

Comprehensive Assessment of Chronic Pelvic Pain in Reproductive and Postmenopausal Women: A Prospective Observational Study

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Abstract:

Background: Chronic pelvic pain (CPP) is a prevalent and multifactorial condition affecting women of all ages, significantly impairing quality of life and placing a substantial burden on healthcare systems. The diagnostic complexity of CPP arises from its diverse etiologies spanning gynecological, urological, gastrointestinal, musculoskeletal, and psychosocial domains. This prospective observational study aimed to comprehensively assess CPP in both reproductive-aged and postmenopausal women, emphasizing clinical characteristics, diagnostic pathways, and associated factors.

Methods: The study was conducted at the Department of Obstetrics and Gynaecology, Netaji Subhas Medical College and Hospital, Bihar. Ninety women aged 18 to 70 years presenting with CPP were enrolled after informed consent. Data collection included detailed history, physical examination, imaging studies, and laboratory investigations. The causes of CPP were classified into gynecological, gastrointestinal, musculoskeletal, and psychosocial categories. Statistical analysis was performed using SPSS version 20.

Results: The majority (36.7%) of participants were aged 31-40 years, and 53.3% belonged to lower socioeconomic status. Gynecological causes predominated (62.3%), with chronic pelvic inflammatory disease (25.6%), endometriosis (21.1%), and adenomyosis (15.6%) being common. Associated symptoms such as dysmenorrhea (63.3%) and abnormal vaginal discharge (40%) were frequent. In postmenopausal women, urogenital atrophy and pelvic organ prolapse emerged as prominent contributors.

Conclusion: CPP in women requires a holistic diagnostic approach integrating physical, psychological, and social factors. Differences in underlying causes between reproductive-aged and postmenopausal women highlight the need for age-specific diagnostic and therapeutic strategies to improve patient outcomes.

Keywords: Chronic Pelvic Pain, Reproductive Women, Postmenopausal Women, Gynecological Causes, Multidisciplinary Approach.

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Introduction

Chronic pelvic pain (CPP) is a common and complex clinical condition affecting women across various age groups, significantly impacting their quality of life and increasing healthcare utilization [1,2]. The International Association for the Study of Pain (IASP) defines "pain as an unpleasant sensory and emotional experience linked to actual or potential tissue damage. CPP is further defined by the European Association of Urology (EAU) as pain persisting for at least six" months, perceived within the pelvic region, and often accompanied by urinary, bowel, sexual, or gynecological dysfunction, along with psychological and behavioral consequences [3]. The American College of Obstetricians and Gynecologists (ACOG) defines CPP as non-cyclic pain lasting six months or longer, severe enough to interfere with daily activities or require medical care.

Globally, CPP affects approximately 5% to 24% of women, accounting for up to 26% of gynecological outpatient visits [4]. Its diagnosis is particularly challenging due to the wide range of contributing factors, including gynecological, urological, gastrointestinal, musculoskeletal, and psychosocial causes [5]. In reproductive-aged women, CPP is frequently associated with conditions such as endometriosis, pelvic inflammatory disease, and pelvic adhesions. In postmenopausal women, common causes include pelvic organ prolapse, urogenital atrophy, and myofascial pain. However, nearly 30% of cases remain unexplained despite thorough evaluation, indicating the presence of idiopathic or functional CPP.

The pathophysiology of CPP is multifactorial and often involves overlapping mechanisms. Pain may originate from identifiable pathology (nociceptive

pain), chronic inflammation, or nerve injury (neuropathic pain) [6,7]. In many cases, central sensitization—where the nervous system becomes hypersensitive to pain—contributes to the persistence of symptoms. Psychological factors, such as anxiety, depression, and past trauma, further amplify pain perception, making it essential to adopt a biopsychosocial approach to assessment and management [8].

The diagnostic process for CPP requires comprehensive clinical evaluation, including detailed history-taking, physical examination, and targeted investigations based on suspected causes. In reproductive-aged women, imaging like transvaginal ultrasound and diagnostic laparoscopy play a key role, while in postmenopausal women, assessments often focus on detecting pelvic organ prolapse or atrophic changes [9]. However, functional and neuropathic causes are frequently overlooked in older women, leading to underdiagnosis and inadequate management. Given the strong influence of psychological and social factors, multidisciplinary evaluation involving gynecologists, pain specialists, physiotherapists, and mental health professionals is increasingly recommended.

Despite its high prevalence, research on CPP has largely focused on younger women, leaving a gap in understanding how the condition manifests and progresses in postmenopausal populations. Age-related changes in hormone levels, tissue integrity, and pain processing may significantly alter symptoms and treatment responses in older women [11,12]. This study aims to bridge this knowledge gap by comparing CPP characteristics, diagnostic pathways, and quality of life impacts between reproductive-aged and postmenopausal women. The findings are expected to support more tailored, age-specific approaches for diagnosing and managing CPP, ultimately improving patient outcomes across the lifespan.

Materials and Methodology

This prospective observational study was conducted in the Department of Obstetrics and Gynaecology at Netaji Subhas Medical College and Hospital, Amhara, Bihta, Patna, Bihar for one year. The hospital is a prominent tertiary care teaching institution, catering to both rural and semi-urban populations across Bihar, and serves as a referral center for specialized obstetric and gynaecological care. During which female patients presenting with chronic pelvic pain were systematically identified, screened, evaluated, and enrolled into the study after obtaining informed consent.

The study population consisted of women aged between 18 to 70 years, who presented to the outpatient department with chronic pelvic pain, defined as persistent or intermittent non-cyclic pain

localized to the pelvis, lasting for at least six months, and severe enough to interfere with daily activities or require medical care. These patients were further evaluated through clinical examination and investigations to identify the underlying causes and assess appropriate management strategies. Only patients who were willing to participate and agreed to follow-up visits were included in the study. Exclusion criteria included women unwilling to provide consent, those with acute pelvic pain of recent onset, pregnant women, and patients with diagnosed malignancies or recent major surgeries unrelated to chronic pelvic pain.

The sample size was calculated based on the prevalence of chronic pelvic pain reported in previous Indian studies, which was estimated at 5.2%. Using the formula for sample size calculation in observational studies:

$$N = Z^2 * P * Q / d^2$$

where $Z = 1.96$ (at 95% confidence interval), $P = 5.2\%$, $Q = 100 - P = 94.8\%$, and $d = 5\%$ (precision), the minimum sample size required was found to be 80. To account for possible non-response or incomplete data, an additional buffer of 20% was added, bringing the final sample size to 90 patients.

Each patient underwent a comprehensive clinical evaluation starting with a detailed history-taking process. Demographic information such as age, socioeconomic status, education, and marital history was recorded, along with detailed obstetric history, including parity, previous pregnancies, deliveries, abortions, and any previous obstetric complications. A thorough history of the presenting complaint was taken, with special emphasis on the onset, duration, nature, severity, and aggravating or relieving factors associated with pelvic pain. Patients were also asked about related symptoms such as dysmenorrhea, dyspareunia, abnormal vaginal discharge, or urinary complaints. Past medical, surgical, and gynaecological history was also meticulously documented, including any history of endometriosis, pelvic inflammatory disease, abdominal or pelvic surgeries, and previous treatment for chronic pelvic pain.

A complete physical examination was performed for every participant, including general examination, abdominal examination, and a gynaecological examination using speculum and bimanual palpation. Findings from the physical examination were correlated with the patient's symptoms to formulate a provisional diagnosis. Routine laboratory investigations such as complete blood count, urine analysis, and pelvic ultrasound were conducted wherever necessary to support clinical findings and assist in identifying the underlying cause.

Based on the clinical and investigative findings, patients were categorized into different diagnostic groups such as gynaecological causes (endometriosis, adenomyosis, chronic pelvic inflammatory disease), gastrointestinal causes, musculoskeletal causes, or psychosomatic causes. Patients were managed according to standard guidelines, which could include medical therapy, counselling, or minor outpatient procedures. Patients with suspected psychosomatic or psychological contributors to pain were referred for psychological evaluation and counselling in collaboration with the Department of Psychiatry. In cases where surgical intervention was indicated, patients were further evaluated for laparoscopy or laparotomy as part of their diagnostic and therapeutic “plan.”

Ethical approval for this study was obtained from the Institutional Ethics Committee of Netaji Subhas Medical College and Hospital prior to initiation. All participants were enrolled only after providing written informed consent, ensuring they understood the purpose, methodology, potential risks, and benefits of the study. Participants were assured that their participation was voluntary, and they could withdraw from the study at any point without affecting their medical care.

All data collected during the study were entered into pre-designed case record forms and subsequently transferred to Microsoft Excel spreadsheets for

cleaning and analysis. The data were anonymized to ensure patient confidentiality. Statistical analysis was performed using SPSS software version 27.0. Continuous variables such as age were summarized using mean and standard deviation, while categorical variables such as parity, associated symptoms, and diagnostic categories were presented as percentages and frequencies. Appropriate statistical tests, such as chi-square tests for categorical variables and t-tests for continuous variables, were applied to assess associations and determine statistical significance.

Results

The study included 90 participants, with the majority (36.7%) aged between 31-40 years, followed by 24.4% in the 18-30 age group. Socioeconomic status revealed that more than half (53.3%) belonged to the lower socioeconomic class, while 38.9% were from the middle class. Educationally, a significant proportion (42.2%) had primary education, and 28.9% were illiterate, with only 6.7% being graduates or above. Most participants were married (90%), with a small fraction being unmarried (4.4%) or widowed/divorced (5.6%), reflecting a population where family life and limited education may contribute to health-seeking behaviors and health awareness.

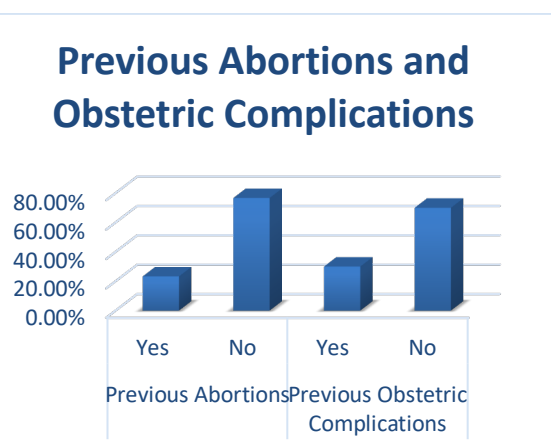
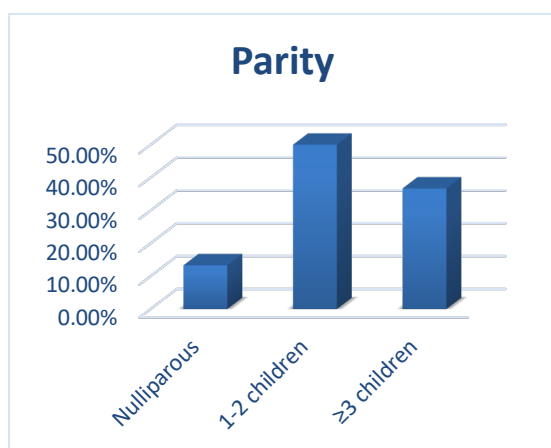
Table 1: Demographic Profile of Study Participants (n = 90)

Parameter	Frequency (n)	Percentage (%)
Age Group (Years)		
18-30	22	24.4%
31-40	33	36.7%
41-50	20	22.2%
51-60	10	11.1%
>60	5	5.6%
Socioeconomic Status		
Lower	48	53.3%
Middle	35	38.9%
Upper	7	7.8%
Education		
Illiterate	26	28.9%
Primary	38	42.2%
Secondary	20	22.2%
Graduate & above	6	6.7%
Marital Status		
Married	81	90%
Unmarried	4	4.4%
Widow/Divorced	5	5.6%

Regarding obstetric history, half of the participants (50%) had 1-2 children, while 36.7% had three or more children, and 13.3% were nulliparous. Previous abortions were reported by 23.3% of participants, indicating a history of pregnancy loss

in nearly a quarter of the population. Obstetric complications were experienced by 30%, showing a notable burden of past pregnancy-related issues that could contribute to chronic pelvic pain in these women.

Table 2: Obstetric and Gynaecological History (n = 90)		
Parameter	Frequency (n)	Percentage (%)
Parity		
Nulliparous	12	13.3%
1-2 children	45	50%
≥3 children	33	36.7%
Previous Abortions		
Yes	21	23.3%
No	69	76.7%
Previous Obstetric Complications		
Yes	27	30%
No	63	70%



In terms of symptomatology, the most common type of pain was dull or aching, reported by 64.4% of participants, while 35.6% experienced sharp or stabbing pain. Pain duration extended beyond a year for most (62.2%), indicating chronicity. Menstruation was the most common aggravating factor (66.7%), with intercourse (20%) and physical activity (13.3%) also triggering pain in some cases.

Associated symptoms were prevalent, with 63.3% reporting dysmenorrhea, 21.1% dyspareunia, 40% abnormal vaginal discharge, and 15.6% urinary complaints, painting a broad symptomatic picture of chronic pelvic pain with overlapping gynaecological, urological, and functional complaints.

Table 3: Symptom Profile and Pain Characteristics (n = 90)		
Symptom/Characteristic	Frequency (n)	Percentage (%)
Nature of Pain		
Dull/aching	58	64.4%
Sharp/stabbing	32	35.6%
Duration of Pain		
6-12 months	34	37.8%
>12 months	56	62.2%
Aggravating Factors		
Menstruation	60	66.7%
Intercourse	18	20%
Physical Activity	12	13.3%
Associated Symptoms		
Dysmenorrhea	57	63.3%
Dyspareunia	19	21.1%
Abnormal Discharge	36	40%
Urinary Complaints	14	15.6%

On clinical examination, pelvic tenderness was the most common finding, present in 82.2% of

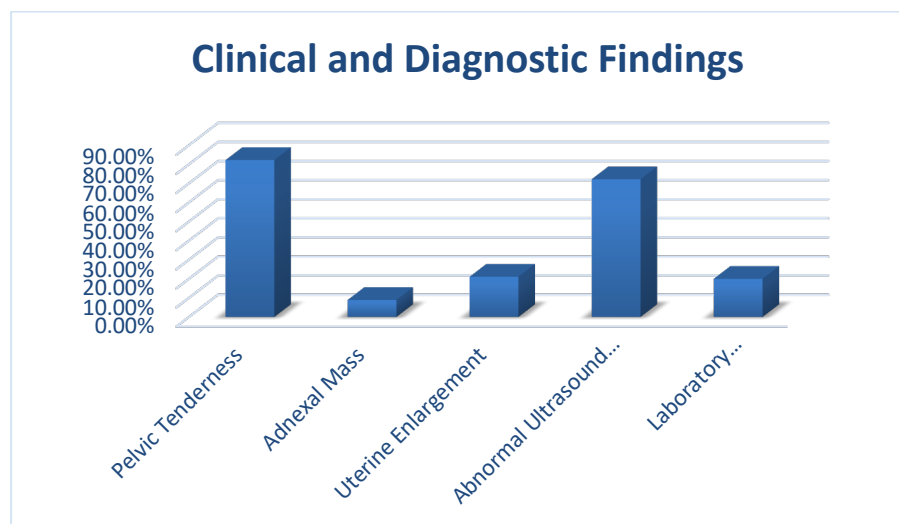
participants, highlighting the physical manifestation of pelvic pain. Abnormal ultrasound findings were

observed in 72.2%, reinforcing the role of imaging in diagnosing underlying pathology. Other notable findings included uterine enlargement (21.1%) and adnexal masses (8.9%), while 20% showed

laboratory abnormalities, reflecting the multifactorial diagnostic complexity involved in chronic pelvic pain evaluation.

Table 4: Clinical and Diagnostic Findings (n = 90)

Finding	Frequency (n)	Percentage (%)
Pelvic Tenderness	74	82.2%
Adnexal Mass	8	8.9%
Uterine Enlargement	19	21.1%
Abnormal Ultrasound Findings	65	72.2%
Laboratory Abnormalities	18	20%



The causes of chronic pelvic pain were diverse, with gynaecological causes being the most frequent, led by chronic pelvic inflammatory disease (25.6%), endometriosis (21.1%), and adenomyosis (15.6%). Gastrointestinal factors also contributed, with irritable bowel syndrome (8.9%) and constipation

(5.6%) identified. Musculoskeletal causes, such as pelvic floor myalgia (7.8%), were also present. Interestingly, psychogenic pain accounted for 15.6%, indicating the important role of psychological factors in chronic pelvic pain presentations.

Table 5: Final Diagnosis Categories (n = 90)

Diagnosis/Category	Frequency (n)	Percentage (%)
Gynaecological Causes		
Endometriosis	19	21.1%
Adenomyosis	14	15.6%
Chronic PID	23	25.6%
Gastrointestinal Causes		
Irritable Bowel Syndrome	8	8.9%
Constipation	5	5.6%
Musculoskeletal Causes		
Pelvic Floor Myalgia	7	7.8%
Psychosomatic Causes		
Psychogenic Pain	14	15.6%

The management of chronic pelvic pain was predominantly medical (71.1%), with surgical intervention required in 13.3% of cases. Psychological counselling was offered to 15.6% of participants, acknowledging the psychosomatic component of pain in some cases. A

multidisciplinary approach, combining medical, surgical, and psychological care, was used in 7.8%. Encouragingly, 88.9% of participants completed follow-up, while 11.1% were lost to follow-up, demonstrating good engagement with the treatment plan.

Table 6: Management Strategies Adopted (n = 90)

Management Approach	Frequency (n)	Percentage (%)
Medical Therapy	64	71.1%
Surgical Intervention	12	13.3%
Psychological Counselling	14	15.6%
Multidisciplinary Approach	7	7.8%
Follow-up Completed	80	88.9%
Lost to Follow-up	10	11.1%

Discussion

The present study analyzed the demographic, obstetric, symptomatologic, clinical, diagnostic, and management profiles of 90 women presenting with chronic pelvic pain (CPP). Most participants belonged to the 31-40 years age group (36.7%), with a significant proportion coming from lower socioeconomic backgrounds (53.3%) and having only primary education (42.2%). This aligns with findings by Zondervan et al., who reported that CPP is most common in reproductive-aged women, with a higher prevalence in low socioeconomic groups, partly due to limited healthcare access and higher rates of undiagnosed reproductive tract infections (RTIs) [12]. The predominance of married women (90%) is also consistent with earlier studies indicating that marital status, sexual activity, and childbirth are closely linked to pelvic pain syndromes [13].

Obstetric history showed that 50% of the participants had 1-2 children, and 36.7% had three or more children, indicating a multiparous population. Previous obstetric complications were reported by 30%, which is comparable to findings by Latthe et al., who highlighted that prior complicated deliveries and postpartum infections increase the risk of chronic pelvic pain [14]. Furthermore, 23.3% had a history of abortion, a known risk factor for chronic pelvic inflammatory disease (PID) and adhesions, which are common contributors to CPP [15].

Symptom analysis revealed that dull or aching pain was the predominant complaint (64.4%), with menstruation being the most frequently reported aggravating factor (66.7%). This mirrors the findings of Grace et al., who observed that cyclical worsening of pain is strongly associated with gynaecological causes such as endometriosis and adenomyosis [16]. Dysmenorrhea, a key symptom in 63.3% of participants, further reinforces this association. Dyspareunia (21.1%) and abnormal vaginal discharge (40%) suggest a significant infectious and inflammatory component, supporting previous work by Zolnoun et al., who noted that chronic lower genital tract infections and pelvic inflammatory disease are major contributors to CPP in resource-limited settings [17]. The chronicity of symptoms, with 62.2% experiencing pain for more

than a year, emphasizes the chronic and often neglected nature of pelvic pain in these populations.

Clinical and diagnostic findings revealed that pelvic tenderness was present in 82.2% of participants, with abnormal ultrasound findings seen in 72.2%. This is in line with the work of Vincent et al., who stressed the importance of thorough pelvic examinations and imaging in diagnosing the multifactorial origins of CPP (7). Uterine enlargement (21.1%) and adnexal masses (8.9%) were also detected, suggesting underlying pathologies such as fibroids, adenomyosis, or ovarian cysts, which have been frequently linked to chronic pain in earlier studies [18].

The final diagnosis in this study highlighted the predominance of gynaecological causes, with chronic PID (25.6%), endometriosis (21.1%), and adenomyosis (15.6%) being the most common. This aligns with the global literature, where gynaecological disorders are identified as the leading causes of chronic pelvic pain in women [19]. Gastrointestinal causes, including irritable bowel syndrome (IBS) (8.9%) and constipation (5.6%), also contributed to the symptomatology, underscoring the importance of considering non-gynaecological sources in the differential diagnosis. This is consistent with studies by Ball et al., who demonstrated that IBS frequently overlaps with CPP, with up to 30% of CPP patients meeting diagnostic criteria for IBS [20]. Musculoskeletal factors, particularly pelvic floor myalgia (7.8%), further highlight the need for comprehensive musculoskeletal assessment, a factor emphasized in the work of Fitzgerald et al. [21].

Psychosomatic causes were identified in 15.6% of participants, indicating the significant role of psychological distress, anxiety, and depression in perpetuating chronic pain. Similar findings have been reported by Zondervan et al., who noted that psychological comorbidities contribute to the development and maintenance of chronic pelvic pain in up to 20% of affected women [12]. This underlines the importance of a biopsychosocial approach to management.

Management strategies in this study were predominantly medical (71.1%), followed by surgical interventions (13.3%) and psychological counselling (15.6%). The use of a multidisciplinary approach in 7.8% reflects the increasing recognition

that chronic pelvic pain requires integrated care addressing both organic and functional components. This aligns with the recommendations from the European Association of Urology, which advocates for multimodal management involving gynaecologists, gastroenterologists, physiotherapists, and psychologists for optimal outcomes in CPP [22]. Encouragingly, follow-up compliance was high (88.9%), demonstrating strong patient engagement, although 11.1% were lost to follow-up, a common challenge reported in studies conducted in low-resource settings.

Overall, the findings of this study emphasize the complex, multifactorial nature of chronic pelvic pain, requiring a holistic diagnostic approach and individualized, multidisciplinary management. Similar to global research, the interplay of gynaecological, gastrointestinal, musculoskeletal, and psychological factors underscores the need for comprehensive evaluation and care pathways tailored to the specific needs of each patient [23,24].

Conclusion

In conclusion, this study highlights the complex, multifactorial nature of chronic pelvic pain (CPP) in women, with gynaecological causes being the most common, followed by gastrointestinal, musculoskeletal, and psychosomatic factors. The findings emphasize the importance of comprehensive evaluation that includes detailed history, clinical examination, imaging, and psychological assessment to identify the underlying causes. The predominance of lower socioeconomic status and limited education among participants also underscores the need for better awareness and access to healthcare for timely diagnosis and management. Effective treatment requires a multidisciplinary approach that combines medical therapy, surgical intervention where necessary, and psychological support. Addressing psychosocial factors alongside physical causes can improve outcomes and enhance the overall quality of life for women suffering from CPP.

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