e cuidado adequado. A prevenção e o tratamento de IST em gestantes são essenciais para a saúde materno-infantil, independentemente do status de HIV. **Palavras-chave:** HIV. Sinais e sintomas. Doenças urogenitais femininas e complicações na gravidez. Gestantes. Infecções sexualmente transmissíveis.

INTRODUCTION

Maternal and child health is an extremely important public health issue, aimed at ensuring the well-being of women during pregnancy and childbirth as well as the health of newborns. During the gestational period, urogenital infections, such as candidiasis, bacterial vaginosis,

and trichomoniasis, are commonly found and can have significant consequences for the health of both women and their unborn children⁽¹⁾.

Sexually transmitted infections (STIs), such as *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, *Chlamydia trachomatis*, and *Mycoplasma genitalium*, are often associated with conditions that can lead to obstruction of the fallopian tubes and infertility, accounting for approximately 30% of cases. In addition, STIs increase the risk of pregnancy complications, such as infant mortality, stillbirth, chorioamnionitis, miscarriage, premature birth, and pre-eclampsia⁽²⁻⁵⁾. The World Health Organization (WHO) estimates that there were approximately 376.4 million cases of curable STIs between 2009 and 2016. Of these cases, approximately 127.2 million were attributed to chlamydia, 86.9 million to gonorrhea, 156.0 million to trichomoniasis, and 6.3 million to syphilis^(6,7).

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These infections have a negative impact on the female genital mucosa, weakening protection against microorganisms such as human immunodeficiency virus (HIV). STIs cause inflammation of the mucosa, with symptoms such as discharge, ulcers, and warts, depending on the type of infection. This inflammation can impair protection and make it easier for HIV to enter target cells. In addition, STIs can increase the number of immune cells, including those most vulnerable to HIV, which increases susceptibility to infection by the virus. It is worth noting that the presence of bacterial vaginosis is also related to complex interactions between STIs, HIV, and susceptibility to these conditions, which should be considered comprehensively⁽⁸⁾. People with chronic HIV infection may be vulnerable to opportunistic infections due to reduced immunity. These infections have a negative impact on the health and quality of life of people living with HIV, increasing morbidity and mortality^(9,10). During pregnancy, women with HIV may be more susceptible to STIs due to anatomical, immunological, and behavioral factors^(11,12).

In Brazil, a significant number of pregnant women are living with HIV. Data show that there has been an increase in the number of reported cases over the years, with a higher concentration of cases in the southeast and south regions. However, the north and northeast regions have experienced a worrying increase in new cases. These figures highlight the need to direct special attention to these vulnerable populations and implement effective measures to reduce HIV transmission and improve maternal and child outcomes^(13,14).

Therefore, this study is justified by the importance of understanding how urogenital infections influence maternal and child outcomes associated with the HIV status of pregnant women, as well as identifying their clinical manifestations. In addition, support for this population group is considered to have a direct impact on health data and is essential for formulating public policies, strengthening the Unified Health System (SUS), and implementing measures to support decisions at broad, intermediate, and local levels in the field of health in Brazil. The results of this research can contribute to advance scientific knowledge in this area and support the creation of more effective prevention, diagnosis, and treatment strategies, promoting maternal and child health in the context of urogenital infections and HIV. The aim was therefore to identify the main evidence describing the clinical and epidemiological characteristics of urogenital infections in women during pregnancy according to HIV serology status.

OBJECTIVE

This study aimed to identify the main evidence describing the clinical and epidemiological characteristics of urogenital infections in women during pregnancy according to HIV serology status.

METHODS

This is a scoping review (SR) conducted in accordance with the global PRISMA-ScR criteria and the recommendations of the Joanna Briggs Institute. The process for carrying out the SR included the following stages: formulation of the research question, identification of relevant studies, selection of studies, data mapping, collection, summary and description of the findings, and dissemination of the results obtained^(15,16). The “PICOS” technique (Patient/Population, Intervention, Comparison, Outcome, and Study Design) was used to construct the research question, which focused on pregnant women with urogenital infections and their clinical and epidemiological characteristics during pregnancy, as shown in **Table 1**⁽¹⁷⁾.

The main research question was to investigate the clinical and epidemiological characteristics of urogenital infections in pregnant women living with HIV compared to those without HIV, based on the available scientific literature. Secondary questions were formulated to refine the research. Different databases, such as MEDLINE (Medical Literature Analysis and Retrieval System Online) via PubMed (US National Library of Medicine), LILACS (Latin American and Caribbean Health Sciences Literature) via BVS (Virtual Health Library), and the SciELO virtual library (Scientific Electronic Library Online), were used with the following key terms: Signs and Symptoms; Female Urogenital Diseases and Pregnancy Complications; Sexually Transmitted Diseases; Pregnant Women. Boolean operators were applied to combine the search terms and, where possible, the results were limited to titles or titles and abstracts to obtain more accurate results.

The inclusion criteria for the selection of studies covered research on pregnant women with urogenital infections, with publications in the past 5 years, without restrictions on the language or age range of the participants, and with free access in full. Articles that did not focus predominantly on pregnant women with urogenital infections, studies of specific groups, theses, dissertations, Course Conclusion Papers, abstracts, and miscellaneous documents were excluded, as were duplicate articles in the databases. The initial selection involved identifying articles with specific terms in the titles or titles and abstracts, as well as eliminating duplicates using the Rayyan tool⁽¹⁸⁾. In the final extraction and selection stage, the articles were read in full, taking into account the pre-defined inclusion and exclusion criteria, in an attempt to answer the primary and secondary questions posed. The entire selection methodology is shown in **Figure 1**.

The inclusion criteria were as follows: studies focusing on pregnant women with urogenital infections; studies published in the past 5 years; no restrictions on the language of the studies and/or the age range of the participants; and only scientific articles available free of charge and in full were considered. The exclusion criteria were as follows: articles whose main focus was not pregnant women with urogenital infections; studies that dealt with specific groups; theses, dissertations,

Table 1 – Components of the research question, according to the acronym PICOS.

Acronym/Strategy	Description	Research component
P	Population	Pregnant women with urogenital infections
I	Intervention/Exposure	Positive HIV status
C	Comparison	Positive HIV status (if available)
O	Outcomes	Clinical and epidemiological characteristics of urogenital infections during pregnancy
S	Context	Studies that describe these characteristics and are available in the scientific literature

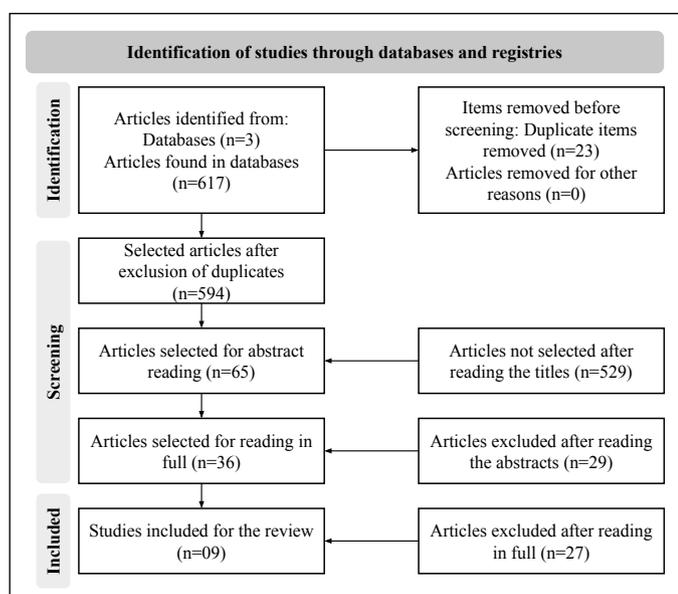


Figure 1 – Flow diagram of the article selection stages.

Course Conclusion Papers, simple and expanded abstracts, and other types of documents; and duplicate articles in the databases.

RESULTS

After eliminating duplicates, we identified 594 articles. We selected 65 abstracts after reading the titles, of which 36 were submitted for full reading. Of these, nine articles met the inclusion and exclusion criteria. The exclusion of studies occurred mainly due to the lack of evaluation of the outcome of interest, totaling 27 excluded studies. The studies included in the final selection were cataloged and summarized in Table 2¹⁹⁻²⁷, which shows information such as authors, title, year, journal of publication, place, type, objective, and main results of the studies.

DISCUSSION

Clinical and epidemiological characteristics of urogenital infections in pregnant women living with HIV

The prevalence of STIs in pregnant women living with HIV is a significant problem, as reported in several studies. *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, and bacterial vaginosis are some of the STIs with a high prevalence in this group. The presence of syphilis was also observed in alarming proportions. It is important to note that many women with STIs are asymptomatic, highlighting the limitations of the syndromic management approach⁽¹⁹⁾.

Risk factors, such as multiparous gestation and younger age, have been identified as predisposing to urogenital infections in pregnant women living with HIV, and researchers recommend implementing point-of-care tests for diagnosis and promoting screening and treatment strategies to improve the management of these infections in pregnant women, especially those living with HIV⁽¹⁹⁾. The high prevalence of STIs in women living with HIV is alarming.

The high prevalence of STIs in HIV-infected pregnant women in South Africa has also been observed in other studies. *Chlamydia*

trachomatis showed a particularly high prevalence rate, the highest being ever reported in pregnant women, both in the South African and global context, with the majority of infected women being asymptomatic, emphasizing the importance of universal testing using accurate diagnostic methods in this population⁽²⁰⁾. Furthermore, the persistence of these infections, even after adequate treatment, is a relevant concern⁽²¹⁾.

Other studies have also highlighted the association between *Trichomonas vaginalis* infection and pregnancy in women living with HIV. Although pregnancy was initially associated with an increased risk of chlamydia, this association was not maintained after multivariable adjustments. The use of hormonal contraceptives, such as oral or injectable pills, was not associated with an increased risk of urogenital infections⁽²²⁾.

The detection and appropriate treatment of urogenital infections in pregnant women living with HIV is fundamental for maternal and fetal health. Open communication, jointly seeking medical care, and the involvement of sexual partners are essential for successful treatment and for preventing the persistence of infections⁽²¹⁾. It is important to emphasize that early detection and timely treatment of urogenital infections are crucial for preventing complications during pregnancy, such as premature birth and adverse outcomes for mother and child⁽²³⁾.

In addition, Short et al.²⁷ indicated that urogenital infections in pregnant women living with HIV are associated with changes in the vaginal microbiota, as well as with a local inflammatory response. Higher concentrations of MMP-9, TIMP-1, and pro-inflammatory cytokines were found in these women compared to HIV-uninfected pregnant women. The presence of vaginal anaerobic bacteria and inflammatory cytokines was also observed in association with these infections. These alterations may contribute to the increased risk of preterm birth in pregnant women living with HIV.

Clinical and epidemiological characteristics of urogenital infections in pregnant women living without HIV compared to women infected with the virus

Urogenital infections in pregnant women are a significant health problem, both for those living with HIV and for those who are not infected. Several studies have revealed a high prevalence of urogenital infections in pregnant women, including chlamydia, gonorrhoea, trichomoniasis, bacterial vaginosis, and syphilis. The majority of infected women were asymptomatic, indicating limitations in the syndromic approach to managing these infections⁽¹⁹⁾.

Risk factors such as younger age, primiparity, and HIV infection are associated with a higher risk of urogenital infections in pregnant women. HIV-infected pregnant women had a high prevalence of STIs, such as chlamydia, with *Chlamydia trachomatis* being the most common. Socioeconomic factors, such as level of education, employment status, and income, were not significantly associated with the prevalence of urogenital infections in pregnant women^(20,26).

Although some urogenital infections in pregnant women may present symptoms, such as frequent urination, pain when urinating, abnormal vaginal discharge, and vaginal bleeding, it is important to note that not all infections present obvious symptoms. Therefore, diagnosis and treatment should be carried out by qualified health professionals⁽²⁴⁾.

Mycoplasma genitalium is also a significant concern in pregnant women, both in those living with HIV and in those not infected.

Table 2 – List of publications selected for the study.

ID	Authors	Title	Periodicals	Years	Place of study	Type of study	Purpose of the study	Main results
E01	Chaponda et al. ⁽¹⁹⁾	Assessment of syndromic management of curable sexually transmitted and reproductive tract infections among pregnant women: an observational cross-sectional study	BMC Pregnancy Childbirth	2021	Nchelenge and Kashikishi in Zambia	Observational cohort study	To investigate the prevalence of curable STIs and reproductive tract infections among pregnant women in the Nchelenge district of Zambia.	The study revealed high rates of infections, such as chlamydia, gonorrhoea, trichomoniasis, bacterial vaginosis, and syphilis among participants, especially in asymptomatic cases. The syndromic management approach proved ineffective in diagnosing and treating these infections. More effective strategies need to be implemented to prevent pregnancy complications and transmission to infants.
E02	Yeganeh et al. ⁽²⁵⁾	Diagnosis and treatment of sexually transmitted infections in male partners of pregnant women in Brazil	Int J STD AIDS	2021	Porto Alegre, Brazil	Prospective cohort study	To explore the acceptability and effectiveness of a clinical intervention in engaging male partners of pregnant women in STI testing and treatment as well as immunizations.	Results showed that 64% of male partners attended the clinic and accepted interventions. 16% of participants tested positive for at least one STI, including <i>Chlamydia trachomatis</i> , syphilis, <i>Trichomonas vaginalis</i> , <i>Neisseria gonorrhoeae</i> , and HIV. The study identified factors associated with STI diagnosis in men, such as younger age, STI symptoms, and arguments over jealousy. Shorter relationship length and jealousy fights were related to less involvement of the male partner in prenatal care. The study highlights the importance of male partner involvement in antenatal care to improve family health outcomes.
E03	Mudau et al. ⁽²⁰⁾	High prevalence of asymptomatic sexually transmitted infections among human immunodeficiency virus-infected pregnant women in a low-income South African community	Int J STD AIDS	2018	South Africa	Cross-sectional study	To support recommendations for the diagnosis and management of STIs during pregnancy.	The study revealed a high prevalence of sexually transmitted infections (STIs) among HIV-infected pregnant women, with about 47.8% having at least one STI. Chlamydia was the most common infection (36.8%), followed by trichomoniasis (23.9%) and gonorrhoea (6.9%). The study also identified that 41.5% of infected women had symptoms. Factors such as age below 25 years and being in the first trimester of pregnancy were associated with symptomatic infections. Effective screening and management of STIs in pregnant women with HIV is crucial to avoid adverse complications.
E04	Teasdale et al. ⁽²²⁾	Incidence of sexually transmitted infections during pregnancy	PLoS One	2018	South Africa and Zimbabwe	Secondary study analyzing data from a randomized clinical trial (RCT) called MIRA (Methods for Improved Reproductive Health in Africa).	To evaluate the use of diaphragm and lubricant gel in the prevention of HIV infection in women.	The study found higher rates of chlamydia, gonorrhoea, and trichomoniasis during pregnancy. However, pregnancy itself was not a significant factor in increasing STI risk after adjusting for several factors. Still, it is important to emphasize that pregnant women face considerable STI and HIV risks, indicating the need for preventive measures and comprehensive care during pregnancy.
E05	Medina-Marino et al. ⁽²¹⁾	Persistent <i>Chlamydia trachomatis</i> , <i>Neisseria gonorrhoeae</i> or <i>Trichomonas vaginalis</i> positivity after treatment among human immunodeficiency virus-infected pregnant women, South Africa	Int J STD AIDS	2020	South Africa	Cohort study	To investigate the frequency and predictors of persistent positive <i>Chlamydia trachomatis</i> , <i>Neisseria gonorrhoeae</i> , and <i>Trichomonas vaginalis</i> in HIV-infected pregnant women in South Africa.	After treatment, many participants continued to test positive for <i>Chlamydia trachomatis</i> , <i>Neisseria gonorrhoeae</i> , or <i>Trichomonas vaginalis</i> . Factors such as multiple sexual partners, HIV diagnosis during antenatal care, and a lack of knowledge about partners' treatment were associated with persistence of positivity. Women without antiretroviral therapy (ART) were more likely to have persistent <i>Trichomonas vaginalis</i> and <i>Chlamydia trachomatis</i> positivity. The study highlights the importance of identifying and addressing factors that contribute to persistent STIs in this population.

Continue...

Table 2 – Continuation.

ID	Authors	Title	Periodicals	Years	Place of study	Type of study	Purpose of the study	Main results
E06	Price et al. ⁽²⁴⁾	Prevalence and Detection of <i>Trichomonas vaginalis</i> in HIV-Infected Pregnant Women	Sex Transm Dis	2018	Tshwane, South Africa	Clinical study using PCR (polymerase chain reaction) and culture tests to detect <i>Trichomonas vaginalis</i> in self-collected vaginal samples	To evaluate the efficacy of nucleic acid amplification tests in screening for <i>Trichomonas vaginalis</i> in HIV-infected pregnant women.	PCR identified <i>Trichomonas vaginalis</i> in 76 women (20%), while culture detected only 38 cases (50%) positive on PCR. A cycle threshold (Ct) value of less than 30 in the PCR test demonstrated 97% sensitivity and 96% specificity for predicting culture positivity. These results indicate that molecular tests such as PCR are more sensitive than culture for detecting <i>Trichomonas vaginalis</i> and may be effective in screening for infection in high-risk populations, such as pregnant women with HIV.
E07	Smullin et al. ⁽²³⁾	Prevalence and incidence of <i>Mycoplasma genitalium</i> in a cohort of HIV-infected and HIV-uninfected pregnant women in Cape Town, South Africa	Sex Transm Infect	2020	Cape Town, South Africa	Cohort study	To assess the prevalence and incidence of <i>Mycoplasma genitalium</i> infection in pregnant women living with and without HIV, as well as the factors associated with <i>Mycoplasma genitalium</i> infection.	The study found that 24% of women living with HIV and 12% of women without HIV had <i>Mycoplasma genitalium</i> infection at their first antenatal visit. The annual incidence rate of infection was 4.7 per 100 women. Being single, experiencing intimate partner violence, and having a co-infection with <i>Trichomonas vaginalis</i> increased the likelihood of <i>Mycoplasma genitalium</i> infection. Treatment with azithromycin for co-infection with <i>Chlamydia trachomatis</i> and/or <i>Neisseria gonorrhoeae</i> helped in eliminating <i>Mycoplasma genitalium</i> . Women with HIV and <i>Mycoplasma genitalium</i> infections had a higher risk of pregnancy or delivery complications. The study highlights the high prevalence and incidence of this infection among pregnant women, especially those living with HIV, emphasizing the importance of its treatment in prenatal care.
E08	Asres et al. ⁽²⁶⁾	Prevalence and trends of sexually transmitted infections among pregnant women in Mizan Tepi University Teaching Hospital, Southwest Ethiopia: a cross-sectional study	Pan Afr Med J	2022	Mizan Tepi University Teaching Hospital (MTUTH) in the Bench Maji region of southwest Ethiopia	Cross-sectional study with retrospective approach	To assess the prevalence and trends of STIs among pregnant women who received antenatal care services at Mizan Tepi University Teaching Hospital.	The overall prevalence of STIs among pregnant women was 16.7%. The most common STIs were HIV (5.0%), genital candidiasis (3.7%), vaginal trichomoniasis (3.3%), hepatitis B (3.0%), chlamydia (1.0%), and hepatitis C (0.7%). Over the 5 years, trends in STIs were variable, with prevalence showing intermittent increases and decreases.
E09	Short et al. ⁽²⁷⁾	Vaginal Microbiota, Genital Inflammation and Extracellular Matrix Remodelling Collagenase: MMP-9 in Pregnant Women With HIV, a Potential Preterm Birth Mechanism Warranting Further Exploration	Front Cell Infect Microbiol	2021	London, United Kingdom	Longitudinal study	Investigating the role of inflammatory processes and immune activation in promoting preterm birth.	The study revealed significant differences in the levels of MMP-9, TIMP-1, cytokines, and bacterial profiles in vaginal fluid between pregnant women with HIV and pregnant women without HIV. These differences may have an impact on the health and pregnancy of women with HIV.

Studies have shown a high prevalence and incidence of this infection, with symptoms generally absent or mild. Co-infection with other STIs, such as *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Trichomonas vaginalis*, increases the likelihood of *Mycoplasma genitalium* infection⁽²³⁾.

The incidence of urogenital infections, such as chlamydia, gonorrhoea, and trichomoniasis, did not show a significant association with pregnancy in women not infected with HIV. The use of hormonal contraceptives, such as oral contraceptive pills or injectable contraceptives, also does not seem to increase the risk of urogenital infections in these women⁽²²⁾.

In the South African context, HIV-infected pregnant women had a high prevalence of *Trichomonas vaginalis* infection. Half of the cases were asymptomatic, while the other half had symptoms such as pain during sexual intercourse, painful urination, abnormal vaginal discharge, or vaginal bleeding. PCR diagnosis proved to be more efficient than culture for detecting the parasite. In addition, the persistence of *Trichomonas vaginalis* DNA was observed even after treatment with metronidazole⁽²⁴⁾.

Differences in the clinical and epidemiological characteristics of urogenital infections in pregnant women with positive and negative serological status for HIV

Based on the study carried out by Yeganeh et al.²⁵, which investigated the individual, partnership, and systemic factors that influence the involvement of male partners in prenatal care, it was observed that pregnant women with HIV-positive serological status have a higher prevalence of urogenital infections, with *Chlamydia trachomatis* being the most common. In addition, male partners who presented symptoms of STIs and conflicts related to jealousy were more likely to be diagnosed with STIs. The participation of male partners in prenatal care was influenced by the characteristics of pregnant women, such as shorter relationship duration, jealousy-related arguments, alcohol use by the mother, and involvement in sexual relationships outside the partnership.

Mudau et al.²⁰ highlighted that pregnant women living with HIV have differences in clinical characteristics in relation to urogenital infections. They have a higher prevalence of infections such as *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Trichomonas vaginalis* compared to HIV-negative women. In addition, women living with HIV are more likely to have multiple infections, be younger, and start antenatal care later. The importance of systematic screening and diagnostic tests to identify urogenital infections during pregnancy is highlighted in order to provide appropriate and personalized care.

In the study conducted by Teasdale et al.²², a secondary analysis of the data revealed that there were no significant differences in demographic and behavioral characteristics between pregnant women with positive and negative HIV serological status. However, pregnancy was associated with an increased risk of chlamydia, gonorrhoea, and trichomoniasis, although these associations did not reach statistical significance. The use of hormonal contraceptives was not associated with an increased risk of urogenital infections. The authors emphasize the importance of STI prevention and screening for pregnant women, regardless of their HIV status.

In relation to *Mycoplasma genitalium* infection, Smullin et al.²³ observed that pregnant women living with HIV are more likely to

report vaginal bleeding compared to HIV-negative women with *Mycoplasma genitalium* infection. Co-infection with other STIs is also associated with *Mycoplasma genitalium* infection.

The results of this SR have significant implications for the health of the population under discussion. Identifying the clinical and epidemiological characteristics of urogenital infections in pregnant women with HIV can assist health professionals in the prevention, diagnosis, and appropriate treatment of these infections. In addition, the results highlight the importance of health education and the promotion of effective prevention strategies, targeting both pregnant women and their partners, to reduce the transmission of STIs and improve maternal and child health outcomes.

Strengths

A rigorous search strategy and inclusion criteria were used in approaching this SR, ensuring a thorough selection of relevant articles. In addition, the implementation of the PICOS framework provided an organized way of addressing the study objectives, increasing the reliability and validity of the results. The search covered several databases, including MEDLINE, LILACS, and SciELO, providing a comprehensive overview of the subject and allowing for a more holistic knowledge of the links between urogenital infections, pregnancy, and HIV status.

Limitations

Study selection was limited to 5 years, which may have omitted relevant older material. There may be a linguistic bias as a result of concentrating on publicly available full-text articles, which excludes good research in other languages or puts it behind payment barriers.

CONCLUSION

This review found that pregnant women living with HIV have a high prevalence of curable STIs, such as chlamydia, trichomoniasis, gonorrhoea, and bacterial vaginosis, as well as a higher incidence of bacterial vaginosis and syphilis. Many of these women had no symptoms at the time of selection for the studies, and pregnancy can increase the risk of some STIs, such as chlamydia. However, pregnancy is not associated with an increased risk of HIV infection, and the use of oral or injectable hormonal contraceptives does not increase the risk of STIs in pregnant women with HIV. There is a need for more studies that specifically address the clinical and epidemiological characteristics of urogenital infections in pregnant women with HIV, as there are gaps in existing knowledge.

Approval by the Human Research Ethics Committee

As this is a scoping review, this research does not require ethical appraisal.

Participation of each author

ALCS: Conceptualization, Data curation, Writing – original draft, Writing – revision & editing. GGS: Conceptualization, Data curation, Writing – original draft, Writing – revision and editing. ESN: Conceptualization, Data curation, Writing – original draft, Writing

– revision & editing. REOJ: Conceptualization, Data curation, Writing – original draft, Writing – revision & editing.

Funding

The authors declare no financial support.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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This document has an erratum:

<https://doi.org/10.5327/DST-2177-8264-2023351384ERRATUM>

