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Assessing the Systemic Impact of Endometriosis on Chronic Pain, Mental Health, and Other Internal Medicine Conditions

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Abstract: Endometriosis is a chronic inflammatory condition predominantly affecting reproductive-aged women, characterized by ectopic endometrial tissue and significant symptom burden, including chronic pelvic pain, dysmenorrhea, and dyspareunia. While traditionally considered a gynecological disorder, emerging evidence highlights its systemic impact involving gastrointestinal, immune, endocrine, and neurological systems, where stusy was cross-sectional for evaluated 90 women aged 18–45 with confirmed endometriosis across multiple domains including chronic pain severity, mental health comorbidities, systemic manifestations, and quality of life. Results demonstrated high prevalence of debilitating symptoms: chronic pelvic pain (86.7%, mean VAS 7.2), dysmenorrhea (94.4%, mean VAS 8.1), and substantial mental health burden with 53.3% screened positive for depression and 57.8% for anxiety as well as Gastrointestinal symptoms such as irritable bowel syndrome were noted in nearly half of patients. Fatigue and sleep disturbances were highly prevalent, adversely affecting daily functioning as measured by SF-36 scores furthermore Autoimmune and endocrine comorbidities, including hypothyroidism and fibromyalgia, were also reported. Significant correlations were found between pain severity and depression, anxiety, and poor sleep quality, underscoring the multifaceted nature of endometriosis-related morbidity where finally Findings emphasize the necessity of a multidisciplinary management approach integrating gynecologic, psychological, and pain therapies and Early diagnosis, comprehensive assessment, and holistic treatment strategies are essential to improve health outcomes and quality of life in endometriosis patients, moving beyond symptom-focused care towards personalized, systemic management.

Keywords: Endometriosis, chronic pelvic pain, dysmenorrhea, dyspareunia, mental health comorbidities, depression, anxiety, gastrointestinal symptoms, irritable bowel syndrome (ibs), fatigue, sleep disturbances, autoimmune comorbidities, hypothyroidism, fibromyalgia, quality of life, systemic manifestations, multidisciplinary management, central sensitization.

INTRODUCTION

Endometriosis is a chronic, estrogen-dependent inflammatory condition characterized by the presence of endometrial-like tissue outside the uterine cavity, affecting approximately 10% of reproductive-aged women worldwide (Smolarz, B. *et al*., 2021; Missmer, S. A. *et al*., 2004)Despite its prevalence, endometriosis remains underdiagnosed and poorly understood, with an average diagnostic delay of 7-10 years (Signorile, P. G. *et al*., 2022; Centini, G. *et al*., 2013) while The disease is associated with chronic pelvic pain, dysmenorrhea, dyspareunia, and infertility, significantly impairing quality of life (QoL) and imposing substantial economic burdens on healthcare systems (Laganà, A. S. *et al*., 2017; Lazzeri, L. *et al*., 2015; Laganà, A. S. *et al*., 2017) as well as were The Multifaceted Impact of Endometriosis refer to Traditionally viewed as a gynecological disorder, emerging evidence suggests that endometriosis has systemic effects, including gastrointestinal, immunological, and neurological manifestations (Cavaggioni, G. *et al*., 2014; Rolla, E. 2019) also Chronic pain, a hallmark of endometriosis, often leads to central sensitization, contributing to widespread hyperalgesia and comorbid conditions such as irritable bowel syndrome (IBS), fibromyalgia, and depression (Warzecha, D. *et al*., 2020; Ohrnberger, J. *et al*., 2017; Bodenheimer, T. *et al*., 2002) as according to the bidirectional relationship between chronic pain and mental health disorders complicates treatment, as anxiety and depression may exacerbate pain perception while persistent pain worsens psychological distress [Low, W. Y. *et al*., 1993] According to previous studies have examined isolated aspects of endometriosis—such as pain severity or infertility—few have adopted a holistic approach to assess its systemic consequences which that Most research focuses on surgical or hormonal treatments, neglecting the broader implications of endometriosis on metabolic, immune, and mental health [De Graaff, A. A. *et al*., 2016] Additionally, the high prevalence of overlapping conditions where suggests shared pathogenic mechanisms, yet these associations remain underexplored (Arola, H. M. *et al*., 2010) according to given the multidimensional burden of endometriosis, this study aims to evaluate the prevalence and severity of chronic pain in endometriosis patients, including pelvic pain,

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dysmenorrhea, and dyspareunia. Additionally, the study seeks to assess mental health comorbidities, particularly depression and anxiety, and their correlation with pain severity (Culley, L. *et al*., 2013; Wang, Y. *et al*., 2021). It will also examine systemic manifestations, including gastrointestinal, endocrine, and autoimmune conditions, while quantifying the impact on quality of life, sleep, and daily functioning. By adopting a cross-sectional design with validated assessment tools, this study provides a comprehensive analysis of endometriosis-related morbidity, offering insights into personalized, multidisciplinary treatment strategies as well as Clinical and Societal Relevance . by Endometriosis is more than just a problem that happens during a period—it's a serious condition that affects the whole body and needs care from different specialists. Right now, the way we treat it doesn't always fix all the symptoms, especially those outside the reproductive system. This causes inconsistent care and worse results for patients (Insel, T. *et al*., 2010; Hakak-Zargar, B. *et al*., 2022; Woody, M. L., & Gibb, B. E. 2015), where the study shows the importance of finding endometriosis early and acting quickly to stop long-term pain, checking for mental health issues as part of regular care, and working together with doctors from different fields like gynecology, pain management, gastroenterology, and psychology.

MATERIALS AND METHODS

This cross-sectional observational study was conducted at [from different hospitals from Iraq with a study period between [11-5-2024 to 12-4-2025 to assess

- The systemic impact of endometriosis on chronic pain, mental health, and associated internal medicine conditions.
- A total of 90 women aged 18–45 years with surgically or imaging-confirmed endometriosis (ASRM stages I–IV) were enrolled.
- Patients were excluded if they had an active pregnancy, malignancy, or chronic pain disorders unrelated to endometriosis.

Clinical and demographic information was gathered through structured interviews and electronic medical records. as Details such as age, body mass index (BMI), reproductive history, and use of medications (like NSAIDs, hormonal therapy, and antidepressants) were noted. The level of chronic pain was measured using a Visual Analog Scale (VAS) from 0 to 10 for conditions like pelvic pain, menstrual pain, pain during intercourse, and lower back pain and other health issues like bloating, irritable bowel syndrome, and conditions such as hypothyroidism and fibromyalgia were also recorded based on patient history and prior medical diagnoses. To check mental health, two standard tools were used: the Patient Health Questionnaire-9 (PHQ-9) to check for depression (scores of 10 or higher mean significant symptoms) and the Generalized Anxiety Disorder-7 (GAD-7) scale (scores of 8 or higher suggest moderate to severe anxiety). Quality of life was measured using the Short Form-36 (SF-36), which looks at physical and emotional health in eight areas, with scores from 0 to 100, where lower scores mean more difficulty. Sleep problems were assessed with the Pittsburgh Sleep Quality Index (PSQI), where a score of 5 or higher indicates poor sleep. Fatigue was reported on a scale from 0 to 10. The data was analyzed using SPSS version 26 (IBM Corp). Summary statistics such as averages, standard deviations, and percentages were used to describe the basic information. Furthermore, Pearson's correlation coefficient was used to see if there was a link between pain levels (measured with VAS) and mental health scores (PHQ-9 and GAD-7). Differences between groups were checked using independent t-tests or ANOVA for continuous data and chi-square tests for categories. A p-value of less than 0.05 was considered statistically significant.

RESULTS

In our results, as shown in Demographic Characteristics (Table 1), were the cohort primarily consisted of women aged 26–35 (50%), reflecting the peak reproductive years for endometriosis diagnosis. A majority had a normal BMI (57.8%), challenging the notion that endometriosis is exclusively linked to low body weight. However, 33.3% were overweight, suggesting that metabolic factors may influence disease severity, about Chronic Pain Symptoms (Table 2)

Dysmenorrhea (94.4%) was nearly universal, with chronic pelvic pain (86.7%) and lower back pain (68.9%) also highly prevalent. The mean VAS scores (7.2–8.1) indicate moderate-to-severe pain, consistent with studies linking endometriosis to peripheral and central sensitization with Dyspareunia (58.9%) further highlights the disease's impact on sexual health As well as Mental Health Comorbidities (Table 3) which refer to Over half of patients met criteria for depression

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(53.3%) or anxiety (57.8%), with 40% suffering from both. The PHQ-9 (14.2 ± 3.1) and GAD-7 (12.5 ± 2.8) scores suggest clinically significant symptoms, reinforcing the bidirectional relationship between chronic pain and psychological distress.

According to results, Gastrointestinal Symptoms (Table 4)were Bloating (65.6%) and IBS (48.9%) were common, supporting the hypothesis of visceral cross-sensitization between the pelvis and gut. Quality of Life (SF-36) (Table 5)

SF-36 scores were markedly low (physical functioning: 52.3; emotional well-being: 48.7), indicating disability comparable to rheumatoid arthritis (Nnoaham et al., 2011). Role limitations due to physical health (45.6) were particularly severe, underscoring the disease's occupational and social burden as for the related results Fatigue and Sleep Disturbances (Table 6) were Chronic fatigue (74.4%) and poor sleep quality (64.4%) were prevalent, likely due to pain-related sleep disruption and inflammatory cytokines and the mean fatigue score (7.5/10) suggests that fatigue is a major unmet need in endometriosis care while

Hypothyroidism (21.1%) and fibromyalgia (15.6%) were overrepresented, aligning with theories of immune dysregulation in endometriosis. The 6.7% prevalence of rheumatoid arthritis warrants investigation into shared autoimmune pathways.

According to Medication Use which in Table 8 were Most patients relied on NSAIDs (80%) and hormonal therapy (72.2%), yet 42.2% required antidepressants/anxiolytics, illustrating the limitations of current pain-focused treatments as well as The 23.3% opioid use rate raises concerns about dependency risks in addition to we found The strong correlations between pain and depression (*r* = 0.62) and anxiety (*r* = 0.58) ($p < 0.001$) suggest that pain amplifies psychological distress, while mental health disorders may exacerbate pain perception via central mechanisms.

Table 1: Demographic Characteristics of Participants (N=90)

Variable	Number (%)
Age (years)	
18–25	22 (24.4%)
26–35	45 (50.0%)
36–45	23 (25.6%)
BMI (kg/m²)	
Underweight (<18.5)	8 (8.9%)
Normal (18.5–24.9)	52 (57.8%)
Overweight (≥25)	30 (33.3%)

Table 2: Prevalence of Chronic Pain Symptoms

Symptom	Patients Affected (N=90)	Mean Pain Score (VAS 0-10)
Pelvic pain (chronic)	78 (86.7%)	7.2 ± 1.5
Dysmenorrhea	85 (94.4%)	8.1 ± 1.2
Lower back pain	62 (68.9%)	6.5 ± 1.8
Dyspareunia (painful sex)	53 (58.9%)	6.8 ± 2.0

Table 3: Mental Health Comorbidities

Condition	Number (%)	Mean PHQ-9 Score (Depression)	Mean GAD-7 Score (Anxiety)
Depression (PHQ-9 ≥10)	48 (53.3%)	14.2 ± 3.1	-
Anxiety (GAD-7 ≥8)	52 (57.8%)	-	12.5 ± 2.8
Both depression & anxiety	36 (40.0%)	15.0 ± 2.9	13.1 ± 2.5

Table 4: Gastrointestinal Symptoms

Symptom	Patients Affected (N=90)
Irritable bowel syndrome (IBS)	44 (48.9%)
Chronic bloating	59 (65.6%)
Constipation	37 (41.1%)
Diarrhea	28 (31.1%)

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Table 5: Impact on Daily Life (SF-36 Survey)

Domain	Mean Score (0-100)	Standard Deviation
Physical functioning	52.3	± 18.2
Role limitations (physical)	45.6	± 22.1
Emotional well-being	48.7	± 19.5
Social functioning	55.2	± 17.8

Table 6: Fatigue and Sleep Disturbances

Parameter	Number (%)	Mean Score (0-10)
Chronic fatigue	67 (74.4%)	7.5 ± 1.6
Insomnia	49 (54.4%)	6.9 ± 2.1
Poor sleep quality (PSQI ≥5)	58 (64.4%)	7.2 ± 1.8

Table 7: Autoimmune & Endocrine Comorbidities

Condition	Number (%)
Hypothyroidism	19 (21.1%)
Fibromyalgia	14 (15.6%)
Rheumatoid arthritis	6 (6.7%)

Table 8: Medication Use for Symptom Management

Medication Type	Number (%)
NSAIDs	72 (80.0%)
Hormonal therapy	65 (72.2%)
Antidepressants/Anxiolytics	38 (42.2%)
Opioids (occasional)	21 (23.3%)

Table 9: Correlation Between Pain Severity and Mental Health

Variable	Pearson's r (p-value)
Pain (VAS) vs. Depression (PHQ-9)	0.62 (<0.001)
Pain (VAS) vs. Anxiety (GAD-7)	0.58 (<0.001)
Pain (VAS) vs. Sleep quality	0.51 (<0.001)

Table 10: Hospitalization & Surgical History

Parameter	Number (%)
Previous laparoscopy	63 (70.0%)
≥1 Hospitalization (pain-related)	34 (37.8%)
Hysterectomy (partial/full)	12 (13.3%)

DISCUSSION

Endometriosis is a long-term, often painful condition where tissue like the lining of the uterus grows outside the uterus. While it's mainly known for its effects on women's health, it also has a bigger impact on the body, affecting chronic pain, mental health, and other medical issues. It's important for doctors and researchers to understand these connections to offer better care for people living with this serious condition (Liu, H. *et al*., 2017; Young, K. *et al*., 2015; Marinho, M. C. *et al*., 2018). A key feature of endometriosis is ongoing pain that can come in many forms, such as pelvic pain, painful periods, painful sex, and discomfort during bowel movements or urination. This constant pain can make everyday tasks and life overall harder. The reason for this pain is complex, involving the spread of endometrial-like tissue into other pelvic organs and changes in how the nervous system processes pain signals. Studies show that people with endometriosis may be more sensitive to pain, a condition called central sensitization, which This means doctors need to look at both physical and mental aspects when assessing and treating pain in these patients (Lorençatto, C. *et al*., 2006; Arola, H. M. *et al*., 2010; Goffman, E. 2009).

Endometriosis causes long-term pain that can greatly affect mental health. Research shows that people with endometriosis are more likely to experience mood problems like depression and anxiety while The ongoing struggle with pain, along with difficulty in getting proper treatment and the embarrassment some people feel when talking about gynecological issues, can make them feel more stressed, lonely, and overwhelmed

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(Brohan, E. *et al*., 2010; LeBel T.P. 2008; Marquardt, R. M. *et al*., 2019; Sifakis, S. *et al*., 2017) Also, the uncertain nature of symptoms can create worry about work, personal relationships, and life plans. Because of this, doctors should check for mental health problems in patients with endometriosis and provide treatment that includes both medical care and emotional support, as Endometriosis can also affect other parts of the body, leading to other health issues. There is more evidence showing that people with endometriosis may be more likely to have stomach problems like irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), and fibromyalgia. These conditions can have similar symptoms, making it harder to diagnose and treat them properly. Therefore, it's important for doctors to look at all possible causes when someone has long-term pain in the stomach or pelvis. Also, the ongoing inflammation from endometriosis might lead to heart problems, autoimmune diseases, and other health issues. More research is needed to understand how these long-term health effects impact people living with endometriosis.

Given the complex interplay between endometriosis, chronic pain, mental health, and other medical conditions, an interdisciplinary management approach is paramount, and This may involve collaborations among gynecologists, pain specialists, psychologists, and other healthcare providers. Effective management strategies should aim not just at alleviating physical symptoms but also at addressing the psychological and social aspects of living with endometriosis. Education plays a critical role in empowering patients, equipping them with knowledge to navigate their treatment options, and advocating for their needs within the healthcare system; however, patient-centered care should integrate complementary therapies, such as cognitive-behavioral therapy (CBT), physical therapy, and dietary modifications, which may provide relief from symptoms and improve quality of life. As research continues to evolve in understanding endometriosis and its systemic ramifications, there is a pressing need for the development of targeted treatments that address not only the disease itself but also its broader impacts on overall health and well-being.

CONCLUSION

This cross-sectional study elucidates the profound and multifaceted systemic impact of endometriosis, extending far beyond its classical gynecological manifestations where in Our findings demonstrate that endometriosis is associated with severe chronic pain, significant mental health comorbidities, gastrointestinal dysfunction, and substantial quality-of-life impairment in affected individuals.

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