Profile of sexually transmitted infections among attendees of special clinics (Suraksha) at an apex regional sexually transmitted disease centre in North India – a five-year study

Perfil de infecções sexualmente transmissíveis entre participantes de clínicas especiais (Suraksha) em um centro regional de doenças sexualmente transmissíveis Apex no norte da Índia – um estudo de cinco anos

Sumathi Muralidhar[1], Prashant Gupta[1], Abhishek Lachyan[1], Soni Singh[1], Ratan Singh Rana[1], Niti Khunger[2]

ABSTRACT

Introduction: Sexually transmitted infections (STIs) present significant global and national health challenges, particularly in India. **Objective:** To estimate the prevalence and characteristics of STIs among attendees at the Suraksha Clinic in the Apex Regional STD Centre, Safdarjung Hospital. **Methods:** Retrospective data from January 2018 to December 2022 were statistically analyzed using Excel and SPSS. The study included the examination for diagnosis of various STIs, such as syphilis, human immunodeficiency virus (HIV), gonorrhoea, chlamydiasis, trichomoniasis, candidiasis, bacterial vaginosis, chancroid, and genital herpes. Gender distribution and syndromic diagnoses, including vaginal/cervical discharge and genital ulcers, were also considered. Referrals to Integrated Counseling and Testing Centres for HIV testing were analyzed. **Results:** The outcomes reveal a substantial burden of STIs, with 3.06% showing reactivity to syphilis, 1.74% testing positive for HIV, 3.36% for gonorrhoea, 11.78% for chlamydiasis, 1.05% for trichomoniasis, 26.24% for candidiasis, 9.97% for bacterial vaginosis, 7.80% for chancroid, 11.64% for herpes genitalis, and 4.01% for other non-STIs. Attendees' interactions included 34.36% of referrals to Integrated Counseling and Testing Centres for HIV testing. The gender distribution showed 58.92% male and 40.94% female attendees. **Conclusion:** Syndromic diagnoses, including vaginal/cervical discharge (21.22%) and genital warts (8.00%), highlight prevalent conditions, necessitating routine screening, early detection, and targeted interventions for effective disease control and prevention. These findings underscore the significance of integrated screening, patient education, and proactive strategies to safeguard public health in the face of rising STI rates.

Keywords: Condom usage. Disease control. Epidemiology. HIV. High-risk population. Patient education. Screening. Sexually transmitted infections. Syphilis. Vulnerable population.

RESUMO

Introdução: As infecções sexualmente transmissíveis (IST) apresentam desafios de saúde globais e nacionais significativos, particularmente na Índia. **Objetivo:** Estimar a prevalência e as características das IST entre os pacientes atendidos na Clínica Suraksha do Centro Regional de doenças sexualmente transmissíveis (DST) Apex, Hospital Safdarjung. **Métodos:** Dados retrospectivos de janeiro de 2018 a dezembro de 2022 foram analisados estatisticamente utilizando Excel e Statistical Package for the Social Sciences (SPSS). O estudo inclui o exame para diagnóstico de diversas IST, como sífilis, HIV, gonorreia, clamídia, tricomoníase, candidíase, vaginose bacteriana, cancroide e herpes genital. A distribuição por gênero e os diagnósticos sindrômicos, incluindo corrimento vaginal/cervical e úlceras genitais, também foram considerados. Foram analisados encaminhamentos para Centros Integrados de Aconselhamento e Testagem para testagem de HIV. **Resultados:** Os resultados revelam uma carga substancial de IST, com 3,06% apresentando reatividade à sífilis, 1,74% testando positivo para HIV, 3,36% para gonorreia, 11,78% para clamídia, 1,05% para tricomoníase, 26,24% para candidíase, 9,97% para vaginose bacteriana, 7,80% para cancroide, 11,64% para herpes genital e 4,01% para outras infecções não IST. As interações dos participantes incluíram 34,36% de encaminhamentos para Centros Integrados de Aconselhamento e Testagem para testes de HIV. A distribuição por gênero mostrou 58,92% de participantes do sexo masculino e 40,94% do sexo feminino. **Conclusão:** Os diagnósticos sindrômicos, incluindo corrimento vaginal/cervical (21,22%) e verrugas genitais (8,00%), destacam condições prevalentes, necessitando de exames de rotina, detecção precoce e intervenções direcionadas para controle e prevenção eficazes de doenças. Estas conclusões sublinham a importância do rastreio integrado, da educação dos pacientes e de estratégias proativas para salvaguardar a saúde pública diante do aumento das taxas de IST.

Palavras-chave: Uso de preservativo. Controle de doenças. Epidemiologia. HIV. População de alto risco. Educação do paciente. Triagem. Infecções sexualmente transmissíveis. Sífilis. População vulnerável.

INTRODUCTION

Sexually transmitted infections (STIs) pose a significant and intricate health concern globally, with particular emphasis in the context of India. Notably, about three-fourths of the estimated 340 million annual cases of curable STIs occur in developing countries, underscoring the gravity of this widespread issue[1]. The repercussions extend beyond individual suffering, encompassing substantial economic losses due to the burden of ill health.

In India, the impact is profound, with approximately 6.00% of the adult population grappling with the effects of STIs[2]. The diseases transmitted through sexual contact include, notably, syphilis, gonorrhoea, chlamydiasis, and trichomoniasis. The STIs stand out as particularly pervasive, causing systemic manifestations and severe consequences. While sexual contact is the primary mode of transmission, other routes such as needle-stick injuries or blood transfusions can also introduce these infections into the body[2].

[1]Safdarjung Hospital, Apex Regional STD Centre – New Delhi, India. E-mails: sumu3579@yahoo.com, dprashant.gupta@gmail.com, drabhilachyan@gmail.com, soni.chauhan1410@gmail.com, rattansingh00@gmail.com
[2]Safdarjung Hospital, Department of Dermatology & STD and Apex Regional STD Centre, Head of Department – New Delhi, India. E-mail: drniti@rediffmail.com

The cumulative burden is immense, with approximately 6 million new cases of syphilis reported annually. The gravity of each infection is compounded when they co-infect individuals, exacerbating the disease's progression and increasing morbidity and mortality[3].

In response to this health crisis, an imperative need for a holistic approach to early diagnosis and treatment arises. Recognizing the significance of STIs in public health, Suraksha clinics, established across the Indian subcontinent, routinely screen attendees for syphilis, other STIs, and human immunodeficiency virus (HIV). However, there is a crucial need to comprehensively evaluate the incidence of all STIs, considering the potential for co-infections.

Suraksha Clinic is a chain of STI/RTI clinics established by the National AIDS Control Organization (NACO) to provide enhanced sexual health services and prevent HIV/Acquired Immunodeficiency Syndrome (AIDS) in India.

OBJECTIVE

This study aimed to estimate the prevalence of STIs among Suraksha clinic attendees at the Apex Regional STD Centre, situated in one of the largest tertiary care hospitals in North India. By doing so, we seek to enhance our understanding and contribute to more effective prevention and intervention strategies for these critical public health issues[4].

METHODS

Study design and data collection

A retrospective study was conducted at the Apex Regional STD Centre, affiliated with Safdarjung Hospital, New Delhi, India. Data covering five years from January 2018 to December 2022 were retrieved from hospital records. The study included attendees both with diagnosed STI complaints and those without a diagnosis, during this timeframe. Comprehensive clinical data were collected from these attendees before inclusion in the study. To ensure the data primarily reflected the experiences of first-time attendees during the specified period, repeat Suraksha clinic attendees were excluded from the analysis.

Microbiological testing

Microbiological testing procedures followed guidelines established by NACO. For the diagnosis of syphilis, a genital ulcer-causing disease, a standardized protocol was adhered to. Symptomatic attendees initially underwent the venereal disease research laboratory (VDRL) test. Reactive VDRL specimens were further tested by a quantitative VDRL test, involving successive two-fold dilutions of serum in 0.9% saline. Samples reactive or weakly reactive in the VDRL test were further confirmed by the specific *Treponema pallidum* hemagglutination assay (TPHA) test, chosen for reliability and accuracy in identifying syphilis.

STIs causing genital discharge were diagnosed using standard laboratory procedures. Direct urethral/cervical specimens were tested by Gram-stained smears, and culture on chocolate agar and saponin-lysed blood agar with supplements to diagnose *Neisseria gonorrhoeae* (*Ng*). The identification of trichomoniasis involved a direct wet mount examination and culture on Kupferberg media. Vulvovaginal candidiasis (VVC) investigation utilized direct Gram-stained smear examination and culture on Sabouraud dextrose agar, confirmed by the germ tube test, sugar assimilation/fermentation tests, and morphological identification on corn meal agar (CMA). Bacterial vaginosis diagnosis included physiological tests, presence of clue cells, and vaginal Gram-stained smear interpretation following Nugent's scoring. Chlamydial infections causing non-gonococcal urethritis (NGU) were recognized by *Chlamydia trachomatis* antigen detection, the enzyme-linked immunosorbent assay (ELISA) or direct fluorescent antibody (DFA) tests, or by antibody detection ELISA tests.

Diagnosis of other genital ulcer diseases (GUD) included Tzanck smear and ELISA tests for herpes genitalis, Gram-stained smears for chancroid, and Giemsa-stained crushed tissue smears for donovanosis. Additionally, the presence of HIV 1 and 2 antibodies was determined using the HIV testing Strategy-III established by NACO, employing ELISA/Rapid tests with NACO-approved kits.

Statistical analysis

Excel and Statistical Package for Social Sciences (SPSS) were used for statistical analysis, recognized software tools in epidemiological and public health research. These facilitated thorough data analysis, assisting in result interpretation and identifying significant patterns and trends within the collected data. This analytical process was a fundamental element of our research, enabling the formulation of conclusions grounded in robust statistical principles.

RESULTS

In this study, we sought to estimate the prevalence of STIs among Suraksha clinic attendees at the Apex Regional STD Centre, Safdarjung Hospital, during the period from January 2018 to December 2022. Our findings provide important insights into the epidemiology of these infections in this population.

Table 1 delineates the gender-wise distribution of attendees at the Suraksha Clinic. Notably, nearly 59% were identified as male, indicating a substantial representation of men seeking services. Additionally, approximately 41% of attendees were female, also underlining the significant presence of women in the clinic population. A minimal proportion constituting only 0.13% was identified as 'Others.'

Table 2 presents a detailed breakdown of the characteristics of attendees at the Suraksha Clinic, shedding light on their interactions and availing of various services. Notably, 19.14% engaged in Partner Notification services, indicating an active effort in notifying

Table 1. Gender-wise distribution (n=12,978).

Gender-wise distribution among Suraksha Clinic attendees			
Sr No.	**Gender**	**Total No.**	**Percentage (%)**
1.	Male	7,647	58.92
2.	Female	5,314	40.94
3.	Others	17	0.13

partners about potential risks. Additionally, 10.40% were managed through Partner Managed services. A significant proportion (34.36%) of individuals were referred to Integrated Counselling and Testing Centres (ICTC) for HIV counselling and testing. Another 14.05% were referred to other services. The "Other" (Condom Provided, TI [Targeted Intervention] Services) category encompassed 22.03% of attendees.

As per guidelines established by NACO, syndromic approach has been adopted for the management of STIs.

Table 3 provides a detailed breakdown of the syndromic diagnoses among attendees at the Suraksha Clinic, offering valuable insights into prevalent conditions and the diversity of cases encountered. The most commonly observed syndromes include vaginal cervical discharge (VCD), constituting 21.22% of cases, and genital warts (GW) with 8.00%. Cases of genital ulcer disease (GUD), indicating genital ulcers potentially linked to herpes, made up 6.96% of diagnoses. Additionally, syphilis and HIV cases were notable, comprising 3.23% and 0.60% of the total, respectively. The category "Not Diagnosed STI" stood out, with 42.23% of cases.

Table 4 is a valuable resource for understanding the various syndromic diagnoses encountered in the Suraksha Clinic, which supports the development of appropriate treatment strategies and healthcare interventions. The comprehensive data in the table encompasses a wide range of conditions, providing healthcare professionals with insights that can inform targeted and effective care for the diverse patient population.

Table 5 provides a comprehensive overview of positivity rates for various STIs over five years, from January 2018 to December 2022. The data table includes laboratory tests performed, with the test results and the percentage of positivity for each STI, including HIV.

Syphilis positivity rates ranged from 2.23% to 4.44% across the five years, with an average positivity of 3.16%. Gonorrhoea showed varying positivity rates from 2.08% to 5.04%, averaging at 3.36%. Chlamydiasis exhibited a wide range of positivity rates from 2.17% to 29.09%, with an average of 11.78%. Trichomoniasis displayed relatively low positivity rates ranging from 0.30% to 2.73%, with an average of 1.05%. Candidiasis revealed positivity rates fluctuating from 21.87% to 29.98%, averaging at 26.24%.

Table 2. Characteristics of Suraksha Clinic attendees (n=12,978).

Sr No.	Characteristics of Suraksha Clinic attendees	Total No.	Percentage (%)
1.	Partner notification	2,484	19.14
2.	Partner managed	1,350	10.40
3.	Referred from Suraksha Clinic to ICTC	4,460	34.36
4.	Referred to other departments /services (e.g., Tuberculosis clinic)	1,824	14.05
5.	Others (Condom Provided, TI Services)	2,860	22.03

Table 3. Sexually transmitted infections syndromic diagnosis (n=12,978).

Sr No.	Syndromic diagnosis among Suraksha Clinic attendees	Total No.	Percentage (%)
1.	Vaginal cervical discharge (VCD)	2755	21.22
2.	Genital ulcer-non-herpetic (GUD-NH)	74	0.57
3.	Genital ulcer-herpetic (GUD-H)	904	6.96
4.	Lower abdominal pain (LAP)	90	0.69
5.	Urethral discharge (UD)	277	2.13
6.	Inguinal bubo (IB)	31	0.23
7.	Painful scrotal swelling (SS), anorectal discharge (ARD)	59	0.45
	Others		
1.	Genital warts (GW)	1039	8.00
2	Other infections	1399	10.77
3.	Not diagnosed as sexually transmitted infections	5481	42.23

Table 4. Sexually transmitted infections syndromic diagnoses at Suraksha Clinic.

Syndromic diagnosis	Description
GUD-herpetic	Refers to individuals diagnosed with genital ulcer disease caused by the herpes simplex virus (HSV). This condition is characterized by the presence of painful sores in the genital area, attributed to the herpes infection.
GUD-non herpetic	This diagnosis is assigned to patients with genital ulcer disease caused by agents other than the herpes simplex virus. Possible diseases include syphilis, chancroid, lymphogranuloma venereum or granuloma inguinale, leading to non-herpetic ulcers.
Scrotal swelling	Patients with this diagnosis present with swelling in the scrotal region. The cause of scrotal swelling can vary and may be associated with various conditions, including infections or inflammation.
Inguinal bubo	This diagnosis indicates that patients have been diagnosed with an inguinal bubo, which refers to an enlarged and swollen lymph node in the inguinal (groin) area. Such swelling may signal the presence of an underlying infection.
Anorectal discharge	This diagnosis is assigned to patients with abnormal discharge from the anal or rectal area, which may be indicative of various infections or inflammatory conditions.
Vaginal/cervical discharge	Individuals with this diagnosis experience abnormal discharge from the vaginal or cervical area. The presence of such discharge may be associated with various gynecological or infectious conditions.
Lower abdominal pain	Those diagnosed with lower abdominal pain may experience discomfort in the lower abdominal area, which can have various causes, including infections, reproductive health issues, or other medical conditions.

Bacterial Vaginosis has positivity rates ranging from 6.90% to 12.41%, with an average of 9.97%. Chancroid showed varying positivity rates from 0% to 16.66%, averaging at 7.80%. Herpes Genitalis and HSV 1& 2 Ab displayed positivity rates fluctuating from 5.88% to 22.72%, with an average of 11.64%. Donovanosis and lymphogranuloma venereum were not detected positive throughout the five years. HIV exhibited positivity rates ranging from 1.21% to 2.10%, with an average of 1.74%.

Table 6 includes medications prescribed to treat specific infections or conditions diagnosed in patients, and plays a crucial role in managing and curing STIs in clinics.

Table 5. Consolidated laboratory data of five years.

SR No.	STIs	Laboratory Test	2018 Positivity	2019 Positivity	2020 Positivity	2021 Positivity	2022 Positivity	(2018–2022) Average %
1.	Syphilis	Dark field microscopy VDRL RPR TPHA TP ELISA(IgG/IgM) FTA-Abs	1,573/3,5379=4.44%	996/27,788=3.58%	483/19,117=2.52%	620/27,725=2.23%	970/31,623=3.06%	3.16%
2.	Gonorrhoea	Direct smear male (Gram stain) Direct smear female (Gram stain) Culture male Culture female Anti-microbial sensitivity testing	70/2,445= 2.86%	39/1,521=2.56%	14/673=2.08%	56/1,310=4.27 %	76/1,506=5.04%	3.36%
3.	Chlamydiasis	Chlamydia ELISA antigen Chlamydia antibody IgG Chlamydia antibody IgM DFA PCR	41/1,881=2.17%	31/861=3.60%	32/110=29.09%	68/598=11.37%	106/836=12.67%	11.78%
4.	Trichomoniasis	Direct wet mount Culture PCR	8/1,928=0.41%	45/1,648=2.73%	2/666=0.30%	5/1,128=0.44%	18/1,276=1.41%	1.05%
5.	Candidiasis	KOH wet mount Gram stain Culture Anti-fungal sensitivity testing	687/2,644=29.98%	647/2,958=21.87%	268/1,096=24.45%	548/1,928=28.42%	628/2,371=26.48%	26.24%
6.	Bacterial Vaginosis	Amsel's criteria Nugent's score	228/1,928=11.82%	142/1,470=9.65%	46/666= 6.90%	140/1,128=12.41%	144/1,580=9.11%	9.97%
7.	Chancroid	Gram stain Culture	6/94=6.38%	0	0	4/25=16.00%	1/6=16.66%	7.8%
8.	Herpes Genitalis	Giemsa stain for MNGC HSV 1& 2 Ag HSV 1& 2 Ab	16/118=13.55%	25/110=22.72%	5/61=8.19%	10/170=5.88%	10/127=7.87%	11.64%
9.	Donovanosis	Giemsa stain	0/2=0	0/0=0	0/1=0	0/4=0	0/0=0	no positive
10.	Lymphogranuloma venereum	Giemsa stain DFA ELISA Ag ELISA Ab	0/0=0	0/0=0	NA	NA	NA	no positive
11.	HIV	HIV	496/2,3561=2.10%	324/19,157=1.69%	289/14,619=1.98%	387/22,028=1.75%	319/26,220=1.21%	1.74%
12.	Others non STIs	Pyogenic culture	NA	NA	29/363=7.98%	35/674=6.09 %	39/649=6.00 %	4.01%

VDRL: venereal disease research laboratory; RPR: rapid plasma reagin; TPHA: *Treponema pallidum* hemagglutination assay; TP ELISA: enzyme-linked immunosorbent assay for *Treponema pallidum*; IgG/IgM: immunoglobulin G/M; FTA-Abs: fluorescent treponemal antibody-absorption; DFA: direct fluorescent antibody; PCR: polymerase chain reaction; KOH: potassium hydroxide; MNGC: Multinucleated Giant Cell; HSV: Herpes Simplex Virus; HIV: human immunodeficiency virus; NA: not available; STIs: sexually transmitted infections.

Table 6. Drugs used in sexually transmitted infections treatment.

Drug Name	Description
Acyclovir 400 mg	Acyclovir is an antiviral medication commonly used to treat infections caused by herpes viruses, including genital herpes (herpes simplex virus) and shingles (herpes zoster).
Amoxicillin 500 mg	Amoxicillin is an antibiotic used to treat a wide range of bacterial infections, including those affecting the genital and urinary tract.
Azithromycin 1 gm	Azithromycin is an antibiotic used to treat various bacterial infections, including chlamydiasis and gonorrhoea.
Benzyl Penicillin 2.4MU	Benzylpenicillin, also known as penicillin G, is an antibiotic used to treat syphilis.
Cefixime 400 mg	Cefixime is an antibiotic used to treat bacterial infections, including some STIs such as gonorrhoea.
Ceftriaxone 250 mg & 1 gm	Ceftriaxone is an antibiotic used to treat a wide range of bacterial infections, including gonorrhoea. The dosage may vary based on the specific infection.
Ciprofloxacin 500 mg	Ciprofloxacin is an antibiotic used to treat various bacterial infections, including those of the urinary and genital tract.
Clotrimazole 500 mg	Clotrimazole is an antifungal medication used to treat fungal infections, including yeast infections in the genital area.
Doxycycline 100 mg	Doxycycline is an antibiotic used to treat bacterial infections, including some STIs such as chlamydiasis and syphilis.
Erythromycin 500 mg	Erythromycin is an antibiotic used to treat various bacterial infections, including genital infections.
Fluconazole 150 mg	Fluconazole is an antifungal medication used to treat fungal infections, including yeast infections in the genital area.
Metronidazole 400 mg	Metronidazole is an antibiotic and antiprotozoal medication used to treat trichomoniasis.
Secnidazole 500 mg	Secnidazole is an antibiotic used to treat parasitic infections, including some STIs, like trichomoniasis.

DISCUSSION

Sexually transmitted infections pose a substantial public health challenge, not only on a global scale but also within the specific context of India. As observed in this study, the burden of these infections is significant, and its implications extend far beyond the immediate concerns of individuals' health. We will now delve into a detailed discussion of the key findings and their implications.

Prevalence of STIs

Our study revealed an STI prevalence of 9.38% and HIV of 1.74% among attendees of the Suraksha Clinic at Apex Regional STD Centre, Safdarjung Hospital, during the five years from January 2018 to December 2022. Among the patients, we found a large proportion of males (58.92%), which corroborates a study by Agrawal et al.[1] with 58.10%, most of them new patients. These findings are indicative of a high-risk population seeking care at this facility, consistent with the notion that STI clinics primarily serve individuals with a higher likelihood of infection.

Syphilis prevalence

Syphilis demonstrated a consistent average positivity of 3.16% over the five years. Passos et al.[5] reported an average of 9.55%, higher than our result, probably due to the longer duration of time study (13 years). The utilization of multiple laboratory tests allowed for a thorough assessment, highlighting the need for ongoing surveillance to monitor any potential changes in syphilis dynamics. All 3.16% of attendees had a reactive VDRL test suggesting active syphilis infection. It is important to note that this disease can have severe health consequences if left untreated, making early detection and treatment vital.

HIV prevalence

The study also highlighted that 1.74% of attendees were HIV-positive, a much lower result than that obtained by Choudhry et al.[2] who reported 10.30%. In India, HIV prevalence is still low, thanks to the consistent efforts of NACO in this regard. HIV is a significant public health concern worldwide, and early detection is crucial for initiating antiretroviral therapy and preventing further transmission. The prevalence of HIV among attendees at this STI clinic was higher than in the general population, emphasizing the importance of integrated screening for HIV in this setting.

Other STIs prevalence

The rising trend in gonorrhoea positivity rates, ranging from 2.08% to 5.04%, calls attention to the need for intensified preventive measures. Our results are still lower than those reported by Choudhary et al.[2], which is far higher at 19.3%, and Passos et al.[5] who presented 13.06%. Garland et al.[6] had a gonorrhoea prevalence of 4.54%, which is close to our study.

The use of diverse diagnostic methods provided a comprehensive evaluation, emphasizing the importance of early detection and intervention strategies. According to the World Health Organization (WHO), drug resistance in gonorrhea is exhibiting an increasing trend, thus requiring strengthening of the STI program for the management of the disease. Antimicrobial resistance increases this burden by prolonging the infection in more people and raising the number of patients with long-term complications of gonococcal infections.

The prevalence of chlamydiasis exhibited significant fluctuations, peaking at 29.09% in 2020 with an overall 11.78% in five years. This is comparable to the slightly higher percentage of 16.30% reported by Choudhry et al.[2] On the other hand, Garland et al.[6] reported only 5.45% in their study, which is lower than the present study. This variability underscores the complex nature of chlamydial infections and suggests the necessity for targeted interventions during periods of elevated prevalence. Further research into the factors influencing these fluctuations could provide valuable insights.

Consistent and low positivity rates in trichomoniasis (0.30 to 2.73%) were seen in five years, overall 1.05%, suggesting a comparatively lower prevalence. Here again, the study by Choudhry et al.[2] was higher at 4.70%. Two other studies by Garland et al.[6] (3.63%) and Passos et al.[5] (3.86%), also recorded higher prevalence than our study.

Chancroid displayed sporadic peaks, reaching 16.66% in 2022, and overall, in five years it was 7.80%. Choudhry et al.[2] related 19.30%, which is far higher than our study. The infrequent detection of cases emphasizes the importance of heightened vigilance and targeted awareness campaigns, particularly for less common STIs.

Herpes genitalis exhibited a fluctuating but generally moderate prevalence. The inclusion of multiple diagnostic methods ensures a comprehensive understanding of herpes genitalis cases, supporting ongoing efforts in prevention and management.

The absence of positive cases in donovanosis and lymphogranuloma venereum suggests a low prevalence or potential underreporting. The comprehensive diagnostic methods employed provide confidence in the findings, emphasizing the need for sustained surveillance and awareness.

Vaginal candidiasis maintained a persistent presence with an average positivity of 26.24%. Our results were much higher when compared to those of Choudhry et al.[2], which were only 2%. This could reflect a geographical variation across the country and the presence of fungal species in several locations. It is important to identify the diverse species of candida causing vulvovaginal candidiasis to institute appropriate treatment as some species are inherently resistant to routinely used antifungal agents (e.g., *Candida krusei*).

Bacterial vaginosis showed fluctuating but generally moderate positivity rates. The variations underscore the need for continued research to elucidate the factors influencing the disease dynamics and to inform strategies for prevention and management.

In addressing the non-STIs, the fluctuating positivity rates and an average of 4.01% highlighted the diversity of these infections. Further exploration of the infections included in this category and their contributing factors could assist in targeted interventions.

Implications for public health

The findings of this study have several important implications for public health. First and foremost, the significant prevalence of STIs and HIV in this clinic population underscores the vulnerability of individuals seeking care at Suraksha Clinic. Routine screening and testing for syphilis, other STIs, and HIV is essential to ensure early diagnosis and timely treatment. This not only benefits the affected individuals but also aligns with broader public health objectives related to disease control and prevention[7].

Integration of screening and treatment

To address the public health challenge of STIs effectively, it is imperative to integrate targeted screening for STIs and HIV within existing STI prevention and treatment services. This approach can help create a more robust and proactive strategy for identifying and managing these infections, thereby contributing to the reduction of their prevalence and the mitigation of their adverse consequences[8]. The syndromic approach suggests a need for further investigation or indicates a diverse range of conditions that may require more targeted diagnostic approaches.

The role of education

Additionally, our data provides insights into the importance of patient education strategies. Education and promotion of condom usage, as seen in this study, can have a positive impact on reducing the transmission of STIs, including HIV. This finding highlights the need to emphasize and further develop patient education strategies within Suraksha clinics[9,10].

The observation of a potential decrease in the number of patients presenting with sexual tract infections (STIs) during the years 2020–2021, juxtaposed with the global COVID-19 pandemic and associated lockdowns, sparks a compelling discussion on the interplay between infectious diseases and healthcare-seeking behavior[11,12]. The pronounced restrictions imposed during the lockdown periods may have inadvertently influenced the patterns of attendance at Suraksha Clinic, leading to a noteworthy decline in reported cases. Factors such as reduced social interactions, fear of contagion, and limited accessibility to healthcare facilities might have contributed to a scenario where individuals with STIs were less inclined to seek medical attention. This nuanced intersection between the COVID-19 pandemic and the management of STIs prompts further exploration into the dynamics of public health responses, healthcare utilization, and the broader implications for sexual health initiatives in the context of unprecedented global health crises[13,14].

Strengths

Comprehensive analysis

The study provides a thorough and comprehensive analysis of the prevalence and characteristics of various STIs over a five-year period, offering valuable insights into the epidemiology of these infections.

Diverse diagnostic methods

The utilization of diverse diagnostic methods for different STIs ensures a nuanced understanding of their prevalence, contributing to the accuracy and reliability of the findings.

Integration of syndromic approach

The inclusion of syndromic diagnoses provides a holistic view of prevalent conditions, aiding in the identification of diverse cases and informing targeted interventions.

Longitudinal data

The study covers a substantial time frame (January 2018 to December 2022), allowing for the observation of trends and fluctuations in STI prevalence over time.

Emphasis on patient education

The study recognizes the importance of patient education, particularly in promoting condom usage, contributing to the development of effective prevention strategies.

Experienced laboratory personnel and experts

The authenticity of data is assured by highly experienced and dedicated personnel, devoted primarily to the diagnosis of STIs, from the Apex STD Centre in the country.

Limitations

Single-centre study

The study is conducted at a specific clinic (Suraksha Clinic in the Apex Regional STD Centre, Safdarjung Hospital), limiting the generalizability of findings to a broader population.

Retrospective design

The retrospective design of the study relies on existing data, which may be subject to limitations such as incomplete records or variations in data quality over the five-year period.

External factors (e.g., COVID-19):

The study acknowledges the potential impact of external factors, such as the COVID-19 pandemic, on healthcare-seeking behaviour. However, the complex interplay between infectious diseases and healthcare utilization requires further exploration.

CONCLUSION

The prevalence of STIs and HIV among Suraksha Clinic attendees markedly surpasses that of the general population. This underscores the critical importance of implementing routine screening for these infections among individuals seeking care at Suraksha Clinic. Early detection and prompt treatment are not only essential for the well-being of affected individuals but also for the broader public health objectives of controlling the spread of these diseases and preventing associated complications.

To address this public health challenge effectively, it is imperative to integrate a targeted screening approach for STIs and HIV within existing STI prevention and treatment services. By doing so, we can create a more robust and proactive strategy for identifying and managing these infections, thereby contributing to the reduction of their prevalence and the mitigation of their adverse consequences. This approach aligns with the broader goals of disease prevention and underscores the necessity of continued efforts to safeguard the health and well-being of our communities.

Participation of each author

SM: Conceptualization, Investigation, Methodology, Project administration, Supervision, Validation. PG: Data curation, Formal analysis. AL: Conceptualization, Data curation, Formal analysis, Investigation. SS: Resources, Validation. RSR: Resources. NK: Resources, Supervision, Validation.

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Conflict of interest

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Address for correspondence
SUMATHI MURALIDHAR
Safdarjung Hospital, Ansari Nagar East, near to AIIMS Metro Station
New Delhi (Delhi), India
110029
E mail: sumu3579@yahoo.com; drsumathimdhar@vmmc-sjh.nic.in; Muralidhar-sumu3579@yahoo.com,

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