



SEXUALLY TRANSMITTED DISEASES: A PUBLIC HEALTH PERSPECTIVE WITH A FOCUS ON INDIA

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ABSTRACT

Sexually transmitted diseases (STDs), also referred to as sexually transmitted infections (STIs), are a significant public health issue globally and particularly in developing nations such as India. These infections are caused by a variety of pathogens including bacteria, viruses, protozoa, and ectoparasites, and are primarily transmitted through sexual contact. Globally, over one million people acquire an STI every day, with serious long-term consequences on reproductive, maternal, and neonatal health. Infections such as chlamydia, gonorrhoea, syphilis, trichomoniasis, HIV, hepatitis B, and HPV account for the majority of the disease burden. Key risk factors include multiple sexual partners, unprotected sex, and limited access to healthcare, with vulnerable groups including adolescents, sex workers, migrant laborers, and men who have sex with men. In India, despite efforts through national STD control programs, a large proportion of cases remain undiagnosed and untreated, especially in rural and marginalized populations. The article highlights the epidemiology, clinical features, risk factors, transmission modes, and prevention strategies related to STDs. A comprehensive approach involving health education, safe sexual practices, early diagnosis, accessible treatment, and supportive services is essential to control the spread of STDs and reduce their long-term health and social impacts.

Keywords: Sexually transmitted diseases, STDs, public health, India, prevention, nursing role.

INTRODUCTION

Sexually transmitted diseases (STDs), also known as sexually transmitted infections (STIs), are a group of communicable diseases that are primarily spread through sexual contact, including vaginal, anal, and oral intercourse. These infections are caused by a wide array of microorganisms such as bacteria, viruses, protozoa, fungi, and ectoparasites. Globally, STDs pose a significant public health burden, with the World Health Organization (WHO) estimating over 1 million new STI cases acquired daily, many of which go undiagnosed and untreated due to stigma, lack of awareness, and limited access to healthcare services. There are more than 30 pathogens known to be transmitted through sexual contact. The most common STDs include bacterial infections like chlamydia (*Chlamydia trachomatis*), gonorrhoea (*Neisseria gonorrhoeae*), and syphilis (*Treponema pallidum*); viral infections such as HIV, herpes simplex virus (HSV), human papillomavirus (HPV), and hepatitis B; and parasitic infections including trichomoniasis (*Trichomonas vaginalis*) and scabies. These infections can lead to serious health complications, including infertility, pelvic inflammatory disease, cervical cancer, ectopic pregnancy, increased risk of HIV acquisition, and adverse pregnancy outcomes. In India, the burden of STDs is substantial, though often underestimated due to underreporting and lack of structured surveillance systems. Studies suggest a high prevalence of STDs across both rural and urban populations, with socio-economic and cultural factors contributing to the risk of transmission. Vulnerable populations such as adolescents, commercial sex workers, men who have sex with men (MSM), long-distance truck drivers, migrant laborers, and prisoners are particularly at risk due to high-risk sexual behaviors and limited access to preventive and treatment services. Despite the existence of national control programs, including those integrated within the National AIDS Control Program (NACP), coverage remains limited. A large proportion of patients seek care in the private or informal sector, where diagnosis and treatment may not align with national or international standards. Addressing STDs requires a comprehensive public health approach, including primary prevention through safe sexual practices, widespread condom use, and health education; secondary prevention through timely diagnosis, treatment, and partner notification; and tertiary prevention to manage complications and reduce stigma. This article aims to provide an in-depth overview of the types, transmission, risk factors, and control strategies for STDs, with a special focus on the Indian scenario, to inform policy makers, healthcare providers, and researchers involved in sexual and reproductive health.

Incidence and Prevalence of STDs in India

Sexually transmitted diseases (STDs) continue to be a significant yet under-recognized public health problem in India. While exact figures remain elusive due to underreporting, social stigma, and lack of surveillance infrastructure, available data indicate a high burden of both curable and incurable STDs across diverse population groups. According to the National AIDS Control Organization (NACO), India records an estimated **6% prevalence** of reproductive tract infections (RTIs)/STDs among the adult population annually. However, this figure is believed to be an underestimate due to the reliance on syndromic surveillance and limited laboratory-confirmed reporting. Community-based studies suggest that **over 30 million cases of STDs may occur each year** in India, although only a fraction reach government-run clinics or are officially reported. The **annual incidence** of STDs reported to the Central Bureau of Health Intelligence (CBHI) was approximately **14 million cases** as early as 1989, and the number has likely increased in the following decades. Studies conducted in urban slums and rural areas indicate that **10–12% of sexually active individuals** may experience an STD at some point in a year. Among high-risk populations such as female sex workers, men who have sex with men (MSM),

and truck drivers, the prevalence rates are significantly higher—ranging from 20% to 40%, depending on the specific region and group studied.

The prevalence of specific infections varies:

- **Chlamydia** and **gonorrhoea** are among the most frequently reported bacterial STDs.
- **Syphilis** shows re-emergence trends in some metro cities.
- **Herpes simplex virus type 2 (HSV-2)** infection is found in up to **30% of women** in reproductive age groups in some regions.
- **HPV infection**, a major cause of cervical cancer, is estimated to affect around **6.6% of women** aged 18–45 years.
- **HIV prevalence** remains low nationally (around **0.21%**), but co-infections with other STDs increase the transmission risk significantly.

The burden is disproportionately higher among women due to biological vulnerability, socio-cultural norms, and limited access to reproductive health services. The silent or asymptomatic nature of many STDs, especially in females, leads to delayed diagnosis and long-term complications. Effective control of STDs in India requires enhanced surveillance, routine screening of high-risk groups, integration of STD services with maternal and reproductive health, and greater public awareness to reduce stigma and promote early healthcare-seeking behavior.

Etiological Agents of STDs

STDs can be classified based on the type of microorganism involved:

- **Bacterial Infections:**
 - *Chlamydia trachomatis* (Chlamydia)
 - *Neisseria gonorrhoeae* (Gonorrhoea)
 - *Treponema pallidum* (Syphilis)
- **Viral Infections:**
 - *Human Immunodeficiency Virus* (HIV/AIDS)
 - *Herpes Simplex Virus* (Genital Herpes)
 - *Human Papilloma Virus* (Genital Warts)
 - *Hepatitis B Virus*
 - *Cytomegalovirus*
- **Parasitic and Fungal Infections:**
 - *Trichomonas vaginalis* (Trichomoniasis)
 - *Phthirus pubis* (Pubic lice)
 - *Sarcoptes scabiei* (Scabies)

Clinical Manifestations of Common Sexually Transmitted Diseases

Disease	Causative Agent	Clinical Manifestations in Men	Clinical Manifestations in Women
Chlamydia	<i>Chlamydia trachomatis</i>	- Urethral discharge- Burning during urination- Testicular pain	- Vaginal discharge- Painful urination- Pelvic pain- Intermenstrual bleeding
Gonorrhoea	<i>Neisseria gonorrhoeae</i>	- Purulent penile discharge- Dysuria- Testicular swelling	- Vaginal discharge- Lower abdominal pain- Dysuria- Bleeding after intercourse
Syphilis	<i>Treponema pallidum</i>	- Painless ulcer (chancre)-	- Genital ulcers- Rash on

Disease	Causative Agent	Clinical Manifestations in Men	Clinical Manifestations in Women
		Skin rashes- Fever- Lymphadenopathy	palms/soles- Flu-like symptoms
Trichomoniasis	<i>Trichomonas vaginalis</i>	- Urethritis- Mild discharge- Irritation during urination	- Frothy, foul-smelling vaginal discharge- Vaginal itching- Painful intercourse
Genital Herpes	<i>Herpes Simplex Virus (HSV)</i>	- Painful blisters/ulcers on genitals- Itching- Fever	- Painful genital sores- Vaginal itching- Dysuria- Flu-like symptoms
Genital Warts	<i>Human Papilloma Virus (HPV)</i>	- Warty growths on penis, anus, or scrotum	- Warty lesions on vulva, cervix, anus- Often asymptomatic
HIV/AIDS	<i>Human Immunodeficiency Virus</i>	- Flu-like symptoms- Weight loss- Opportunistic infections	- Recurrent infections- Menstrual irregularities- Fatigue
Hepatitis B	<i>Hepatitis B Virus</i>	- Jaundice- Fatigue- Abdominal pain- Nausea	- Same as in men- Risk of vertical transmission during childbirth
Pubic Lice (Crabs)	<i>Phthirus pubis</i>	- Itching in pubic area- Visible lice or eggs	- Genital itching- Rash or redness in pubic area
Scabies	<i>Sarcoptes scabiei</i>	- Severe itching (especially at night)- Small red bumps or blisters	- Same as in men- Lesions may appear on genital region, breasts, and between fingers

Modes of Transmission of Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) are primarily spread through various forms of sexual contact, including vaginal, anal, and oral sex. During these activities, infectious organisms can be transmitted through semen, vaginal fluids, blood, or direct mucosal contact. The likelihood of transmission increases with high-risk behaviors such as unprotected sex, multiple sexual partners, and engagement in sexual activity with infected individuals. Non-sexual modes of transmission also contribute to the spread of certain STDs. Bloodborne pathogens like HIV and hepatitis B can be transmitted through sharing contaminated needles, transfusion of unscreened blood, or use of unsterilized medical equipment. Vertical transmission from mother to child is another critical route; infections such as syphilis, HIV, hepatitis B, and herpes can be passed during pregnancy, childbirth, or breastfeeding. In rare cases, indirect transmission may occur through shared personal items like towels or undergarments, particularly in infestations like pubic lice or scabies. Though less common, this route is more likely in settings with poor hygiene and close physical contact. Understanding the multiple transmission routes is essential for effective prevention and control strategies. Public health education, promotion of safe sexual practices, and timely screening and treatment are vital to reducing the burden of STDs in both individuals and communities.

Prevention and Control Strategies of Sexually Transmitted Diseases

Effective prevention and control of sexually transmitted diseases (STDs) require a comprehensive, multi-pronged approach that addresses both individual behavior and systemic healthcare responses. Strategies are generally categorized into **primary**, **secondary**, and **tertiary** prevention.

Primary prevention aims to stop infections before they occur. Key measures include promoting safe sexual practices such as consistent and correct use of condoms, delaying the onset of sexual activity, and mutual monogamy with an uninfected partner. Comprehensive sex education, particularly among adolescents, is essential to raise awareness and reduce stigma. Vaccination programs, such as the human papillomavirus (HPV) and hepatitis B vaccines, are critical components of primary prevention.

Secondary prevention involves early detection and treatment to prevent complications and further transmission. Syndromic management, regular screening of high-risk groups, partner notification, and contact tracing are important strategies. Accessible, confidential, and youth-friendly STD clinics should be available, especially in underserved areas.

Tertiary prevention focuses on minimizing long-term complications through medical management, counseling, and rehabilitation services. Addressing the psychosocial impact of STDs, especially in cases like HIV, is equally important.

At the community and policy level, integrating STD services into primary healthcare, training healthcare workers, strengthening surveillance systems, and enforcing public health legislation contribute to long-term control. Community engagement, reducing gender disparities, and addressing social determinants of health such as poverty and education are also essential to sustainably reduce the burden of STDs. Together, these strategies form the foundation for a coordinated and effective STD prevention and control program.

Roles of Nurses in the Prevention and Management of Sexually Transmitted Diseases

Nurses play a pivotal role in the prevention, early detection, treatment, and ongoing management of sexually transmitted diseases (STDs). As frontline healthcare providers, they are uniquely positioned to deliver patient-centered care and promote public health through education, counseling, and advocacy.

1. **Health Education and Promotion:** Nurses provide accurate, age-appropriate information on sexual health, modes of transmission, and prevention of STDs. They promote safe sexual practices, including consistent condom use and routine screening, particularly among adolescents and high-risk populations.
2. **Screening and Early Detection:** Nurses are often the first point of contact in clinical settings and play a key role in identifying symptoms, collecting samples, and initiating early interventions. They may conduct syndromic assessments or assist with laboratory-based diagnostic testing.
3. **Counseling and Psychosocial Support:** Nurses offer non-judgmental, confidential counseling to individuals diagnosed with STDs. They support patients in coping with the emotional and psychological impact of infection and encourage partner notification and treatment compliance.

4. **Treatment and Follow-Up Care:** In many settings, nurses administer prescribed treatments, monitor adverse effects, and ensure treatment adherence. They may also be responsible for follow-up visits to evaluate recovery and prevent reinfection.
5. **Community Outreach and Advocacy:** Nurses engage in outreach programs, especially in rural and underserved communities, to raise awareness and improve access to STD prevention services. They advocate for vulnerable groups and help reduce stigma associated with STDs.
6. **Policy Implementation and Surveillance:** Nurses contribute to the implementation of public health policies, record and report STD cases, and participate in surveillance activities that inform national control strategies.

Conclusion

Sexually transmitted diseases (STDs) remain a critical public health challenge globally, with a significant and growing burden in countries like India. These infections, caused by a wide range of bacterial, viral, protozoal, and parasitic agents, often go undiagnosed and untreated due to lack of awareness, social stigma, and inadequate healthcare infrastructure. The long-term consequences of untreated STDs can be severe, leading to infertility, cervical cancer, increased risk of HIV transmission, adverse pregnancy outcomes, and psychosocial distress. India faces unique challenges in STD control, including limited access to diagnostic facilities, reliance on syndromic management, and a lack of integrated sexual health services. High-risk groups such as adolescents, sex workers, migrant laborers, and men who have sex with men are disproportionately affected due to behavioral, social, and economic vulnerabilities. To effectively address the STD burden, a comprehensive strategy is essential. This includes primary prevention through health education and condom promotion, secondary prevention via early diagnosis and treatment, and tertiary care to manage complications. Strengthening public health systems, ensuring availability of skilled healthcare providers—especially nurses—and improving surveillance and reporting mechanisms are also crucial. Nurses, as trusted healthcare professionals, play a key role in educating communities, providing compassionate care, and supporting individuals affected by STDs. Their involvement is vital in promoting behavior change and reducing stigma. Ultimately, combating STDs requires coordinated efforts across sectors—healthcare, education, policy, and community engagement—to create a safer, healthier future and to protect the sexual and reproductive health of all individuals.

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