PROFILE OF SYPHILIS RISK FACTORS IN THE PRODUCTIVE AGE GROUP AT DERMATOLOGY AND VENEREOLOGY CLINIC RSUD DR. SAIFUL ANWAR MALANG, INDONESIA

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ABSTRACT

Syphilis is a sexually transmitted infection that has the potential to cause serious complications and is closely related to the human immunodeficiency virus (HIV) infection, thus making syphilis a major public health problem. Understanding the characteristics of risk factors could be used to prevent future transmission and occurrences of syphilis. This study aimed to determine the demographic data and risk factors of syphilis in productive age at the Dermatology and Venereology Clinic, RSUD. DR. Saiful Anwar, Malang, Indonesia. This study used a descriptive approach using secondary data from the medical records of syphilis patients from January to December 2021. Sample collection was carried out using a total sampling technique. Twenty medical records that met the inclusion criteria were included, all of which belonged to the productive age group. The majority of the sample were male (70%), aged 17-25 years (45%) and 26-35 years (45%), had a high school education (55%), were private sector workers (40%), were unmarried (70%), had anogenital sexual activity (50%), never used condoms (50%), had more than one sexual partner (85%), were in the primary stage of syphilis (35%), and were HIV positive. Among male patients with syphilis-HIV coinfection, 80% of cases were homosexual. The risk factors for syphilis at a productive age include anogenital intercourse, irregular condom use, multiple sexual partners, the primary stage of syphilis, HIV infection, and homosexuality. A program focused on detecting and treating syphilis among people living with HIV/AIDS, especially those in high-risk populations such as men who have sex with men (MSM), is needed.

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INTRODUCTION

Syphilis is a chronic, progressive sexually transmitted infection (STI) caused by *Treponema pallidum*. Its ability to mimic many diseases makes it known as "The Great Imitator". The infection is transmitted through sexual contact, from mother to baby via placenta, and blood transfusions[1].

Syphilis is a significant health problem that requires attention, as its incidence tends to increase. Based on data from the World Health Organization

(WHO) in 2020, 7.1 million new cases of syphilis occurred in patients aged 15-49 years. In Southeast Asia, the trend of sexually transmitted infections (STIs) is reported to be decreasing except for syphilis, with a total of 350,000 cases[2]. In Indonesia, according to the Ministry of Health of Indonesia, the reported cases in 2021 were 13,505 for early-stage syphilis and 3,775 for late-stage syphilis. The most at-risk groups for STIs are heterosexual couples (11,804), men who have sex with men/MSM (9,857), and female sex workers/FSWs (6,7828)[3].

Untreated syphilis can cause serious complications in 25% of patients who do not receive treatment[2]. The disease causes severe and life-threatening complications and increases the risk of HIV (Human Immunodeficiency Virus) infection. When co-infection with HIV occurs, both infections tend to progress more quickly[4].

The distribution pattern of syphilis varies in each city and country, and this is influenced by various risk factors, including sociodemographic factors, knowledge, health behavior, and risky sexual behavior. A surveillance and prevention program for syphilis transmission can be easily created if the risk factors that influence the distribution pattern are known. The purpose of this study was to determine demographic data and risk factors for syphilis in productive-age patients at Dermatology and Venereology Clinic RSUD. Dr. Saiful Anwar Malang, Indonesia from January to December 2021.

MATERIALS AND METHODS

This study used a descriptive approach and was conducted on secondary data from the medical records of syphilis patients at the Dermatology and Venereology Clinic RSUD. Dr. Saiful Anwar Malang from January to December 2021. Sampling was carried out using a total sampling technique, all samples that met the inclusion criteria would become research subjects. The inclusion criteria used were new syphilis patients diagnosed at the Dermatology and Venereology Clinic RSUD. Dr. Saiful Anwar during the period of January to December 2021 and in the productive age group. According to the Indonesian Central Bureau of Statistics, the productive age group is defined as those aged between 15 and 64 years old. The exclusion criteria were incomplete medical record data. The parameters studied included gender, age, education, occupation, marital status, sexual behavior, condom use, number of sexual partners, syphilis stage, sexual orientation, and HIV infection status. The data obtained were presented in numerical and percentage form descriptively and analyzed using univariate analysis with the Statistical Package for the Social Sciences (SPSS) application. The research protocol has been approved by the Medical Research Ethics Committee of RSUD. Dr. Saiful Anwar (070/035/1027 /IKKK/09/2022).

RESULTS

There were 20 medical records of new syphilis patients at Dermatology and Venereology Clinic RSUD. Dr. Saiful Anwar met the inclusion criteria.

According to Table 1, the majority of syphilis patients were male (70%), aged between 17-25 years old (45%) and 26-35 years old (45%), had high school education (55%), worked in the private sector (40%), and were unmarried (70%). While the

majority of patients with syphilis-HIV coinfection were female (54.5%), aged between 17-25 years old (45.45%), had high school education (54.55%), worked in the private sector (45.45%), and unmarried (54.55%).

Table 2 presents the distribution of risk factors in the sample. It was found that the majority of syphilis patients had anogenital sexual intercourse (50%), never used condoms during intercourse (50%), had more than one sexual partner (85%), were in the primary syphilis stage (35%), and 55% were HIV positive. The majority of syphilis patients with HIV coinfection had genito-genital sexual intercourse (45.45%), never used condoms during intercourse (54.56%), had more than one sexual partner (81.82%), and were in the primary syphilis stage (36.36%). Male syphilis patients with HIV coinfection were mostly homosexual (80%).

Table 1. Demographic Data

Parameters	HIV positive n (%)	HIV negative n (%)	Total n (%)
Gender			
Female	6 (54.55)	0 (0)	6 (30)
Male	5 (45.45)	9 (100)	14 (70)
Total	11 (100)	9 (100)	20 (100)
Age			
17 – 25 years old	5 (45.45)	4 (44.44)	9 (45)
26 – 35 years old	4 (36.36)	5 (55.56)	9 (45)
36 – 45 years old	2 (18.18)	0 (0)	2 (10)
Total	11 (100)	9 (100)	20 (100)
Education			
Elementary School	2 (18.18)	0 (0)	2 (10)
Junior High School	0 (0)	0 (0)	0 (0)
Senior High School	6 (54.55)	5 (55.56)	11 (55)
University	1 (9.09)	2 (22.22)	3 (15)
Unknown	2 (18.18)	2 (22.22)	4 (20)
Total	11 (100)	9 (100)	20 (100)
Occupation			
Housewife	1 (9.09)	0 (0)	1 (5)
Civil Servant	0 (0)	1 (11.11)	1 (5)
Private Sector	5 (45.45)	3 (33.33)	8 (40)
Entrepreneur	1 (9.09)	0 (0)	1 (5)
Student	3 (27.27)	3 (33.33)	6 (30)
Unemployed	1 (9.09)	2 (22.22)	3 (15)
Total	11 (100)	9 (100)	20 (100)
Marital Status			
Unmarried	6 (54.55)	8 (88.89)	14 (70)
Married	5 (45.45)	1 (11.11)	6 (30)
Total	11 (100)	9 (100)	20 (100)

Table 2. Risk Factors

Parameters	HIV positive n (%)	HIV negative n (%)	Total n (%)
Sexual Practice			
Genito-genital	5 (45.45)	0 (0)	5 (25)
Ano-genital	4 (36.36)	6 (66.67)	10 (50)
Oro-genital	0 (0)	0 (0)	0 (0)
> 1 practice	2 (18.18)	3 (33.33)	5 (25)
Total	11 (100)	9 (100)	20 (100)
Condom Use			
Always	1 (9.09)	1 (11.11)	2 (10)
Occasionally	4 (36.36)	4 (44.44)	8 (40)
Never	6 (54.56)	4 (44.44)	10 (50)
Total	11 (100)	9 (100)	20 (100)
Number of Sexual Partners			
1	2 (18.18)	1 (11.11)	3 (15)
>1	9 (81.82)	8 (88.89)	17 (85)
Total	11 (100)	9 (100)	20 (100)
Syphilis Stage			
Primary	4 (36.36)	0 (0)	7 (35)
Secondary	2 (18.18)	7 (77.78)	6 (30)
Tertiary	0 (0)	0 (0)	0 (0)
Early Latent	2 (18.18)	1 (11.11)	3 (15)
Late Latent	3 (27.27)	1 (11.11)	4 (20)
Total	11 (100)	9 (100)	20 (100)
Sexual Orientation			
Female			
Heterosexual	6 (100)	0 (0)	6 (100)
Homosexual	0 (0)	0 (0)	0 (0)
Bisexual	0 (0)	0 (0)	0 (0)
Total	6 (100)	0 (0)	6 (100)
Male			
Heterosexual	1 (20)	0 (0)	1 (7.14)
Homosexual	4 (80)	6 (66.67)	10 (71.42)
Bisexual	0 (0)	3 (33.33)	3 (21.43)
Total	5 (100)	9 (100)	14 (100)
HIV status			
Total	11 (100)	9 (100)	20 (100)

DISCUSSION

Syphilis is an infectious venereal disease that is transmitted through sexual contact, vertically from mother to fetus, or through blood products. This disease can occur during an active clinical period (primary, secondary, or tertiary) or an asymptomatic period known as latency. Syphilis is known as "The Great Imitator" because its symptoms are similar to those of other diseases, which presents a challenge in its diagnosis and treatment[2,5,6].

Productive age is when a person can still work, produce something, and potentially have offspring. The impact of productive age is very big, the quality of education and health for this age group can increase their productivity and the welfare of a nation. The Indonesian Central Bureau of Statistics has set the productive age limit in Indonesia to be between 15 to 64 years old. Currently, the Indonesian population is dominated by the productive age group. The percentage of productive age groups in the total population in 2020 was 70.72%[7]. Syphilis in the productive age group affects health and a nation's social and economic development. In this study, a total of 20 syphilis cases were found. All samples were categorized as the productive age group, with the majority of patients being in late adolescence aged 17-25 years (45%), and early adults aged 26-35 years (45%). This was reported by the European Centre for Disease Prevention and Control (ECDC) in 2019, while the highest proportion of syphilis cases were in the age group of 25-34 years old[5]. The retrospective study conducted by Kusumawaty et al. showed that the age group with the most syphilis patients in Makassar in 2017-2018 was between 21-30 years old (51.8%)[8].

The high incidence of syphilis in the productive age group is because this age group is engaged in various activities, one of which is sexual activity with other people, including syphilis patients. In addition, the production of sex hormones in this age group is high, leading to an increase in sexual activity. Among the productive age groups, late adolescence and early adulthood are the groups with the highest sexual activity. Factors that influence risky sexual behavior in adolescence include a lack of parental supervision, biological maturity, a lack of knowledge, information media, and increased promiscuous behavior. The family has a significant influence on the formation of adolescent personalities. When there is a lack of parental supervision, adolescents will feel like they have more freedom in their behavior. Biological maturity and curiosity about sex make adolescents seek information about it, discuss it with peers, and explore books or the internet about sex by themselves. Parents and teachers are often reluctant to provide sex education because they are afraid teenagers will become sexually active after receiving the information. The spread of information media and sexual stimulation through mass media such as the internet, magazines, and television can make teenagers imitate what they see and hear. Promiscuity is common in adolescents, and peer influence makes them more likely to adopt peer norms than social norms[9–11].

Risk factors are factors associated with an increased incidence of a disease. Several risk factors for syphilis in the productive age group evaluated in this study included sexual practices, condom use, number of sexual partners, syphilis stage, sexual orientation, and HIV infection.

According to the results of the study, the majority of the samples had anogenital sexual intercourse (50%). Gray et al. stated that the risk of syphilis transmission is higher in anogenital contact (transmission probability of 1.4% per act) and lower in oro-genital contact (transmission probability of 1.0% per act) during the primary and secondary stages[12].

In the study, the majority of samples did not regularly use condoms during sexual intercourse (50%). In 2009, Koss et al. published a systematic review that evaluated the association between condom use and the risk of syphilis. It was reported that the incidence of syphilis tends to decrease with consistent condom use. Latex condoms protect against syphilis transmission if used consistently and correctly, but the condom needs to cover any ulcer or condyloma lata entirely[13].

The majority of samples had more than one sexual partner (85%). A study by Refti in 2018 found that patients with multiple sexual partners were 5.29 times more likely to contract STI compared to those with one sexual partner. Having multiple sexual partners increases the risk due to increased contact with a potential source of infection[14,15].

According to the stages of syphilis, the majority of patients (35%) were in the primary stage, with the secondary stage (30%) coming in second. According to the ECDC report in 2019, more than half of the reported cases were primary and secondary syphilis. This is because primary and secondary syphilis shows characteristic lesions. In primary syphilis, a primary lesion will be found in the genitalia, perianal area, or chancre, but in women, chancre may not be easily diagnosed until it develops into secondary syphilis. Lesions in secondary syphilis are copper-colored rashes that disappear quickly, followed by symmetrical maculopapular eruptions on the body and extremities, including palms and soles, which are easily noticeable by the patient[5].

Around 50% of the sample in the study had a homosexual orientation. The Centers for Disease Control and Prevention (CDC) surveillance study showed that the increase in STI cases was most pronounced in the MSM community. The findings of a meta-analysis study found that the estimated prevalence of syphilis in the MSM population in Asia continued to increase from 2002 to 2007 (14.01%)[6]. Behaviors that can increase the risk of syphilis in MSM include engaging in unprotected anal sex, both insertion and reception, oral sex without using protection, using saliva as a lubricant, and having multiple sexual partners. Several studies have reported that anal sex among MSM is very popular and is usually unprotected. Men who have sex with men and engage in anal sex are more susceptible to syphilis infection due to the high risk of abrasions or erosions[16].

From 20 samples of syphilis patients, it was found that 55% of the patients were confirmed to have HIV. HIV-positive patients have a greater risk of contracting syphilis compared to healthy individuals because of their weakened immune systems. Similarly, patients with syphilis will have a greater risk of contracting HIV because the ulcers in primary syphilis damage the integrity of the epithelium and mucosal barrier, making HIV transmission and acquisition easier. Inflammation and CD4 cells located in the ulcer area can also increase HIV transmission[17,18]. Coinfection of syphilis in people living with HIV/AIDS (PLHA) can alter the clinical manifestation of syphilis,

leading to rapid progression, making diagnosis more difficult, increasing the risk of neurological complications, and increasing the risk of treatment failure with standard regimens.[17]

The study also found that male syphilis patients infected with HIV mostly had a homosexual orientation (80%). This was in line with a study by Tsachouridou in 2016, which showed a 5.2% incidence of HIV-syphilis coinfection, with the highest risk factor being homosexuality at 94.82%. This may be because HIV-positive MSM are more sexually active and less self-protective than MSM who are not infected. Several studies also showed that oral sex by HIV-positive MSM was considered a safer sexual activity, whereas oral sex was the most effective route of syphilis transmission. Receptive anal sex has also been shown to be a risk factor for coinfection, where inadequate lubrication in the rectal area can cause mucosal trauma, making it more prone to syphilis transmission[19,20].

The limitation of this study was the restricted sample size since data collection was conducted for only one year. It is hoped that future studies can involve more samples with a longer sampling period to improve the accuracy of the data. In addition, this descriptive research only provides an overview of variables without analyzing the relationship between variables. Future studies can integrate statistical analysis to understand relationships and causal factors between variables.

CONCLUSION

Risk factors for syphilis at a productive age, according to the results of this study, include anogenital sexual intercourse, inconsistent use of condoms, multiple sexual partners, the primary syphilis stage, and homosexuality. Of the 20 cases in this study, 55% were confirmed to have an HIV infection. In male patients with HIV-syphilis coinfection, 80% of cases were homosexual. Due to the high incidence of HIV-syphilis coinfection, it is necessary to develop a program focusing on the detection and treatment of syphilis in PLHAs (people living with HIV/AIDS), particularly in high-risk populations such as men who have sex with men (MSM). Strategies for prevention and control of syphilis should be intensified since the youth are the backbone of the economy in the country and should be encouraged to lead a moral social life.

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CONFLICT OF INTEREST

The authors declare that they have no potential conflict of interest or personal relationships that could have appeared to influence the work reported in this paper.

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AUTHOR CONTRIBUTION

All authors have contributed to all processes in this research, including preparation, data gathering, analysis,

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