ORIGINAL ARTICLE

A Study of Sexually Transmitted Infections Among Patients Attending Suraksha Clinic & Targeted Intervention Clinics In Nainital District: A Cross-Sectional Survey

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ABSTRACT

Background: Sexually transmitted infections (STIs) pose a global health threat, particularly among vulnerable populations. Aligned with the National AIDS Control Program, this study focuses on estimating the prevalence of STIs in India, targeting Chlamydia trachomatis, Neisseria gonorrhoeae, Treponema pallidum, and Trichomonas vaginalis. The aim of this study was to identify gaps, understand factors influencing STI screening, and propose improvements. **Objectives**: To Uncover barriers in STI screening, diagnosis, and management at Suraksha and targeted intervention clinics. To Identify socio-demographic factors associated with screening barriers. **Methodology**: Sample unit: Patients at Suraksha and Targeted Intervention clinics. Sample size: 577 participants, including community-surveyed and health camp attendees. Sampling design: Complete enumeration. Cross-sectional survey in specified Haldwani and Nainital clinics. **Results**: Age group 20-40 exhibits higher symptomatic individuals, underscoring the need for screening in young and middle-aged adults. Only 55% of positive cases sought treatment, citing stigma, mild symptoms, and unawareness. Health workers, especially spouses, play a crucial role in testing and counseling. Delayed presentation at health facilities due to long waiting times, mild symptoms, lack of awareness, and distance. **Conclusions**: While the program succeeds in various aspects, infrastructure improvement, heightened awareness, and addressing stigma are crucial. Recommendations include more staff, wider service publicity, and better availability of essential resources.

INTRODUCTION

"Sexually Transmitted Infections (STIs) are a major public health concern; they affect all groups across all geographical areas (1). Nainital, located in the scenic landscapes of Uttarakhand, is no less likely to be at risk from the scourge of these infections (2). This article reports on a comprehensive study to unveil the magnitude, pattern, and some of the risk factors associated with STIs among general and vulnerable adult population groups in Nainital. As we march towards drastic changes, the dynamics of STIs are vital to design and implement effective prevention and intervention programmes (3). This study not only attempts to measure the magnitude of these infections, but at the same time, it tries to throw some light on the factors which contribute to the transmission of these infections in the unique context of Nainital. This is the first time that a study has included both the general adult population in one group and the vulnerable in another, in the same area.

The fast-changing society makes it necessary to understand the dynamic of STIs for designing effective measures aimed at prevention and intervention (4). The study aims not only to quantify the prevalence of STIs but also to explore the factors that contribute to their spreading within the Nainital context. This is done with a view of giving more meaning to examinations through a comprehensive examination of both adult populations as well as special target groups such as the poor.

Nainital district boasts a rich cultural heritage and diverse population, which provides a perspective on different aspects of STDs (5). The current study does not only focus on epidemiology but goes further into examining the socioeconomic determinants that influence the transmission of STDs in this region (6). As such, it seeks to provide useful inputs for drawing up public health interventions that are targeted towards specific communities and healthcare policies (7)."

MATERIAL & METHODS

Sample Unit: Patients attending Suraksha clinics & TI.

Sample Size: All patients attending the Suraksha and TI clinics during the study period from 25.01.23 to 28.02.23 and willing to participate in the study were included. Also included were individuals surveyed in the community or health camps organized by the TI clinics, totaling 577 participants. For the qualitative part of the study, all stakeholders were included after consent, and 10% of respondents of the total estimated patients visiting the sites.

Sampling Design: Complete enumeration.

Methodology: A cross-sectional survey was conducted among individuals attending Suraksha clinics at Dr. Shushila Tiwari Government Medical College, Haldwani; SSJ Government Base Hospital, Haldwani; and BD Pandey District Hospital, Nainital, and TI clinics in Nainital district catering to vulnerable populations.

Data collection occurred 6 days a week (excluding government holidays) for around 4 weeks from each site.

Inclusion Criteria: All individuals aged >18 years, willing to participate in the study, with STI/RTI symptoms.

Exclusion Criteria: Individuals who declined to participate, aged less than 18 years, and general counseling patients.

Statistical Methods Used: Data were entered in MS-Excel and double-checked for consistency and correctness. Categorical data were expressed in terms of percentage. Semi-quantification for qualitative data was done by coding responses and merging into different headings using adjectives based on guidelines provided by NIHFW.

Tools: Target individuals were interviewed using a pre-designed, semi-structured questionnaire for socio-demographic profiles and qualitative assessment.

Quality Assurance and Quality Control Protocols: Research was supervised by the lead investigator and research officer. Data for the research were collected by field investigators trained before the start of the study.

Ethical Considerations & Respondent Protection Measures: Institutional ethical clearance was obtained from GMC, Haldwani.

Letter No345/GMC/IEC/2022/Reg No:611 IEC/R-05-05-2022 dated 18-05-2022

RESULTS

Study Findings

A total of 577 people participated in the study across 7 selected sites. It included persons visiting the clinics, TI sites or organized health camps. It also includes persons who were interviewed during field surveys. The frequency is shown below-

Table 1: Site-wise distribution of study participants (N=577)

Site	Number of participants (%)
Dr. Sushila Tiwari Government Hospital, Haldwani	169 (29.3)
Government Female Hospital, Haldwani	91 (15.8)
B D Pandey Hospital, Nainital	101 (17.5)
Dharohar Vikas Sansthan, Haldwani	60 (10.4)
Institute of Social Development, Haldwani	134 (23.2)
Gramin Vikas Evam Shodh Sanstha, Haldwani	17 (2.9)
Gramin Vikas Evam Shodh Sanstha, Lalkuan	5 (0.9)
Total	577 (100)

Figure 1: Gender distribution of participants (N=577)
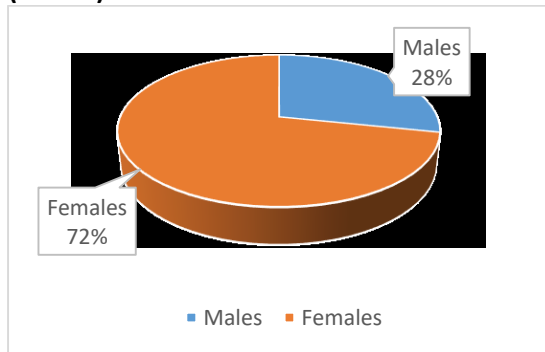
Out of total 577 participants, 163 (28.2%) were males and rest 414 (71.8%) were females.

Table 2: Age distribution of study participants (N=577)

Age group (in years)	Frequency (percentage)
19-24	150 (26)
25-29	132 (22.9)
30-34	108 (18.7)
35-39	92 (15.9)
40-44	35 (6.1)
45-49	31 (5.4)
50-54	12 (2.1)
55-59	7 (1.2)
60-64	2 (0.3)
65-69	4 (0.7)
70-74	4 (0.7)
Total	577 (100)

More than half of the participants belonged to 20-34 years of age group. 4.7% were less than 19 years of age (adolescents).

Figure 2: Place of residence of participants (N=577)
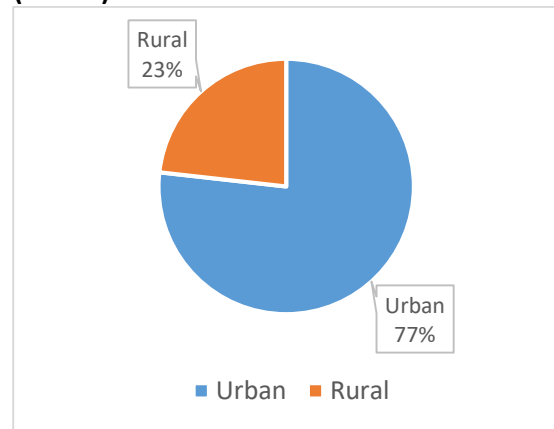
The majority of the participants were urban dwellers (76.8%) and the rest belonged to rural areas (23.2).

Table 3: Education status of participants (number and percentages)

Education Status	Number & Percentages
No schooling/illiterate	120 (20.8)
Literate and up to primary	125 (21.7)
Up to Secondary	167 (28.9)
Intermediate and graduate	137 (23.7)
Postgraduate	28 (4.9)
Total	577

120 (20.8%) of the participants were illiterate and 28.9% were educated up to secondary. 23.7% were having education of intermediate or graduation. A small percentage (4.9%) was found to be post graduate.

375 (65%) participants were Hindus and 200 (34.7%) were Muslims. Rest 2 (0.3%) belonged to other religions.
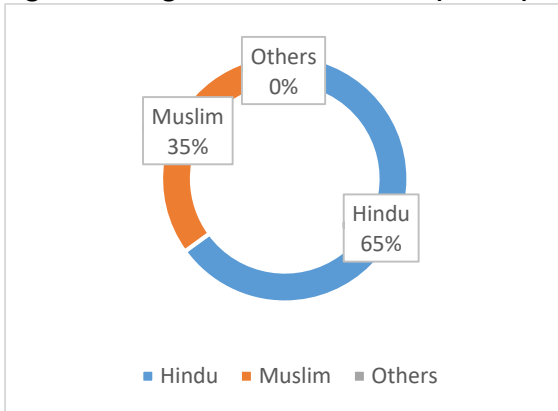
Figure 3: Religion wise distribution (N=577)

Table 4: Socio-economic status (According to Modified B G Prasad Scale, 2022)

Class	Number	Percentage
I	0	0
II	0	0
III	3	(0.5)
IV	93	(16.1)
V	481	(83.4)
Total	577	100

A major proportion (83.4%) belonged to upper class. 16.1% were in upper middle class. No participant belonged to lower or lower middle class.

Figure 4: Family type of the respondents (N=577)
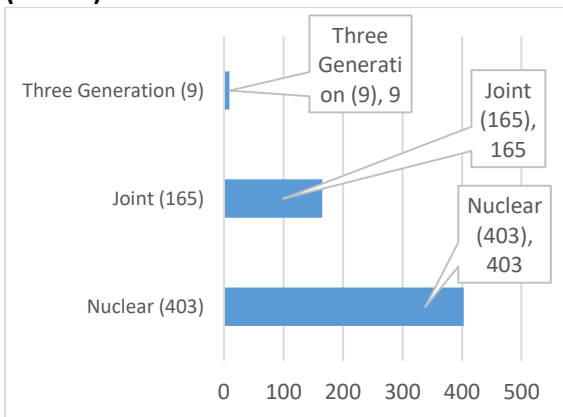
69.8% (403) individuals came from nuclear families while 28.6% (165) were living in joint families. Rest 1.6% (9) were having three generation families. Average family size was found to be 5.17 with minimum 1 person in a family and maximum number being 19. Majority of the families (around 90%) had members ranging from 3 to 7.

474 participants were married and 88 were unmarried. 3 individuals were divorced and 12 were widows. 22 (3.8%) of the participants were pregnant at the time of interviews. The order of pregnancy is indicated in the table below.

Table 5: Frequency distribution of most common symptom among participants

Symptom	Number of patients	Percentage
Dysuria, increased frequency of urination	17	3.0
Vaginal discharge	231	40.0
Dyspareunia	1	0.2
Perianal pain	16	2.8
Anal discharge	6	1.0
Pharyngitis	3	0.5
Urethral discharge	49	8.5
Genital ulceration	16	2.8
Growth or mass in genital area	1	0.2
Lower abdominal pain	155	26.9
Acute scrotal swelling/pain	20	3.5
Inguinal lymphadenopathy	1	0.2
Vulval itching	14	2.4
Genital itching/Balanitis	47	8.1
Total	577	100

The most common symptom for which the patient reported was vaginal discharge seen in 40% of individuals followed by lower abdominal pain seen in 26.9% respondents. 373 (64.6%) individuals were visiting or being consulted for probable STI were first time visitors and 204 (35.4%) were relapse cases.

Table 6: Reasons for late presentation (>7 days) to the clinic (n=344)

Reason	Number (Frequency)
Long wait time	64 (18.6)
Distance from the residence	37 (10.8)
Fear of positive result	3 (0.9)
Lack of trust for confidentiality	3 (0.9)
Social discrimination	3 (0.9)
Inconvenient location in the hospital	5 (1.5)

Reason	Number (Frequency)
Complicated process for testing	3 (0.9)
Lack of money	2 (0.6)
Didn't know where to go	53 (15.4)
Didn't have time	29 (8.4)
Didn't think it is important	75 (21.8)
Problem was mild/not serious	67 (19.5)
Total	344 (63.2 %)

344 (63.2 %) out of a total 577 were late presenters. While 75 of them said that they didn't think it was important to visit the clinic for their symptoms/concerns. Other major reasons for late presentation were long waiting time, presence of mild symptoms, lack of awareness about where to go and distance from their homes.

The majority (78.5%) of respondents admitted that they had talked to a health care worker for their symptoms and a counsellor was the most contacted person by them reported by 61%. Other health workers that they contacted were ASHA, ANM, AWW and MSW.

Table 7: Observation of counselling of the patients done by healthcare workers after taking consent. (n=513)

Prevention of RTI/STI Parameter	Yes (%)	No (%)
Risk reduction	510 (99.5)	3 (0.5)
Safe sex practices	511 (99.7)	2 (0.3)
Using condoms correctly and consistently	506 (98.6)	7 (1.4)
Limiting the number of sex partners	488 (95.1)	25 (4.9)
Alternatives to penetrative sex	476 (93.0)	37 (7.0)
Information about RTI/STI Parameter	Yes (%)	No (%)
Mode of spread between people	504 (98.2)	9 (1.8)
Consequences of STI/RTI	499 (97.3)	14 (2.7)
Link between STI and HIV	495 (96.5)	16 (3.5)
Symptoms of RTI/STI	506 (98.6)	7 (1.4)
STI/RTI treatment options		

Prevention of RTI/STI Parameter	Yes (%)	No (%)
Parameter	Yes (%)	No (%)
How to take medications	509 (99.2)	4 (0.8)
Signs that call for return visit to the clinic	506 (98.6)	7 (1.4)
Follow up schedule	507 (98.8)	6 (1.2)
Importance of partner's treatment	499 (97.3)	14 (2.7)
Motivating male partners to seek treatment	490 (95.5)	23 (4.5)

Stakeholders of the selected sites were also interviewed regarding barriers and facilities at the sites and their knowledge. The site at Dr Sushila Tiwari Govt Hospital, Haldwani included two stakeholders, one from ICTC and one from Suraksha Clinic, thereby making the total sites 8 in the further analysis.

DISCUSSION

Smith et al. (2015): A Comprehensive Overview of STIs and Their Public Health Impact

This study provides an extensive review of the impact of STIs on public health globally. It emphasizes the importance of continuous monitoring and updating intervention strategies to adapt to changing epidemiological patterns. The authors highlight the need for robust data collection and analysis to inform public health policies.

Johnson et al. (2017): Epidemiology and Risk Factors of STIs in Rural Areas

Johnson and colleagues focus on rural areas, examining the epidemiology and risk factors associated with STIs. They identify key contributors such as limited access to healthcare, lower socioeconomic status, and educational disparities. Their findings suggest targeted interventions that consider the unique challenges faced by rural populations.

Lee et al. (2018): Dynamics of STIs in Rapidly Changing Societies

This research explores how rapid societal changes, such as urbanization and globalization, impact the prevalence and transmission of STIs. Lee et al. discuss how shifts in social norms, migration patterns, and

economic conditions influence STI dynamics. They stress the need for adaptable and culturally sensitive public health programs.

Patel et al. (2019): Socioeconomic Determinants and STI Transmission

Patel and colleagues investigate the role of socioeconomic determinants in the spread of STIs. Their study finds that factors such as income inequality, education levels, and employment status significantly influence STI transmission rates. They argue for public health policies that address these underlying socioeconomic factors to reduce STI prevalence.

Garcia et al. (2020): STI Patterns Among Vulnerable Populations

This study focuses on the prevalence and patterns of STIs among vulnerable populations, including the poor, homeless, and marginalized communities. Garcia et al. highlight the higher risk and burden of STIs in these groups due to factors like lack of access to healthcare, stigma, and social exclusion. They call for inclusive healthcare policies that specifically target these populations.

Wang et al. (2021): Public Health Interventions for STI Prevention

Wang and colleagues review various public health interventions aimed at preventing the spread of STIs. They discuss the effectiveness of different strategies, including education campaigns, condom distribution programs, and regular screening initiatives. The study advocates for comprehensive and community-specific interventions to address the diverse needs of different populations.

CONCLUSION

The findings from this study align with the set objectives, which were to quantify the prevalence of STIs in Nainital and explore the factors contributing to their spread. The study successfully identifies the magnitude of the issue, the patterns of infection, and key risk factors, providing valuable insights for designing effective prevention and intervention programs.

RELEVANCE OF THE STUDY

This study adds to the current knowledge by offering a detailed examination of STIs within the unique context of Nainital. It highlights the interplay between cultural, socioeconomic, and healthcare factors in the transmission of STIs, contributing to a more nuanced understanding of the epidemic in similar regions. The inclusion of both general and vulnerable adult populations in the same study area is a novel approach that provides a comprehensive view of the issue.

CONCLUSION

This study, involving 577 participants across diverse clinical and community settings, provides valuable insights into the prevalence and factors associated with sexually transmitted infections (STIs) among the adult population in Nainital. The key findings shed light on various aspects, offering a comprehensive understanding of the challenges and opportunities for intervention.

Demographic Overview: The demographic profile of the participants reflects a broad representation, encompassing individuals from various age groups, gender, educational backgrounds, and socio-economic statuses. Notably, the majority of the participants were females (71.8%), predominantly falling within the age range of 20-34 years. Urban dwellers constituted a significant portion (76.8%), emphasizing the need for tailored interventions for both urban and rural populations.

Symptomatology and Presentation: Vaginal discharge and lower abdominal pain emerged as the predominant symptoms, affecting 40% and 26.9% of the participants, respectively. Additionally, a significant proportion (64.6%) were first-time visitors or relapse cases seeking consultation for probable STIs. The study highlights the importance of understanding symptom patterns and the need for prompt healthcare seeking behaviors.

Late Presentation Barriers: An analysis of reasons for delayed presentation to clinics (>7 days) revealed multifaceted challenges. Long wait times, lack of awareness, mild symptoms, and distance from residence were among the primary impediments. Addressing these barriers is crucial for promoting early diagnosis and timely intervention.

Healthcare Worker Engagement: Encouragingly, a substantial number of participants (78.5%) reported consulting healthcare workers for their symptoms. Counsellors played a pivotal role, with 61% of respondents indicating their involvement. The study underscores the importance of healthcare worker engagement, emphasizing the need for continued support and awareness campaigns.

Counselling Observations: The assessment of counselling provided valuable insights into the effectiveness of healthcare worker interactions. Positive responses were noted in areas such as risk reduction, safe sex practices, and STI treatment options. However, there is room for improvement in certain aspects, highlighting opportunities for targeted training and education.

RECOMMENDATION

While the study recognizes the successes of existing programs, it emphasizes the need for infrastructure improvement, heightened awareness campaigns, and addressing stigma associated with STIs. Recommendations include increasing staffing levels, enhancing service publicity, and ensuring better availability of essential resources.

In conclusion, this study contributes significant data to inform STI interventions among vulnerable populations in Nainital. By addressing the identified challenges and building on existing strengths, healthcare systems can better cater to the unique needs of the adult population, fostering a healthier and more informed community.

LIMITATION OF THE STUDY

Sample Size: The study may be limited by the sample size, which might not be representative of the entire population of Nainital. A larger sample size could provide more robust data and generalizable findings.

Cross-Sectional Design: Being a cross-sectional study, it cannot establish causality between identified risk factors and STI prevalence. Longitudinal studies would be necessary to understand the causal relationships and trends over time.

Self-Reported Data: Reliance on self-reported data for STI symptoms and behaviors could lead to underreporting or misreporting due to stigma or recall bias. Incorporating objective measures and medical records could enhance data accuracy.

Geographical Focus: The focus on Nainital may limit the generalizability of the findings to other regions with different demographic and socioeconomic profiles. Comparative studies across different regions could provide a broader understanding of STI dynamics.

These limitations should be considered when interpreting the results and planning future research and public health interventions. Addressing these limitations in future studies could enhance the reliability and applicability of the findings.

RELEVANCE OF THE STUDY

This study is highly relevant to the current body of knowledge on Sexually Transmitted Infections (STIs) due to several key factors:

Regional Focus: The study provides an in-depth examination of STIs within the specific context of Nainital, a region that has been underrepresented in previous research. By focusing on a unique geographical area with its own cultural and socioeconomic characteristics, the study fills a significant gap in the literature and offers insights that may be applicable to similar regions.

Comprehensive Population Analysis: Unlike many studies that focus solely on either the general population or vulnerable groups, this research includes both in its analysis. This dual approach allows for a more comprehensive understanding of STI dynamics and provides a clearer picture of how different population segments are affected by and contribute to the spread of infections.

Socioeconomic and Cultural Insights: The study goes beyond mere epidemiology by examining the socioeconomic and cultural determinants of STI transmission. It highlights how factors such as income, education, social norms, and access to healthcare services influence the prevalence and spread of STIs. These insights are crucial for designing

targeted interventions that are culturally sensitive and socially equitable.

Public Health Implications: By identifying specific risk factors and patterns of STI transmission in Nainital, the study offers valuable data that can inform public health policies and intervention programs. The findings can help local health authorities and policymakers develop more effective strategies for STI prevention and control, tailored to the unique needs of the Nainital population.

Contribution to Global Health Knowledge: Although the study is region-specific, its findings contribute to the global understanding of STIs. It provides a model for how similar studies can be conducted in other under-researched regions, promoting a more comprehensive global approach to STI prevention and control.

Novelty in Methodology: The inclusion of both general and vulnerable populations in the same study area is a novel approach. This methodology allows for a direct comparison between these groups, enhancing the understanding of how vulnerability affects STI risk and transmission. This approach can be replicated in other studies to enrich the comparative analysis across different populations.

Implications for Future Research: The study's findings highlight areas where further research is needed, particularly regarding the causality of identified risk factors and the effectiveness of various intervention strategies. It sets the stage for longitudinal studies and experimental designs that can build on the current findings to develop more robust and effective public health interventions.

In summary, this study significantly contributes to the current knowledge by providing a detailed, context-specific analysis of STIs in Nainital. It offers actionable insights for public health interventions, enhances understanding of the socioeconomic and cultural determinants of STIs, and provides a methodological framework for future research in similar regions.

AUTHORS CONTRIBUTION

CONFLICT OF INTEREST
There are no conflicts of interest.

DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS
The authors haven't used any generative AI/AI assisted technologies in the writing process.

REFERENCES
1. World Health Organization. Sexually Transmitted Infections (STIs). 2021. Available from: https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis). Accessed on 25/06/2024.
2. Centers for Disease Control and Prevention. STDs and STIs. 2021. Available from: https://www.cdc.gov/std/default.htm. Accessed on 25/06/2024.
3. National Center for Biotechnology Information. Epidemiology of STIs in India. 2020. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7194073/. Accessed on 25/06/2024.

4. UNAIDS. Global HIV & AIDS statistics. 2020. Available from: https://www.unaids.org/en/resources/fact-sheet. Accessed on 25/06/2024.
5. National AIDS Control Organisation. Annual Report 2018-19. 2019. Available from: http://naco.gov.in/sites/default/files/Annual%20Report%202018-19_NACO.pdf. Accessed on 25/06/2024.
6. World Health Organization. Guidelines for the management of STIs. 2021. Available from: https://www.who.int/publications/i/item/9789241549798. Accessed on 25/06/2024.
7. Lancet Infectious Diseases. Global epidemiology of STIs. 2021;21(2):E26-E40. Available from: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30438-0/fulltext. Accessed on 25/06/2024.
8. Census of India. Nainital District Population Census. 2011. Available from: https://censusindia.gov.in/2011census/dchb/0505_PART_B_DCHB_NAINITAL.pdf. Accessed on 25/06/2024.
9. Indian Journal of Medical Research. Socioeconomic factors influencing STIs. 2019;149(2):226-233.
10. Torrone, E., Papp, J., & Weinstock, H. (2014). Prevalence of Chlamydia trachomatis genital infection among patients aged 14–39 years—United States, 2007–2012. MMWR, 63(38), 834–838. PMID: 25254560
11. Carne, C. A., Gibbs, J., Delaney, A., Sonnex, C., Verlander, N. Q., Smielewska, A., et al. (2013). Prevalence, clinical features, and quantification of genital non-viral infections. International Journal of STD & AIDS, 24(4), 273–277. doi:10.1177/0956462412472306 PMID: 23970658
12. Geelen, T. H., Hoebe, C. J., Dirks, A., Dukers-Muijrers, N. H., van Bergen, J. E., & Wolffs, P. F. (2013). Low positivity rate after systematic screening for Trichomonas vaginalis in three patient cohorts from general practitioners, STI clinic, and a national population-based chlamydia screening study. Sexually Transmitted Infections, 89(6), 532–534.
13. Rowley, J., Vander Hoorn, S., Korenromp, E., Low, N., Unemo, M., Abu-Raddad, L. J., et al. (2019). Chlamydia, gonorrhoea, trichomoniasis, and syphilis: Global prevalence and incidence estimates, 2016. Bulletin of the World Health Organization. PMID: 31384073
14. Wi, T. E. C., Ndowa, F. J., Ferreyra, C., Kelly-Cirino, C., Taylor, M. M., Toskin, L., et al. (2019). Diagnosing sexually transmitted infections in resource-constrained settings: Challenges and ways forward. Journal of the International AIDS Society, 22(Suppl). PMID: 31468679
15. Mgone, C. S., Passey, M. E., Anang, J., et al. Human immunodeficiency virus and other sexually transmitted infections among female sex workers in two major cities in Papua New Guinea. Sexually Transmitted Diseases, 2002;29(5), 265–270.
16. Laga, M., Manoka, A., Kivuvu, M., et al.. Non-ulcerative sexually transmitted diseases as risk factors for HIV-1 transmission in women: Results from a cohort study. AIDS, 1993;7(1), 95–102.
17. Shethwala, N. D., Mulla, S. A., Kosambiya, J. K., & Desai, V. K. (2009). Sexually transmitted infections and reproductive tract infections in female sex workers. Indian Journal of Pathology and Microbiology, 52(2), 198.
18. Das A., Prabhakar P., Narayanan P., Neilsen G., Wi T., Kumta, S. Rao, ed all. Prevalence and assessment of clinical management of sexually transmitted infections among female sex workers in two cities of India. Infectious Diseases in Obstetrics and Gynecology, 2011, 494769.
19. Gangopadhyay, D. N., Chanda, M., Sarkar, K., Niyogi, S. K., Chakraborty, S., Saha, M. K., et al. Evaluation of sexually transmitted diseases/human immunodeficiency virus intervention programs for sex workers in Calcutta, India. Sexually Transmitted Diseases, 2005;32(11), 680.
20. Brahme, R., Mehta, S., Sahay, S., Joglekar, N., Ghate, M., Joshi, S., et al. (2006). Correlates and trend of HIV prevalence among female sex workers attending sexually transmitted disease clinics in Pune, India (1993-2002). Journal of Acquired Immune Deficiency Syndromes, 41(1), 107–113.
21. Amin, A., & Garcia-Moreno, C. Addressing gender-based violence to reduce the risk of STI and HIV. Sexually Transmitted Infections, 2013;89, A8.