

Research Article

Association between Endometriosis, Dysmenorrhea, and Chronic Pelvic Pain in Women of Reproductive Age. A Clinical Study

Ahmed Faheem¹, Sayed Mohammad Saud Jalal², Farah Bano³, Seerat Fatima⁴, Marina Khalid⁵, Noor Fatima⁶

¹Medical Officer, Shalamar Hospital, Lahore, Pakistan.

²Medical Officer & Health Manager, MNHC, Saroki, Gujrat, Pakistan.

³Postgraduate Resident (PGR), Department of Gynecology & Obstetrics, Aziz Bhatti Shaheed Teaching Hospital, Gujrat, Pakistan.

⁴Women Medical Officer (WMO) & Health Manager, MNHC, Hariawala, Pakistan.

⁵Assistant Professor, Department of Obstetrics & Gynecology, Nawaz Sharif Medical College, Gujrat, Pakistan.

⁶Postgraduate Resident (PGR), Department of Gynecology & Obstetrics, Farooq Hospital, Lahore, Pakistan.

Corresponding Author: Dr. Ahmed Faheem

Email: ahmedfaheem335.af.af@gmail.com

Received: 07.01.26, Revised: 10.02.26, Accepted: 12.03.26

ABSTRACT

Background: Endometriosis is a chronic gynecological disorder characterized by the presence of endometrial tissue outside the uterine cavity and is a major cause of dysmenorrhea and chronic pelvic pain in women of reproductive age. Despite its high prevalence, it remains underdiagnosed, particularly in developing countries, leading to significant morbidity and reduced quality of life. The objective of this study was to evaluate the association between endometriosis, dysmenorrhea, and chronic pelvic pain.

Methods: This cross-sectional clinical study was conducted at Shalamar Hospital, Lahore, and Aziz Bhatti Shaheed Teaching Hospital, Gujrat, Pakistan, from January 2024 to June 2025. A total of 120 women aged 18-45 years presenting with pelvic pain or menstrual complaints were included using consecutive non-probability sampling. Diagnosis of endometriosis was based on clinical evaluation, ultrasound, and laparoscopy, where required. Severity of dysmenorrhea was assessed using the Visual Analog Scale (VAS), and chronic pelvic pain was defined as non-cyclic pain lasting more than six months. Data were analyzed using SPSS version 26, with $p < 0.05$ considered statistically significant.

Results: Endometriosis was diagnosed in 45.0% of participants. Severe dysmenorrhea was significantly more common in women with endometriosis (66.7%) compared to those without (27.3%) ($p < 0.001$). Chronic pelvic pain was reported in 72.2% of endometriosis patients versus 45.5% in non-endometriosis patients ($p = 0.002$). A strong positive correlation was observed between endometriosis and dysmenorrhea ($r = 0.61$) as well as chronic pelvic pain ($r = 0.65$).

Conclusion: Endometriosis is strongly associated with increased severity of dysmenorrhea and a higher prevalence of chronic pelvic pain. Early clinical suspicion and timely diagnosis are essential for effective management and improved quality of life in affected women.

Keywords: Endometriosis, Dysmenorrhea, Chronic Pelvic Pain, Reproductive Age, Women's Health, Pelvic Pain.

INTRODUCTION

Endometriosis refers to a persistent, estrogen-sensitive gynecological condition that involves the existence of functional endometrial glands and stroma outside the uterine cavity¹. It is among the leading causes of pelvic pain in women of reproductive age, with an occurrence rate approximated at 10 percent of this group of people globally. Although endometriosis has a high incidence, in low- and middle-income economies, it has been underdiagnosed

because of the nonspecific symptoms, late seeking of healthcare, and limited access to state-of-the-art diagnostic methods like laparoscopy².

Endometriosis has a variable clinical presentation, with dysmenorrhea and chronic pelvic pain being some of the most noticeable and debilitating symptoms³. Painful menstruation (dysmenorrhea) is a characteristic common in women with endometriosis, and it may start early in

reproductive life. It is supposed to be caused by augmented generation of prostaglandins and inflammatory mediators in the ectopic endometrial tissue that causes uterine hypercontractility and pain. With time, these intermittent pains can be progressive and unresponsive to traditional painkillers^{4,5}.

Another significant clinical manifestation of endometriosis is chronic pelvic pain (CPP), which is defined as any type of non-cyclic pelvic pain occurring over a period of over six months⁶. Pathophysiology of CPP in endometriosis is complicated and includes chronic inflammation, fibrosis, adhesions, and neuroangiogenesis that together lead to peripheral and central sensitization of pain pathways. Notably, the degree of pelvic pain is not always related to the anatomical location and grade of endometriosis, indicating that neurobiological processes are significant in symptom development⁷.

A significant percentage of those women who present with chronic pelvic pain are known to harbor underlying endometriosis, and prevalence rates of endometriosis are reported to be between 40 and 80 percent in symptomatic groups⁸. On a similar note, dysmenorrhea occurs in over 60-70 percent of women with endometriosis, a fact that underscores the close clinical resemblance between the two. Nevertheless, a significant number of women still have delays in diagnosis, which can take years, causing the development of diseases, decreased quality of life, and a significant burden on the health care system⁹. Within the Pakistani clinical context, minimal local information is available to examine the relationship between endometriosis, dysmenorrhea, and chronic pelvic pain. The early diagnosis and management are further complicated by cultural barriers, lack of awareness, and underreporting of menstrual symptoms. This association is crucial to comprehending a local population to enhance clinical suspicion, diagnostic assessment, and timely therapeutic interventions^{10,11}.

Therefore, this study aims to evaluate the association between endometriosis, dysmenorrhea, and chronic pelvic pain among women of reproductive age presenting to tertiary care hospitals. The study aims to add to enhanced clinical awareness and treatment of endometriosis in everyday gynecology through determining the strength of this relationship¹².

MATERIALS AND METHODS

This cross-sectional clinical study was conducted at two tertiary care hospitals in Pakistan, namely Shalamar Hospital Lahore, Lahore, Pakistan, and Aziz Bhatti Shaheed Teaching Hospital, Gujrat, Pakistan, over a duration of 18 months from January 2024 to June 2025. The purpose of the study was to assess the relationship between endometriosis, dysmenorrhea, and chronic pain in the pelvis in women of reproductive age in the outpatient gynecology departments.

A total sample size of 120 women was included in the study. Non-probability sampling was used to recruit the participants, whereby a consecutive method was employed to ensure that all the eligible patients who reported during the period of the study were included. Females between the ages of 18 and 45 years who complained of pelvic pain, dysmenorrhea, menstrual abnormalities, or suspected endometriosis were enrolled. To reduce confounding factors, patients with known malignancies of gynecological malignancies, inflammation of the pelvis, pregnancy, and those who have undergone major pelvic surgery were excluded.

All the participants were asked to provide detailed clinical history, such as age, body mass index (BMI), menstrual history, parity, duration and severity of symptoms, and the history of previous treatment. The degree of dysmenorrhea was measured using a Visual Analog Scale (VAS) and classified as mild (score 1–3), moderate (score 4–6), and severe (score 7–10). The definition of chronic pelvic pain was non-cyclic pelvic pain that lasted longer than six months.

Endometriosis was diagnosed through a combination of clinical, pelvic examination, and or imaging, including transvaginal ultrasound, or transabdominal ultrasound. In some instances where the diagnosis remained not clear, laparoscopy was done to confirm this diagnosis. The presence or absence was considered as a categorical variable.

A structured proforma was used in recording all data. Statistical Packages Social Sciences (SPSS) version 26 was used to perform statistical analysis. Continuous variables were reported in terms of mean or standard deviation, and categorical variables were reported in terms of frequencies and percentages. The chi-square test was used to determine the association between endometriosis and categorical variables like the severity of dysmenorrhea and the presence of chronic pain in the pelvis. The Pearson

correlation analysis was used to examine the level of association between variables. A p-value of below 0.05 was taken to be statistically significant.

The institutional review boards of the two hospitals where the study was conducted provided ethical clearance. All participants were informed in writing before being included in the study, and the confidentiality of patient data was upheld throughout the study.

RESULTS

This study involved a total of 120 women of reproductive age, and the mean age of the

women was 29.8 ± 5.9 years. Most of the participants (58.3%) were aged 26–35 years, followed by 28.3% aged 18–25 years and 13.4% aged 36–45 years. A total of 54 (45.0%) patients were diagnosed with endometriosis, and 66 (55.0%) did not show any evidence of endometriosis. Ninety-four (78.3%) participants had dysmenorrhea, and 76 (63.3%) participants had chronic pelvic pain. These baseline data show that the symptoms of pelvic pain are extremely common within the analyzed population, and almost half of the patients had endometriosis, which represents a significant clinical burden (Table 1).

Table 1: Baseline Characteristics and Symptom Distribution (n = 120)

Variable	Frequency (n)	Percentage (%)
Age (Mean \pm SD)	29.8 \pm 5.9	—
Age 18–25 years	34	28.3
Age 26–35 years	70	58.3
Age 36–45 years	16	13.4
Endometriosis Present	54	45.0
Endometriosis Absent	66	55.0
Dysmenorrhea Present	94	78.3
Chronic Pelvic Pain Present	76	63.3

A close comparison of the severity of dysmenorrhea in women with and without endometriosis showed that both are related statistically significantly. Severe dysmenorrhea (VAS score 7–10) was found in 36 out of 54 patients with endometriosis (66.7%), and only 18 out of 66 women without endometriosis (27.3%) had severe pain. Mild dysmenorrhea, on the other hand, was more prevalent among women who did not have endometriosis

(33.3%) than those who had endometriosis (11.1%). The moderate dysmenorrhea was also relatively high in the non-endometriosis group. That difference in distribution was very significant ($p < 0.001$), meaning that the existence of endometriosis is closely connected with the severity of menstrual pain. These results indicate that severe dysmenorrhea may be a significant clinical clue to underlying endometriosis (Table 2).

Table 2: Association between Endometriosis and Severity of Dysmenorrhea

Severity of Dysmenorrhea	Endometriosis (n=54)	No Endometriosis (n=66)	p-value
Mild (VAS 1–3)	6 (11.1%)	22 (33.3%)	
Moderate (VAS 4–6)	12 (22.2%)	26 (39.4%)	
Severe (VAS 7–10)	36 (66.7%)	18 (27.3%)	<0.001

Likewise, endometriosis was found to be closely related to chronic pelvic pain. Out of 54 women with endometriosis, 39 (72.2%) of the women complained of chronic pelvic pain, compared to 30 out of 66 (45.5%) women without endometriosis. On the other hand, the non-endometriosis group had a higher prevalence of absence of chronic pelvic pain (54.5%) than the

endometriosis group (27.8%). This was statistically significant ($p = 0.002$), and this shows that endometriosis is a significant cause of chronic pelvic pain. As the findings highlight, women who have endometriosis are significantly more prone to reporting chronic pain in their pelvis than their counterparts (Table 3).

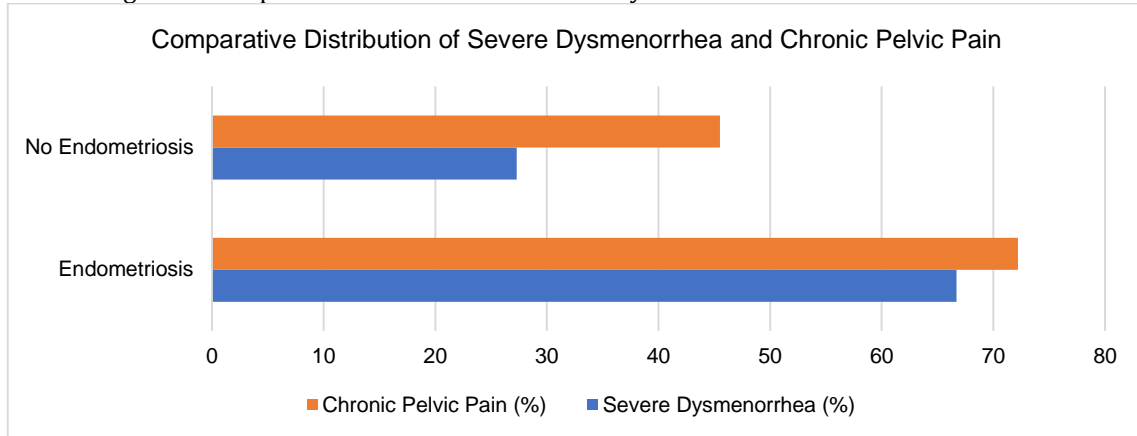
Table 3: Association between Endometriosis and Chronic Pelvic Pain

Chronic Pelvic Pain	Endometriosis (n=54)	No Endometriosis (n=66)	p-value
Present	39 (72.2%)	30 (45.5%)	0.002
Absent	15 (27.8%)	36 (54.5%)	

To further demonstrate these associations, a graphical comparison was done that indicated the percentage of severe dysmenorrhea and chronic pelvic pain in women with and without endometriosis. The figure also shows that both

severe dysmenorrhea and chronic pelvic pain are significantly increased in the endometriosis group, which is in line with the statistical data given in Tables 2 and 3 (Figure 1).

Figure 1: Comparative Distribution of Severe Dysmenorrhea and Chronic Pelvic Pain



Overall, the results demonstrate a strong and statistically significant association between endometriosis, dysmenorrhea, and chronic pelvic pain, highlighting the importance of early diagnosis and targeted management in affected women.

DISCUSSION

The present study demonstrates a strong and statistically significant association between endometriosis, dysmenorrhea, and chronic pelvic pain among women of reproductive age⁷. Almost half of the study population had endometriosis, in line with the previously reported evidence that endometriosis is very widespread among women who present with pelvic pain and menstrual issues. The findings of the current study are supported by several international studies, which have stated that endometriosis is detected in about 30–50% of women when they are assessed with reference to chronic pelvic pain⁸.

One of the main results of this paper is that the rate of severe dysmenorrhea is much higher among women with endometriosis, as 66.7% of people with endometriosis complained of severe pain as opposed to 27.3% without endometriosis (Table 2)⁹. This differs very well with the research study by Ju et al. (2014), which indicated dysmenorrhea is found in up to 70–80% of women with endometriosis and that dysmenorrhea is usually more acute and progressive than primary dysmenorrhea. Previous studies show that one of the first and most predictable symptoms of endometriosis is dysmenorrhea, which can occur several years

before the diagnosis. The pathophysiological mechanism behind this relationship is said to be the augmented production of prostaglandins, interleukins, and tumor necrosis factor-alpha by ectopic endometrial tissue that results in augmented uterine contractility and pain sensitization¹⁰.

Besides dysmenorrhea, chronic pelvic pain was also found to be much higher among the women with endometriosis in this study, with 72.2% of the patients with endometriosis experiencing the pain vs. 45.5% without endometriosis (Table 3)¹¹. The results are in line with the study conducted by Reid-McCann (2025), which indicated that about 40–87% of women experiencing chronic pelvic pain have endometriosis. Moreover, Baradwan et al. (2024) revealed that chronic pelvic pain is a predominant symptom in endometriosis and greatly impacts everyday functioning and quality of life. The close relationship observed in the present study is also corroborated by the study conducted by Muharam R (2022), which highlighted that chronic pain in the pelvis in endometriosis is a result of inflammatory processes, adhesions, and the proliferation of the nerve fibers in the ectopic lesions^{12,13}.

The correlation coefficients found in this study ($r = 0.61$ with dysmenorrhea and $r = 0.65$ with chronic pelvic pain) support the strength of the relationships between endometriosis and pain symptoms further¹⁴. These results are similar to those of Stratton and Berkley (2011), who indicated that there is a significant association between the presence of endometriotic lesions and the extent of symptoms of pelvic pain, but

they also reported that the intensity of pain does not necessarily correlate with the stage of the disease. This underscores the multifaceted neurobiological processes that are present, which comprise central sensitization and distorted pain processing pathways¹⁵.

In regional terms, the results of the current study are of special significance because little information is known about Pakistan in terms of the clinical aspects of endometriosis¹⁷. This has been observed in other regional research studies carried out in South Asia, where delayed diagnosis and underreporting of symptoms are usually widespread due to sociocultural factors and ignorance. The high incidence of severe dysmenorrhea and chronic pelvic pain found in the present study indicates that a considerable percentage of women might be having unrecognized endometriosis, and hence better clinical screening and awareness are necessary¹⁸.

In spite of these significant findings, there are some limitations of the study. The cross-sectional design does not allow the determination of causality between endometriosis and pain symptoms. The sample size was also quite small and limited to tertiary care hospitals, and this can create a risk of selection bias. Also, not every case was diagnosed by laparoscopy, which is the gold standard diagnostic modality, and this could have resulted in underdiagnosis or misclassification^{19,20}.

The need for future study should be to conduct multicentre prospective research with a higher sample size to confirm such findings and investigate causal relationships⁷. The diagnostic accuracy can also be improved with the use of biomarkers, high-technology imaging methods, and standardized pain measurement instruments. In addition, educational campaigns on endometriosis and the importance of seeking medical attention early enough should be considered as a measure to curb the delay in diagnosis and the success of patients¹⁸⁻²⁰.

CONCLUSION

Endometriosis has been closely linked with the severity of dysmenorrhea and the prevalence of chronic pelvic pain among women of reproductive age. The results of this study, based on the literature, point to the fact that acute menstrual pain and long-standing pelvic discomfort are the clinical features that are used to diagnose underlying endometriosis. The importance of early recognition, timely

diagnosis, and management strategies is required to minimize morbidity and enhance the quality of life in the affected women.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

Funding

No external funding was received for this study.

Authors' Contributions

A.F., S.M.S.J., and F.B. contributed to study conception, design, and data collection.

S.F. and M.K. were involved in clinical evaluation and patient management.

N.F. contributed to data analysis and manuscript drafting.

A.F. supervised the study and finalized the manuscript.

All authors read and approved the final manuscript.

Acknowledgements

The authors acknowledge the support of the staff of Shalamar Hospital, Lahore, and Aziz Bhatti Shaheed Teaching Hospital, Gujrat, for their assistance in patient recruitment and data collection.

REFERENCES

1. de Las Mercedes Villa Rosero CY, Mazin SC, Nogueira AA, Vargas-Costales JA, Rosa-e-Silva JC, Candido-dos-Reis FJ, et al. Prevalence of chronic pelvic pain and primary dysmenorrhea in women of reproductive age in Ecuador. *BMC Womens Health*. 2022;22(1):363.
2. Reid-McCann R, Poli-Neto OB, Stein K, Dixon S, Cox E, Coxon L, et al. Longitudinal association between dysmenorrhoea in adolescence and chronic pain in adulthood: a UK population-based study. *Lancet Child Adolesc Health*. 2025;9(11):766–75.
3. Rodríguez-Lozano DC, Meza-Rodríguez MD, Cruz-Orozco OP, Sánchez-Ramírez B, Olguin-Ortega A, Silvestri-Tomassoni JR, et al. Emotional dysregulation in women with endometriosis with cyclical and non-cyclical chronic pelvic pain. *BMC Womens Health*. 2022;22(1):525.

4. Baradwan S, Gari A, Sabban H, Alshahrani MS, Khadawardi K, Bukhari IA, et al. The effect of antioxidant supplementation on dysmenorrhea and endometriosis-associated painful symptoms: a systematic review and meta-analysis of randomized clinical trials. *Obstet Gynecol Sci.* 2024;67(2):186–98.
5. Shafir AL, Laliberte A, Wallace B, Vitonis AF, Sieberg CB, Ghiasi M, et al. Pelvic pain symptoms and inflammation among adolescents and adults with and without endometriosis. *Int J Mol Sci.* 2025;26(11):5377.
6. Begum IA. The connection between endometriosis and secondary dysmenorrhea. *J Reprod Immunol.* 2025;168:104425.
7. Selntigia A, Exacoustos C, Ortoleva C, Russo C, Monaco G, Martire FG, et al. Correlation between endometriosis and migraine features: results from a prospective case-control study. *Cephalgia.* 2024;44(3):03331024241235210.
8. Syed K, Sabora A, Rizvi SMAA. Association of iron deficiency anemia with cognitive and physical performance in women presenting with heavy menstrual bleeding: a cross-sectional study. *Dev Medico Life Sci.* 2025;2(12):24–29.
9. Khalajinia Z, Falahieh FM, Aghaali M. The effects of chamomile and flaxseed on pelvic pain, dyspareunia, and dysmenorrhea in endometriosis: a controlled randomized clinical trial. *Iran J Nurs Midwifery Res.* 2024;29(6):731–6.
10. Orlandi M, Vannuccini S, El Aoufy K, Melis MR, Lepri G, Sambataro G, et al. Menstruation-related disorders—dysmenorrhea and heavy bleeding—are significant epiphenomena in women with rheumatic diseases. *Front Pharmacol.* 2022;13:807880.
11. Bakhsh H, Algenaimi E, Aldhuwayhi R, AboWadaan M. Prevalence of dysmenorrhea among reproductive age group in Saudi women. *BMC Womens Health.* 2022;22(1):78.
12. Akram A, Anwar A, Batool R, Baloch NS. Thyroid function abnormalities in women with polycystic ovary syndrome (PCOS): a clinical study. *Dev Medico Life Sci.* 2025;2(11):18–22.
13. Ghiasi M, Chang C, Shafir AL, Vitonis AF, Sasamoto N, Vazquez AI, et al. Subgroups of pelvic pain are differentially associated with endometriosis and inflammatory comorbidities: a latent class analysis. *Pain.* 2024;165(9):2119–29.
14. Vilyonda LQ, Budihastuti UR, Munawaroh S, Pangestu M. Comparison of chronic pelvic pain, dysmenorrhea, dyspareunia, dysuria, and dyschezia intensity in patients with endometriosis stage. *East J Med.* 2024;29(2):141–5.
15. Muharam R, Amalia T, Pratama G, Harzif AK, Agiananda F, Maidarti M, et al. Chronic pelvic pain in women with endometriosis is associated with psychiatric disorders and quality of life deterioration. *Int J Womens Health.* 2022;14:131–8.
16. Esmaeilzadeh S, Sadrzadeh A, Moher D, Sepidarkish M, Alamolhoda SH, Mirabi P, et al. Efficacy of antioxidant supplementation in alleviating endometriosis-related pain: insights from a systematic review and meta-analysis of RCTs. *Reprod Biol Endocrinol.* 2025;23(1):164.
17. Chaggar P, Tellum T, Thanatsis N, De Braud LV, Setty T, Jurkovic D. Impact of deep or ovarian endometriosis on pelvic pain and quality of life: prospective cross-sectional ultrasound study. *Ultrasound Obstet Gynecol.* 2025;65(3):372–83.
18. Ahsan I, Nawaz A, Khan MU. Insulin resistance as a determinant of menstrual irregularities in women of reproductive age with and without polycystic ovary syndrome. *Dev Medico Life Sci.* 2025;2(12):8–12.
19. Tewhaiti-Smith J, Semprini A, Bush D, Anderson A, Eathorne A, Johnson N, et al. An Aotearoa New Zealand survey of the impact and diagnostic delay for endometriosis and chronic pelvic pain. *Sci Rep.* 2022;12(1):4425.
20. Zaurito A, Mehmeti I, Limongelli F, Zupo R, Annunziato A, Fontana S, et al. Natural compounds for endometriosis and related chronic pelvic pain: a review. *Fitoterapia.* 2024;179:106277.