

## OVERVIEW OF THE CHARACTERISTICS AND USE OF DRUGS FOR SEXUALLY TRANSMITTED INFECTION (STI) PATIENTS DURING THE COVID-19 PANDEMIC 2020 - 2021 AT RSUD ABDUL WAHAB SJAHRANIE SAMARINDA

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**Abstract** During the COVID-19 pandemic, many infectious diseases other than COVID-19 are often neglected in their spread. One of the most common infectious diseases is Sexually Transmitted Infections (STI). STIs are reproductive tract infections caused by bacteria, viruses, and parasites, most of which are transmitted through sexual contact. The high incidence of STIs shows that the public's knowledge of STIs is still low. This study aims to determine the use of drugs and the characteristics of STI patients during the COVID-19 pandemic in 2020-2021 at RSUD Abdul Wahab Sjahranie Samarinda. This research is non-experimental. The research method used is descriptive quantitative, which is done retrospectively. The results showed a decrease and increase in the number of patients during the COVID-19 pandemic. The total number of STI patients in this study was 48 patients, consisting of 17 patients in 2020 and increasing to 31 patients in 2021. The most characteristics of STI patients during 2020-2021 are male patients, the majority of STI patients aged 17-25 years, high school education level, working as private employees, and unmarried. The most common types of STIs in 2020 were gonorrhea and syphilis in 2021. The most frequently used drug for the treatment of syphilis was the injection of benzathine penicillin, for the treatment of gonorrhea was

azithromycin, for the treatment of condyloma acuminata was cefixime and for the treatment of genital herpes was acyclovir.

**Keywords:** COVID-19 · *pandemic* · STI · *drug use* · *patient characteristics*



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### Introduction

At the end of 2019, the whole world was shocked by the emergence of the coronavirus which later changed its name to Coronavirus Disease-19 or COVID-19. The rapid spread of COVID-19 has resulted in countries around the world implementing several public health measures intended to prevent its spread, including social distancing restrictions (Fong et al., 2021). The decline in health services is one of the impacts of social distancing policies on health aspects, besides that most people choose to stay at home instead of going to health facilities for fear of infection. It is reported that the number of visits

to the National Health Insurance or JKN service at health facilities during the COVID-19 pandemic decreased to 70.69 million people. Previously in 2019, the number of JKN service visits at health facilities was 433.39 million, then during the COVID-19 pandemic in 2020 it became 362.7 million (Silaban, 2021).

The COVID-19 pandemic significantly affected the prevalence of sexually transmitted diseases in 2020, resulting in the possibility of unreported infections and increased transmission of sexually transmitted infections. This will likely last for a few more years (CDC, 2022).

Sexually transmitted infections (STIs) are infections of the reproductive tract caused by bacteria, viruses, and parasites that are mostly transmitted through sexual intercourse including vaginal, anal, and oral sex between people who are already infected with other people. In addition to sexual intercourse, STIs can also be transmitted through direct contact with contaminated tools such as towels, thermometers, syringes, blood, vaginal fluids, sperm, and saliva. Some STI sufferers can also be victims due to circumstances beyond their ability, the intended victims are those who try their best not to contract the disease but are still infected (Panonsih, 2016). The high incidence of STIs is evidence that there is still low public knowledge of STIs. Based on having heard of STIs, the percentage of STIs in married women aged 15-49 years who have never heard of an STI is higher than those who have heard of an STI (Simbolon dan Budiarti, 2020).

The results of research at RSUD Abdul Wahab Sjahranie for the period January – December 2015 showed the characteristics of most patients who had the male sex with the largest number aged 26-35 years, high school education level, working as private employees and unmarried status. While the characteristics in female patients aged 17-25 years, high school education level, IRT work, and married status. The most common type of STI disease in male patients is gonorrhea, while in female patients it is acuminata. The most frequently used drugs in the treatment of gonorrhea are efficacy (38.71%), treatment of

condyloma acuminata is ciprofloxacin (28.57%), the treatment of herpes genital is acyclovir (77.80%), the treatment of candidiasis is ketoconazole (100%), the treatment of Syphilis is doxycycline (66.67%), the treatment of ulcer genital is ciprofloxacin (50%), and the treatment of trichomoniasis is metronidazole (66.67%) (Rahayu et al., 2016).

The discovery of cases of patients with STIs during the period January – March 2021 with diagnosis based on the syndrome approach amounted to 7,364 cases, while based on laboratory examinations there were 11,133 cases. The number of STI cases based on laboratory examination approaches reported, namely early syphilis as many as 2,976 cases, advanced syphilis as many as 892 cases, gonorrhea as many as 1,482 cases, gonorrhea urethritis as many as 1,004 cases, non-GO urethritis as many as 1,250 cases, cervicitis proctitis as many as 3,031 cases, LGV as many as 13 cases, trichomoniasis 342 cases, and genital herpes 143 cases (Kemenkes RI, 2021).

Based on data from the Central Bureau of Statistics of East Kalimantan Province, there have been 519 cases of STIs in Samarinda throughout 2019, which is before the emergence of the COVID-19 pandemic. The results of a survey conducted by researchers in 2022 at the Skin and Genital Poly of RSUD Abdul Wahab Sjahranie found a decrease in the number of STI patient visits in 2020. The number of STI patients in 2020 decreased by  $\pm 50\%$  from the number of patients in 2019 and then the number began to grow again with the decline in COVID-19 cases in 2021.

The implementation of Community Activity Restrictions (PPKM) implemented during the COVID-19 pandemic in East Kalimantan will certainly affect patient services in health facilities, including STI patients who seek treatment at the hospital. This study aims to see the description of drug use and characteristics of STI patients during the COVID-19 pandemic in 2020 – 2021 at Abdul Wahab Sjahranie Hospital Samarinda. The choice of RSUD Abdul Wahab Sjahranie Samarinda as a place of research is

because RSUD Abdul Wahab Sjahranie Samarinda is one of the referral hospitals in East Kalimantan and its position is located in the middle of the city so it is easily accessible to many people.

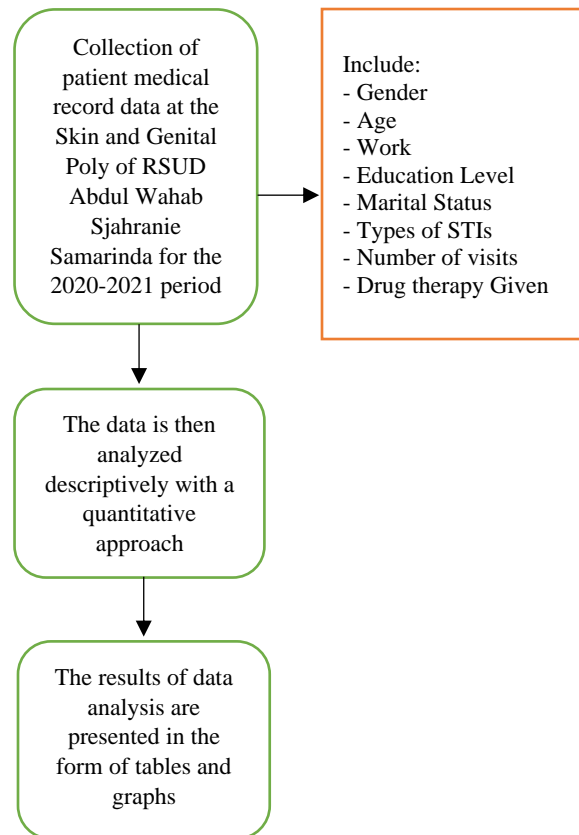
### Material and Methods

The research method used is quantitative descriptive conducted retrospectively. This research was conducted by collecting patient medical record data obtained at the Skin and Genital Poly of RSUD Abdul Wahab Sjahranie Samarinda during the 2020 – 2021 period.

The use of descriptive analysis in this study aims to see the distribution of data by calculating the frequency and percentage in descriptive statistics. Analysis of drug use in patients is used to see what antibiotic or antiviral drug therapy is given to STI patients. Analysis of patient characteristics in this study was divided into several variables, namely: gender, age, occupation, education level, marital status, type of STI suffered, and the number of patient visits.

The samples in this study were patients suffering from STIs with inclusion criteria in the STI diagnosis and had complete medical record data during the 2020-2021 period at the Skin and Genital Poly of RSUD Abdul Wahab Sjahranie Samarinda with samples obtained by purposive sampling.

Medical record data that has been collected is recorded, on the data collection form is analyzed descriptively with a quantitative approach, then the data is presented in the form of tables and graphs.

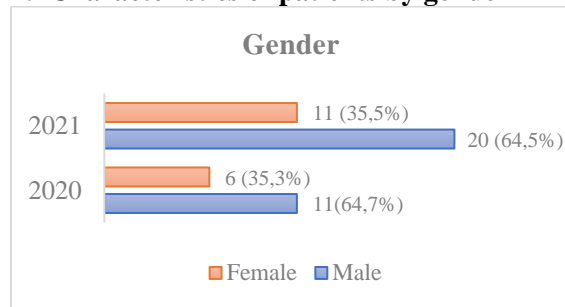


### Results and discussion

This research was carried out at the Skin and Genital Poly of Abdul Wahab Sjahranie Hospital Samarinda which is a special poly for the examination and treatment of skin and venereal-related diseases, including STIs. The period of this study was conducted from January 2020 to December 2021, there were approximately 60 positive cases of STIs and the samples used in this study that met the inclusion criteria were 48 patients.

## A. Characteristics of STI Patients

### 1. Characteristics of patients by gender



**Figure 1.** Graph of distribution of STI patients by gender

Figure 1 shows that in 2020 64.7% (11 people) were male and 35.3% (6 people) were female, then in 2021 there were 64.5% (20 people) male and 35.5% (11 people) female. The largest percentage of STI patients by gender in this study were male. When compared to data before the COVID-19 pandemic entered Indonesia, namely in 2019, it was found that the percentage of male patients was 59% (16 people) and female patients as much as 41% (11 people) there was a decrease the total number of STI patients in 2020, and began to increase after the pandemic in 2021.

The percentage of male patients remains more than the number of female patients. The high percentage in men can be attributed to several reasons, among them that most men have more frequent activities in the field and sometimes often away from family, change partners during sexual intercourse, and more importantly, clinical symptoms of STIs in men are more prominent (Sridana dan Indrayani, 2015).

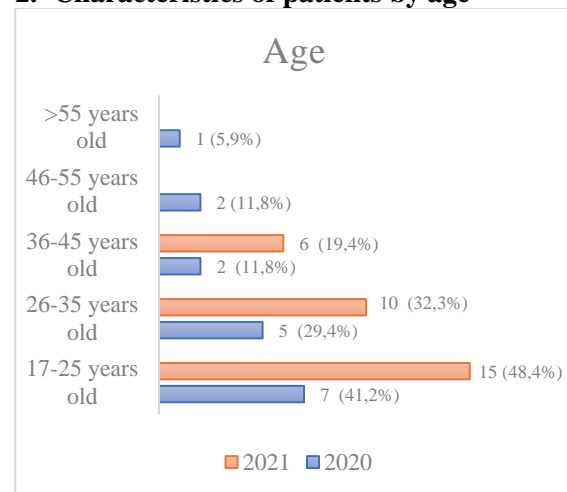
The clinical manifestations of STIs in men are more pronounced than in women, leading to a greater likelihood of men with STIs using medical facilities. The diagnosis of men with STIs is also easier, so more cases of STIs in men are reported. In developing countries, sex outside marriage is mostly performed by men. It is related to influential factors of tradition, religion, and culture (Refti, 2018).

Another factor that may increase the number of male STI patients in the study was men having sex with men (MSM), which is associated with

higher rates of STIs. No less than 1% of the Indonesian population are deviant sex offenders or homosexuals, that number will continue to grow in line with the development and existence of homosexual associations in Indonesia. Homosexuality refers to sexual and/or romantic interactions between persons of the same sex situationally or on an ongoing basis (Siyoto dan Sari, 2014).

Anal sex is often the main choice for homosexual couples so the percentage of anal sores or abrasions during penetration is higher. Most homosexual couples who have sex do not use condoms and can have more than one sexual partner (Nirmalasari et al., 2018). The Centers for Disease Control (CDC) surveillance study shows that the recent increase in STIs is most pronounced in the MSM community (Putri dan Hutapea, 2022). All people with the wrong lifestyle can also be infected, but homosexuals can be at higher risk because they have oral and anal sex (Naully dan Nursidika, 2019).

### 2. Characteristics of patients by age



**Figure 2.** Graph of distribution of STI patients by age

Figure 2 shows that in 2020 and 2021 the most patients with STIs were in the age range of 17–25 years, namely 41.2% (7 people) in 2020 and 48.4% (15 people) in 2021. This is different from the research data obtained by researchers that the most STI patients in 2019 came from the age

group of 26-35 years. The decrease in patient frequency in the age group of 26-35 years is suspected because this age group is an age that is still productive in terms of sexual and work, also has high mobility and activity outside the home and the frequency and social interaction are also high so that this age group has a greater risk level of exposure to COVID-19.

This is supported by research results from [Elviani et al., \(2021\)](#) at RSMH Palembang which stated that of the 666 respondents, the highest percentage of patients treated in the isolation room of RSMH Palembang came from the age group of 26-35 years was 21.2% or as many as 141 people. Therefore, in this age group during the pandemic, it is suspected that limiting themselves from outside social activities affects decreasing the number of STI patients seeking treatment at the hospital.

Data from Cipto Mangunkusumo Hospital shows that about 15% of new STI cases reported occur in children between the ages of 12-22 years. Based on medical record data from the Polyclinic of Skin and Genital Health Sciences, Division of Sexually Transmitted Infections at RSUP dr. Hasan Sadikin in 2013, there were 900 STI patients, and 9% of them were patients aged 10-19 years. Meanwhile, RSUD Soetomo Surabaya records around 30 young STI patients every month ([Perdoski, 2018](#)).

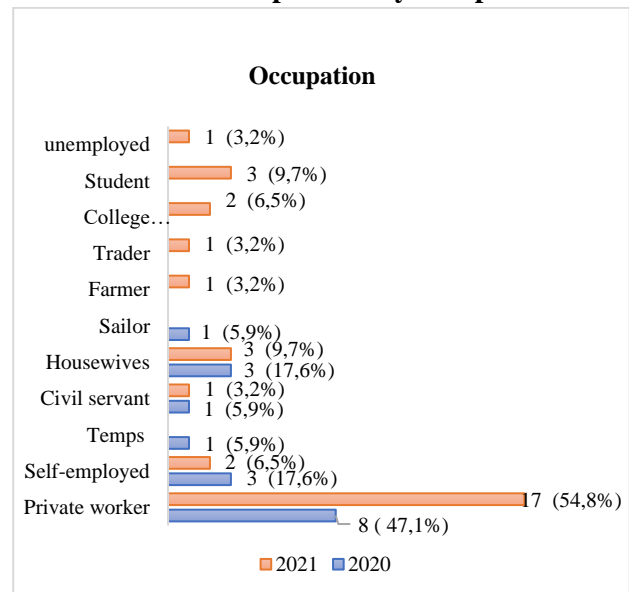
Various circumstances from the external of adolescents can also cause risky sexual behavior, such as stereotypes of parents who tend to talk about sexual information, the influence of the social environment, stimuli from electronic and print media, peer group influences, and sexual misconceptions ([Sarwono, 2011](#)).

In addition, adolescents who have experienced sexual abuse are more likely to engage in risky sexual behaviors than those who have not experienced abuse, such as sexual activity with multiple partners, early sexual behavior, sexual aggression, and prostitution ([Wherry et al, 2009](#)). Those who often engage in risky sexual behavior, feel uncomfortable discussing safer sex and do not dare to refuse

sexual intercourse. An unbalanced age ratio, for example, the relationship between adolescent girls and adult boys is also a risk factor for STIs in adolescents ([Ayu dan Susanto, 2019](#)).

In other studies, risky sexual behavior in adolescents also has a significant relationship between parenting style and risky sexual behavior ([Ungsianik dan Yuliati, 2017](#)). Communication with parents about adolescent reproductive health is important from the beginning of puberty so that adolescents are not mistaken in responding to issues related to reproductive health problems, especially sexual behavior problems ([Nadirahilah dan Nurdiansyah, 2019](#)).

### 3. Characteristics of patients by occupation



**Figure 3.** Graph of distribution of STI patients by occupation

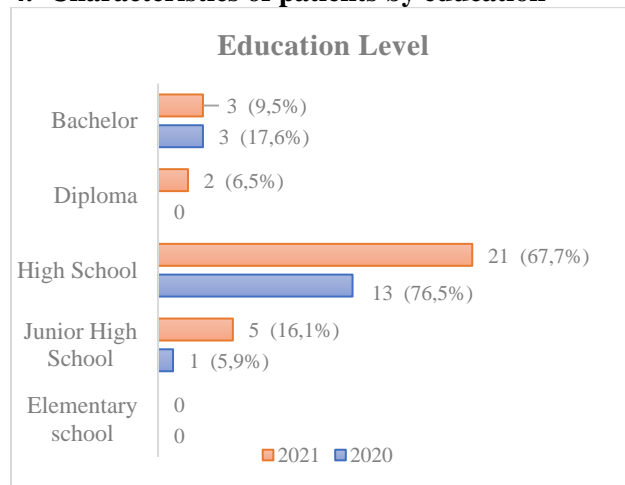
Figure 3 shows that most STI patients in 2020 and 2021 worked as private workers, namely 47.1% (8 people) in 2020 and 54.8% (17 people) in 2021. It can be seen that STIs can not only occur in people of poor social or economic status but can also occur in people of good social or economic status ([Rahayu et al., 2016](#)). A person's job is often closely related to the likelihood of an STI. People who work with certain conditions will find an environment that creates sex



opportunities, thus increasing the number of STI sufferers (Daili, 2008).

The high need for sex, being away from family, and being bored with married life can cause someone to do negative things such as using prostitution services. A good social and economic situation causes a person to feel able to use prostitution services and change partners so that they become vulnerable to contracting and transmitting STIs (Muda et al., 2014).

#### 4. Characteristics of patients by education



**Figure 4.** Graph of distribution of STI patients by education

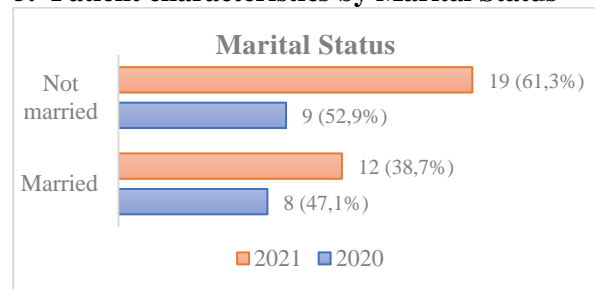
Figure 4 shows that the majority of STI patients at RSUD Abdul Wahab Sjahranie Samarinda have a recent history of high school education, namely 76.5% (13 people) in 2020 and as many as 67.7% (21 people) in 2021. Education does have a very important relationship with one's knowledge. Even knowledge cannot stand alone; the support of education can help a person's knowledge or ability become better and more advanced. Education acts as a tool to provide and teach various knowledge (Panonsih et al., 2020). In developing countries, STIs and their complications are the fifth diseases that cause adults to need medical facilities. One of the causes is due to sexual activity and a low level of knowledge. Based on the phenomena encountered, many do not know what STIs are and some have never even heard of them, some

only know but do not understand and only often hear about HIV / AIDS (Hermanto et al., 2020).

Based on the research of Ayu and Susanto (2019), the level of education has no relationship with knowledge of STIs, but knowledge of STIs can be improved by health promotion and counseling on STIs. Some other variables that can affect the occurrence of STIs, include environmental, socioeconomic, reproductive hygiene, and sex partners. In their research, Ayu and Susanto (2019) also analyzed that the level of education is not related to STIs, because the education curriculum in Indonesia has not applied specific subjects that discuss sexually transmitted diseases. Students are generally only taught about sexually transmitted diseases at a glance in biology subjects. The number of risky sexual behaviors due to the lack of information about reproductive health and STIs at each level of education, health information, and education about STIs and their prevention is needed to increase knowledge and increase awareness in themselves to prevent and treat STIs.

A person's level of knowledge increases because the information obtained is evident from the results of research which shows that before getting health education there are still many respondents who do not have enough knowledge, but after getting health education, there is an increase in the number of respondents with a good level of knowledge (Hermanto et al., 2020).

#### 5. Patient characteristics by Marital Status

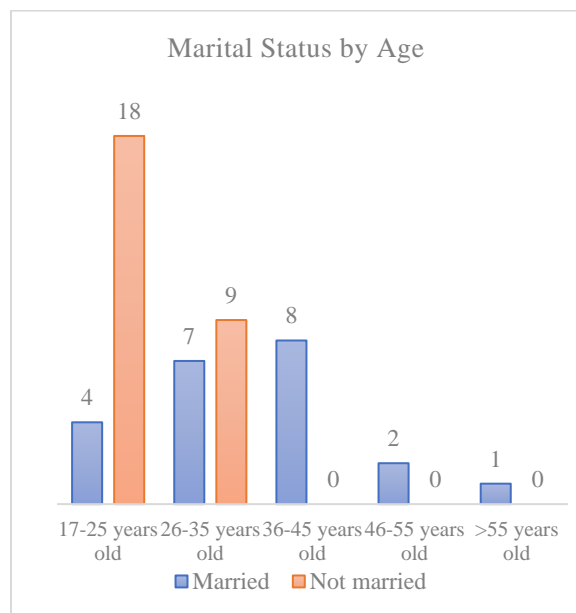


**Figure 5.** Graph of distribution of STI patients by marital status

Figure 5 shows that the most STI patients in 2020 and 2021 were unmarried, namely 52.9% (9

people) in 2020 and 61.3% (19 people) in 2021. Meanwhile, those who are married are 47.1% (8 people) in 2020 while in 2021 they are 38.7% (12 people). Sex behavior before marriage is behavior that can increase a person's risk of contracting sexually transmitted diseases, including sex at a young age, having more than one sex partner, having sex under the influence of alcohol or drugs, and risky sexual behavior (Ghule, 2013).

In this study, unmarried patients were dominated by males, while married patients are dominated by females. This is because unmarried men are more likely to engage in unsafe sex and change partners, which can increase STI transmission. Married women are infected because their husbands turned out to change partners or have sexual relations with commercial sex workers (Muda et al., 2014).

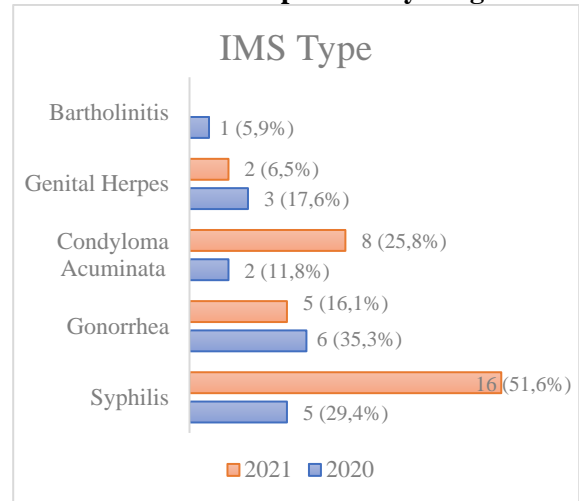


**Figure 6.** Marital Status Graph by Age

In Figure 6, it can be seen that most unmarried patients come from the age group of 17-25 years. Based on the Ministry of Health (2009), the age group of 12-25 years is the age group of adolescents. About 1 million boys (5%) and 200,000 girls (1%) said they had had sexual intercourse publicly. Nowadays teenagers have a wrong understanding of sexuality that makes them try to experiment on the subject of sex

without realizing the dangers that arise from their actions (Amrillah et al, 2006).

## 6. Characteristics of patients by Diagnosis



**Figure 7.** Graph of distribution of STI patients by STI Type

Figure 7 shows that the most STI suffered by patients in 2020 was gonorrhoea with a percentage of 35.3% (6 people). Some of the factors that cause high rates of gonorrhoea are its high transmission rate, short incubation period, a high proportion of asymptomatic carriers, lack of immunity, increased resistance to antibiotics, and changes in sexual behavior (Kusuma et al., 2021). CDC reported that the COVID-19 pandemic has not only increased cases of respiratory diseases but it is known that sexually transmitted diseases have also increased significantly. In the 2020 Sexually Transmitted Disease Surveillance Report, there was an increase in gonorrhoea cases by 10 percent compared to 2019 (Adhistanaya, 2017).

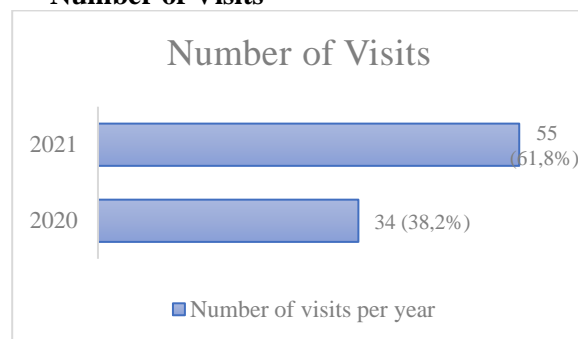
Meanwhile, in 2021, the most STI suffered by patients was syphilis with a percentage of 51.6% (16 people). Transmission of STIs itself is by direct contact, namely contact with infectious exudate from skin lesions or mucous membranes at the time of sexual intercourse with a partner who has been infected. Syphilis itself is a disease caused by *Treponema pallidum* bacteria. There are several phases of the development of syphilis, namely primary, secondary, latent, and tertiary

phases. Transmission of syphilis mostly occurs through sexual intercourse, transmission can also occur from mother to fetus in the womb or at birth, from blood products or tissue transfers that have been contaminated, and sometimes can be transmitted through medical devices.

Based on data obtained from patient medical records, syphilis patients who seek treatment are patients with advanced syphilis such as secondary syphilis and latent syphilis. This is in line with the research of [Adhistanaya \(2017\)](#) that found that patients with secondary-stage syphilis had the highest percentage of 54.3%, early latent stage syphilis with a percentage of 14.3%, advanced latent syphilis stage with percentage of 20%. Sexually transmitted infections, particularly syphilis, increased 26% from 2020 to 2021, according to preliminary data from the Centers for Disease Control and Prevention (CDC) published in September ([Law, 2022](#)).

Sexually active people should be screened for syphilis, along with other STIs, about once a year. The COVID-19 pandemic has added to the burden on health systems, not only in the United States but also around the world. The tendency of people who are reluctant to go to the hospital decreases interest in conducting sexually transmitted disease tests ([CDC, 2022](#)). Not to mention the attention and focus of health workers in the first year of the pandemic who were distracted by COVID-19, so the increase in syphilis cases could be influenced by a decrease in screening tests for diseases such as condyloma acuminata, gonorrhea, and other STI diseases. This is due to restrictions on community activities outside the home and anxiety or fear if you will go to a health facility to test for STIs. In addition, the increase in syphilis can also be influenced by a transmission that can occur horizontally, namely by sexual activities, or vertically from mother to baby, or commonly referred to as congenital syphilis.

## 7. Patient Characteristics based on the Number of Visits



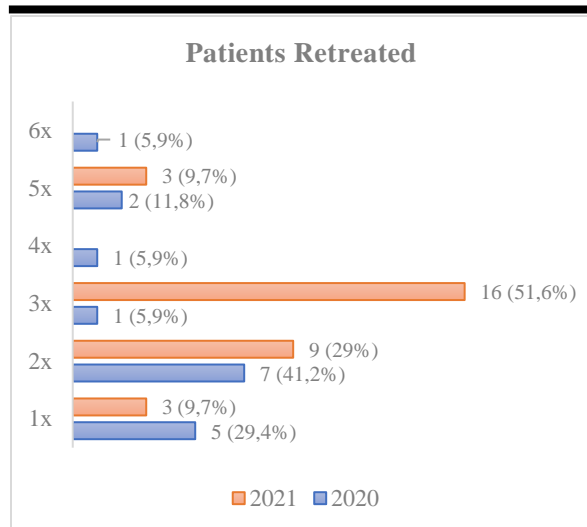
**Figure 8.** Graph of distribution of STI patients by number of visits per year

Figure 8 shows that visits of STI patients seeking treatment to the Skin and Genital Poly of RSUD Abdul Wahab Sjahranie Samarinda from 2019 to 2020 decreased by 54%, this visit data was obtained from the outpatient register book at the Skin and Genital Poly of RSUD Abdul Wahab Sjahranie Samarinda. The decrease in the number of visits is thought to be due to the implementation of PPKM by the government during the COVID-19 pandemic and the anxiety of patients to come for treatment to health facilities including hospitals for fear of contracting COVID-19 disease, so patients prefer to stay at home and not check their complaints at the hospital.

In 2021, visits by STI patients who want treatment at the Skin and Genital Poly of Abdul Wahab Sjahranie Hospital have increased, where previously there were only 34 visits in 2020, increasing to 55 visits in 2021. The increase in patient visits in 2021 is thought to be due to the decline in COVID-19 cases in Samarinda and the implementation of PPKM which has begun to be relaxed from before.

The frequency of visits of STI patients in 2020 is 2 times, this is because, at the first visit, patients only complain about the symptoms to the doctors. Then the doctor will make a diagnosis and proceed with the provision of medical treatment therapy. At the second visit, patients usually come for control to see the progress of therapy that has been obtained previously.





**Figure 9.** Distribution graph of STI patients based on the number of arrivals for treatment

In 2021, the frequency of many visits to STI patients was 3 times, dominated by syphilis patients. In 2020, most patients with syphilis were given oral treatment rather than injection, so the number of syphilis patient visits in 2020 was not as much as in 2021. Most syphilis patients are given benzathine penicillin injection therapy 3 times, and patients will come every 1 week to be given injections. The number of visits is above 3 times, most of which are patients who after treatment are then referred to lab checks and then return for treatment at skin and genital poly.

### B. Drug Use of STI Patients

Treatment of STI cases based on the syndrome approach is carried out by identifying a group of complaints and symptoms as easily recognizable syndromes and then establishing treatment for most or almost all of the microorganisms believed to be the cause of the syndrome. Treatment of STI at RSUD Abdul Wahab Sjahranie Samarinda uses guidelines derived from the National Formulary and Hospital Formulary. Based on prescriptions obtained from the medical records of STI patients, in each type of STI, there are two types of therapy: single therapy and combination therapy of antibiotics in the treatment.

**Table 1.** Drug Use for STI Patients

Types of STIs	Treatment Therapy	Total Usage (2020)	Total Usage (2021)
Syphilis	Azithromycin	1	-
	Erythromycin	1	-
	Doxycycline	2	1
	Inj. BP*	1	15
Gonorrhea	Azithromycin	3	3
	Cefixime	2	2
	Doxycycline	2	1
	Sphoretic	-	1
Kondyloma Akuminata	Cefixime	-	4
	Ciprofloxacin	2	2
	Erythromycin	-	2
	Gentamicin	-	2
Herpes Genital	Aciclovir	3	2

\*Injection Benzatin Penicillin

The results showed that the use of benzathine penicillin injection drugs was the most frequently used drug in 2020-2021 for the treatment of syphilis. Benzathine penicillin used in the treatment of syphilis at RSUD Abdul Wahab Sjahranie Samarinda is an injection preparation with a dose of 2.4 million units.

Parenteral penicillin has become the first-line treatment for early and latent syphilis. Due to the long half-life of penicillin, the treponemicidal effects are longer, but it should be noted patients with a risk of penicillin allergy. Doxycycline is an alternative therapy for syphilis in patients allergic to penicillin antibiotics (Clement, 2014).

In the treatment of gonorrhea, the most frequently used drug use in 2020-2021 is azithromycin. It is generally recommended that non-gonorrhea disease therapy be given to all patients with gonorrhea, as 10-30% of patients with co-infect gonorrhea infection also with chlamydia. The recommended therapy for chlamydial infection is azithromycin 1 g peroral single dose (Harningtyas, 2017).

In the treatment of condyloma acuminata, the most widely used antibiotic as therapy for condyloma acuminata patients in 2020-2021 is cefixime. Condyloma acuminata patients in this study were patients with electrocauterization action, so antibiotics were given after the action. Following the Ministry of Health (2011), Giving antibiotics before, during, and up to 24 hours postoperatively aims to prevent infection in the

surgical wound and inhibit the emergence of resistant normal flora.

The results of research on the use of drugs for the treatment of genital herpes the most in 2020-2021 are Acyclovir. This is in line with research by Rahayu et al., (2016) which states that the most widely used drug for STI patients at RSUD Abdul Wahab Sjahranie is acyclovir with a percentage of 77.80%. Aciclovir is an agent used to treat infections caused by the herpes simplex virus (HSV).

Aciclovir FDA is approved to treat genital herpes (Ashiddiq, 2020). The drug is highly selective for infected cells due to its high affinity for the viral enzyme thymidine kinase. This effect will concentrate acyclovir mono phosphate on infected cells. The monophosphate is then metabolized to form cytoactive phosphate kinase, which disrupts the viral DNA polymerase enzyme, thereby inhibiting DNA replication (Salvaggio et al., 2016).

## Conclusion

Based on the results and discussion of the study, it can be concluded that there was a decrease and increase in the number of patients during the COVID-19 pandemic, the total number of STI patients in this study was 48 patients, consisting of 17 patients in 2020 and increasing to 31 patients in 2021. Throughout 2020-2021, STI patients with the most STI patient characteristics were male patients, the majority of STI patients aged 17-25 years, high school education level, working as private employees, and unmarried status. The most common types of STI diseases in 2020 were gonorrhea and syphilis in 2021. The drug most often used in the treatment of syphilis is the injection of benzathine penicillin, in the treatment of gonorrhea is azithromycin, in the treatment of condyloma acuminata is cefixime and in the treatment of genital herpes is acyclovir.

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