



DECODING THE HIDDEN IMPACT: A 6-YEAR RETROSPECTIVE STUDY ON SEXUALLY TRANSMITTED INFECTIONS IN WOMEN AT A TERTIARY CARE CENTRE IN CENTRAL KARNATAKA

Dermatology

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ABSTRACT

Background: Women are more vulnerable to sexually transmitted infections (STIs) due to anatomical, biological, and socioeconomic factors, which in turn increases their susceptibility to Human Immunodeficiency Virus (HIV) infection. Monitoring trends in STI prevalence among females is vital for designing effective intervention strategies. **Materials and Methods:** A retrospective study was conducted over a six-year period (June 2018 to May 2024) at the outpatient departments of Chigateri General Hospital and Bapuji Hospital, affiliated with JJM Medical College, Davangere. Female patients diagnosed with STIs were evaluated for demographic characteristics, types of STIs, partner behavior, pregnancy status, and HIV co-infection. Data were analyzed using descriptive statistics. **Results:** Females accounted for 37.9% of all STI cases. The majority belonged to the 21–30-year age group (36%). Six patients were pregnant at the time of diagnosis. HIV seropositivity among the study group was 14.9%. Viral STIs, such as herpes genitalis and condyloma acuminata, were more prevalent than bacterial infections. A noticeable resurgence of syphilis was also observed. Many patients reported high-risk sexual behavior among their partners, along with inconsistent condom use. Limitations of the study include its retrospective design and absence of patient follow-up, limiting assessment of treatment outcomes and reinfection rates. Prospective studies are warranted. **Conclusion:** The study indicates a shift in STI patterns, with increasing viral infections and re-emergence of syphilis among females. The significant HIV prevalence highlights the need for integrated STI-HIV screening, partner notification, and preventive counseling.

KEYWORDS

Females, Sexually Transmitted Infections, Human Immunodeficiency Virus.

INTRODUCTION

Sexually transmitted infections (STIs) are a significant public health concern, primarily transmitted through sexual contact. Clinical manifestations often include urethral discharge, dysuria, and genital ulcers. However, many STIs remain asymptomatic, particularly in women, facilitating silent transmission and contributing to both health and economic burdens.¹

According to the World Health Organization (WHO) report from May 2024, there has been a marked increase in adult and maternal syphilis cases (1.1 million annually) and congenital syphilis (523 cases per 100,000 live births per year), with syphilis-related deaths reaching 230,000 in 2022.²

In India, the true burden of STIs remains underreported, as current estimates are based on limited surveillance studies in select sub-populations. A community-based study by the Indian Council of Medical Research (ICMR) in 2002 estimated the prevalence of STIs among sexually active adults to be around 5–6%. Women are disproportionately affected by STIs due to a range of factors including anatomical susceptibility, gender-based violence, involvement in commercial sex work, and inadvertent exposure through partners. STIs contribute significantly to preventable infertility, ectopic pregnancy, cervical cancer, and adverse neonatal outcomes.¹ Their impact is further compounded by physiological changes across the female lifespan—from puberty and pregnancy to menopause—which alter genital tract vulnerability.³

Delayed diagnosis in women, often due to asymptomatic presentation and stigma, increases the risk of complications and transmission to partners or offspring. STIs in pregnancy pose additional challenges due to altered disease presentation and concerns regarding safe treatment options.³

The syndemic relationship between STIs and HIV is well established. STIs facilitate HIV acquisition and transmission by disrupting mucosal barriers and inducing inflammation.⁴ Individuals with HIV are more likely to have coexisting STIs, reflecting continued high-risk behaviors. In India, the 2023 NACO report estimates 25.44 lakh people living with HIV (PLHIV), with women accounting for 44% (11.22 lakh).

Aim of the Study

To assess the prevalence and clinico-demographic profile of sexually

transmitted infections in females attending the STI clinic, and to evaluate the prevalence of HIV co-infection among them.

MATERIALS AND METHODS

This retrospective study was conducted using case records of 208 female patients who attended the Sexually Transmitted Infections (STI) clinic in the outpatient department of Dermatology, Venereology, and Leprosy at a tertiary care hospital in Davangere, Karnataka. The study period spanned six years, from June 2018 to May 2024.

Inclusion criteria comprised female patients with a confirmed clinical and/or laboratory diagnosis of an STI. Exclusion criteria included patients with inconclusive clinical or serological findings, those who declined HIV testing, had incomplete medical records, or were follow-up cases from previous visits.

Diagnoses were made based on presenting clinical symptoms, and laboratory investigations were utilized for confirmation wherever necessary. Data collected included demographic details, clinical presentation, partner characteristics, pregnancy status, type of STI diagnosed, and HIV serostatus. Ethical clearance was obtained from the Institutional Ethics Committee prior to the initiation of the study. All patient data were handled with strict confidentiality.

Data entry and statistical analysis were performed using IBM SPSS Statistics for Windows, Version 21.0 (IBM Corp., Armonk, NY, USA).

RESULTS

A total of 548 patients were diagnosed with sexually transmitted infections (STIs) during the study period, comprising 208 females, 323 males, and 11 transgender individuals, with a male-to-female ratio of 1.55:1. The majority of female patients (36%) were in the 21–30-year age group, with ages ranging from 17 to 65 years. Ulcerative STIs were more common (n=105, 50.48%) than non-ulcerative STIs (n=75, 36.05%).

Among ulcerative STIs, Herpes genitalis was the predominant diagnosis (n=93, 44.7%), followed by Chancroid (n=7, 3.36%), primary syphilitic chancre (n=3, 1.4%), and Donovanosis (n=2, 0.96%). Non-ulcerative STIs included Condyloma acuminata (n=48, 23.07%) and Molluscum contagiosum (n=27, 12.98%). Two patients presented with concurrent infections: one with Herpes genitalis and Condyloma acuminata, and another with Molluscum contagiosum (Table 2).

In terms of socio-demographics, most patients were housewives (n=166, 79.8%), followed by professionals (n=22, 10.6%), students (n=14, 6.7%), and commercial sex workers (n=2). A majority were from urban areas (n=127), with the rest from rural areas (n=81) (Table 2). The highest number of cases was reported in 2024 (n=56, 26.9%).

Marital status distribution included 180 married (86.5%), 20 unmarried (9.6%), and 8 widowed (3.8%) individuals. All patients were heterosexual. Sexual partner status revealed that 83 partners were symptomatic, 107 asymptomatic, while 9 widowed/separated patients denied recent sexual activity. Additionally, 9 unmarried patients reported no history of sexual intercourse.

There were 6 pregnant patients (2.89%) in the cohort, with Herpes genitalis, Syphilis, and Condyloma acuminata seen in equal proportions.

Condom use was notably low, with 84.6% of patients reporting no use of protection—this showed a significant association with STI acquisition. Literacy rate among patients was 75%, which also showed a significant correlation with increased healthcare-seeking behavior.

A total of 31 patients (14.9%) were found to be HIV-positive, with Herpes genitalis and Syphilis co-infections reported in 12 patients each (38.7%). Partners of 15 HIV-positive patients were also seropositive, yielding a serodiscordancy rate of 51.61% (Table 3).

DISCUSSION

This study addresses a critical gap in the literature on sexually transmitted infections (STIs) among females, a population that often underutilizes healthcare services due to socio-cultural barriers. Ulcerative STIs were the predominant clinical presentation, many of which were asymptomatic, thereby increasing vulnerability to HIV acquisition and transmission. Literature supports that HIV infection can lead to atypical STI manifestations and increased treatment resistance.⁵

Herpes genitalis was the most common viral STI, affecting 44.7% of participants, followed by condyloma acuminata (23.07%) and molluscum contagiosum (12.98%). Syphilis accounted for 14.9% of cases, including primary, secondary, and latent stages, while bacterial STIs such as chancroid (3.36%) and donovanosis (0.96%) were less frequent. Two patients had concomitant infections involving condyloma with herpes genitalis and molluscum contagiosum, respectively. The predominance of viral over bacterial STIs aligns with findings from prior studies by Ray et al., Devi et al., Jain et al., and Chandragupta et al.⁶⁻⁹

The increased STI burden in rural populations is influenced by socioeconomic vulnerability, occupational risks, illiteracy, and limited awareness. Women in rural areas face amplified challenges due to societal stigma and poor healthcare-seeking behavior compared to urban counterparts.¹⁰⁻¹² Our study highlights emerging STI awareness among rural women (38.9%), though this likely represents only a fraction of those affected, underscoring the urgent need for targeted education and intervention programs.

STI prevalence was higher among married women (86.5%), literates (75%), and housewives (79.8%), reflecting transmission dynamics within stable relationships. This concurs with findings from Kosambiya JK et al. in Surat, who reported higher STI rates among married homemakers with lower incomes.¹³ These observations stress the importance of integrating HIV and STI education into sexual health initiatives targeting married couples.

Notably, 8.2% of participants reported engaging in oral sex, consistent with Avasthi et al.'s findings.¹⁴ Alarmingly, 84.6% did not use any protection during sexual activity, revealing a significant gap in safe sexual practices and highlighting the need for focused health education campaigns.¹⁵ Female condom use was absent among participants, pointing to a critical opportunity to empower women to negotiate safer sex and reduce STI risk.¹⁶

Overall, the diverse range of STIs detected emphasizes the necessity for comprehensive screening and treatment protocols, particularly in underserved rural areas. Socioeconomic constraints contribute to lower awareness and access to sexual healthcare among women

relative to men. The positive correlation between education and health-seeking behavior further underscores the need to bridge gaps created by illiteracy to improve STI outcomes.

Limitations

This study is limited by its retrospective and hospital-based design, which may not fully represent the community burden of STIs. Additionally, the lack of patient follow-up restricts assessment of treatment outcomes and long-term sequelae.

CONCLUSION

This study highlights the significant burden of STIs among young women, with potential consequences including infertility and life-threatening malignancies. Early and sustained interventions through comprehensive sexual education, counseling, and awareness programs during adolescence are essential to empower informed decision-making and promote safer sexual practices. Emphasizing condom use and actively addressing societal stigma are critical steps to reduce STI transmission and improve sexual health outcomes.

Table 1: Distribution of the Subjects Based on Demographic Details

Demographic Details		Frequency	Percent
Age Groups	17 to 30 years	89	42.8
	31 to 45 years	89	42.8
	46 to 69 years	30	14.4
Place of Residence	Rural	81	38.9
	Urban	127	61.1
Education	Illiterate	52	25.0
	Literate	156	75.0
Occupation	Housewife	166	79.8
	others (CSW)	2	1.0
	Professional	24	11.53
	Student	16	7.69
Marital Status	Married	180	86.5
	Unmarried	20	9.6
	Widowed	8	3.8

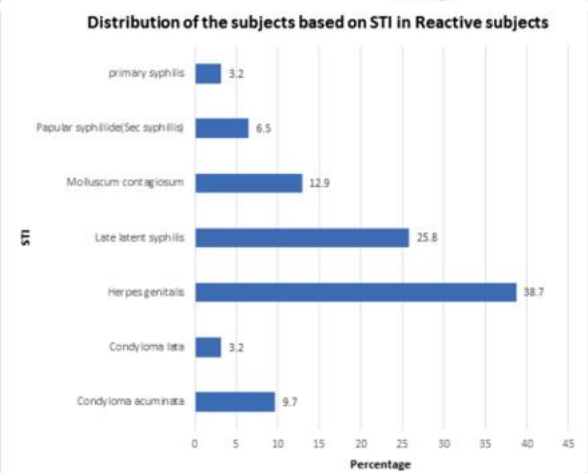
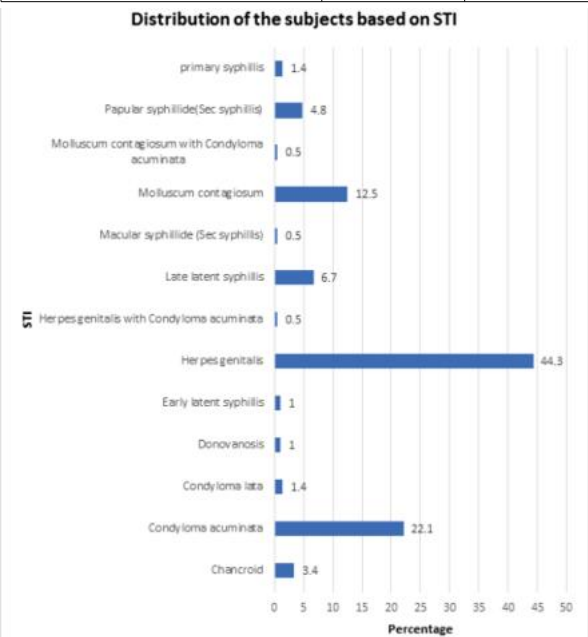
Table 2: Distribution of the Subjects Based on STI History

		Frequency	Percent
Use of protection	N	176	84.6
	NA	19	9.1
	Yes	13	6.3
Type	Denies	19	9.1
	PV	172	82.7
	PV and PO	17	8.2
Sexual Partners	Multiple	10	4.8
	NA	9	4.3
	Single	189	90.9
Partner Status	NA	18	8.7
	Asymptomatic	107	51.4
	Symptomatic	83	39.9
HIV status	NR	177	85.1
	Reactive	31	14.9
STI	Chancroid	7	3.4
	Condyloma acuminata	46	22.1
	Condyloma lata	3	1.4
	Donovanosis	2	1.0
	Early latent syphilis	2	1.0
	Herpes genitalis	92	44.3
	Herpes genitalis with Condyloma acuminata	1	.5
	Late latent syphilis	14	6.7
	Macular syphillide (Sec Syphilis)	1	.5
	Molluscum contagiosum	26	12.5
	Molluscum contagiosum with Condyloma acuminata	1	.5
	Papular syphillide(Sec Syphilis)	10	4.8
	primary Syphilis	3	1.4

Table 3: Distribution Based on STI in Reactive Subjects

	Frequency	Percent
Condyloma acuminata	3	9.7
Condyloma lata	1	3.2
Herpes genitalis	12	38.7
Late latent syphilis	8	25.8

Mollusum contagiosum	4	12.9
Papular syphilide(Sec syphilis)	2	6.5
Primary syphilis	1	3.2
Total	31	100.0



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