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Profile Of Sexually Transmitted Diseases And The Influence Of Covid-19 Pandemic On Sexual Transmitted Infection Testing In Dr. Moewardi General Hospital

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ABSTRACT

Introduction
Sexually transmitted infections (STIs) are diseases resulting from bacteria, viruses, or parasites transmitted during vaginal, anal, or oral sexual intercourse. The COVID-19 pandemic markedly influenced STI statistics, leading to potential underreporting of cases and heightened transmission rates.
Objective **:** To analyse the profile of sexually transmitted infections and the influence of COVID-19 on STI assessments at the Dermatology and Venereology (DV) Outpatient Clinic of Dr. Moewardi General Hospital.

Method
A retrospective study using secondary data derived from medical records and registration logs at DV Outpatient Clinic of Dr. Moewardi General Hospital, spanning from January 2018 to December 2022.

Results
284 new STI cases were documented in the before pandemic lockdown period, however during the pandemic lockdown, there was a significant decline of 149 new cases. After the pandemic lockdown, there was 200 additional cases of STIs. Up to 90 patients with STIs were co-infected with HIV. The predominant instance of STIs was condyloma acuminata., and there was a strong correlation between gender and the incidence of STIs ($p=0.000$; $p<0.05$)

Conclusion
There was a sharp decline in STI cases during the COVID-19 pandemic and a surge in STI cases after the COVID-19 pandemic, predominantly featuring instances of condyloma acuminata and syphilis.

Keywords : HIV, sexually transmitted infections, COVID-19 pandemic

Introduction

Sexually transmitted infections (STIs) are infections conveyed through sexual contact, including vaginal, anal, or oral routes (Wagenlehner *et al.*, 2016). The etiology of STIs is categorized as bacteria, viruses, fungi, and protozoa (Díez and Díaz, 2011). Globally, the incidence of STIs is projected to exceed 1 million individuals daily. The WHO estimates 374 million new illnesses occurred in 2020 (WHO, 2022). As of December 2017, the Ministry of Health of the Republic of Indonesia reported a total of 280,623 HIV (Human Immunodeficiency Virus) infections and 102,667 AIDS (Acquired Immuno Deficiency Syndrome) cases. Over the past decade, the transmission of HIV has switched from the utilization of unsterilized syringes to sexual intercourse (Kemenkes RI, 2021).

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Sexually transmitted infections are 90% asymptomatic, therefore, insufficient diagnostic tests and management also facilitate the progression of cases. The reporting of STI data is estimated to only represent 50-80% or the total cases. This illustrates the limitation of screening, insufficient knowledge on disease transmission, and inadequate data reporting (Anantawijaya D *et al.*, 2021). Immunosuppression may elevate vulnerability to sexually transmitted infections. The prevalence of STIs among individuals using antiretroviral therapy (ART) may diminish the prophylactic advantages of ART (Okoboi *et al.*, 2019).

The pandemic COVID-19 markedly influenced STI trends in 2020, leading to potential underreporting of diseases and heightened STI transmission. The data from all nations indicate that the incidence of STIs identified in 2020 was significantly lower than in 2019 (Kocer, 2020). The monitoring of STIs is essential for their management and the provision of safety net services in numerous states. To mitigate the danger of COVID-19 transmission, numerous patients with suspected STIs have curtailed or cancelled clinical appointments and elective procedures, resulting in the suspension of STI services, which may contributes to a rise in STI incidence (Tao *et al.*, 2021).

This study aims to determine the profile of STIs at the Dermatology and Venereology (DV) outpatient clinic of Dr. Moewardi General Hospital from January 2018 to December 2022 by comparing the incidence of STI cases before, during, and after the COVID-19 pandemic lockdown, alongside an analysis of HIC-coinfection in individuals with STIs.

Methods

This study is a retrospective study utilizing secondary data, specifically medical records and registration logs from the DV Outpatient Clinic of Dr. Moewardi General Hospital, covering the period from January 2018 to December 2022. This study's inclusion criteria encompass all STI patients documented as new cases at the DV Outpatient Clinic of Dr. Moewardi General Hospital, Surakarta from January 2018 to December 2022, including HIV patients with comprehensive medical records. Individuals lacking comprehensive medial records will be excluded from the study. Data were analyzed using SPSS version 24.0 for Windows and deemed significant if the p-value <0.05. The minimum sample size for this study was established via nonprobability sampling by purposive sampling.

Results

Based on research conducted, there were 633 new cases of STIs. The research encompassed an outbreak of the COVID-19 pandemic, categorized into three distinct phases: the pre-pandemic lockdown phase (January 2018-December 2019), the pandemic lockdown phase (January 2020-December 2021) and the post-pandemic lockdown (January 2022-December 2022). During the pre-pandemic lockdown phase, 284 new cases of STI were identified, 149 cases were reported during the pandemic lockdown phase, and 200 cases were recorded post-pandemic lockdown phase **(Tabel 1).**

Tabel 1. Analysis of STI prevalence by gender from January 2018 – December 2022 and the statistical correlation between diagnosis of STI and gender

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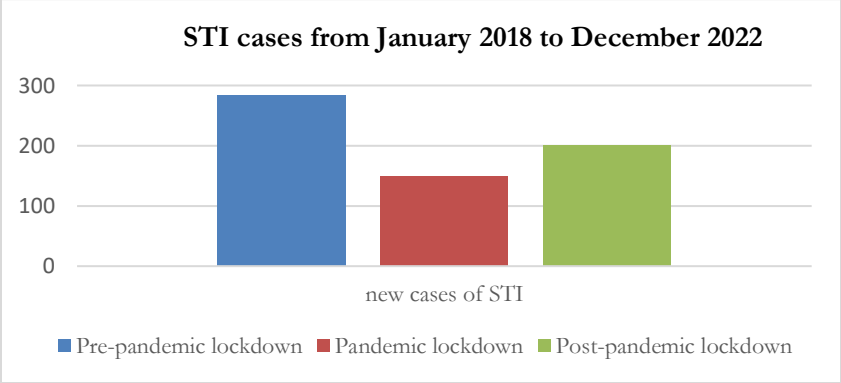
M = male
F = female

Diagnosis (n = 633)	Pre-Pandemic Lockdown (n = 284)			During Pandemic Lockdown (n = 149)			Post-Pandemic Lockdown (n = 200)			p - value
	M	F	Total	M	F	Total	M	F	Total	
Condyloma acuminata (n=322)	79	50	129	48	29	77	69	47	116	0.000 *
Vulvovaginal candidiasis (n=73)	0	53	53	0	13	13	0	7	7	
Syphilis (n=64)	7	0	7	11	7	18	25	14	39	
Bacterial vaginosis (n=53)	0	25	25	0	18	18	0	10	10	
Non specific cervicitis (n=49)	0	23	23	0	8	8	0	18	18	
Gonorrhea infection (n=43)	23	5	28	10	0	10	5	0	5	
Genital Herpes (n=20)	6	6	12	2	2	4	0	4	4	
Trichomoniasis vaginalis (n=6)	0	4	4	0	1	1	0	1	1	
Granuloma Inguinale (n=3)	2	1	3	0	0	0	0	0	0	

Tabel 1 indicates that condyloma acuminata is the most prevalent illness, with 322 cases (20.87%) of the total STI cases. Condyloma acuminata were more prevalent in men (196 cases; 60.87%) than in women (126 cases; 39.13%). The second most prevalent complaint among women is vaginal discharge, accounting for 181 cases (28.59%). Syphilis was the most commonly reported case in the pos-pandemic lockdown period, totaling 39 cases. The data indicates a substantial correlation between STI diagnosies and gender, with a p-value = 0.000, signifying statistical significance ($p<0.05$).



Gambar 1. STI cases from January 2018 to December 2022

From January 2018 to December 2022, there were 633 new STI cases, inclucing 96 occurance of HIV co-infection. The predominant demographic of STI patients with HIV consist of men, totaling 82 cases (85.42%). Instances of STIs co-infected with HIV encompass condyloma acuminata, followed by syphilis in its primary, secondary, and latent phases, molluscum contagiosum, genital ulcers, vulvovaginal candidiasis, bacterial vaginosis, gonococcal urethritis, and donovanosis. **Table 2** presents data on patients with STI and HIV co-infection.

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Tabel 2. Profile of STI cases with HIV co-infection based on gender and sexual orientation for the period January 2018 - December 2022

Characteristics	Total (n=96)	Precentage (%)
Gender		
Male	82	85.42
Female	14	14.58
STI cases		
Condyloma acuminata	56	56.25
Syphilis	21	27.08
Genital ulcer	7	7.29
Bakterial vaginosis	4	4.17
Gonococcal urethritis	4	4.17
Molluscum contagiosum	2	2.08
Vulvovaginal candidiasis	1	1.04
Donovanosis	1	1.04
Sexual orientation		
Homosexual	51	53.13
Heterosexual	31	32.29
Bisexual	14	14.58

Discussion

The global COVID-19 pandemic has significantly affected the world's population as all resources have been reallocated to confront this crisis. The COVID-19 pandemic significantly reduced patients visit, since individuals, including those with HIV and STIs who frequently exhibit no symptoms, were apprehensive about attending healthcare institutions. The identification of cases and contact tracing through partner services are essential components of the STI program, with over half (57%) of specialized STI screens encountering challenges in identifying new STI cases during the COVID-19 pandemic (Johnson *et al.*, 2021). This aligns with findings from the study, which indicated a significant reduction in the identification of new STI cases during the pandemic, followed by an increase in cases post-pandemic.

Sexually transmitted infections can affect both men and women, with differing prevalence rates across various countries worldwide. The female gender is more vulnerable to STIs due to anatomical considerations, since the greater surface area of the genitalia (vagina) heightens the risk of bacterial and viral infections compared to men (Arum Maujudah and Susanna, 2019). This study aligns with the study, which identified a substantial correlation between STI diagnoses and gender.

HIV is a virus that compromises the immune system, rendering individuals susceptible to further infections, whereas AIDS is a syndrome characterized by symptoms arising from diminished immunological defence due to HIV infection (Morineau *et al.*, 2011; Werner *et al.*, 2018). Individuals with STIs have 5-9 fold increased chance of developing HIV/AIDS (Fernandes and Ervianti, 2020). This study identified 96 cases of STIs with concurrent HIV infection. Inconsistent sexual practices, including frequent partner changers and the absence of condom usage, have emerged as significant risk factors for the transmission of HIV/AIDS. Men who engage in sexual activity with other men (MSM) represent a significant risk factor. The CDC indicates that the MSM demographic has a greater prevalence of HIV cases relative to other group (Henkel, 2021). This stigma surrounding the MSM population also influences their propensity to seek health or preventative services (Helda and Muchlisa, 2021).

Condyloma acuminata (CA) is a clinical manifestation of Human Papillomavirus (HPV) infection (Kang *et al.*, 2019). CA is the most common STI worldwide, probably due to its highly contagious nature (Nareswari *et al.,* 2020). This study identified 322 cases of condyloma acuminata, comprising 50.87% of the total STI cases. Anogenital warts were observed more prevalently in male patients than in female individuals. The findings align with research from Jining No. 1 People's Hospital and Shandong Oriental Anorectal Hospital, which gathered 321 and 152 HPV DNA samples, respectively, from 804 of 880 CA cases, yielding a

positive rate of 91.4%, comprising 90.6% men and 93.7% (Yuan *et al.*, 2023). Studies in Africa indicated a substantial correlation between HPV and HIV infections. Immunocompromised individuals exhibit a higher propensity for dysplastic lesions and possible HPV reactivation (Galati *et al.*, 2021). Additional research has demonstrated an association between CA and the prevalence of HIV/AIDS, predominantly within the homosexual demographic (Yarchoan and Uldrick, 2018; Mawardi and Danu Yuliarto, 2022; Purwoko *et al.*, 2022). Syphilis and HIV are significant factors in public health. The illnesses intersect, influence one another, and possess notable similarities (Fernandes and Ervianti, 2020). A study by Begovac *et al.* in 2023 found the range of asymptomatic syphilis was 35.5% in 2018 to 42.7% in 2021. The accurate identification of asymptomatic and symptomatic STIs depends on the availability of quality diagnostic tests and a validated screening strategy. The availability of low-cost rapid screening test for syphilis have increased syphilis detection and thus explains the higher case of syphilis among other STI in our study (WHO, 2025).

Conclusion

There was a sharp decline in STI cases during the COVID-19 pandemic and a surge in STI cases after the COVID-19 pandemic, predominantly featuring instances of condyloma acuminata and syphilis.

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