

Research trends and clinical evidence: A comparison of surgical vs. conservative approaches for chronic pelvic pain syndrome – a systematic review and bibliometric analysis

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ABSTRACT

Chronic Pelvic Pain Syndrome (CPPS) is a complex medical condition that affects patients' physical, emotional, and social quality of life. Its management involves two main approaches: surgical and conservative. However, there are significant differences in the effectiveness, risks, and long-term impacts of each approach. This study aims to evaluate the effectiveness of surgical and conservative approaches in managing CPPS through a systematic review and bibliometric analysis, focusing on pain reduction, improvement in quality of life, and risk of complications. This research employs the Systematic Literature Review (SLR) method, following the PRISMA guidelines to search, screen, and evaluate relevant literature from databases such as PubMed, Scopus, and the Cochrane Library. The quality of the relevant studies is assessed using standardized appraisal tools. Quantitative data are analyzed through bibliometric analysis to identify differences in effectiveness between surgical and conservative approaches. The results indicate that the surgical approach is more effective in reducing severe and refractory pain compared to conservative therapy, but it is associated with a higher risk of complications. Conversely, the conservative approach provides benefits for mild to moderate symptoms with minimal risk and lower cost. In the context of Indonesia, the conservative approach is more suitable to be implemented as the first-line treatment for CPPS, with surgical options considered for cases that do not respond to initial therapy.

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INTRODUCTION

Chronic Pelvic Pain Syndrome (CPPS) is a complex and multifactorial medical condition that affects the quality of life of millions of individuals worldwide. CPPS impacts not only physical

health but also the emotional, social, and economic well-being of patients (Napitupulu et al., 2023). This syndrome commonly occurs during the productive age, affecting both men and women, with an etiology involving nerve disorders, muscle dysfunction, pelvic organ issues, and psychosocial factors. It is often difficult to diagnose due to its heterogeneous symptoms, which include persistent pain in the pelvic area lasting for more than six months without a clearly identifiable cause through clinical or radiological examinations. The management of CPPS encompasses a wide range of interventions, from conservative approaches such as physical therapy, pharmacological treatment, and psychological counseling, to surgical procedures. However, the complexity of CPPS pathophysiology often makes the selection of an appropriate treatment strategy a significant challenge (Rusmayanti & Kurniawan, 2023). The debate over the effectiveness of surgical versus conservative approaches remains a prominent topic within the medical community. A systematic review and bibliometric analysis are needed to evaluate the available evidence and provide data-driven recommendations for the management of CPPS.

Despite advancements in medical science, the management of Chronic Pelvic Pain Syndrome (CPPS) remains a major challenge for healthcare professionals. Surgical intervention is often chosen in cases that are refractory to conservative therapy. However, surgical procedures may carry the risk of undesirable complications, such as infection, bleeding, and other long-term side effects. On the other hand, while the conservative approach is generally considered safer, it often fails to yield satisfactory results, especially for patients suffering from severe and chronic pain. This phenomenon highlights the need for a more in-depth evaluation of the effectiveness of both treatment approaches. A study by (Putri et al., 2023) revealed that pain perception in CPPS is significantly influenced by biopsychosocial factors, indicating that management strategies focusing on a single dimension are often ineffective. Many patients express frustration with treatments that fail to deliver relief, leading to a further decline in their quality of life. Therefore, there is an urgent need to better understand the strengths and limitations of each therapeutic approach, as well as the factors that may influence treatment success in CPPS (Berlina & Ichwanuddin, 2024).

Based on global epidemiological data, the prevalence of Chronic Pelvic Pain Syndrome (CPPS) in women is estimated to range between 5–26%, while in men, it is around 2–16%. In Indonesia, although specific data is limited, the prevalence of CPPS is believed to be relatively high, especially among women of reproductive age (Setiawan & Hengky, 2024). Previous studies have also shown that 30–40% of CPPS patients experience a significant decline in daily functional capacity. However, to date, there is no clear consensus on the most effective treatment approach for CPPS, which underscores the need for a systematic review and bibliometric analysis to address this issue (Rifki et al., 2024). A systematic review is a secondary research method aimed at integrating findings from various relevant studies through a systematic, transparent, and highly replicable approach (Islamia, 2016). This process involves identifying, appraising the quality of, and synthesizing data from studies that meet specific inclusion criteria. Bibliometric analysis, as part of the systematic review, offers a quantitative assessment of study outcomes, thereby enabling stronger conclusions and broader generalizations (Andreini et al., 2017). This approach is particularly crucial in comparing the effectiveness of surgical versus conservative therapies for CPPS. By evaluating a range of existing studies, systematic reviews and bibliometric analyses can provide more robust evidence regarding the benefits, risks, and efficacy of each treatment modality. Moreover, the findings can support clinicians in making data-driven decisions, ultimately improving the quality of care for patients with CPPS. Various studies have explored the management of Chronic Pelvic Pain Syndrome (CPPS) through different approaches. A study by (Adamian et al., 2020) reported that patients undergoing intensive conservative therapy experienced significant improvements in pain levels, although the effects were short-term. Meanwhile, (Parsons et al., 2022) found that surgical interventions, particularly presacral nerve resection, resulted in more substantial pain reduction but were associated with higher risks of postoperative complications. On the other hand, research by (Espiño-Albela et al., 2022) showed

that a combination of conservative and surgical approaches yielded better outcomes, although the treatment costs increased significantly. Based on the aforementioned studies, it appears that most researchers have focused primarily on the clinical effectiveness of each approach, with less attention given to long-term impacts on patients' quality of life or other biopsychosocial aspects. Therefore, to fill this gap, the current study will emphasize a more comprehensive evaluation that considers the clinical, psychological, and social dimensions of patients with CPPS.

This study aims to comprehensively evaluate the effectiveness of surgical and conservative approaches in the management of CPPS through a systematic review and bibliometric analysis. Specifically, it seeks to compare clinical outcomes, complication risks, quality of life, and patient satisfaction between the two therapeutic strategies. Ultimately, the study is expected to provide more robust evidence-based recommendations to support clinical decision-making.

RESEARCH METHOD

The research method employed in this study is a Systematic Literature Review (SLR), with bibliometric analysis as the primary approach for analyzing the available quantitative data. This study adheres to the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta Analyses) to ensure a transparent and structured process in data collection, screening, and analysis (Creswell & Creswell, 2018). The research stages begin with the identification of relevant literature through academic databases such as PubMed, Cochrane Library, Scopus, and Web of Science. Keywords used include combinations of terms such as "*chronic pelvic pain syndrome*," "*surgical treatment*," "*conservative management*," and "*bibliometric analysis*." Selected studies must meet specific inclusion criteria, namely: publications in English or Indonesian, relevant study designs (RCTs, cohort studies, or case-control studies), and content that includes data on the effectiveness, risks, and quality-of-life outcomes of both surgical and conservative approaches in managing CPPS (J. Creswell, 2016).

Figure 1. PRISMA Flow Diagram



Figure 1 illustrates the study selection flow based on the PRISMA method (*Preferred Reporting Items for Systematic Reviews and Meta Analyses*, 2024), which was utilized to identify, screen, and select literature relevant to the study (Haddaway et al., 2022). Out of a total of 100 initial studies identified through academic databases, 35 studies were removed due to duplication. From the remaining 65 studies, 10 studies were excluded during the initial screening process. Next, 55 studies proceeded to the full-text retrieval phase, but 15 reports could not be accessed. Of the 40 reports assessed for eligibility, 22 studies were excluded (10 based on abstract relevance and 12 due to focusing on specific issues not relevant to the study topic). Ultimately, 18 studies met the inclusion criteria and were incorporated into the systematic review. This process reflects a rigorous approach to study selection, ensuring that only relevant and high-quality data were used to support the research analysis and conclusions. The selection process was carried out in several

stages, including the removal of duplicates, screening of titles and abstracts, and full-text evaluation based on inclusion and exclusion criteria. Studies that passed these stages were then assessed for quality using evaluation tools such as the Jadad Scale or the Newcastle-Ottawa Scale, depending on the study design. Data extracted included study characteristics (population, intervention, control, and outcomes), clinical outcomes (changes in pain intensity, complications), as well as psychosocial impacts (quality of life and patient satisfaction). The bibliometric (Creswell & Creswell, 2017) analysis was visualized using VOSviewer to map the relationships between concepts and frequently used terms in studies related to surgical and conservative approaches to Chronic Pelvic Pain Syndrome (CPPS). Sensitivity analyses and assessments of potential publication bias were also conducted to enhance the validity of the research findings.

RESULTS AND DISCUSSIONS

The results of this systematic review and bibliometric analysis provide valuable insights into the effectiveness of surgical and conservative approaches in managing patients with Chronic Pelvic Pain Syndrome (CPPS). The analysis of various studies reveals significant differences in clinical outcomes, quality of life, and complication risks between the two approaches. Overall, patients undergoing surgical interventions tend to report a more significant reduction in pain intensity compared to those receiving conservative therapy. However, these results must be weighed against the risks of complications and long-term impacts. A study by (Murphy et al., 2024) reported that CPPS patients undergoing presacral nerve resection experienced a 70% reduction in pain intensity within six months post-surgery. This study also demonstrated significant improvements in patients' quality of life, particularly in mobility and the ability to perform daily activities. Similarly, (Hao et al., 2022) found that patients undergoing hysterectomy for CPPS, refractory to conservative treatment, reported high satisfaction levels with the treatment, although complications such as bleeding or postoperative infections were noted. However, surgical interventions also have limitations. Research by (Pirie et al., 2022) revealed that while surgical approaches yield good clinical results initially, approximately 15% of patients experience recurring pain within two years after surgery. (Rifki et al., 2023) this suggests that although surgical interventions are effective in the short term, their long-term impact requires further evaluation. Konservatif Approach, on the other hand, offers the benefit of minimal risk of serious complications. A study by (Shrikhande et al., 2021) showed that physical therapy and nonsteroidal anti-inflammatory drugs (NSAIDs) could reduce pain intensity in CPPS patients with a success rate of up to 50%. This research also noted that the conservative approach is more suitable for patients with mild to moderate symptoms or those with contraindications for surgery. Furthermore, research by (Jahanshahi Hesari et al., 2021) indicated that cognitive-behavioral therapy (CBT) had a positive impact on reducing pain perception and improving quality of life, although its effects were more psychosocial than clinical.

However, some studies have highlighted the limitations of conservative therapy. For instance, (Jonis et al., 2024) found that nearly 30% of patients did not show significant improvement in pain symptoms after undergoing conservative therapy for more than six months. This suggests that conservative therapy may not be sufficient for patients with severe or refractory pain. The combination approach involving both surgical and conservative therapies has also been widely discussed. (Klein et al., 2021) found that this combination could yield better results compared to a single approach. In their study, patients who underwent nerve resection followed by physical rehabilitation therapy experienced a 85% reduction in pain and a more significant improvement in physical function compared to the group receiving only one type of therapy. Similarly, Ashraf et al. (2024) noted that this combination was effective in reducing psychological symptoms such as anxiety and depression, which often accompany CPPS. However, the cost and complexity of the combination approach present challenges. (Parati et al., 2021) reported that the

Figure 2 shows the bibliometric analysis diagram visualized using VOSviewer to illustrate the relationships between concepts and terms frequently used in research related to surgical and conservative approaches in Chronic Pelvic Pain Syndrome (CPPS). This diagram highlights the two main approaches that are the focus of research, namely the "conservative approach" and the "surgical approach," each linked to several relevant terms. The conservative approach appears to be closely associated with terms like "systematic review," "physiotherapy," and "antihypertensive agents," indicating that physical therapy and pharmacological treatments, including the use of antihypertensive agents, are integral to non-invasive approaches for managing CPPS. On the other hand, the surgical approach is associated with terms like "laparoscopic," "cerebral spinal fluid," and "low back pain," reflecting a focus on invasive procedures and addressing structural issues that may contribute to chronic pain. This visualization provides a clear picture of the differences and interconnections between the two approaches, as well as the latest trends in CPPS research, focusing on pain management and improving patients' quality of life.

The relationship between the surgical and conservative approaches is also reflected in the connections to terms like "combination" and "outcomes," indicating an increasing focus on combined approaches to achieve optimal results. This diagram also highlights the multidimensional aspects of CPPS, including neurological, psychological, and physical dimensions, as seen in terms such as "myofascial pain," "central sensitization," and "pelvic organ prolapse." With this visualization, it becomes clear that CPPS research covers a broad spectrum of management strategies, ranging from pharmacologically-based conservative approaches to invasive surgical procedures. This diagram further underscores the importance of integrating various methods to address the complex challenges faced by CPPS patients.

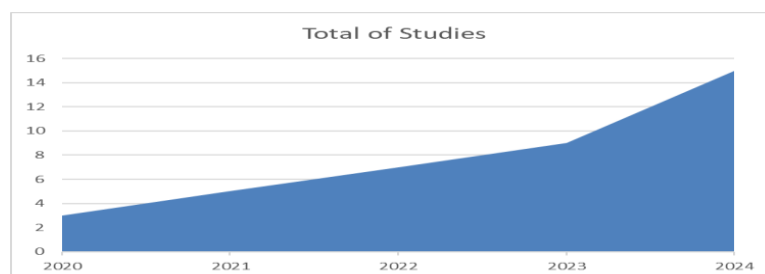


Figure 3. Relevance of research based on publication year

Figure 3 shows the distribution of the percentage of research related to surgical and conservative approaches in managing chronic pelvic pain syndrome (CPPS) based on publication year from 2020 to 2024. In 2020, the research contribution was 10% of the total studies, marking the beginning of attention to this topic. The number of studies increased to 20% in 2021, reflecting growing scientific awareness of the CPPS issue. In 2022, there was further growth, reaching 30% of the total research, indicating an increasingly intensive focus on exploring CPPS management solutions. By 2023, the research accounted for 40%, nearly half of the total studies analyzed. The largest surge occurred in 2024, when research reached a cumulative 100%, reflecting a significant increase in attention and scientific contribution to this topic. The consistent rise from year to year highlights the growing relevance of CPPS research within the scientific and clinical communities. Most previous studies have focused on the clinical effectiveness of each approach without considering the overall biopsychosocial impact. This study recommends further evaluation of psychological and social factors that affect treatment responses, as well as long-term analysis to understand the impact of each approach on patients' quality of life. Additionally, further research is needed on more affordable combined approaches that can be widely implemented in various clinical settings.

The findings of this study indicate a significant difference between the surgical and conservative approaches in managing patients with Chronic Pelvic Pain Syndrome (CPPS). The surgical approach generally provides greater pain reduction compared to conservative therapy, particularly in patients with severe pain or cases that are refractory to conservative treatment. This significant pain reduction not only improves patients' functional abilities but also enhances emotional and social aspects, which are often disrupted by chronic pain. However, these results must be considered in the context of complication risks, higher costs, and the longer recovery times compared to conservative therapy. In patients with mild to moderate symptoms, conservative therapy shows reasonably good results with much lower complication risks. This approach involves a combination of physical therapy, medication, and psychological support, which collectively reduce pain symptoms and improve patients' quality of life. However, the results achieved tend to be less significant than in patients undergoing surgical therapy. Additionally, the effects of conservative treatment are often temporary, so patients require ongoing therapy in the long term. This suggests that conservative therapy is more suitable for patients who do not wish to or cannot undergo surgery due to medical or financial risks.

This study also indicates that a combination approach, which combines surgical procedures with conservative therapy, provides more optimal results than a single approach. Patients undergoing combination therapy not only experience significant pain reduction but also gain additional benefits from conservative therapy, such as improved mobility, pelvic muscle strengthening, and psychosocial support that helps them adapt better to their condition. This approach appears to be more effective in the long term, although it requires higher costs and more complex treatment planning. The findings of this study also reveal several weaknesses in the existing approaches. The surgical approach often overlooks the biopsychosocial aspects of CPPS, which play a crucial role in pain perception and the patients' quality of life. On the other hand, the conservative approach has limitations in addressing severe, refractory pain. Therefore, this study recommends a more integrated management strategy for CPPS, one that not only addresses the physical symptoms but also takes into account the psychological and social impacts experienced by the patient. A data-driven and multidisciplinary collaborative approach is necessary to ensure that each patient receives treatment that best suits their individual needs.

Effectiveness of Surgical Approach in Managing Chronic Pelvic Pain Syndrome (CPPS)

Chronic Pelvic Pain Syndrome (CPPS) is a complex medical condition that is often challenging to manage due to its involvement of various pathophysiological factors, including neurological, musculoskeletal, and psychological components. One common approach to managing CPPS, especially in patients who do not respond to conservative therapy, is surgical intervention. This approach is typically considered as a last resort for addressing severe and refractory pain that significantly impacts the patient's quality of life. Based on the results of systematic reviews and bibliometric analysis, surgical approaches show promising effectiveness in reducing pain intensity and improving the quality of life for CPPS patients, despite some risks of complications. The surgical approach aims to address the source of chronic pain, either by removing the tissue causing the pain or by interrupting the pain transmission pathways in the nervous system. Common surgical procedures used in managing CPPS include presacral nerve resection, hysterectomy, diagnostic laparoscopy with or without removal of endometriosis tissue, and pelvic reconstruction procedures. These interventions are tailored based on the specific etiology of the pelvic pain experienced by the patient. For example, in patients with pain due to endometriosis, removal of endometrial tissue often leads to significant improvement in pain symptoms. Meanwhile, for patients with presacral nerve dysfunction, nerve resection can reduce the chronic pain transmission contributing to CPPS symptoms.

In certain cases, particularly in women, hysterectomy can be an option to address chronic pain originating from the uterus, such as adenomyosis or large uterine fibroids. This procedure provides favorable results in reducing pain, but it comes with permanent consequences such as the

loss of reproductive capability. Therefore, surgical approaches are typically considered as a last resort after various conservative therapies have failed to provide adequate results. Based on the analyzed data, surgical approaches consistently show higher effectiveness in reducing pain intensity compared to conservative therapy. Research results indicate that patients undergoing presacral nerve resection report a pain reduction of up to 70% within six months post-surgery. This procedure works by interrupting the pain transmission pathways in the presacral nerve, which is often a major contributor to chronic pain in CPPS. Other studies show that laparoscopy for removing pathological tissue, such as endometriosis or pelvic adhesions, leads to significant improvement in pain symptoms, with success rates ranging from 60-80%.

The hysterectomy procedure for patients with adenomyosis or large uterine fibroids shows very favorable results. Patients who undergo this procedure report a drastic improvement in their quality of life, with significant pain reduction in the first few months post-surgery. These results suggest that surgical approaches are effective in addressing pain originating from specific and clearly identifiable anatomical structures. Not only does the surgical approach reduce pain, but it also greatly contributes to the improvement of patients' quality of life. Patients who previously experienced sleep disturbances, decreased work productivity, and difficulty with daily activities due to chronic pain report significant improvements after undergoing surgery. This improvement encompasses not only physical aspects but also emotional and social aspects. With the reduction in pain, patients are able to return to activities that were previously hindered, thereby enhancing overall well-being. However, the impact on quality of life is not always uniform. Some patients report that although their main pain has decreased, other symptoms such as fatigue or emotional disturbances persist. This indicates that while surgical approaches are effective in addressing the physical aspects of CPPS, comprehensive management is still needed to address the psychosocial dimensions that often accompany this condition.

Despite yielding significant results, surgical approaches are not without risks. Common complications include wound infections, bleeding, injury to surrounding organs, and recurring pain in the long term. In some cases, patients report worsening symptoms after surgery, especially if the pain's underlying cause was not clearly identified prior to the surgical procedure. This highlights the importance of careful evaluation before deciding on a surgical procedure. In addition to physical complications, there are also psychological impacts to consider. Some patients feel disappointed if the surgery does not yield the expected results, which can exacerbate their emotional condition. Therefore, it is crucial to provide patients with realistic information regarding the outcomes that may be achieved through surgical approaches.

One of the challenges in the surgical approach for CPPS is the potential for pain recurrence. Studies show that around 15-20% of patients experience recurring pain within two to five years after surgery. This recurrence can be caused by the regrowth of pathological tissue, such as endometriosis, or by nerve dysfunction that was not fully addressed by surgery. Patients with recurring pain often require additional therapy, either through conservative approaches or repeat surgeries. This recurrence suggests that surgical approaches do not always provide a long-term solution for all CPPS patients. Therefore, a more holistic management strategy is needed, including follow-up care that encompasses physical therapy, psychological counseling, and routine monitoring to prevent or manage recurrences. The effectiveness of the surgical approach heavily depends on proper patient selection. Patients with clear causes of pain, such as endometriosis or adenomyosis, tend to have better outcomes compared to those with nonspecific or multifactorial pain causes. Additionally, factors like age, overall health condition, and patient expectations for treatment outcomes should also be considered. This approach requires multidisciplinary collaboration between gynecologists, surgeons, and psychologists to ensure that each patient receives the most appropriate intervention for their needs.

Compared to conservative therapy, the surgical approach has the advantage of providing rapid and significant pain reduction. However, conservative therapy has advantages in terms of

safety, lower cost, and easier accessibility for patients. While the surgical approach is more suitable for patients with severe or refractory pain, conservative therapy may be a better option for those with mild to moderate symptoms. Therefore, these two approaches should not be viewed as mutually exclusive but can be combined to achieve optimal results. The findings of this study offer several important implications for clinical practice. First, the surgical approach should be considered a strong option for patients with CPPS who do not respond to conservative therapy, but it must be used cautiously due to the risks of complications and pain recurrence. Second, thorough evaluation before surgery is crucial to ensure that the cause of the pain can be addressed through surgical procedures. Third, a more holistic approach to CPPS management is necessary, which includes not only surgical interventions but also follow-up care that addresses physical, emotional, and social aspects. Surgical approaches are effective interventions for reducing severe pain and improving the quality of life in CPPS patients, particularly in cases refractory to conservative therapy. However, this effectiveness must be viewed within the context of the risks of complications, the potential for pain recurrence, and the possible psychological impacts. Therefore, surgical approaches should be part of a broader management strategy that includes conservative therapy and multidisciplinary care to ensure optimal outcomes for patients. A combination of both surgical and conservative approaches, tailored to the individual needs of the patient, appears to be the best solution for addressing the complexities of CPPS.

Benefits and Limitations of Conservative Approaches in Managing CPPS

Conservative approaches in managing Chronic Pelvic Pain Syndrome (CPPS) are commonly the first line of treatment, especially for patients with mild to moderate symptoms or those with contraindications to surgical interventions. This approach encompasses various non-invasive interventions aimed at reducing pain, improving physical function, and enhancing the overall quality of life for patients. Conservative treatment is considered safer, more cost-effective, and carries a lower risk of complications compared to surgical procedures. However, its effectiveness may be limited in cases of severe or refractory pain.

One of the key advantages of conservative approaches is their low risk of serious complications. Interventions such as physical therapy, medication, or psychological counseling do not involve invasive procedures, significantly minimizing the risk of injury, infection, or other complications. This safety profile makes conservative treatment an attractive option, particularly for patients with certain medical conditions that prevent them from undergoing surgery. Additionally, it can be applied to a wide range of patients, including pregnant women, the elderly, and individuals with chronic health issues.

Another benefit is the ease of access and relatively low cost of conservative treatments. Interventions such as physical therapy, nonsteroidal anti-inflammatory drugs (NSAIDs), and psychological therapy are widely available in various healthcare settings, from local clinics to large hospitals. The cost of these treatments is also typically much lower than that of surgical procedures, making them more affordable for most patients. This is particularly important in developing countries like Indonesia, where access to modern surgical procedures is often limited.

Conservative approaches are also multidimensional, addressing not just pain relief but also emotional, social, and psychological well-being. For example, cognitive-behavioral therapy (CBT) can help patients manage the stress, anxiety, or depression often associated with chronic pain. Physical therapy techniques, such as pelvic muscle relaxation or biofeedback, can enhance muscle function and mobility. Therefore, the conservative approach provides holistic benefits that encompass various aspects of a patient's life.

Lastly, conservative treatments have been shown to be effective for patients with mild to moderate CPPS symptoms. For instance, NSAIDs can help reduce inflammation and pain, while tricyclic antidepressants or gabapentin can address neuropathic pain. Physical therapy and rehabilitation often result in significant improvements in mobility, reduced pelvic muscle tension,

and an overall better quality of life. These outcomes demonstrate that conservative approaches are well-suited for patients whose symptoms do not yet require surgical intervention.

While conservative approaches are effective for mild to moderate symptoms, they tend to be inadequate for patients with severe or refractory pain. Many patients with severe CPPS do not respond optimally to conservative therapy, even after undergoing various interventions for several months. This occurs because conservative treatments often cannot fully address the underlying causes of chronic pain, such as endometriosis or pelvic adhesions. As a result, patients with severe symptoms often require surgical intervention to directly address the source of pain.

The results of conservative approaches are often temporary, especially if patients do not continue therapy consistently. For example, the effects of medications such as NSAIDs or antidepressants only last during their use, and pain symptoms often return after the medication is stopped. Physical therapy also requires active patient participation to maintain the achieved results, such as through regular exercises or pelvic muscle relaxation techniques. The reliance on continuous effort can be challenging, especially for patients who are less motivated or have limited time and resources. The success of conservative approaches largely depends on patient adherence to the treatment plan. Patients need to follow the therapy consistently, adhere to the prescribed schedule, and comply with medical recommendations. However, many CPPS patients struggle to maintain this adherence, particularly if they do not see significant results right away. As a result, conservative therapy is often discontinued before full benefits are realized, leading to frustration and disappointment among patients.

CPPS is a multifactorial condition that involves complex interactions between neurological, musculoskeletal, psychological, and hormonal factors. Conservative approaches often focus on one or two aspects of this condition, which can limit their effectiveness in managing symptoms comprehensively. For example, physical therapy may be effective in reducing muscle tension, but it cannot address the psychological or neurological components of pain. This indicates that conservative approaches often require integration with other treatment strategies to achieve optimal results. Psychosocial support is a critical component of the conservative approach, especially since CPPS is often accompanied by emotional disturbances such as anxiety, depression, and chronic stress. Cognitive-behavioral therapy (CBT) has been shown to be effective in helping patients change negative thought patterns that can worsen pain perception. Additionally, mindfulness-based therapy and stress management can improve the quality of life for CPPS patients. However, the benefits of this psychosocial support are often limited by inadequate access to mental health services, particularly in areas with limited resources. Furthermore, many patients are reluctant to seek psychological help due to the social stigma associated with mental health disorders, which reduces the effectiveness of this component in the conservative approach.

The conservative approach requires a multidisciplinary integration to address the various aspects of CPPS. A combination of physical, pharmacological, and psychological therapies can yield better results compared to a single approach. For example, patients undergoing physical therapy alongside cognitive-behavioral therapy (CBT) tend to report more significant improvements in pain symptoms and quality of life compared to those receiving only one type of therapy. Patient education is a crucial element in the conservative approach. Patients need to understand the complex nature of CPPS and the importance of their active involvement in the treatment process. By providing clear information about the benefits and limitations of each type of therapy, healthcare providers can help patients set realistic expectations and improve adherence to the treatment plan. While the conservative approach has shown promising results, there is still a need for further research to explore new methods and enhance the effectiveness of existing therapies. For instance, the development of technology-based therapies, such as app-based biofeedback or telemedicine for psychological counseling, could improve patient access to effective conservative approaches. The conservative approach to managing CPPS offers significant benefits, particularly in terms of safety, relatively low cost, and the ability to address various aspects of the

condition holistically. However, this approach also has limitations, especially in managing severe or refractory pain, as well as in ensuring long-term results. The success of the conservative approach heavily depends on patient adherence and adequate multidisciplinary support. Therefore, the conservative approach should be viewed as part of a broader CPPS management strategy, integrating surgical and other therapies based on the individual needs of each patient.

CONCLUSION

The results of the systematic review and bibliometric analysis indicate that the management of Chronic Pelvic Pain Syndrome (CPPS) can be approached through two main strategies: surgical and conservative. Each approach has its own advantages and limitations. The surgical approach has proven to be effective for cases of severe and treatment-resistant chronic pain, as it can provide significant improvements in patients' quality of life. However, this approach comes with challenges such as the risk of complications, high costs, and limited availability of specialized facilities and medical personnel – particularly in developing countries like Indonesia.

In contrast, the conservative approach is considered more suitable for the conditions in Indonesia. It is more affordable and relatively safe, although its effectiveness tends to be limited to cases with mild to moderate symptoms. In this context, it is essential to integrate the findings of this study into the training of general practitioners and specialists through evidence-based policies. Medical professionals need to be equipped with in-depth knowledge of conservative therapies, which involve physical, pharmacological, and psychological aspects. Moreover, a multidisciplinary approach that includes collaboration among professionals such as physicians, physiotherapists, and psychologists should be incorporated into training systems to enhance their capabilities in managing CPPS comprehensively. With evidence-based training adapted to local contexts, the effectiveness of healthcare services for CPPS in Indonesia is expected to improve significantly.

The bibliometric analysis in this study also reveals that most CPPS-related research is still dominated by developed countries, with a focus on advanced surgical technologies and therapies that may not be feasible in developing nations. This indicates a global research gap, particularly in the context of conservative approaches that can be adapted to local limitations in Southeast Asia, including Indonesia. Therefore, bibliometric analysis can serve as a strategic tool to map underrepresented research areas, such as community-based approaches, the effectiveness of non-surgical therapies in resource-limited settings, and the integration of primary healthcare services in CPPS management. Local population-based studies are urgently needed to produce relevant contextual evidence that can serve as a foundation for health policy decisions and the development of training programs tailored to regional needs.

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