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Female Reproductive Tract Infections in Married Women: A Review Study

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***Abstract*— Female reproductive tract infections (FTIs) are common issues among women in general, negatively affecting reproductive health, and are more widespread among married women. Therefore, this review aimed to identify the types and causes of FTIs in married women. It demonstrated the prevalence of various kinds of female reproductive tract infections among married women, especially during pregnancy, which can be transmitted to the fetus during pregnancy or childbirth. These infections include fungal, bacterial, and sexually transmitted infections, which are transmitted sexually, caused by multiple factors and risk elements such as unhealthy sexual behaviors, poor hygiene, social influences, weakened immunity, frequent use of medications, and certain types of contraceptives. Female sex hormones also significantly influence the development of infection by impacting behavioral, immunological, and physiological parameters in affected women. Consequently, understanding these factors is essential for developing effective infection prevention strategies. The widespread prevalence of female reproductive tract infections (FTIs) calls for a comprehensive approach to assessing the health risks to both mother and child.**

Keywords—Married women, reproductive tract infections

I. Introduction

The female reproductive (genital) system includes the ovaries, fallopian tubes, uterus, cervix, vagina, and vulva. During pregnancy, additional tissues, such as the placenta, amniotic fluid, and the fetus, are involved. Gynecological and obstetric infections are a vital aspect of women's health [1].

According to the WHO Guidelines for the Care of Reproductive Tract Infections (RTIs), reproductive tract infections are categorized into three groups: (1) iatrogenic illnesses, which are acquired through medical instruments; (2) endogenous infection, caused by microbes naturally present in the genital tract; and (3) sexually transmitted infections, caused by pathogens acquired during sexual contact [2].

The environment of the female reproductive system contains metabolites, immune components, and microorganisms; the stasis of interactions among them plays a vital role in maintaining genital system health. When an imbalance occurs in any of the organisms, metabolites, or immunity, it affects the other two, leading to the development of infections and the appearance of signs and symptoms, such as abortion, premature delivery, infertility, and gynecological tumors caused by genital infections [3].

The causes of female reproductive infections vary greatly. The proximity of the vagina, urethra, and anus is the most essential factor in susceptibility to genital disease, and specific agents increase the risk [4].

A systematic review by Umami et al (2022) showed that women with unhealthy reproductive health practices have a higher incidence of reproductive infections [5]. Chronic vulvovaginitis can lead to serious, ongoing gynecological issues such as pelvic inflammation and tubal infertility [6].

Vaginitis is one of the most common conditions among women. The leading causes are Vulvovaginal candidiasis (VVC) and bacterial vaginosis (BV) [7]. These two conditions account for roughly 90% of female reproductive tract infections. There is a connection between vaginal infections and health-related quality of life in women diagnosed with this condition. Vaginal infections significantly affect women's daily routines [8].

Reproductive tract infections are more prevalent among married women due to various factors, including high fertility rates, early marriage, low education, a history of miscarriage, and poor menstrual hygiene [9].

In recent years, married women have been suffering from various genital infections, so this review was conducted to determine which diseases are more prevalent and the causes of these infections.

II. Methods

A. Study design

The articles used in this work highlighted the prevalence of female reproductive tract infections and sexually transmitted diseases among married women. According to the study criteria, some studies were retrieved from various databases, including Google Scholar, Scopus, PubMed, and DOAJ. Table (1).

B. Study criteria

This work includes studies on reproductive tract infections and sexually transmitted diseases among married women published from 2023 to 2025. Exclude articles that do not focus on married women.

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III. Results

Female reproductive tract infections occur in all women of reproductive age worldwide, with a higher incidence in married women, especially during pregnancy. These infections include fungal infections, such as yeast infections (also called vulvovaginal candidiasis or VVC), and bacterial vaginosis (BV). They develop when the natural balance of skin or vaginal flora is disturbed by hormonal changes, pregnancy, antibiotic use, sexual activity, irritation of vaginal tissue, altered pH, increased moisture, or frequent use of vaginal washes, all of which can trigger overgrowth of flora. Mucosal immunity and factors like hormonal contraceptive use and intrauterine devices (IUDs) also play a role. Sexually transmitted diseases can occur in married women due to asymptomatic infections (HPV, chlamydia, trichomoniasis), hormonal factors, and unsafe infertility or medical procedures Table 1.

A. Fungal infections

Candida albicans is a commensal microbe but can cause serious health issues in immunocompromised patients, leading to a wide range of systemic and mucosal diseases. These include vulvovaginal candidiasis (VVC), which affects approximately 75% of women of reproductive age at some point in their lives, and about 9% of women across all population groups experience more than three recurrences annually, known as recurrent vulvovaginal candidiasis (RVVC) [10,11].

Candidiasis, also known as a yeast infection, is a condition that causes infections worldwide due to an overgrowth of *Candida* species. Among its various types, genital candidiasis, particularly vulvovaginal candidiasis (VVC), which is primarily caused by the fungus *Candida albicans*, is more common in women [12].

An infection of the vagina and vulva in women caused by a species of Candida. There are over 200 Candida species, with *Candida albicans* being the most common. However, in recent decades, infections caused by non-Candida albicans species (e.g., *Candida glabrata*, *Candida tropicalis*, and *Candida parapsilosis*) have increased [13,14].

Vulvovaginal candidiasis (VVC) is more common in married women with multiple pregnancies. Untreated VVC can lead to complications such as miscarriage, pelvic inflammatory disease, and placental abruption [15]. Over 85% of vaginal yeast infections are caused by *Candida albicans* [16]. A study in Iraq found that *Candida albicans* accounts for 60.9%, *Candida Krusei* for 7.3%, and *Candida glabrata* for 3.6% among married women [17].

The prevalence of vaginal candidiasis among women at a maternity hospital in Erbil, Iraq, was 54.66%. The rate was higher among married women, especially pregnant women (63.4%), and among women taking contraceptive pills (57.4%). The rate among women using intrauterine devices (IUDs) was 66.7% [18].

B. Bacterial infections

A balance of naturally occurring microbes, synthetic metabolites, and immune factors is vital for female reproductive health. Lactobacillus bacteria are the most prevalent, making up 90-95% of the normal vaginal bacterial population. The four most common species in the female reproductive tract are *Lactobacillus jensenii*, *Lactobacillus gasseri*, *Lactobacillus crispatus*, and *Lactobacillus iners* [19]. A dysbiotic environment is a risk factor for bacterial vaginosis, an infection that can increase the presence of sexually transmitted bacteria (Neisseria, Chlamydia, and Trichomonas), leading to impaired fertility [20].

A cross-sectional study among married women in Zakho, Iraq, found that bacterial vaginosis (BV) is the leading cause of female reproductive tract infections, with a prevalence rate of 27.33% among married women. This increase is closely linked to higher birth rates, genital ulcers, vaginal discharge, and elevated vaginal pH [21].

Bacterial vaginosis (BV) is an infection caused by pathogenic bacteria that displace the normal vaginal flora. BV has become a significant concern for women visiting obstetrics and gynecology clinics in many countries. A total of 18 bacterial species were isolated among married women in Kalar District, Iraq; coagulase-negative staphylococci (CoNS) were the most common cause of BV (32.84%), along with *Streptococcus aureus* (7.46%), *Klebsiella pneumoniae* (8.96%), *Staphylococcus aureus* (13.43%), and *Escherichia coli* (14.93%) [22].

Another study conducted in Thi Qar on bacterial vaginosis found that *Staphylococcus aureus* (44.3%), *Klebsiella* (18.8%), and *Escherichia coli* (18.1%) were prevalent among infertile women [23]. Abortion, age, and education level are risk factors for bacterial vaginosis [24]. In Nigeria, the prevalence of bacterial vaginosis was 64.5% among 496 women. This infection was more common among married women, with 285 (66.1%) affected [25]. Of the 153 participating women, 100 (65.4%) with bacterial vaginosis were married. Married women were more likely to develop bacterial vaginosis than unmarried women. The study also identified poor menstrual hygiene as a leading cause of bacterial vaginosis [26].

C. Sexually transmitted infections among married women

Women are vulnerable to sexually transmitted diseases (STDs). These illnesses harm female reproductive health because of the anatomy of the female urogenital system [27].

More than 30 different types of parasites, viruses, and bacteria are known to be transmitted through sexual contact. Some sexually transmitted diseases can also pass from mother to child during breastfeeding, pregnancy, and childbirth. Eight microbes are linked to the highest prevalence of sexually transmitted diseases. Among these, four are incurable viral infections: human immunodeficiency virus (HIV), herpes simplex virus (HSV), human papillomavirus (HPV), and hepatitis B. The remaining four are currently treatable: gonorrhea, trichomoniasis, syphilis, and chlamydia [28].

Sexually transmitted diseases (STDs) are hazardous for married women because they can transmit these infections to their newborns. These include fungal infections like candidiasis; bacterial infections such as bacterial vaginosis, chancroid, gonorrhea, chlamydia, syphilis, Donovan's disease, and genital granuloma; and viral STDs like genital herpes, warts, hepatitis, and infectious lymphoma [29].

A study conducted in Egypt on sexually transmitted diseases among married women found that the prevalence of candidiasis was 38% and scabies was 21%. It also identified several factors that can prevent these diseases, including gynecological conditions, sexual and reproductive behavior, healthcare, lifestyle, demographic, social, and economic factors [30].

Sexual relations outside of marriage are forbidden in Islam, and information about sexual health is often scarce in Muslim societies, especially for women [31]. Women lack knowledge about sexually transmitted diseases (STDs), and many misconceptions exist. Most women in this study held negative attitudes toward these diseases, especially HIV/AIDS, and believed men were the primary source of these infections [32].

A. Hormonal and physiological changes that stimulate infections in married women

The vagina consists of vaginal microbes, its anatomical structure, mucosal immunity, and the host endocrine system, all of which interact to maintain the balance of vaginal microbiota and promote vaginal health in women. The composition and growth of vaginal microbiota are heavily influenced by progesterone and estrogen. Progesterone breaks down vaginal epithelial cells, releasing glycogen. Meanwhile, estrogen promotes the formation of vaginal epithelial cells and increases glycogen storage, helping maintain a normal vaginal pH [33].

The female reproductive system is a complex ecosystem influenced by factors such as microbes, genetics, physiology, and behavior. It is closely linked to the immune function of the female mucosal membrane and plays a crucial role in controlling reproductive tract infections [34]. Lifestyle, hormones, and reproductive age also influence the makeup of microbes in the female reproductive tract [35].

Microbial infections threaten female reproductive health. Although sex hormones regulate pregnancy and the reproductive cycle, their effects on host-microbe interactions and immunity in the women's reproductive tract remain poorly understood. Additionally, hormonal changes during pregnancy may affect when and how a woman becomes susceptible to disease. Since most microbial infections in the uterus originate in the lower reproductive tract, future research is crucial to understanding how various hormones affect susceptibility in this area and to identifying the timing factors that influence infection risk during pregnancy. This research should also include non-pregnant women. It is crucial to examine how hormonal fluctuations during the menstrual cycle and the use of hormonal contraceptives influence infection susceptibility [36].

Hormonal and immune changes during pregnancy influence the vaginal microbiome, which plays a vital role in the development of infections such as vulvovaginal candidiasis (VVC) and bacterial vaginosis (BV) [37].

TABLE 1.Studies published between 2023 and 2025 on reproductive tract infections in married women

Reference	Year	Country	Type of infection	Sample size	Percent of infection
[8]	2024	Iraq	Mixed infections	90	Bacterial infection 40% Vaginal candidiasis 31.11%
[17]	2024	Iraq	Mixed infections	400	Candidiasis 27.5% Trichomoniasis 6%
[38]	2024	Iraq	Vaginal candidiasis	100	55%
[39]	2023	Iraq	Bacterial infection	70	48.5%
[40]	2023	Libyan	Mixed infections	55	Bacterial infection 100% Vaginal candidiasis 69.9%
[41]	2024	Egypt	Yeast infection	370	56.5%
[42]	2023	Egypt	Mixed infections	231	Bacterial infection 28.1% Vaginal candidiasis 47.6%
[43]	2023	Iraq	STDs	200	6 % Trichomoniasis
[44]	2025	Pakistan	STDs	650	STI prevalence was 22.0%, trichomoniasis was 15.1%
[45]	2024	Egypt	STDs	1040	29% Chlamydia trachomatis

IV. CONCLUSIONS

- Women are advised to undergo regular checkups.
- They should maintain good personal hygiene to prevent genital tract infections.
- They should avoid taking medications, especially while pregnant.
- Women should learn about sexually transmitted infections and how to prevent them. They should avoid using contaminated items such as contraceptives or personal hygiene products and should not share them with other women.

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CONFLICT OF INTEREST

Authors declare that there is no conflict of interest.

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