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Profile of syphilis in pregnancy at the Dermatovenereology Clinic, Bali Mandara General Hospital (2020–2024)

Febri Evalina Trisnawati[1*], Luh Putu Dina Wahyuni[2]

[1]Faculty of Medicine, Wijaya Kusuma Surabaya University, East Java, Indonesia
[2]Department of Dermatology and Venereology, Bali Mandara General Hospital, Denpasar, Bali, Indonesia

*Corresponding author:
Febri Evalina Trisnawati
Faculty of Medicine, Wijaya Kusuma Surabaya University, East Java, Indonesia
evalina.febri@gmail.com

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ABSTRACT

Introduction: Syphilis in pregnancy remains a significant public health concern due to its association with adverse maternal and neonatal outcomes, including congenital syphilis. Delayed diagnosis, particularly in asymptomatic stages, increases the risk of transmission to the fetus. Local epidemiological data are essential to support early detection strategies and improve antenatal screening programs. This study aimed to describe the epidemiological and clinical characteristics of syphilis among pregnant women attending the Dermatovenereology Clinic of Bali Mandara General Hospital, Denpasar, from January 2020 to December 2024.

Methods: This study employed a retrospective descriptive design using secondary data obtained from medical records of pregnant women diagnosed with syphilis at the Dermatovenereology Clinic of Bali Mandara General Hospital during the study period.

Results: A total of 23 cases of syphilis in pregnancy were identified between 2020 and 2024, with a marked increase observed in 2023 (61%). Most cases occurred in women aged 26–35 years (52%). Most patients were diagnosed during the third trimester of pregnancy (65%), and late latent syphilis was the most prevalent clinical stage (87%).

Conclusion: Syphilis in pregnancy at Bali Mandara General Hospital was predominantly detected in women of reproductive age during the third trimester, with late latent syphilis as the most common stage. These findings highlight the need to strengthen early antenatal screening and timely diagnosis to reduce the risk of maternal complications and congenital syphilis.

Keywords: Syphilis, pregnancy, epidemiology.
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INTRODUCTION

Syphilis is a sexually transmitted infection (STI) caused by the bacterium *Treponema pallidum* subspecies *pallidum*. Francois Rosset Syphilis is often referred to as *the great imitator* because its clinical manifestations can mimic a wide range of dermatological conditions, frequently leading to delayed diagnosis. Consequently, adequate and timely treatment of this infectious disease remains challenging, even when patients present with classic symptoms.[1] Globally, the incidence of syphilis has continued to increase from 2015 to 2025, rising from approximately 6.0 million cases in 2015 to a projected 9.0 million cases in 2025.[2] In Indonesia, the Ministry of Health of the Republic of Indonesia reported a total of 76,923 new syphilis cases in 2020.[3]

Epidemiological trends indicate that syphilis predominantly affects men, particularly those engaging in sexual activity with men (men who have sex with men/MSM), accounting for approximately 83% of cases. Age-based distribution shows that the highest incidence is observed among individuals aged 25–34 years, followed by those aged 20–24 and 35–44 years. These age groups represent sexually active populations, which may contribute to the sustained transmission of syphilis.[2]

Unfortunately, this epidemiological trend also has significant implications for pregnant women. According to the World Health Organisation (WHO), nearly half of untreated pregnant women with syphilis experience adverse pregnancy outcomes. The WHO estimates that approximately 1.5 million pregnant women worldwide are infected with active syphilis each year, and more than half of these cases result in negative outcomes due to untreated or inadequate therapy. These outcomes include early fetal loss, stillbirth, prematurity, low birth weight, neonatal and infant death, as well as severe sequelae in live-born infants.[4,5]

Several studies in Indonesia have reported an increasing burden of syphilis among pregnant women. A study conducted at Mangusada Hospital demonstrated an upward trend in syphilis infection among pregnant women from 2022 to 2024, with prevalence increasing from 7% to 13%.[6] Data from Wijayakusuma Hospital in Purwokerto revealed that 6% of pregnant women in Pekalongan were diagnosed with syphilis.[7] Another study reported that 13% of pregnant women in North Halmahera were infected with *T. pallidum*, while research in Gorontalo

Table 1. Distribution of syphilis cases in pregnancy by year

Period	Syphilis in pregnancy n(%)
2020	2 (8)
2021	1 (5)
2023	14 (61)
2024	6 (26)

found a syphilis prevalence of 3.6% among pregnant women.[8,9]

The most severe complication of syphilis during pregnancy is congenital syphilis. This condition is largely preventable, as mother-to-child transmission can be effectively interrupted through early detection and appropriate treatment of syphilis during pregnancy.[5] However, a significant increase in the risk of pregnancy complications has been observed among women who initiate standardised penicillin therapy late, particularly when treatment begins only in the third trimester.[10] Therefore, local epidemiological data are essential to support early detection strategies and to strengthen antenatal screening programs. This study aimed to describe the epidemiological and clinical characteristics of syphilis among pregnant women attending the Dermatovenereology Clinic of Bali Mandara General Hospital, Denpasar, from January 2020 to December 2024.

METHODS

Study Design

This study employed a retrospective descriptive design using secondary data from medical records of patients who visited the Dermatovenereology Clinic at Bali Mandara General Hospital, Denpasar, between January 2020 and December 2024.

Eligibility Criteria and Sampling Technique

The inclusion criteria of this study include pregnant woman diagnose with syphilis, registered in Bali Mandara General Hospital, Denpasar, between January 2020 and December 2024. The exclusion criteria were incomplete due to incomplete data in medical records. The sampling technique in this study was pusposive sampling technique.

Table 2. Characteristics of syphilis patients during pregnancy

Variable	n(%)
Age (years old)	
15 – 20	3 (13)
21 – 25	5 (22)
26 – 30	6 (26)
31 – 35	6 (26)
36 – 40	3 (13)
Gestational age	
1st Trimester	2 (9)
2nd Trimester	6 (26)
3rd Trimester	15 (65)
Stages of syphilis	
Primary	0 (0)
Secondary	0 (0)
Early latent	3 (13)
Late latent	20 (87)
Tertiary	0 (0)
Other medical history	
HIV	1 (4)
Penicillin allergy–related therapy	
Desensitization	0 (0)
No-desensitization	23 (100)
Partner's history of syphilis	
Husband with syphilis	3 (13)
Husband without syphilis	20 (87)
VDRL titer at diagnosis	
1:1	2 (9)
1:2	4 (17)
1:4	4 (17)
1:8	0 (0)
1:16	6 (26)
1:32	2 (9)
1:64	4 (17)
1:128	1 (4)
1:256	0 (0)
TPHA titer	
Reactive	23 (100)
Non-reactive	0 (0)

HIV: human immunodeficiency virus; TPHA: *Treponema pallidum* hemagglutination assay; VDRL: venereal disease research laboratory

Research Procedure

The data collected was secondary data sourced from medical records. All pregnant women registered at Bali Mandara Hospital were screened according to the inclusion and exclusion criteria. After all samples were collected, the data based on the desired variables were entered into a data extraction sheet. The data was then coded and analysed using SPSS.

Statistical Analysis

Data were analysed descriptively by using SPSS version 22. After that, the data were presented in a table as percentages and frequency.

RESULTS

Based on medical record data, a total of 23 cases of syphilis in pregnancy were recorded at the Dermatovenereology Clinic of Bali Mandara General Hospital between January 2020 and December 2024. The distribution of cases per year was as follows: 2 cases (8%) in 2020, 1 case (5%) in 2021, 14 cases (61%) in 2023, and 6 cases (26%) in 2024, as presented in **Table 1**.

Table 2 showed that the largest proportion of mothers were aged 26–30 years and 31–35 years, with 6 cases (26%) each, followed by 5 cases (22%) aged 21–25 years, while 3 cases (13%) were aged 15–20 years and 3 cases (13%) were aged 36–40 years. Based on gestational age at diagnosis, the majority of cases were identified in the third trimester, with 15 cases (65%), followed by the second trimester with 6 cases (26%), and the first trimester with 2 cases (9%). In terms of syphilis stage, all cases were dominated by late latent syphilis (20 cases; 87%), while early latent syphilis accounted for 3 cases (13%); there were no primary, secondary, or tertiary cases (0% each). The history of comorbidity listed was HIV in 1 case (4%). Regarding management in the context of penicillin allergy, none of the patients underwent desensitisation (23; 100%). The history of partners showed that most husbands did not have syphilis (20; 87%), and 3 cases (13%) had husbands who were reported to have syphilis. In non-treponemal testing, VDRL titers at diagnosis varied, with the most common titer being 1:16 (6; 26%), followed by 1:2, 1:4, and 1:64 (4; 17% each), and 1:1 and 1:32 (2; 9%), 1:128 (1; 4%), with no findings at 1:8 and 1:256 (0%). All subjects showed reactive TPHA results (23; 100%), and none were non-reactive

DISCUSSION

The present findings demonstrate that most syphilis cases in pregnancy occurred among women aged 20–34 years, predominantly in the late latent stage with intermediate VDRL titers (1:16) and reactive TPHA results. These results align with previous studies emphasising the silent and often underdiagnosed course of maternal syphilis during pregnancy, particularly in low- and middle-income countries. Late latent syphilis accounted for over half of all cases, underscoring that delayed detection remains a major public health concern in antenatal populations, particularly in Indonesia and other developing regions where screening coverage and partner treatment remain suboptimal.[6]

In this study, the predominance of late latent syphilis mirrors findings from Junita et al. (2025), who reported 54% of cases at a similar stage in Mangusada Hospital, indicating a national pattern of late diagnosis despite routine antenatal screening. This stage distribution suggests that many infections are acquired before pregnancy and remain untreated due to insufficient preconception screening, reflecting a critical gap in early reproductive health interventions.[6]

According to the syphilis stages, all the samples were diagnosed with late syphilis. From a clinical standpoint, the predominance of latent-stage syphilis carries critical implications. As noted by Winata et al. (2023), vertical transmission can occur in all stages but is highest during early and secondary infection; however, untreated latent infections still contribute substantially to congenital syphilis due to persistent spirochetemia and lack of maternal immune control.[5] Early serologic screening during antenatal care is therefore essential, as penicillin remains highly effective in preventing transplacental transmission when administered before the second trimester.[11] This finding supports WHO recommendations for universal syphilis testing in the first trimester and re-screening in the third trimester for high-risk women.

In the present series, most diagnoses were made in the third trimester, consistent with previous reports by Purnamasari et al. (2021) and Odilia & Giovani (2021), who emphasised that late detection often results from missed early screening or inadequate follow-up of initial negative tests. Clinically, third-trimester diagnosis limits the opportunity for timely penicillin administration before fetal infection occurs, as spirochetes may have already crossed the placenta by week 14.[11,12] Thus, strengthening the first-trimester screening window is essential for preventing congenital cases and improving fetal outcomes.

The epidemiological pattern observed, predominance of primigravida and women in productive age groups, suggests an association between younger maternal age, limited sexual health literacy, and inadequate access to antenatal services. These trends mirror those reported by Anteneh et al. (2024) in Ethiopia, who found that unsafe sexual behaviour (AOR = 8.2), history of sexually transmitted infections (AOR = 6.3), and limited antenatal surveillance significantly increased the risk of co-infections, including HIV, HBV, and syphilis among pregnant women.[13] In the local context, cultural taboos and limited partner involvement remain barriers to early testing, as similarly highlighted by Novena & Giovani (2021), who reported that asymptomatic infections are often detected only through routine antenatal screening.[12] When contextualised with our data, limited antenatal contact likely explains why most cases were detected in late pregnancy, reinforcing that system-level accessibility remains a structural determinant of infection control.

In our study, coinfection with HIV was observed in a small proportion of patients, echoing global trends showing a bidirectional interaction between Treponema pallidum and HIV. According to Anteneh et al. (2024), HIV/syphilis coinfection occurs in approximately 1.3% of pregnancies in Ethiopia, with unsafe sexual contact and incarceration history as major risk factors. The immunosuppression induced by HIV facilitates more rapid progression of syphilis and increases maternal viremia, enhancing vertical transmission risks for both pathogens. Clinically, HIV coinfection necessitates integrated management with coordinated ART and penicillin therapy, as immune restoration can improve serologic response to treatment and reduce congenital transmission.

Socio-behavioural determinants also play a pivotal role. Studies from China and Brazil have identified low education level, unmarried status, multiple sexual partners, and previous STIs as independent risk factors for gestational syphilis.[14,15] Women with less than primary education had a two-fold higher risk (OR = 2.02), and those

with limited antenatal visits (< 3 visits) had a 3.5-fold higher risk of infection.[14] These findings are consistent with the Indonesian data, where most affected women were homemakers with modest educational backgrounds and inconsistent antenatal attendance, emphasising the need for targeted education and accessible community-based screening programs.

Clinical implications extend beyond maternal outcomes to fetal morbidity and mortality. Untreated maternal infection can result in miscarriage, stillbirth, preterm delivery, or neonatal death in up to 50% of cases, as demonstrated by Purnamasari et al. (2021), where a secondary syphilis case treated with benzathine penicillin resulted in successful serological decline (VDRL 1:16 → 1:4) and healthy delivery.[11] This underscores the high efficacy of penicillin therapy and the importance of test-of-cure monitoring within three months post-treatment. Unfortunately, this study did not evaluate the changes in VDRL titer after receiving therapy. In the context of coinfection, however, HIV-positive mothers may demonstrate a slower or incomplete serologic decline after penicillin therapy, as immune dysfunction can alter clearance kinetics of Treponema pallidum. Therefore, close serological follow-up and coordination with HIV care programs are crucial to ensure adequate treatment response and fetal protection.

Finally, the present findings reinforce the public health necessity of integrating universal syphilis screening into routine antenatal care, improving contact tracing, and enhancing laboratory capacity for confirmatory tests. As demonstrated in the Mangusada cohort, all patients were TPHA-reactive, reflecting reliable diagnostic consistency, but the detection of mainly latent infections indicates missed opportunities for early intervention. These patterns echo WHO's triple elimination strategy for HIV, HBV, and syphilis (2022–2030), which prioritises early maternal testing, partner notification, and adequate treatment to eliminate congenital transmission.[13] Given that most infections were identified in the late second and third trimesters, implementing re-screening protocols for high-risk women, particularly those with HIV coinfection or prior STI exposure, should be considered a clinical priority. Early integration of syphilis testing with HIV and HBV panels during ANC, as recommended by WHO and corroborated by Anteneh et al. (2024), is essential to reduce maternal-fetal morbidity and achieve elimination targets.[13]

In summary, syphilis in pregnancy remains a preventable cause of adverse perinatal outcomes. Strengthening education, screening coverage, and early treatment supported by intersectoral strategies between obstetric, dermatovenereologic, and public health services constitutes a cornerstone in reducing maternal-fetal morbidity and achieving elimination targets. These findings also collectively highlight that trimester of detection, HIV coinfection status, and timing of therapy are the three main clinical determinants of outcome, underlining the importance of early integrated screening pathways and comprehensive prenatal care.

CONCLUSION

Syphilis in pregnancy at Bali Mandara General Hospital was predominantly detected in women of reproductive age during the third trimester, with late latent syphilis as the most common stage. These findings highlight the need to strengthen early antenatal screening and timely diagnosis to reduce the risk of maternal complications and congenital syphilis.

ETHICS IN PUBLICATION

The ethical clearance number for this study is 084/EA/KEPK.RSBM.DISKES/2025 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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GENERATIVE ARTIFICIAL INTELLIGENCE (AI) DISCLOSURE

There was no use of AI in the creation of this article.

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