

Research Article

Distribution and Clinical Characteristics of Endometriosis in a Tertiary Referral Hospital in Indonesia: A Cross-Sectional Study

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Abstract

Objective: The objective of this study is to describe the prevalence and distribution of demographic and reproductive characteristics among patients diagnosed with endometriosis at a tertiary referral hospital in Palembang, Indonesia.

Methods: This is a descriptive cross-sectional study that was conducted on secondary medical record data of women with histopathologically-confirmed endometriosis between the period of July 2022 to December 2024 to achieve the objective mentioned previously by applying total sampling. Variables analyzed included age, age at menarche, menstrual cycle pattern, disease stage based on the revised American Society for Reproductive Medicine classification, marital status, parity, and body mass index. Data were then summarized using descriptive statistics.

Results: A total of 507 patients were included. The highest number of cases occurred in 2024 (57.2%). Most patients were aged between 15 – 49 years (98.4%), had menarche at 8 – 15 years (98.8%), and regular menstrual cycles (98.0%). Stage IV was predominant (61.1%). Nearly half were nulliparous (49.5%), were married (94.1%), and had normal body mass index (38.5%).

Conclusion: Most patients with endometriosis in this study were of reproductive age and were predominantly diagnosed at an advanced stage with nulliparity frequently observed.

Keywords: Endometriosis; prevalence; cross-sectional study; reproductive age; Indonesia

Distribusi dan Karakteristik Klinis Endometriosis di Rumah Sakit Rujukan Tersier di Indonesia: Studi Potong Lintang

Abstrak

Tujuan: Penelitian ini bertujuan untuk mendeskripsikan prevalensi dan distribusi karakteristik demografi serta reproduksi pasien endometriosis di rumah sakit rujukan tersier di Palembang, Indonesia.

Metode: Metode yang digunakan dalam penelitian ini adalah metode deskriptif dengan desain potong lintang menggunakan data sekunder rekam medis pasien endometriosis yang terkonfirmasi secara histopatologi periode Juli 2022 hingga Desember 2024. Variabel yang dianalisis meliputi usia, usia *menarche*, pola siklus menstruasi, derajat berdasarkan klasifikasi Revised American Society for Reproductive Medicine, status pernikahan, paritas, dan indeks massa tubuh. Data dianalisis menggunakan statistik deskriptif.

Hasil: Hasil penelitian menunjukkan bahwa sebanyak 507 pasien memenuhi kriteria. Kasus terbanyak ditemukan pada tahun 2024 (57,2%). Mayoritas pasien berusia 15 – 49 tahun (98,4%), usia *menarche* 8 – 15 tahun (98,8%), dan siklus menstruasi teratur (98,0%). Stadium IV mendominasi (61,1%). Sebanyak 49,5% pasien merupakan nulipara, 94,1% telah menikah, dan 38,5% memiliki indeks massa tubuh normal.

Kesimpulan: Sebagian besar pasien endometriosis dalam penelitian ini merupakan wanita usia reproduktif dan terdiagnosis pada stadium lanjut dengan nuliparitas sebagai karakteristik yang sering ditemukan.

Kata kunci: Endometriosis; Indonesia; prevalensi, studi potong lintang, usia reproduktif

Introduction

Endometriosis is a chronic gynecological disorder characterized by the presence of endometrial-like tissue outside the uterine cavity.^{1,2} The condition primarily affects women of reproductive age and is associated with pelvic pain, dysmenorrhea, dyspareunia, and infertility.^{1,3} Globally, endometriosis is estimated to affect approximately 10% of women of reproductive age, equivalent to nearly 190 million individuals worldwide.^{4,5} Despite its recognized burden, reported prevalence varies substantially across regions. A meta-analysis reported prevalence rates of 17% in Europe, 19% in the Americas, 26% in Africa, and 36% in Asia.⁵ These variations are particularly relevant to Indonesia, where differences in healthcare accessibility and referral systems may influence the detection and clinical presentation of endometriosis.

In Indonesia, epidemiological evidence remains limited and is largely derived from hospital-based studies, particularly in tertiary referral centers. Previous studies from tertiary hospitals have reported prevalence ranging from 10% to 37.2%, depending on study population and clinical setting, particularly among women undergoing surgery or infertility evaluation.^{3,6,7} A prior study conducted at Mohammad Hoesin Hospital during the years of 2016–2018 reported a prevalence of 10.3%, with most patients being of reproductive age.⁷ These findings suggest variability across clinical settings and highlight the need for updated institutional data.

Tertiary referral hospitals frequently manage patients with more complex presentations and advanced-stage disease, making them important settings for understanding the clinical and stage distribution of endometriosis. However, recent data describing the distribution and characteristics of endometriosis cases in

Indonesian referral centers remain limited. Despite its high prevalence, endometriosis remains underdiagnosed worldwide, with an average diagnostic delay to range from several years after the onset of symptoms.³ Chronic pelvic pain and dysmenorrhea are frequently normalized, particularly among adolescents and young women, leading to delayed referral and definitive diagnosis.^{3,4} Prolonged untreated disease may result in disease progression, including progressive lesion development, fibrosis, and adhesion formation, ultimately contributing to advanced-stage presentation at the time of surgical confirmation.^{1,2}

In many low- and middle-income countries, including Indonesia, limited access to specialized care, delayed referral pathways, and restricted availability of minimally-invasive diagnostic procedures such as laparoscopy may further contribute to delayed diagnosis. In Indonesia, where most confirmed cases are identified in referral centers, understanding the clinical and demographic characteristics of patients is essential to reflect the current disease profile. Therefore, this study aims to describe the distribution and clinical characteristics of endometriosis cases diagnosed at Mohammad Hoesin Hospital, Palembang, between the period of July 2022 to December 2024.

Method

This descriptive cross-sectional study was conducted at Mohammad Hoesin Hospital, Palembang, Indonesia, a tertiary referral center in South Sumatra. Secondary data were obtained retrospectively from medical records of female patients with histopathologically-confirmed endometriosis between the period of July 2022 to December 2024. All eligible patients during the study period were included using a total sampling method. This approach allowed comprehensive inclusion of cases, however, as the study population was limited

to a tertiary referral center, the findings may reflect a higher proportion of more complex or advanced cases. Medical records with incomplete data for the variables of interest were excluded from analysis.

The variables analyzed included age, age at menarche, menstrual cycle pattern, stage of endometriosis based on the revised American Society for Reproductive Medicine classification, marital status, parity, and body mass index. Diagnosis of endometriosis was confirmed through documented histopathological examination. Data were collected anonymously to ensure patient confidentiality. Data quality was ensured by reviewing medical record for completeness and consistency. Records with incomplete key variables were excluded, and data entry was cross-checked to minimize potential errors.

Statistical analysis was conducted using descriptive epidemiological methods. Categorical variables were presented as frequencies and percentages to summarize the distribution of patient characteristics. The number of confirmed endometriosis cases during the study period was described according to year of diagnosis. All analyses were performed using the Statistical Package for the Social Sciences (SPSS) software. This study received ethical approval from the Ethics Committee of the Faculty of Medicine, Universitas Sriwijaya (Protocol No. 161-2025).

Result

A total of 507 patients with histopathologically-confirmed endometriosis were identified between the period of July 2022 to December 2024. The number of cases increased over the study period, with the highest proportion recorded in 2024 (57.2%), followed by 2023 (26.6%) and the latter half of 2022 (16.2%) (Table 1). This increasing trend may reflect improved case detection, enhanced referral

patterns, or greater clinical awareness over time in a tertiary care setting.

Table 1 Distribution of Confirmed Endometriosis Cases by Year of Diagnosis

Year	Number (n)	Percentage (%)
July 1, 2022–December 31, 2022	82	16.2
January 1, 2023–December 31, 2023	135	26.6
January 1, 2024–December 31, 2024	290	57.2
Total	507	100

Most patients were aged (15–49 years), accounting for 98.4% of cases. The majority of female patients reported age at menarche between 8 and 15 years (98.8%) and those patients had regular menstrual cycles (98.0%) (Table 2). These findings indicate that endometriosis in this cohort predominantly affects women within the typical reproductive age range and with generally normal menstrual characteristics.

Advanced-stage disease predominated, with stage IV accounting for 61.1% of cases and stage III 29.8%, while early-stage disease (stage I–II) represented a smaller proportion. This distribution suggests that a substantial proportion of patients were diagnosed at an advanced stage, which may be associated with delayed diagnosis or referral patterns in tertiary care settings.

Nearly half of the patients were nulliparous (49.5%), and most were married (94.1%). The high proportion of nulliparous patients may reflect the known association between endometriosis and infertility, although no causal inference can be made from this descriptive analysis.

Regarding body mass index, 38.5% were classified as normal weight, followed by obese class I (24.9%) and overweight

(20.5%). These findings indicate that endometriosis occurs across a wide range of body mass index categories and is not limited to a specific weight group.

Table 2 Demographic and Clinical Characteristics of Patients with Endometriosis (n = 507)

Demographic and Clinical Characteristics	Number (n)	Percentage (%)
Age		
<15 years	1	0.2
15–49 years	499	98.4
>49 years	7	1.4
Age at Menarche		
<8 years	2	0.4
8–15 years	501	98.8
>15 years	4	0.8
Menstrual Cycle		
<21 days	5	1.0
21–35 days	497	98.0
>35 days	5	1.0
Stage of Endometriosis		
Stage I	11	2.2
Stage II	35	6.9
Stage III	151	29.8
Stage IV	310	61.1
Parity History		
Nulliparous	251	49.5
Primiparous	100	19.7
Multiparous	155	30.6
Grand multiparous	1	0.2
Marital Status		
Married	477	94.1
Unmarried	30	5.9
Body Mass Index (BMI)		
Underweight	38	7.5
Normal	195	38.5
Overweight	104	20.5
Obese I	126	24.9
Obese II	44	8.9
Total	507	100

Discussion

This study provides updated institutional data on endometriosis cases diagnosed at a tertiary referral hospital over a three-year period. The number of histopathologically-confirmed cases increased annually, with the highest proportion recorded in 2024. This upward trend may reflect improved case detection rather than a true increase in disease incidence. Enhanced access to surgical evaluation and histopathological confirmation, which remain the gold standard for diagnosis, have likely contributed to the higher number of confirmed cases in recent years.³ In addition, increasing clinical awareness of endometriosis as a significant cause of pelvic pain and infertility may have led to more timely referrals for specialist evaluation.^{3,8} Changes in patient health seeking behavior and broader access to healthcare services may also have contributed to increased detection over time. As a tertiary referral center, Mohammad Hoesin Hospital receives patients from various districts, which may further contribute to the accumulation of confirmed cases over time.

One of the most notable findings in this study was the predominance of advanced stage disease, with stage IV accounting for 61.1% of cases and stage III for 29.8%, while early-stage disease represented only a small proportion. This distribution suggests that most patients were diagnosed after substantial disease progression had already occurred. Similar findings have been reported in previous institutional studies at the same hospital. Soraya reported that moderate to severe stages were more frequently observed than minimal disease during the 2016–2018 period,⁷ and Adora also documented a predominance of higher stage disease among surgically confirmed cases.⁹ The consistency of these findings over time indicates that advanced stage presentation remains a

characteristic pattern in this tertiary referral setting.

The high proportion of stage III and IV disease may be explained by several factors. First, tertiary referral hospitals typically receive patients after initial evaluation at primary or secondary care levels, particularly those with persistent pelvic pain, infertility, or adnexal masses requiring surgical assessment.⁸ This referral pattern inherently increases the likelihood of encountering more severe cases. Second, diagnostic delay remains a recognized challenge in endometriosis. Agarwal et al. emphasized that symptoms such as dysmenorrhea are frequently normalized, resulting in delayed specialist referral and definitive diagnosis.³ Prolonged untreated inflammation may contribute to progressive fibrosis, adhesion formation, and anatomical distortion of pelvic organs, ultimately leading to higher r-ASRM staging at the time of surgery.^{1,2}

The age distribution in this study aligns with established epidemiological patterns indicating that endometriosis predominantly affects women during their reproductive years.^{1,2,4,5} Previous institutional reports from the same hospital have demonstrated a comparable predominance of reproductive age patients, suggesting consistency in the age profile of diagnosed cases across different study periods.^{7,10} This pattern reflects the hormone dependent nature of endometriosis, in which cyclic ovarian estrogen production sustains lesion growth and inflammatory activity during the reproductive period.^{1,2} The distribution of age at menarche and menstrual cycle characteristics in this study is comparable to findings from other descriptive studies.^{10–13}

Nearly half of the patients in this study were nulliparous (49.5%), a pattern frequently observed in institutional based studies.^{7,10} Similar associations between nulliparity and endometriosis have been reported in systematic reviews and meta-

analyses, which suggest that women with lower parity may have an increased likelihood of being diagnosed with the disease.^{14,15} One proposed explanation is that pregnancy induces prolonged periods of amenorrhea and sustained progesterone exposure, which may suppress the proliferation of ectopic endometrial tissue and reduce cumulative menstrual cycles.^{1,14} In contrast, nulliparous women experience uninterrupted ovulatory cycles, potentially increasing cumulative exposure to retrograde menstruation.¹ From a clinical perspective, this highlights the importance of early evaluation and appropriate management in women of reproductive age presenting with symptoms suggestive of endometriosis, particularly those with concerns regarding fertility. This also underscores the need for timely fertility assessment, counseling, and individualized management strategies in women with suspected endometriosis who desire future pregnancy. However, it is important to recognize that the relationship between nulliparity and endometriosis may be bidirectional, as the disease itself is a known contributor to subfertility and infertility.³ Therefore, while nulliparity was common in this cohort, the descriptive design of this study does not allow conclusions regarding causality or temporal direction.

The distribution of body mass index (BMI) in this study demonstrated variability across categories, with the largest proportion classified as normal weight, followed by overweight and obesity. This heterogeneous pattern is consistent with previous literature indicating that the relationship between adiposity and endometriosis remains inconclusive. Large cohort studies have reported inconsistent associations, with some suggesting an inverse relationship between higher BMI and endometriosis diagnosis, while others have identified associations depending on body size across different life stages.^{16–18} These variations

may be influenced by differences in study design, case ascertainment methods, and population characteristics. Hormonal factors, inflammatory processes, and differences in adipose tissue distribution have been proposed as potential contributors to these inconsistencies. An Indonesian study similarly reported variability in BMI distribution among women with endometriosis.¹⁹ In the present study, endometriosis was observed across all BMI categories, supporting the concept that the disease is multifactorial and not confined to a specific anthropometric profile.

Yet, there are several limitations of this study that should be considered. As a retrospective single-center study, the findings may not be generalizable to broader populations. Additionally, reliance on medical record documentation may introduce information bias, particularly for reproductive history variables. The absence of denominator data also limits the ability to estimate population-based prevalence or temporal trends. Nevertheless, this study provides updated clinical data reflecting the distribution and stage profile of endometriosis cases in a tertiary referral setting. Furthermore, age information is only available within a broad reproductive age category (15–49 years), which limits more detailed age-stratified analysis. Despite the age information limit, this study still provides updated clinical data reflecting the distribution and stage profile of endometriosis cases in a tertiary referral setting.

Conclusion

In this study, endometriosis cases diagnosed at a tertiary referral hospital were predominantly observed in women of reproductive age, with advanced-stage disease comprising the largest proportion. Nulliparity and heterogeneous body mass index distribution were frequently identified characteristics. The marked

predominance of stage III–IV disease suggests that a substantial proportion of patients may only receive definitive diagnosis after significant disease progression. This pattern reflects the complexity of cases typically managed in referral centers and indicates that diagnostic delay may remain a persistent challenge in routine clinical practice. These findings highlight the importance of earlier recognition and timely referral of women presented with symptoms suggestive of endometriosis. Improving clinical awareness among healthcare providers, enhancing access to diagnostic evaluation, and strengthening patient education may facilitate earlier diagnosis and help reduce the burden of advanced-stage disease.

Conflict of Interest

The authors declare no conflict of interest in this study

References

1. Tsamantioti ES, Mahdy H. Endometriosis. In: StatPearls. StatPearls Publishing; 2025. PubMed PMID: 33620854.
2. Taylor HS, Kotlyar AM, Flores VA. Endometriosis is a chronic systemic disease: clinical challenges and novel innovations. *The Lancet*. 2021 Feb;397(10276):839–52. doi:10.1016/S0140-6736(21)00389-5
3. Agarwal SK, Chapron C, Giudice LC, Laufer MR, Leyland N, Missmer SA, et al. Clinical diagnosis of endometriosis: a call to action. *Am J Obstet Gynecol*. 2019 Apr;220(4):354.e1-354.e12. doi:10.1016/j.ajog.2018.12.039
4. World Health Organization. Geneva: World Health Organization [Internet]. 2025 [cited 2026 Feb 21]. Endometriosis. Available from: <https://www.who.int/news-room/fact-sheets/detail/endometriosis>

5. Moradi Y, Shams-Beyranvand M, Khateri S, Gharahjeh S, Tehrani S, Varse F, et al. A systematic review on the prevalence of endometriosis in women. *Indian Journal of Medical Research*. 2021 Sep;154(3):446–54. doi:10.4103/ijmr.IJMR_817_18
6. Anggia Prameswari Wardhana, Yahya Irwanto. Effect of Genistein on Proliferating Cell Nuclear Antigen (PCNA) Expression and Vascular Density in The Peritoneum of Endometriosis Mice Model. *Asian Journal of Health Research*. 2023 Dec 14;2(3):5–11. doi:10.55561/ajhr.v2i3.104
7. Soraya A. Angka kejadian dan faktor risiko pasien endometriosis di RSUP Dr. Mohammad Hoesin Palembang periode 2016–2018. [Palembang]: Universitas Sriwijaya; 2019.
8. Utami N. Profil pasien endometriosis dan tatalaksananya di Poliklinik Ginekologi RSUP Dr. Mohammad Hoesin Palembang periode Januari 2020 – Oktober 2023. [Palembang]: Universitas Sriwijaya; 2023.
9. Adora A. Hubungan stadium dengan profil klinis dismenore pada pasien endometriosis di RSUP Dr. Mohammad Hoesin Palembang. [Palembang]: Universitas Sriwijaya; 2025.
10. Leriva RT. Gambaran Karakteristik Pasien Endometriosis di RSUP Dr. Mohammad Hoesin Palembang Periode Tahun 2018-2020 . [Palembang]: Universitas Sriwijaya; 2021.
11. Hendarto H. Endometriosis dari aspek teori sampai penanganan klinis. Surabaya: Airlangga University Press (AUP); 2015.
12. Lestari SPP, Annas JY, Juniastuti J. HUBUNGAN USIA MENARCHE DENGAN KEJADIAN ENDOMETRIOSIS. *Indonesian Midwifery and Health Sciences Journal*. 2021 Jun 23;3(1):30–6. doi:10.20473/imhsj.v3i1.2019.30-36
13. Azzahrah N. Hubungan karakteristik menstruasi dengan kejadian endometriosis pada wanita usia reproduksi di RSUP Dr. Mohammad Hoesin Palembang. [Palembang]: Universitas Sriwijaya; 2024.
14. Sri Ranjan Y, Ziauddeen N, Stuart B, Alwan NA, Cheong Y. The role of parity in the relationship between endometriosis and pregnancy outcomes: a systematic review and meta-analysis. *Reproduction and Fertility*. 2023 Feb 23;4(1). doi:10.1530/RAF-22-0070
15. Jenabi E. The association between parity and the risk of endometriosis: a meta-analysis. *Erciyes Medical Journal*. 2020. doi:10.14744/etd.2020.25874
16. Rowlands IJ, Hockey R, Abbott JA, Montgomery GW, Mishra GD. Body mass index and the diagnosis of endometriosis: Findings from a national data linkage cohort study. *Obes Res Clin Pract*. 2022 May;16(3):235–41. doi:10.1016/j.orcp.2022.04.002
17. Shah DK, Correia KF, Vitonis AF, Missmer SA. Body size and endometriosis: results from 20 years of follow-up within the Nurses' Health Study II prospective cohort. *Human Reproduction*. 2013 Jul 1;28(7):1783–92. doi:10.1093/humrep/det120
18. Farland LV, Missmer SA, Bijon A, Gusto G, Gelot A, Clavel-Chapelon F, et al. Associations among body size across the life course, adult height and endometriosis. *Human Reproduction*. 2017 Aug 1;32(8):1732–42. doi:10.1093/humrep/dex207
19. Aris RS, Pasaribu M, Riastiti Y. Hubungan Indeks Massa Tubuh Dan Lama Menstruasi Pada Penderita Endometriosis Di RSUD Abdoel Wahab Sjahranie Samarinda Periode 2019-2022. *Jurnal Ilmu Kedokteran dan Kesehatan*. 2024 Oct 13;11(9):1741–6. doi:10.33024/jikk.v11i9.15739