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Review

A Narrative Review Exploring the Associations Between Emphasis on Pain Education in Medical Curricula and Discrepancies Associated with Pain Management Related to IUD Insertions

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Abstract

Increasing use of intrauterine devices (IUDs) makes effective pain management essential for high-quality reproductive care. Yet gaps between patient and clinician pain perceptions, along with limited training in managing IUD-related acute pain, contribute to barriers in IUD uptake and patient-provider mistrust. This narrative review (1) summarizes current approaches to IUD-related pain management, (2) evaluates the emphasis on pain education and the management of acute and chronic pain, including IUD insertion pain, across undergraduate medical education (UME), graduate medical education (GME), and residency training, and (3) examines how gaps in pain education may affect clinicians' preparedness to manage both chronic pain broadly and IUD-related acute pain specifically. Relevant literature was identified through keyword searches across major databases and national organizations. Evidence highlights limited and inconsistent strategies for managing IUD insertion pain and a persistent lack of comprehensive pain-medicine training in medical school and residency. Variability in clinicians' approaches to IUD-related pain likely reflects gaps between national guidelines and insufficient pain-management education across UME and GME. A structured, longitudinal pain medicine curriculum spanning pre-clerkship, clerkship, and residency is needed to strengthen clinicians' competence in pain management and improve patients' experiences with IUD care.

Keywords: pain education; Undergraduate Medical Education (UME); Graduate Medical Education (GME); intrauterine device; pain management

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Introduction

Pain, despite its complex and multifactorial nature, remains one of the most common reasons patients seek medical care. Robust educational initiatives in undergraduate (UME) and graduate medical education (GME) covering chronic pain pathophysiology, evidence-based treatment strategies, and effective patient communication are essential to prepare future physicians to manage pain competently and deliver high-quality patient care.

Hormonal and non-hormonal intrauterine devices (IUDs) are highly effective long-term contraceptive options [1,2] offering additional benefits, including reduced symptoms of menorrhagia, endometriosis, and adenomyosis, improvement of anemia, and decreased risk of endometrial cancer [3–5]. However, IUD insertion can be painful for many patients [6]. Despite this, approximately 14.3% people of reproductive age worldwide use IUDs for contraception, and U.S. utilization has increased from 5.6% (2006–2011) to 10.5% (2017-2019) [7].

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Recent studies highlight substantial variation in pain-management practices for IUD insertion across healthcare settings. Reports of clinicians minimizing patients' pain and insufficient patient counseling about available pain-management options [8] contribute to hesitancy among younger patients considering IUDs [9,10]. National guidelines from the American College of Obstetricians and Gynecologists (ACOG) and the Centers for Disease Control and Prevention (CDC) were inconsistent and remained largely unchanged between 2017 and 2023. Only recently have both organizations updated their recommendations [11,12]. These discrepancies raise important questions about whether gaps in medical training contribute to inconsistent clinical pain-management practices.

This article examines the emphasis on pain education and physician training in the management of acute and chronic pain in medical education, drawing on an extensive review of the existing literature. We have attempted to determine whether the identified gaps in pain medicine education are associated with clinicians' ability to effectively manage patients' acute pain, including IUD-related pain. We have also offered recommendations to address these curricular deficiencies to reduce the existing disparities in clinical practice.

Methods

An exploratory search was conducted using PubMed, Google Scholar, Google Search, ScienceDirect, NIH, and CDC resources. The search, completed between April 2024 and March 2025, focused on two areas: (1) current approaches to managing IUD-associated pain, and (2) emphasis on pain education in UME and GME, including training in IUD insertion and related pain management.

For section (1), the goal was to identify existing strategies for reducing pain during and after IUD insertion. Search terms included combinations of "intrauterine device," "IUD," "pain management," "analgesia," "insertion," "procedure-related pain," "strategies," and "methods." Eligible sources included peer-reviewed articles on pharmacological and non-pharmacological interventions, reviews, clinical guidelines, meta-analyses, controlled trials, national agency documents, and survey-based studies. After title and abstract screening, full-text reviews were performed. Exclusion criteria included studies unrelated to IUD-associated pain, non-human research, studies involving participants under 18, and non-English publications. Pain scores from seven randomized controlled trials (N = 61- 202) evaluating pharmacological interventions were compared and summarized in Figure 1, with additional details provided in the supplemental materials.

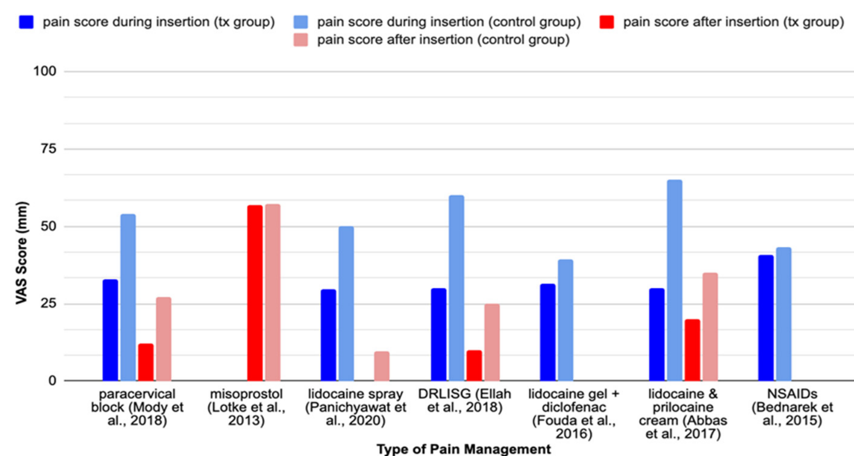

Figure 1. Percentage of use of the different pain management options by US current providers.

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For section (2), the aim was to assess how UME and GME curricula address pain education, IUD insertion/removal training, and instruction on managing associated pain. Search terms included "pain education," "medical curriculum," "undergraduate medical education," "graduate medical education," "IUD pain management training," "IUD training," and "medical student competencies." Included materials consisted of reviews, research articles, and survey-based studies focused on pain-education practices, interdisciplinary approaches, IUD clinical training, and competency development. Screening followed the same process as section (1). Notably, no studies were found that specifically addressed training in IUD-associated pain management within existing UME or GME curricula.

Because this work is a narrative review of existing literature and does not involve primary data collection, ethical approval was not required. Our aim was to provide a comprehensive overview of the topic by summarizing and synthesizing available evidence, without following the strict methodological procedures of systematic reviews. This also eliminated the need for including a PRISMA diagram. All sources were represented accurately, and citations were provided with care to ensure transparency and scholarly integrity.

Results

To highlight the existing discrepancies in pain management options for IUD insertions and the lack of standardization in the process, our results section lists the available options in the prevailing literature. It summarizes their efficacy, disadvantages, and their current use in clinical practice. We strongly feel that educational initiatives are crucial for ensuring physicians are equipped with the necessary knowledge, aptitude, and skill sets to mitigate patients' chronic pain in general and IUD-associated acute pain in specific. We have thus attempted to provide a status update on how general pain medicine education has historically been emphasized and incorporated into medical curricula globally. Furthermore, in this section, we have also provided a summary of the emphasis of UME and GME curricula on pain education, pain management, and training in IUD insertion and removal processes.

Current Management Options Available for IUD-Associated Pain

Misoprostol: Misoprostol is a synthetic prostaglandin E_1 analog routinely used in the OB/GYN practice for medication abortion, medical management of miscarriage, induction of labor, and as a cervical ripening agent for hysteroscopic procedures like IUD insertion [13,14]. Routine utilization of the drug as a pain management option for IUD insertion by physicians is reflected in Table 1. However, due to its limited effectiveness [15], CDC does not recommend using misoprostol to reduce IUD insertion pain in their most recently updated guidelines [12].

Nonsteroidal anti-inflammatory drugs (NSAIDs): These drugs are the most commonly recommended by providers [16–18]. Although oral administration of NSAIDs like ibuprofen (800 mg), 30-45 min prior to IUD insertion, may have little to no effect on insertion pain [19,20], ibuprofen might help manage post-procedural pain [17]. The updated CDC and ACOG guidelines include the use of NSAIDs (such as ibuprofen or naproxen) as a recommended option for managing IUD insertion pain, often to be taken about an hour before the procedure [11,12].

Lidocaine: Recent guidance from both the CDC's 2024 U.S. Selected Practice Recommendations and ACOG's 2025 Clinical Consensus on Pain Management for in-office gynecologic procedures emphasizes that local anesthesia with lidocaine should be actively offered for the management of IUD-insertion pain. Both organizations note that a paracervical block with 1% lidocaine provides the most consistent reduction in insertion-related pain, particularly for nulliparous patients or those with anticipated high discomfort. They also acknowledge that topical lidocaine formulations, including lidocaine gel, spray, or cream applied to the cervix or cervical canal, can reduce tenaculum placement pain and decrease insertion pain, though with variable effects. CDC and ACOG frame lidocaine use as part of shared decision-making and a multimodal pain-management strategy, encouraging clinicians to offer topical lidocaine and/or a paracervical block rather than relying on NSAIDs alone.

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Other lidocaine formulations with different efficacies used in the management of IUD-associated pain include 20 cc buffered 1% lidocaine paracervical block [21], 10% lidocaine spray [7,22], and 2% dual-responsive lidocaine in situ hydrogel [23].

Combination drugs: Use of combination drugs, like oral administration of diclofenac potassium tablets one hour prior to the IUD insertion, followed by the application of 2% lidocaine gel on the anterior cervical lip and cervical canal, 3 minutes before insertion, is found to reduce IUD-associated pain efficiently [24]. Lidocaine-prilocaine cream (LP cream) is another effective combination drug that can reduce insertion pain in subjects using copper IUDs [25].

Figure 1 compares the pain scores associated with the different pain management options listed above during the IUD insertion and post-insertion (5-15 minutes after). Data was obtained from seven randomized controlled trials referenced above, with N ranging between 61-202 patients.

Two U.S. provider surveys, a 2019 cross-sectional study of 1,063 family planning clinicians [26], and a mixed-methods study of 33 routine IUD inserters [17], show wide variation in how clinicians use available options for managing IUD-related pain. As summarized in Table 1, their findings underscore substantial inconsistencies in pain-management practices across the country.

Table 1. Summary of the results of two national surveys (Reeves et. al, 2023; Daidone et al., 2024) highlighting the existing discrepancies in IUD-associated pain management in the US.

Pain management options	Percentage of use (Reeves et. al., 2023)	Percentage of use (Daidone et. al., 2024)
Misoprostol prior to IUD insertion for parous women	N/A	12.70%
Misoprostol for nulliparous patients before IUD insertion	15.70%	N/A
Misoprostol for recently failed IUD insertion	30%	N/A
NSAIDS prior or during IUD placement	76.70%	38.68%
Paracervical block before IUD insertion	3.80%	20.63%
Topical analgesic prior to IUD insertion	3.90%	6.35%

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Identified Gaps in Pain Education in Medical School Curricula

International guidelines for pain education have existed for decades, including the International Association for the Study of Pain (IASP) curriculum, now in its third edition [27]. We also reviewed AAMC guidance on pain-education content in U.S. medical schools. Although “pain” and “pain management” appear among commonly included clerkship topics, AAMC data [28] (accessed Jan 11, 2026) do not provide robust information on the actual instructional hours devoted to pain medicine. This discrepancy highlights a persistent gap between national recommendations, curricular documentation, and the time allocated to pain-education content in U.S. medical schools. Our literature review identified three major areas of deficiency in UME and GME.

1. Inconsistent Time Dedicated to Pain-Medicine Education

Studies from the early 21st century show substantial variation in pain-education hours across countries. North American medical schools offered limited and inconsistent instruction [29,30]. A 2009-2010 survey reported that although most U.S. (80%) and Canadian (92%) schools required at least one pain session, the content was “limited, variable, and fragmentary” [29,31]. A global review by Shipton et al. (2018) found the highest median instructional hours on pain were in Polish (39 hours) and Finland (30 hours) medical schools, and the lowest in Romanian and Italian (4 hours each) medical schools [32,33]. Canada, Australia, New Zealand, the UK, and Europe reported 12-20 hours of pain education, while U.S. medical schools offered a median of only 11 hours, with 20% providing fewer than 5 hours [29,33,34]. More recent work [35] continues to criticize U.S. programs for insufficient pain-education time, particularly in GME. Collectively, these findings underscore the need for stronger, more consistent integration of pain-medicine education in medical education globally. Our review also revealed limited research comparing the emphasis on pain education between UME and GME.

2. Lack of a Dedicated Pain-Focused Curriculum

Pain-education instruction is often fragmented across multiple courses rather than delivered through a unified curriculum. Studies describe pain-education content as “limited and variable” [29] and many IASP core topics remained unaddressed [31]. In most U.S, Canadian, and European medical programs, pain-related content is dispersed across pharmacology, anatomy, and physiology in UME, and oncology, anesthesiology, and emergency medicine in GME [30,32,33,36,37]. Australia and New Zealand commonly offer short elective pain-medicine courses, but these are not standardized [33]. These findings highlight the absence of comprehensive, standalone pain education curricula with defined objectives that cover pain physiology, assessment, management, and ethical considerations. Shipton et al. (2022) highlight the need to develop an innovative, interprofessional pain curriculum aligned with future healthcare needs and competency-based education in modern medical education [34].

3. Insufficient Training in Advanced Contraceptive Methods, Including IUDs

Gaps in pain-medicine education mirror broader deficiencies in training on advanced contraceptive methods. Early work by Westhoff et al. (1993) showed that although OB/GYN residents felt comfortable with oral contraceptives and tubal ligations, 38% had never performed an IUD insertion [38]. Subsequent studies demonstrate that this limited exposure persists: Bartz et al. (2016) found that 26% of Harvard medical students had never witnessed an IUD placement and that nearly half preferred simulation-based learning [39]. Similarly, Steinauer et al. (2008) reported that only 76% of U.S. medical students received any IUD education, with curricula still centered on oral contraceptives [40]. More recent research [41,42] highlights the value of simulation-based IUD training in GME, particularly for non-OB/GYN specialties, while studies by Strasser et al. (2022) show that many residency programs continue to fall short in advanced reproductive health trainings [43], contributing to the low proportion of clinicians (40%) who provide IUD insertion to their patients.

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This lack of consistent, hands-on training may also limit physicians' ability to anticipate, recognize, and effectively manage acute pain during IUD insertion, reinforcing variability in patient experience and procedural quality. Notably, very few studies have examined how GME or residency programs train clinicians specifically in IUD-related pain management, highlighting a persistent and understudied gap in the area.

Discussion

A persistent gap remains between patients' and physicians' perceptions of pain, its causes, and appropriate management strategies. Recent studies highlight that patients often report higher levels of pain than clinicians anticipate, particularly in procedures such as IUD insertion, where pain can vary widely across individuals [8,18,44]. This discrepancy between patients' and physicians' perceptions of pain can be partially attributed to the limited and fragmented nature of pain education in undergraduate medical education (UME) and to insufficient training in acute and chronic pain management during graduate medical education (GME) and residency. These findings align with longstanding literature showing that medical graduates frequently feel underprepared to manage chronic pain due to inadequate instruction in pain pathophysiology, treatment strategies, and communication skills [32,36,45]. Recent evidence also indicates that outdated pain management training methods or the lack of it, continues to leave clinicians uncomfortable and underprepared [34,35]. This educational gap may also have direct implications for reproductive health procedures such as IUD insertion. While many patients experience pain similar to menstrual cramping during IUD insertion, nulliparous individuals and those with anxiety or dysmenorrhea often report significantly higher pain intensity [6,46]. The subjective nature of pain, shaped by psychological, experiential, and physiological factors, further complicates clinicians' ability to anticipate patient needs. The complex sympathetic, parasympathetic, and sensory innervation of the female pelvis adds another layer of difficulty, making it challenging to target specific nociceptive pathways during IUD insertion [47].

Addressing these discrepancies requires a multifaceted approach. First, a structured, longitudinal pain-education curriculum spanning UME, GME, and residency is essential. Such a curriculum would aim to provide foundational knowledge of pain science during preclinical years (UME), followed by skills-based instruction in empathetic communication, pain assessment, and multimodal management strategies in GME. Repeated clinical exposure during residency would reinforce these competencies and help future clinicians better recognize the complexity of patients' pain experiences. A coordinated educational model would bridge the current disconnect between theoretical knowledge and clinical practice, ultimately producing practitioners capable of managing pain with both precision and empathy [31,34].

The recent updates to national guidelines for IUD pain management represent a promising step toward standardizing patient-centered care. Between 2017 and 2023, major guidelines from the CDC and ACOG remained unchanged, a stagnation that may have contributed to inconsistent clinical practice. However, both organizations have now released updated recommendations-CDC in 2024 and ACOG in 2025. Both organizations have emphasized proactive counseling and expectation-setting before the IUD insertion. ACOG's 2025 Clinical Consensus offers more explicit clinical direction, recommending routine consideration of topical, intracervical, or paracervical lidocaine and highlighting the importance of individualized, culturally competent counseling. In contrast, the CDC's 2024 Selected Practice Recommendations provide broader guidance, noting that lidocaine "might be useful" while reaffirming that misoprostol should not be used routinely due to minimal benefit as indicated in prior studies [48,49]. The clear emphasis of both organizations on the need for patient-centered communication is an essential step toward narrowing the gap between clinician expectations and patient-reported pain.

Finally, enhanced procedural training in GME and residency is critical for improving IUD-specific pain management. The APGO Medical Student Educational Objectives (11th ed., 2019) include IUD insertion and removal under gynecologic procedures, underscoring the need for

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clerkship programs to emphasize procedural competence, risk–benefit counseling, and pain-management considerations [50]. Yet, as our findings indicate, consistent and comprehensive training in these areas remains incomplete across many programs [39,51]. Strengthening this component of training would help clinicians better navigate the individualized nature of IUD-associated pain and apply updated guidelines effectively.

Taken together, these suggested educational reforms may offer a path to reduce patient discomfort, minimize skepticism, and strengthen patient-physician trust. By aligning medical training with contemporary evidence and patient-centered standards, the healthcare system can move closer to equitable, empathetic, and effective pain management across reproductive health and beyond.

Conclusion and Limitations Merged

This narrative review prioritized breadth over depth, potentially leading to the omission of certain nuances or conflicting perspectives. The limited consistency in research on pain education and pain management training in medical education can be considered a limitation of our study. Nonetheless, rising IUD use underscores the need to address persistent discrepancies in IUD-associated pain management. Our findings support implementing a mandatory, longitudinal pain-education curriculum across UME and GME that integrates foundational instruction in pain physiology and pharmacology with simulation-based training in IUD insertion, removal, and patient-centered pain management. Such an approach would help prepare clinicians to deliver individualized, evidence-based pain management strategies consistent with updated CDC and ACOG guidelines [11,12], ultimately improving patient comfort and procedural experience.

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