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# Characteristics of syphilis in the Dermato-Venereology Department of Bali Mandara General Hospital



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## ABSTRACT

**Introduction:** *Treponema pallidum* is the sexually transmitted pathogen that causes syphilis. Congenital or acquired syphilis are the two categories. In 2020, the World Health Organization (WHO) anticipates 7 million additional cases of syphilis. 76,923 new patients were reported in 2020 by the Ministry of Health of the Republic of Indonesia. There is still inadequate information about Bali's incidence or prevalence of syphilis. This study aims to describe the characteristics of syphilis patients seeking treatment at Bali Mandara Hospital's Dermato-Venereology Department between 1<sup>st</sup> January 2020 to 31<sup>st</sup> December 2022.

**Methods:** In this descriptive cross-sectional retrospective study from 1<sup>st</sup> January 2020 to 31<sup>st</sup> December 2022, we used 56 samples from secondary data collected from the patient register book and medical records of the Dermato-Venereology Outpatient Unit at Bali Mandara General Hospital. Data were analyzed descriptively using SPSS version 26.

**Results:** According to the study, there were 56 syphilis patients, including 32 men (57.1%) and 24 women (42.9%). The most common age group was 25 to 44 years old, with 36 patients (64.3%), while the most common clinical stage of syphilis was early latent syphilis, with 20 patients (35.7%). Venereal Disease Research Laboratory (VDRL) titer of 1:2 was the most frequent finding, with 16 patients (28.6%).

**Conclusion:** It may be concluded that syphilis cases at Bali Mandara General Hospital have a different description that varies according to each variable. Future studies on syphilis cases are anticipated to build on the findings of this study.

**Keywords:** Characteristic, sexually transmitted infection, stage of syphilis, syphilis.

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## INTRODUCTION

*Treponema pallidum* subspecies *pallidum* is the organism that causes the sexually transmitted disease syphilis.<sup>1</sup> Congenital or acquired syphilis are the two categories. Early and late syphilis are two types of acquired syphilis primarily spread through sexual contact. Primary, secondary, and early latent syphilis are all types of early syphilis.<sup>2</sup> A rise in the disease was reported in the United States toward the end of the 20th century, even though the incidence of syphilis significantly decreased worldwide and reached its lowest levels five decades after the invention of penicillin in the mid-1940s.<sup>3</sup> Each year, there are an estimated 6 million new cases of syphilis globally in persons aged 15 to 49 years.<sup>4</sup> Bisexual males, along with other men who have sex with men, accounted for the majority of syphilis cases in 2016 in the United States.

Between 2015 and 2019, the prevalence of congenital syphilis increased by nearly four times.<sup>5</sup> 2020 had 76,923 new cases, according to the Republic of Indonesia's Ministry of Health.<sup>6</sup>

Early recognition, rapid treatment with a suitable antibiotic regimen, and therapy of a person with infectious syphilis's sex partners are all critical components in syphilis management. The goal of treatment is to either stop the progression of complications in patients with tertiary disease signs or to prevent difficulties in asymptomatic patients. Compared to early disease, treating late syphilis calls for longer durations of antibiotic therapy.<sup>7</sup> Untreated syphilis, nevertheless, can have possibly fatal health effects, such as problems with the nervous system, loss of hearing, vision loss, and a higher risk of acquiring other sexually transmitted infections (STIs), like the human

immunodeficiency virus (HIV).<sup>8</sup> There is still relatively little information on the number of cases or prevalence of syphilis in Bali. Therefore, it is crucial to establish the incidence, prevalence, and features as a reference for future research on syphilis patients. Thus, this study aimed to describe the characteristics of syphilis in the Dermato-Venereology Department of Bali Mandara Hospital, Denpasar, Bali, Indonesia, between 1<sup>st</sup> January 2020 and 31<sup>st</sup> December 2022.

## METHODS

Secondary data sources for this descriptive cross-sectional study were the Dermato-Venereology Outpatient Unit's patient registration book and Bali Mandara General Hospital medical records. This study was completed in June 2023. The sample for this study was new cases of syphilis at the Dermato-Venereology

Outpatient Unit at Bali Mandara General Hospital, Denpasar, Indonesia, between 1<sup>st</sup> January 2020 and 31<sup>st</sup> December 2022, which fulfilled the inclusion criteria for new cases of syphilis and the exclusion criteria for revisiting syphilis patients. The variables in this study were sex, age, syphilis stage, and VDRL titer at diagnosis. SPSS 26 for Windows was used to analyze the data. We displayed data groups in a table, along with calculations and percentages.

**RESULTS**

Within three years, between 1<sup>st</sup> January 2020 and 31<sup>st</sup> December 2022, 3,976 people visited the Dermato-Venereology Outpatient Unit at Bali Mandara General Hospital. The number of cases of syphilis was 56 (1.4%). Based on sex, syphilis was more frequent in the males (32 patients) compared to the females (24 patients) (57.1% vs 42.9%) (Table 1).

The most common finding in VDRL titer at diagnosis was 1:2 with 16 patients (28.6%), followed by 1:32 with 8 patients (14.3%), 1:256 with 7 patients (12.5%), 1:4, 1:8, 1:64 with 6 patients (10.7%), 1:16 and 1:128 with 3 patients (5.4%), and 1:512 with 1 patient (1.8%) (Table 1).

Syphilis frequency was highest among those aged 25 - 44, with 36 patients (64.3%). Syphilis patients under the age of 15 years were 0%. Age 15 - 24 years was 19 patients (33.9%), with 10 patients (52.6%) in males and 9 patients (47.4%) in females. Age 25 - 44 years was 36 patients (64.3%), with 21 patients (58.3%) in males and 15 patients (41.7%) in females. One patient (1.8%) of syphilis patients was over and equal to the age of 45, with 1 patient (100%) male and 0% female (Table 2).

Based on the clinical stages of syphilis, early latent syphilis cases were the highest, with 20 patients (35.7%), with 8 patients (40%) in males and 12 patients (60%) in females. The primary syphilis was 2 patients (3.6%), with 2 patients (100%) in males and 0% in females. The stage of secondary syphilis was 15 patients (26.8%), with 12 patients (80%) in males and 3 patients (20%) in females. The stage of late latent syphilis was 19 patients (33.9%), with 10 patients (52.6%) in males and 9 patients (47.4%) in females, and the number of cases of tertiary syphilis stage was 0% (Table 2).

**DISCUSSION**

Based on sex, the incidence of syphilis was higher among men (32 patients) in comparison to women (24 patients) (57.1% vs 42.9%). This outcome is comparable to the result of a study completed by Pinchera et al. in Southern Italy, in which 97 patients were selected for the study. As a result, there are 59 (60.8%) men and 38 (39.2%) women.<sup>3</sup> Similar outcomes from Adisthanaya's study at Bali's Sanglah Hospital, where male patients with syphilis made up a more significant percentage than female patients, are shown here.<sup>9</sup> This is conceivable due to the behavior of sexual intercourse between men, which is usually through anal. The biological risk of

**Table 1. Characteristics of syphilis**

Characteristic	Total = 56	Percentage (%)
Sex		
Male	32	57.1%
Female	24	42.9%
Age (years)		
< 15	0	0%
15 - 24	19	33.9%
25 - 44	36	64.3%
≥45	1	1.8%
Stages of syphilis		
Primary syphilis	2	3.6%
Secondary syphilis	15	26.8%
Early latent syphilis	20	35.7%
Late latent syphilis	19	33.9%
VDRL titer at diagnosis		
1:2	16	28.6%
1:4	6	10.7%
1:8	6	10.7%
1:16	3	5.4%
1:32	8	14.3%
1:64	6	10.7%
1:128	3	5.4%
1:256	7	12.5%
1:512	1	1.8%

**Table 2. Characteristics of age, gender, and stage of syphilis patients**

Characteristic	Age				Total n= 56	
	< 15 years n= 0	15-24 years n= 19	25-44 years n= 36	≥45 years n= 1		
Sex						
Male	0 (0%)	10 (52.6%)	21 (58.3%)	1 (100%)	32 (57.1%)	
Female	0 (0%)	9 (47.4%)	15 (41.7%)	0 (0%)	24 (42.9%)	
Characteristic	Clinical stage of syphilis					Total n= 56
	Primary n= 2	Secondary n= 15	Early latent n= 20	Late latent n= 19	Tertiary n= 0	
Sex						
Male	2 (100%)	12 (80%)	8 (40%)	10 (52,6%)	0 (0%)	32 (57.1%)
Female	0 (0%)	3 (20%)	12 (60%)	9 (47,4%)	0 (0%)	24 (42.9%)

transmitting syphilis is substantially higher during anal than vaginal intercourse. The rectum is more prone to epithelial abrasions, less elastic, and self-lubricating than the vagina. Furthermore, the rectum has a high degree of vascularization. Such features benefit a systemic pathogen like *Treponema pallidum* because they allow for microbial penetration due to the lack of epithelial stability.<sup>8</sup>

Patients with syphilis who were under 15 years old made up 0% of the study population. Between the ages of 15 and 24, 33.9% of syphilis patients and 64.3% of those between the ages of 25 and 44 had the disease. This is quite similar to a study conducted by Pinchera, where 54.4% of the patients were in the 18 to 32-year-old age group, the largest group.<sup>3</sup> In line with research by Mutagoma et al. on the general population of Rwanda, syphilis was more common in people aged 25 to 49 compared to people aged 15 to 24.<sup>10</sup> This could happen because persons between the ages of 25 and 44 are sexually active. They may be unaware they are infected with syphilis because some stages, like early latent syphilis and late latent syphilis, show no symptoms. In this study, just 1.8% of patients were above 45.

Due to its simplicity, sensitivity, and affordability, the VDRL test, a nontreponemal test, is utilized for syphilis screening. The VDRL often starts acting up within a few weeks of infection, peaks within the first year, and then gradually diminishes, leaving late syphilis patients with low titers.<sup>11</sup> As a fourfold change in titer is deemed substantial, test findings can be measured and used to track the progression of the disease.<sup>5</sup> The most common finding in VDRL titer at diagnosis was 1:2, with 16 patients (28.6%). This may result from the peak antibody titers occurring in untreated individuals 1-2 years after infection and remaining positive with low titers in latent stages.<sup>12</sup> Related to the result from this study, early latent syphilis was the highest percentage in this study.

Patients with early latent syphilis comprised the highest percentage in this study (35.7%), while those with tertiary syphilis comprised the lowest rate (0%). 3.6% of cases of syphilis are in the primary

syphilis, 26.8% of cases are in the secondary syphilis, and 33.9% of cases are in the late latent syphilis. This is similar to data for 2019 from The European Surveillance System (TESSy), where early latent syphilis was the highest (37%) among all stages.<sup>10</sup> But, it differs from Adisthanaya's study at Sanglah General Hospital, where the secondary syphilis rate was highest, at 54.3%. The primary syphilis rate was 11.4%, early latent syphilis was 14.3%, late latent syphilis was 20%, and tertiary syphilis was 0%.<sup>9</sup> This may occur because most patients visit the hospital for syphilis screening, whether during pregnancy, when their partners are found to have syphilis, or when they are getting ready to apply for a job. They had no symptoms and were diagnosed with early or late latent syphilis.

## CONCLUSION

The characteristics of syphilis from this study found mainly were males, group of age 25 to 44 years, early latent syphilis, and VDRL titer at diagnosis was 1:2. Prevention and early detection, as well as appropriate therapy are needed to reduce the transmission of syphilis because it is more dominant in productive age. Further research is required to be able to determine the characteristics that are more common in syphilis, especially in Bali.

## ETHICS IN PUBLICATION

The ethical clearance number for this study is 035/EA/KEPK.RSBM.DISKES/2023 was granted by the Bali Mandara General Hospital Ethics Commission.

## AUTHOR CONTRIBUTIONS

Each author has contributed to the data collection, data analysis, assessment of the references, process of writing, and publication.

## CONFLICT OF INTEREST

None.

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