Acute Pain Management in Outpatient Gynecological Procedures: A Scoping Review

by

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Abstract

Pain management for outpatient gynecological procedures is a nuanced and inconsistent experience in the United States. Currently, there are no set operating procedures for healthcare providers on best practices for acute pain management for the majority of common outpatient gynecological procedures. This is of public health significance as the negative experiences of excessive pain during procedures has the potential to increase short term complications, reduce follow up visit compliance of patients, and increase mistrust of the medical community by the general public. This scoping review examines current interventions, procedural methodologies, patient and provider attitudes and experiences, barriers to pain management, and risk factors that have been studied within the past ten years. One reviewer used OVID to find relevant research that was published surrounding United States based procedures including IUD insertion/removals, endometrial or cervical biopsies, uterine aspiration, colposcopy, loop electrosurgical excisional procedure (LEEP), hysteroscopy, endometrial ablation, and the coordinated pain, pain management, anxiety, and patient/provider experiences. A total of 656 potential articles were identified, 181 full text articles were reviewed, and 40 were included in this review. Findings of the review indicated that pain management likely needs to consist of a multimodal approach specific to each type of procedure, and that best practices have not been identified yet for most procedures. IUD insertions were the only exception, with a 20 mL buffered 1% lidocaine paracervical block showing a reduction in overall pain in nulliparous people. Anxiety was

additionally shown to play a large part in the pain experiences of patients, and should be considered as a moderating factor that should be addressed as well. In summary, pain management for outpatient gynecological procedures requires more extensive research into multimodal approaches that factor in patient history and clinical facility capabilities.

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Preface

Firstly, I wish to acknowledge my essay readers: Vera Krekanova and Mary Hawk. Thank you for your time and critical feedback that went to into making this possible. Additional thanks to Helena Vonville for lending her expertise with all things related to performing literature reviews.

Special thanks to Jeff Lewis, for being an additional reader and sounding board, as well as my other family and friends for their support during this time. You all make doing hard things less so. And finally, many thanks to my two cats for being the perfect lap warmers during this writing process.

1.0 Background

Introduction

The topic of pain management in outpatient gynecological procedures has recently gained increasing interest among patients and physicians alike. The complexity of the discussion stems from variations in practices of physicians, pain experiences of patients, and the type of procedure being performed. Procedures that cause excessive pain or dismiss the experiences of those they are being performed on can possibly result in adverse outcomes like patient mistrust, PTSD, avoidance of effective birth control methods, and avoidance of care altogether [1].

The purpose of this essay is to examine recent literature on pain management options for a subset of outpatient gynecological procedures to better understand current practices and discover potential areas of improvement. This was done through a scoping review describing pain management treatments, perceptions and attitudes of pain management options of both patients and healthcare providers, and barriers to use for these different options in a clinical setting. Once collected and summarized, this data was critically examined considering participant perspectives, existing health disparities, and current United States policies and standard operating procedures. By using these combined lenses, an accurate assessment of what is happening now, what could change given the current limitations, and what should change in the future can be identified. Together, this analysis resulted in a recommendation of future actions to improve the current state of pain management options in outpatient gynecological procedures.

Note that gender neutral terms will be used in this essay, except direct quotes from other works.

1.1 Essay Scope

This scoping review will focus on the procedures involving Intrauterine device (IUD) insertion and removal, endometrial biopsies, uterine aspiration, colposcopy, loop electrosurgical excisional procedure (LEEP), and office-based hysteroscopy. These are some of the most frequently performed procedures in the outpatient gynecological setting that warrant attention for immediate pain management evaluation. Only pain management that relates to treating the potential pain caused by the immediate procedure will be examined, excluding post procedural and follow up methods of treatment. To further narrow the scope of this essay, only outpatient procedures that can be performed in-office, that do not require sedation, will be evaluated since procedural standards drastically change for clinicians and patients with sedative measures. This allows the results and outcomes to be directly applicable to clinical physicians, providing in-office gynecological services, and those who regulate these services.

1.2 Definitions and Current Practices of Listed Procedures

Below is a list of commonly used terms and procedures on which this essay will focus.

Colposcopy: A procedure that uses a colposcope, as seen in Figure 1, to closely view the vagina, vulva, and cervix, to examine the areas for suspicious tissue [2]. This is a procedure that is often used in conjunction with others and doesn't usually warrant significant pain concerns itself.

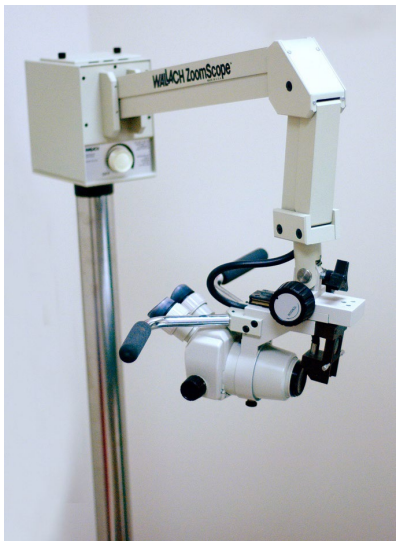

Figure 1. A Colposcope

Cervical biopsy: A procedure to remove suspicious tissue from the cervix which can be performed using one of the following three techniques: punch biopsy, cone biopsy, or endocervical curettage (ECC). This can be used to merely take a small sample of tissue for testing or to remove abnormal tissue altogether [3]. Though there is no current opinion for pain management on cervical biopsies by the American College of Gynecology (ACOG), the overseeing body for such standard operating procedure suggestions in the United States, a guideline for endocervical curettage at colposcopy published in the *Journal of Lower Genital Tract Disease* in 2023 states that no local anesthetic should be used, citing a 2019 systematic review that found no impact of local anesthetic on pain from ECC [4].

Endometrial biopsy: A procedure in which a small piece of tissue is removed from the endometrial lining of the uterus for further examination under a microscope. The tissue is removed by the insertion of a thin tube through the cervix that suctions off small samples [5]. Though there is no current opinion for pain management on endometrial biopsies by ACOG, a systematic review from 2020 that was published in the *Journal of Obstetrics and Gynaecology Research* found that

intrauterine anesthetics, anesthetic cervical spray, paracervical blocks, and oral non-steroidal anti-inflammatory drugs (NSAIDs) are all effective pain control at different levels [6]

Hysteroscopy: A procedure that involves a small, lighted wire being inserted through the cervix into the uterus, both for diagnostic viewing and treatment purposes, as seen in Figure 2, Other instruments can be inserted through the hysteroscope for operative purposes as necessary to correct fibroids, polyps, adhesions, and uterine septums. Other uses include diagnosing infertility causes, locating IUDs, and discovery/removal of placental tissue after birth [7]. The current opinion for pain management by ACOG is that no currently used regimens show clinically significant differences in safety or effectiveness as pain management options. They do state that analgesia regimens in the literature can include "a single agent or a combination of multiple agents, including a topical anesthetic, a nonsteroidal anti-inflammatory drug, acetaminophen, a benzodiazepine, an opiate, and an intracervical or paracervical block, or both" but state that none of these are clinically superior to placebo [8].

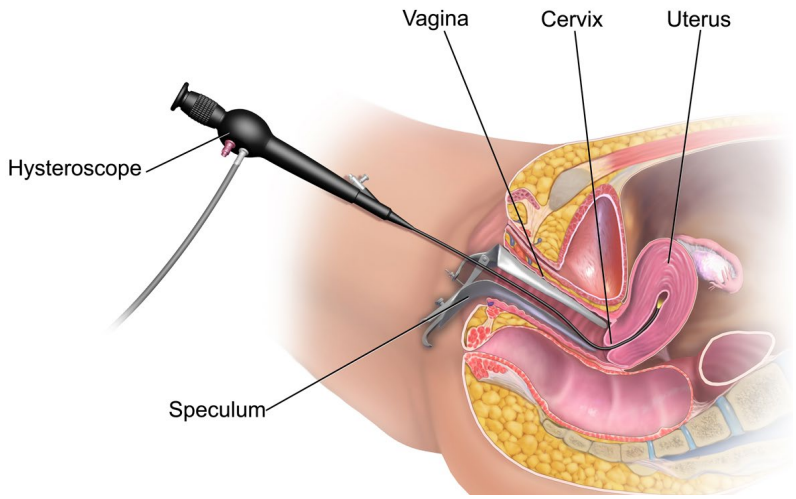

Figure 2. Hysteroscopy
Image by Blausen Medical CC BY-SA 4.0

IUD: Intrauterine devices (IUDs) are a type of birth control that is directly implanted and left in the uterus for anywhere from 3 to 10 years, depending on the type. There are two types, copper and hormonal, that are both T-shaped with a string that reaches into the vagina for easy removal by health care providers [9]. A diagram of an IUD placed inside the uterus can be seen in Figure 3. It is common for most people to experience discomfort or pain during the insertion and removals of IUDs. The current recommendation for pain management by ACOG is for patients to receive anticipatory guidance on the pain and for health care providers to use an individualized approach that "may include non-steroidal anti-inflammatory drugs (NSAIDs), narcotics, anxiolytics, or paracervical blocks". They specifically note that the best method for pain management has not been identified yet and reference several studies using naproxen and paracervical blocks successfully for post insertion pain and insertion pain, respectfully. They also mention that Misoprostol should not be used as it shows no reduction in pain or ease of insertion [10].

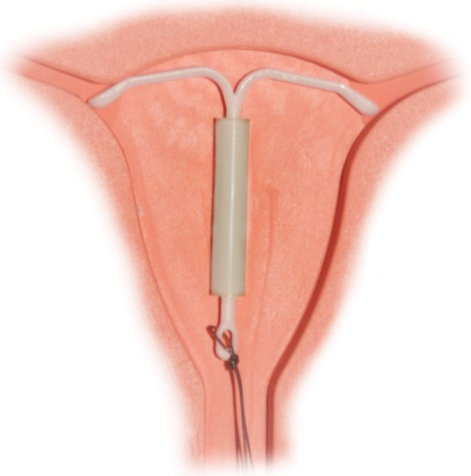

Figure 3. An IUD Sitting Inside a Uterus

LEEP: A Loop Electrosurgical Excision Procedure (LEEP) is used for diagnosis and treatment of abnormal cervical and vaginal tissue. The LEEP consists of a wire loop heated by an electric current and is used to remove a portion of the tissue in question [11]. ACOG's webpage on LEEPs describes that local anesthetic may be used to numb the cervix before the procedure, but gives no further specifics [12].

Nulliparous: The status of a person who has never given birth before [13].

Tenaculum: A tenaculum is a medical instrument that is used to stabilize the cervix during gynecological procedures. Seen in Figure 4, it is shaped like forceps with a sharp singular prong on each end that are used to puncture the end of the cervix [14].

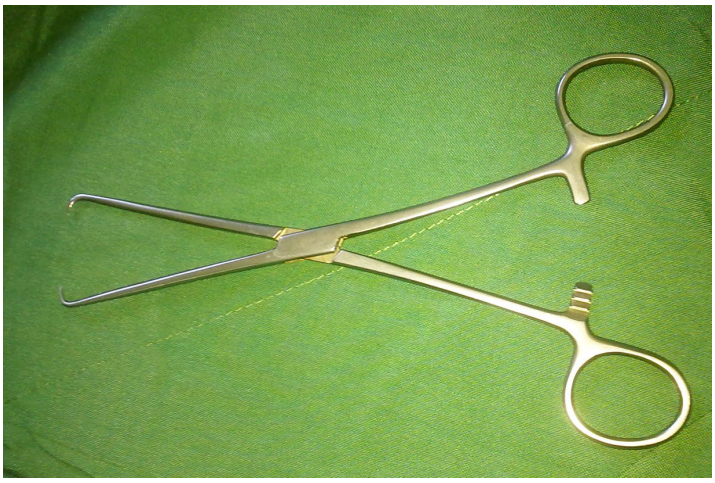

Figure 4. Single Tooth Tenaculum
Photo by دماوندی CC BY-SA 3.0

Uterine aspiration: As a commonly used method of abortion in the United States, this is an alternative to a medication abortion throughout roughly the first trimester of pregnancy. This is performed using mechanical cervical dilation, relatively proportional to the gestational period, and vacuum aspiration using a plastic cannula [15]. Though there is not an explicit recommendation by ACOG on pain management options for uterine aspiration, a 2018 systematic review found that pain management should be individualized for patients, with successful methods including the use of NSAIDs, a defined paracervical block, or nonpharmacological options [16].

Vaginoscopy: A diagnostic procedure that is used to visualize the vaginal canal using a small scope attached to a display screen [17].

1.3 Context of Pain Management in Gynecological Procedures

Pain management for gynecological procedures is an area that has been shown as a potential blind spot for health care practitioners. In a 2020 UK study that was observed over 8

years, where physicians applied pain management for ambulatory hysteroscopy only in a contextual manner, a full 92.2% of patients felt some sort of pain with their procedure, and nearly a fifth of patients (17.6%) rated their pain as severe, or greater than a 7 on a 10-point scale. While there was a positive correlation between anesthetic dose and pain perception of patients, over one third of patients didn't receive any pain medication at all (37.7%). Notably, it was also found that there was a negative correlation between patient ratings of pain and physician perception of pain, highlighting the disconnect between practice and patient experience [18].

This phenomenon of reports of patient pain that was not proportionate to the pain management offered is not unique. With other gynecological procedures, especially IUD insertion and removal, many people report that they have extremely negative experiences that leave them feeling major physical and emotional distress. One of the anecdotal reports in a 2021 BMJ article documented "excruciating pain" after IUD insertion that left them "shaken for days and traumatised for many years, extremely fearful to return for it to be removed". In that same article, the fact that there is no routine documentation or collection of pain management is highlighted in contrast with the many physicians' claims that most patients do not feel significant pain with these procedures. It is also noted that part of the potential reason that patients do not express their pain and that physicians may be unaware, is feeling dismissed in their pain or having "froze" in the immense pain of the procedure [1].

1.4 Rationale

This essay aims to broadly examine the current landscape of pain management in outpatient gynecological procedures. This landscape includes existing practices and recommendations,

alternative methods and medications that are currently being researched, and factors that can be associated with pain experiences such as education, anxiety, and other barriers. By examining these practices contextually, the impacts, risks, and potential behavioral outcomes can be used to inform current pain management practices and policies and identify future research areas to improve the literature.

1.5 Objectives

The objective of this scoping review is to synthesize the existing literature on pain management options for outpatient gynecological procedures and the associated factors and barriers to this care. The primary aims include:

1. describe the literature on pain management options that are currently being studied for outpatient in-office gynecological procedures
    a. describe interventions, outcomes measured, and patient perspectives, if applicable
2. identify risk factors for higher pain experiences in the context of these options
3. describe the potential factors and barriers that are involved with these pain management options, both from the provider and patient perspectives
4. identify gaps in the literature

2.0 Methods

The critical literature synthesis in this essay is done through a scoping review, performed with the help of a health sciences librarian who has experience in systematic reviewing. A literature search was conducted through Medline (Ovid), the National Library of Medicine's bibliographic database, where all resulting titles and abstracts were placed into an excel workbook made for one-person critical literature syntheses [19]. Screening for inclusion was done through a two-step process that first examined titles & abstracts, and secondly moved to full text reviews of articles identified in the first step.

2.1 Search

The database search through Medline (Ovid) was developed by the health sciences librarian, Helena VonVille, and the author. The search terms surrounded the following concepts: pain, pain management, pain perception, colposcopies, hysteroscopies, dilation and curettage, intrauterine devices, and electrosurgery. A combination of Medical Subject Heading (MeSH) terms and title, abstract, and keywords were used to develop the initial Medline search which was checked against a known set of studies. Duplicates were removed after the initial search using the Amsterdam Efficiency Deduplication (AED) method. Results were limited to United States based studies published in English over the last 10 years, from 2014 to 2024. These limitations were chosen because they would find studies most relevant to the U.S. population for which this review seeks to learn about and make recommendations for. The date of the last search was February 8th,

2024. Table 1, shown below, has the complete search strategy used. All results were then moved into the Excel workbook for selection.

Table 1. Search Query Used in Medline

Search Query
colposcopy/ or "dilatation and curettage"/ or vacuum curettage/ or endometrial ablation techniques/ or hysteroscopy/
intrauterine devices/ or intrauterine devices, medicated/ or intrauterine devices, copper/
Electrosurgery/
Uterine Cervical Neoplasms/ or uterine cervical dysplasia/ or "atypical squamous cells of the cervix"/ or "squamous intraepithelial lesions of the cervix"/
3 and 4
(((intrauterine adj device*) or IUD*) and (insert* or remove or removal)).ti,ab,kf.
(colposcop* or (dilatation and curettage) or (endometrial adj2 ablation) or hysteroscopy or leep or ((loop adj electrosurgical) and (electrosurgical adj excisional) and (excisional adj procedure*))).ti,ab,kf.
1 or 2 or 5 or 6 or 7
Pain Threshold/ or Pain Measurement/ or Pain, Procedural/ or Pain Perception/ or Pain Management/ or Pain/
(discomfort or pain or painful).ti,ab,kf.
9 or 10
8 and 11
12 not (exp "Animals"/ not "Humans"/)
limit 13 to (english language and yr="2014 - 2024")
14 not ((exp africa/ or exp asia/ or exp australia/ or exp canada/ or exp central america/ or exp europe/ or exp south america/) not (north america/ or exp united states/))
("clinical study" or "adaptive clinical trial" or "clinical trial" or "clinical trial, phase i" or "clinical trial, phase ii" or "clinical trial, phase iii" or "clinical trial, phase iv" or "controlled clinical trial" or "equivalence trial" or "multicenter study" or "pragmatic clinical trial" or "randomized controlled trial").pt. or double-blind method/ or "adaptive clinical trials as topic"/ or "clinical trials as topic"/ or "clinical trials, phase i as topic"/ or "clinical trials, phase ii as topic"/ or "clinical trials, phase iii as topic"/ or "clinical trials, phase iv as topic"/ or "controlled clinical trials as topic"/ or "equivalence trials as topic"/ or "intention to treat analysis"/ or "non-randomized controlled trials as topic"/ or "pragmatic clinical trials as topic"/ or "randomized controlled trials as topic"/ or "multicenter studies as topic"/ or (phase adj1 ("I" or "II" or "III" or "IV" or "1" or "2" or "3" or "4")).ti,ab,kf. or ((randomi?ed adj7 trial*) or (controlled adj3 trial*) or ((clinical or feasibility or pilot or pragmatic) adj2 (study or trial*)) or (research adj (studies or study)) or ((single or doubl* or tripl* or treb*) adj4 (blind* or mask*))).ti,ab,kf. or (("4" or four) adj arm).ti,ab,kf. or intervention*.ti.
Cross-Sectional Studies/ or Prevalence/ or ((association adj2 (studies or study)) or cross-sectional or prevalence or transversal).ti,ab,kf. or (association or associations).ti.
focus groups/ or interviews as topic/ or narration/ or qualitative research/ or ((face or f2f or guided or depth or indepth or informal or semistructured or structured or unstructured) adj4 (discussion* or interview* or questionnaire*)).ti,ab,kf. or (ethnograph* or (field adj1 work) or fieldwork or (focus adj1 (group or groups)) or (key adj1 (informant or informants)) or qualitative).ti,ab,kf.
cohort studies/ or longitudinal studies/ or follow-up studies/ or observational study.pt. or prospective studies/ or retrospective studies/ or cohort.ti,ab,kf. or longitudinal.ti,ab,kf. or prospective.ti,ab,kf.
16 or 17 or 18 or 19

15 and 20

2.2 Selection of Sources of Evidence

After results from the search were transferred into the workbook, titles and abstracts were screened based on the eligibility criteria. If anything met at least one exclusion criteria in this first step of the selection process, the result was excluded. All works that moved on to the second step, the full text review, were then screened with the same exclusion criteria process.

2.3 Eligibility Criteria

Eligibility criteria and methods of analysis were determined a priori. The complete list of inclusion and exclusion criteria can be seen below in Table 2. Note that studies whose primary focus was not acute pain management, but whose measures and outcomes of such were recorded secondarily, were considered sufficient. Studies were limited to the United States as standard practices are usually based off of ACOG standard operating procedures. Non-local sedation and general anesthesia were excluded as they require different facilities and staffing requirements that are not typically found in the outpatient in-office setting set by the objectives of this essay. Because of the potential measures of perception and attitudes that could have possibly been included in the scope of the objectives, qualitative and quantitative studies were both permitted.

Table 2. Inclusion and Exclusion Criteria

Inclusion Criteria All Studies must:
Must address regional or local pain management options during in-office outpatient procedures, or factors that affect pain perception like previous experiences or anxiety
Address acute pain relief associated with direct procedure, not delayed effects
Must examine one of the following procedures: IUD insertion/removal, endometrial or cervical biopsies, uterine aspiration, colposcopy, loop electrosurgical excisional procedure (LEEP), hysteroscopy, endometrial ablation
Must be published in a journal
Must occur in the United States
Must have been published since January 1st, 2014
Exclusion Criteria
Study was performed in a hospital or in-patient setting
Study outcome measured was post-procedural or longitudinal pain
Study focused on pregnancy or sexual function after procedure
Study procedure included general anesthesia/sedation
Study used non-human subjects
Study was not conducted in the U.S.
Study was the wrong publication type (i.e., reviews, commentaries, editorials, letters, dissertations, videos, non-journal articles, and conference proceedings)
Study procedure was diagnostic or procedural only, did not include acute pain management or relevant topics
Study procedure was not gynecological

2.4 Data Charting Process

Included articles were reviewed using a data extraction Excel workbook [19]. Several types of studies were expected to be analyzed, so several reporting guidelines were used based on the EQUATOR network recommendations including CONSORT, STROBE, and SRQR [20]. This data charting process was conducted solely by the author.

2.5 Data Items

The standardized data extraction form includes items from every article that will help to analyze the information that meets the objectives of this essay. Basic information collected through these forms included titles, abstract, authors, and publication date. Information collected about the study itself included study design, study aims, methods, and topics. Lastly, information on findings and outcomes was collected amongst these various reporting guidelines, including any noted gaps in the research.

2.6 Synthesis of Results

The articles included in this essay were broadly categorized by one of three topics – intervention for pain management, healthcare provider perspectives or patient perspectives, and by study type (i.e., mixed methods). The overall synthesis of these results is used to fulfill the primary aims set in the objectives listed for this essay.

3.0 Results

3.1 Study Selection

The initial search in Ovid identified 656 articles. After removing one duplication, 474 titles or abstracts were excluded from full text review based on the exclusion criteria listed in Table 2. 181 articles were reviewed in full to assess exclusion criteria and of that, 141 were excluded, leaving 40 totals articles to be included in this scoping review. Each step was recorded in the Excel workbook, and results of the overall selection process can be seen in Figure 5, with specific breakdowns of exclusion reasons included.

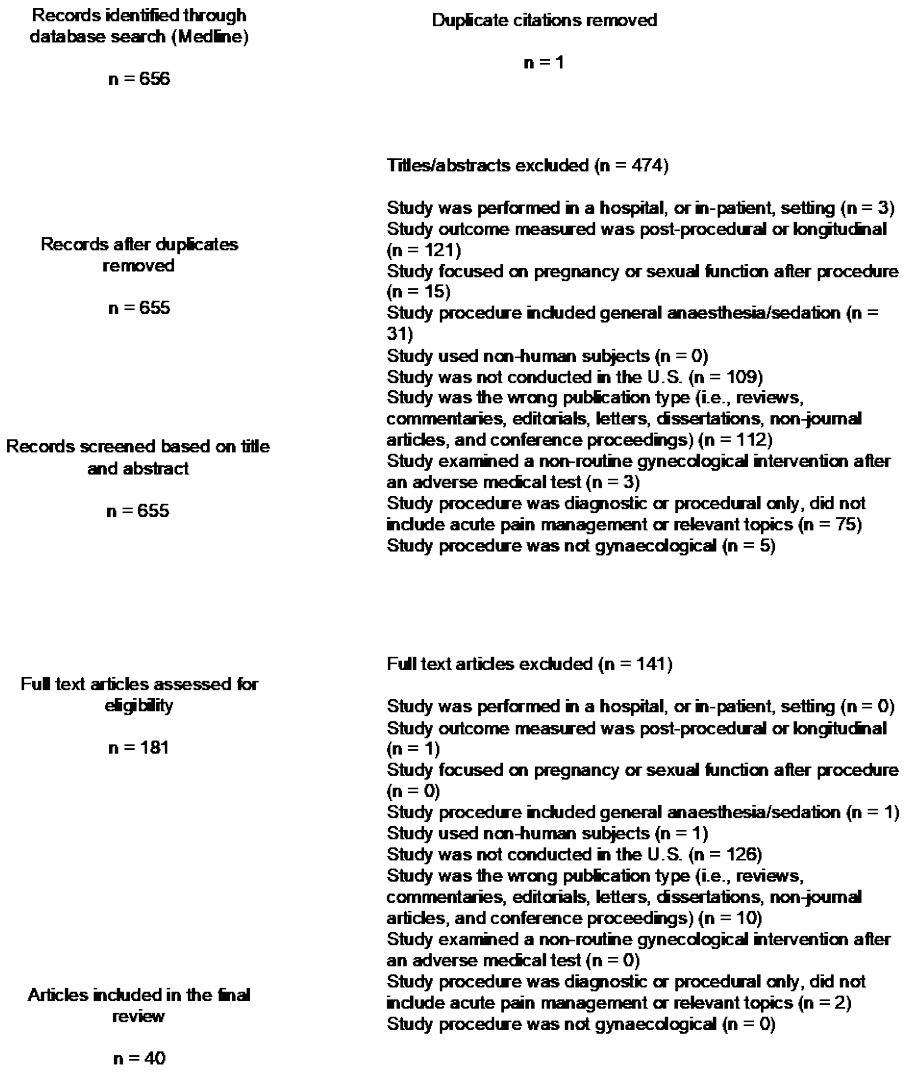

Figure 5. PRISMA Flowchart

3.2 Study Locations

As required by the inclusion criteria, all studies took place in the United States. Of these studies, the majority took place in the Northeast (35%) and Western regions (32.5%) of the United States, followed by the South (20%) and the Midwest (5%). The breakdown of the different states & regions that these studies originated from can be found in Table 3. Note that only 37 of the 40 total studies included in this review were specified to a singular region as three contained data from across multiple or all regions.

Table 3. Breakdown of Included Study Locations

West	**n (%)**	**South**	**n (%)**	**Northeast**	**n (%)**	**Midwest**	**n (%)**
California	5 (12.5)	Florida	3 (7.5)	Pennsylvania	5 (12.5)	Ohio	1 (2.5)
Oregon	3 (7.5)	North Carolina	1 (2.5)	New York	4 (10.0)	Missouri	1 (2.5)
New Mexico	2 (5.0)	Georgia	1 (2.5)	Massachusetts	2 (5.0)		
Utah	1 (2.5)	DC	1 (2.5)	Rhode Island	2 (5.0)		
Colorado	1 (2.5)	Texas	1 (2.5)	New Jersey	1 (2.5)		
Unspecified Western State	1 (2.5)	Virginia	1 (2.5)				
Total:	**13 (32.5)**		**8 (20)**		**14 (35)**		**2 (5.0)**

3.3 Methodology

Of the 40 studies included in this review, 36 (90%) used quantitative methods, 3 (7.5%) used qualitative methods, and 1 used mixed methods (2.5%). Additionally, 31 (77.5%) of the studies were randomized trials evaluating the effects of different interventions, 3 (7.5%) were secondary analyses of previously performed randomized control trials, and 2 (5.0%) were pilot feasibility studies used to test new technology. Of the 7 studies that were observational, 4 (57.1% of the observational studies) were prospective cohort studies, 1 (14.2%) was a retrospective cohort study, and 2 (28.5%) were cross-sectional surveys. Of the 3 qualitative surveys, 2 were interview based, and 1 was a collection of internet forum posts that were analyzed. These methodologies can be seen in Table 4.

Table 4. Overview of Studies

Descriptors	n
Study Method/Design	
Quantitative	
Experimental	
Randomized*	27
Field Trials or Pilot	2
Observational	
Cross sectional	2
Prospective cohort	4
Retrospective cohort	1
Qualitative	3
Mixed Methods	1
Topic(s)	
Direct pain interventions	17
Procedural methodologies	11
Patient attitudes and perspective	7
Provider attitude and perspective	2
Barriers	2
Risk factors	1

*Includes primary or secondary studies of randomized trials

3.4 Study Topics

The topics of the articles reviewed included the following categories or themes: direct pain or anxiety interventions, procedural methodologies, patient attitudes or perspectives, provider attitudes or perspectives, risk factors, and barriers. These categories are used to further characterize the objectives set forth previously and the content of the studies themselves.

3.5 Synthesis of Findings

The studies in this review include 17 (42.5%) whose primary focus was testing a direct pain intervention, 11 (27.5%) whose primary focus was comparing procedural methodologies, 7 (17.5%) that focused on patient attitudes or perspectives, 2 (5.0%) that focused primarily on provider attitudes or perspectives, 2 (5.0%) whose primary focus was on barriers, and 1 (2.5%) that primarily identified risk factors surrounding pain management in outpatient gynecological procedures. Studies could, and often did, include more than one category in addition to their primary focus.

3.6 Measurements

The majority of studies in this review used the 100-mm Visual Analogue Scale (VAS) for allowing patients to report pain. This line scale is a validated measure for acute and chronic pain where scores are measured on a continuum between 0 for “no pain” to 100 for “worst pain” [21]. A few studies additionally used a 5-point Likert scale in their surveys, similarly listing from “no pain” to “severe” [22]. For anxiety, a similar 100-mm Visual Analogue Scale (VAS) was also used, where patients could verbally state where on the scale they were feeling, with 100 being “worst anxiety”.

3.6.1 Direct Pain Interventions

Of the 40 studies included in this review, 17 (42.5%) fell into the category of direct pain interventions. This category represents clinical interventions that were hypothesized to reduce pain felt by patients during one of the specified procedures. These interventions were not technique based, but were mostly pharmacological in nature, and all caused a physiological reaction or change in the body. All 17 of the studies in this category were quantitative randomized clinical trials and can be split into subcategories of what procedure they were specifically applied to, including IUD placements, hysteroscopies, endometrial biopsies, uterine aspirations, and LEEPs.

3.6.1.1 IUD Placements

IUD insertion or removal was the most frequently addressed procedure for direct pain interventions in this review as it was included in 13 out of 18 studies. Despite being one of the most effective birth control methods available, IUDs are one of the least utilized, comprising only 12.7% of contraceptive users' choice. One of the main barriers to IUD uptake is patient pain and fear of procedural pain [23]. Of the 13 studies, 7 focused on local anesthetics like lidocaine or nitroglycerin ointment, 5 related to NSAID use, 1 tested misoprostol, and 1 tested the use of a cold compress. These do not add to 13 because the interventions used were not mutually exclusive.

Lidocaine is a local anesthetic agent that can be administered through various routes including subcutaneously, intravenously, or topically. It can be used to reduce pain to small superficial areas through topical applications or entire regions through nerve blocks [24]. Nitroglycerin ointment is a topical vasodilator that is sometimes used to treat anal fissure pain [25]. Both of these methods of pain management are relatively fast acting and available in the clinical setting.

In a 2014 pilot study, Micks et al. tested the effects of nitroglycerin on IUD insertion pain for nulliparous people by placing 1 mL of 0.5-mg of nitroglycerin ointment on the posterior fornix about 30 to 45 minutes before IUD insertion. Results of the study showed no difference between the nitroglycerin and placebo groups' perception of pain at any point throughout the IUD insertion process, including positioning, speculum placement, tenaculum placement, uterine sounding, or actual IUD insertion. Similarly, there were no differences in subject satisfaction or provider reported ease of insertion [26].

A 2016 study by Rapkin at al., focused on topical self-administered lidocaine use for pain management in IUD insertions by testing 4 mL of 2% lidocaine applied 5 minutes before the procedure start time. They found no statistically significant differences in pain for IUD insertion, but there were statistically significant improvements for tenaculum placement [27]. A later 2019 study by Conti et al. also focused on topical lidocaine use for IUD placements, modifying the approach undertaken by Rapkin et al. to improve some hypothesized limitations of the original study. The results of the new study, comparing a self-administered placebo to 20 mL of 2% topical lidocaine, 15 minutes prior to the procedure, similarly showed no statistical difference in pain scores during IUD insertion. Secondarily, however, there was a statistical difference in reduced speculum placement pain, but no difference in pain related to tenaculum placement [23].

One 2014 study by Goldthwaite et al. compared topical lidocaine to injected lidocaine, specifically on the effects of tenaculum placement pain before IUD insertion. One group received a 2 mL injection of 1% lidocaine while the other received 1 mL of 2% lidocaine topical gel. They found that despite the lack of significant difference of pain levels at speculum insertion between groups, there were statistically significantly lower pain levels at tenaculum placement for the lidocaine injection group. However, this reduction of pain during the actual tenaculum place did

correspond to a significantly higher level of pain at lidocaine administration due to needle injection, prior to the tenaculum placement, compared to topical lidocaine administration pain [28].

Focusing solely on the effects of injected lidocaine, more specifically a paracervical block during IUD placement in nulliparous people, Akers et al. examined the effects of a 1% lidocaine paracervical nerve block on patient pain during 13.5-mg levonorgestrel IUD insertion in nulliparous people aged 14 to 22. They found that those in the treatment group showed statistically significantly lower pain scores during uterine sounding and IUD placement, but not during tenaculum placement. Notable secondary outcomes included a positive association between anticipated pain and associated pain at IUD insertion and that satisfaction scores did not change between the lidocaine block and sham block groups [29].

Another study performed by Mody et al. also tested paracervical blocks, updating their methodology to some of the perceived limitations of the Akers et al. study. Using a 20 mL buffered 1% lidocaine paracervical block on nulliparous people aged 18-45 who were receiving the more commonly used larger framed levonorgestrel 52-mg and CuT380A IUDs, they found that there was statistically significant reduction in IUD placement, uterine sounding, and overall pain perception. There was no statistically significant difference in tenaculum placement between control and interventions groups, though it could be due to the superficial lidocaine that was administered to the tenaculum site for both groups. Finally, there was also a significant difference in pain scores for the administration of the paracervical block [30].

A study exploring a different method of pain management was Ngo et al. in 2016, who examined the effects of Naproxen sodium for IUD insertion relief. Naproxen is a type of NSAID, which is a class of medications commonly used to reduce inflammation, relieve pain, and lower fevers [31]. This medication was given orally 1 hour before IUD placement at a standard dosage

of 550 mg and was compared to a placebo. The results showed no statistically significant differences with IUD insertion, tenaculum placement, or uterine sounding. There was however a significant reduction in post procedural pain [32].

Wanting to test the effects of Naproxen in combination with lidocaine, Miles et al. compared 5 mL of intrauterine lidocaine given through the endocervix with 375 mg of oral naproxen separately, and combined, to a placebo. The results of this lidocaine and NSAID comparison and combination showed no significant differences between pain scores for any of the interventions. One noted limitation of the study is that the placebo group receiving a saline instillation may have had an effect on the nerve endings within the endometrium by distending the uterus, possibly skewing the control ratings of pain. This potential is possibly indicated since the placebo pain mean sits on the lower end of the current literature range for this procedure [33].

Another set of studies looked at Ketorolac for potential pain management, an additional medication classified as an NSAID. The first study occurred in 2015, by Ngo et al., which examined the impact of a 30 mg (1 mL volume) intramuscular injection of Ketorolac 30 minutes prior to the IUD insertion. Similar to the Naproxen study, there were no statistically significant reductions in pain during speculum insertion, tenaculum placement, uterine sounding, or actual IUD placement, but there was significantly reduced pain afterwards [34]. The second study, by Crawford et al., occurred in 2017 and tested 20 mg of oral ketorolac between 40 to 60 minutes before IUD insertion. The findings with this dosage and administration method showed a significant decrease in pain perception during IUD deployment with overall pain scores and during the post procedural time period, but not during tenaculum placement or uterine sounding. One important limitation of this study as described by the authors was the wait time for optimal analgesic effect of oral ketorolac being between 1 to 2 hours after administering the medication,

which was not incorporated into this test and could be a limiting factor to outpatient clinic settings due to time constraints [35].

Ibuprofen is another common NSAID that is readily available in the clinical setting and can be taken orally [31]. Bednarek et al. studied the effects of 800 mg of ibuprofen for pain reduction administered 30-45 minutes prior to IUD insertion on people who had experienced first trimester uterine aspiration approximately 2-6 weeks prior. The results showed no significant difference in pain scores for speculum insertion and actual IUD placement between the intervention and placebo group, and no difference between nulliparous and parous people when sub analyzed. No measures of post procedure pain scores were obtained for this study [36].

In a study examining a different type of medication, Espey et al. studied the effects of Misoprostol in IUD insertion pain management. Misoprostol is a synthetic prostaglandin E1 analogue that is used off-label for many obstetrics and gynecological practices such as treatment of postpartum hemorrhaging, induction of labor, medical management of miscarriage, and cervical ripening [37]. In the Espey et al. study, they used 400 mcg of misoprostol placed buccally 30 minutes prior to IUD insertion and then reported anticipated pain, pain before and after the procedure, and preference on waiting for pain medication before the procedure. The results showed no significant differences between the placebo and intervention groups during the insertion process but showed that most people would prefer to wait for pain medication before their procedure, if available [38].

The last of the direct pain management interventions for IUD insertions was not pharmacological in nature, but instead focused on the effectiveness of using cold compresses placed on the abdomen during the insertion process. Cold compresses act as vasoconstrictors, reducing blood to the area, numbing the area, and reducing swelling and pain [39]. This study, by

Hylton et al., applied cold compresses to the treatment group for 5 minutes prior to the IUD insertion and throughout the whole process. They ultimately found that the cold compress showed no significant difference in pain scores during IUD insertion. No specific measures were taken to evaluate the timepoints of speculum insertion, uterine sounding, or tenaculum placement in this study [40].

3.6.1.2 Hysteroscopy

The only direct pain management study that related to hysteroscopies was a 2021 study by New et al. that examined the effects of pre-treating patients with 50 mcg of misoprostol the night before various procedures requiring hysteroscopy. All people, including both misoprostol treatment or placebo groups, also received 20% benzocaine topical gel to the cervix immediately prior to their hysteroscopy. The results for those using hysteroscopy indicated by uterine fibroids showed that the treatment group showed significantly reduced rates of tenaculum utilization and higher volume of saline required for distension. In those who received an endometrial biopsy, there was no difference in pain scores, volume of saline required for distension, or tenaculum utilization. One important comment by the authors stated, “The overall tenaculum use was higher in the patients undergoing office hysteroscopy with endometrial biopsy compared to those undergoing hysteroscopy alone. These findings suggest that the endometrial biopsy component of these procedures and resulting tenaculum use may be the driver of increased pain score observed during successive hysteroscopy and endometrial biopsy” [41].

3.6.1.3 First Trimester Uterine Aspiration

A 2020 study by Hailstorks et al. examined the effects of gabapentin in combination with local anesthetic on pain experienced during first trimester uterine aspiration. Gabapentin is an

anticonvulsive drug that was originally used as a muscle relaxer, but was also found to be potent for anxiety reduction in specific cases, movement disorders, and specific kinds of neural pain control [42]. This study administered two 300 mg capsules orally, 1 hour before the procedure, in combination with 18-20 mL of 1% nonbuffered lidocaine injections to the local area. Results showed no significant differences for pre- or intraoperative pain, but showed significant reduction in pain for the gabapentin group in the post operative time period of 10 to 30 minutes after the procedure [43].

3.6.1.4 Colposcopy-Guided Cervical Biopsy

Though coughing has routinely been used as a distractor from pain by healthcare providers during the time of biopsies, there are few studies examining this mechanism of pain management during colposcopy guided biopsies. For this reason, in 2020, Kuhn et al. performed a randomized study that compared cough versus no cough during biopsy procedures and found lower trends for cough groups, but no statistically significant difference in pain perception or anxiety score between treatment and control groups. The authors note some limitations including choosing an alpha as 0.1 in their design and recommend further studies with larger sample sizes [44].

3.6.1.5 Loop Electrosurgical Excision Procedure

The use of LEEP to remove at risk cervical tissue is a commonly used outpatient procedure that frequently uses intracervical anesthesia. A 2014 study by Kizer et al. focused primarily on the injection pain associated with administering the local anesthetic used for LEEPs by comparing a buffered 10 mL lidocaine mix (9 mL of lidocaine with 1 mL of 8.4% sodium bicarbonate) and a control 10 mL lidocaine mix (9 mL of lidocaine with 1 mL of epinephrine). Results of the study showed that mean pain score and cramping pain were not statistically significant between the

buffered and non-buffered treatment groups. Notably, procedural pain trended lower in the buffered group but did not reach statistical significance ($p = 0.08$). The authors note that though they may have missed some statistically significant findings due to limitations, they likely did not miss clinically significant results, meaning that this is a relatively well tolerated procedure and other measures to reduce this low-level pain could be futile.

3.6.2 Procedural Methodologies

Of the 40 studies included in this review, 11 (27.5%) fell into the category of procedural methodology. This category represents procedural interventions that altered the way a healthcare provider, or patient, performed or sought treatment, often with the primary hypothesis of reducing pain felt by patients. These interventions are mostly technique based, with some technology or tool-based adjustments included. Of the 11 studies in this category, 8 were quantitative randomized trials, 2 were cohort observational studies, a 1 was a qualitative analysis.

3.6.2.1 Randomized Trials

Within the procedural methodology category, studies related to IUD insertion within the randomized trials came up 3 times. The first study was a 2018 pilot by Turok et al. for a new medical device that replaces the need for a single-tooth tenaculum. This novel cervical suction retractor was tested in 3 stages, with the third being a randomized pilot on 24 people receiving IUDs. It found that though there was not a statistically significant change in pain scores, there was a trend towards lower scores in the novel suction tool compared to the traditional single-tooth tenaculum. Authors state that given the low sample size of this, the trend should be considered as

a sound indication for future studies into the effectiveness of this product, noting that there will likely be a nuanced patient base best served by this treatment option [45].

The second study, by Doty et al. in 2015, looked at IUD procedures also focused on tenaculum usage, comparing the traditionally used single-tooth tenaculum with an atraumatic vulsellum. Results show no significant differences in pain scores at placement between the two tools, but a significantly longer time required to control the bleeding associated with the single-tooth tenaculum. In a secondary analysis, it was shown that pre-procedure anxiety corresponded positively with more pain during the IUD procedure [46].

The third study that examined IUD placement procedures was interested in the optimal time for placement in the postpartum period. In 2016, Baldwin et al. introduced the IUD to people in the postpartum period at either 3 weeks or 6 weeks after giving birth. Among the secondary outcomes measured was "IUD Placement Experience", which evaluated pain. They found that there was no difference in pain scores between these two time periods, but when separated by type of delivery, people who had given birth vaginally experienced significantly lower scores than people who had cesarean deliveries for both groups [47].

Within the procedural methodology category, three studies within the randomized trials were related to hysteroscopy methodologies. One 2021 study by Moustafa et al. compared "patient and provider satisfaction of saline ultrasound (SIS) versus office hysteroscopy for cavity evaluation prior to in vitro fertilization (IVF) and to assess the capability of hysteroscopy to manage pathology at time of diagnosis to reduce delays and supernumerary procedures." Without providing anesthesia, subjects were randomized to either SIS or hysteroscopy, and both patients and providers were assessed about the experience. Results found that pain score was slightly higher in the hysteroscopy group, but there was no difference in satisfaction scores of patients. Providers

indicated the hysteroscopy provided better cavity evaluation, and only 1of 17 pathologies required secondary procedure in the hysteroscopy group, while all of the SIS group required a secondary procedure. Authors state that despite the slight increase in pain, hysteroscopy is the more reasonable first line for cavity evaluation given its efficient nature in treating pathologies [48].

Another study by Chapa et al. in 2015 looked at best hysteroscopic practices for pain management compared a traditional hysteroscopic approach to a vaginoscopic approach for sterilization. Prior to either method, patients received 10 mg of medroxyprogesterone acetate orally twice a day for the immediately preceding 10 days for endometrial preparation and were given1 mL (30 mg) ketorolac solution placed sublingually about 30 minutes before the procedure. The results showed no difference in pain for the micro insert but significantly greater pain for the traditional hysteroscope overall due to more discomfort in speculum, tenaculum, and block placement. Authors therefore recommend the vaginoscopic approach to hysteroscopy as the preferred method, accounting for procedure time, patient comfort, and ease of performance [49].

The third study that was related to hysteroscopic methodologies was by Sarker et al. in 2017, which evaluated the optimal order of hysteroscopy and endometrial biopsy when evaluating abnormal uterine bleeding. Patients in this study receiving successive procedures were randomized to order of procedure and analyzed for patient pain, length of procedure, adequacy of endometrial sample, and optimal visualization of the endometrial cavity during hysteroscopy. Authors found the time and perception of pain were independent of procedural order, and that the goal of either a better hysteroscopic view of the cavity or the goal of a better endometrial sample should drive the order of hysteroscopy versus endometrial biopsy [50].

Since pre-procedural anxiety has the highest correlation of increased perception of pain with surgical procedures, Sridhar et al. did a study to examine how immersive virtual reality (VR)

might reduce anxiety for first trimester dilation and curettage. In this 2020 pilot feasibility study, all participants received 600 mg of ibuprofen and a 20mL paracervical block with 1% lidocaine for pain management to start, and then were placed into either the VR group or the control group. Results showed that there was not a significant difference in the anxiety scores between the groups, but there were lower scores within the treatment group for those who wore the VR for longer amounts of time. The authors suggest that with a future study powered with an adequate sample size, there could potential for reduction in anxiety [51].

The last procedural methodology study in the randomized trials examined the impact of gentle language on pain perception during colposcopies, as this method has been shown to improve pain scores in other types of procedures. In this 2014 Dalton et al. study, patients were randomized to either hearing standard language or gentle language during their colposcopy, and their pain scores were recorded during their procedures. Though there was a slight trend to lower scores with the gentle language group, patients ultimately did not report significantly different pain perceptions by group [52].

3.6.2.2 Observation Cohort Studies

There were two observational cohort studies that fell under the procedural methodology category within this review. The first, published by New et al. in 2018, was a prospective study that compared patient's reported pain with office hysteroscopy between those with endometrial biopsy and those without. Overall, after controlling for confounding variables, pain scores were not different between the combined hysteroscopy and endometrial biopsy group and the hysteroscopy only group. Univariate analysis showed higher pain scores with tenaculum use and prior diagnosis of uterine fibroids. Authors conclude by highlighting the feasibility of office

hysteroscopy, while emphasizing the importance of patient self-assessment for pain tolerance and anxiety and their choice of office versus operating room setting [53].

The second study was a retrospective cohort study, by Keyhan et al. in 2014, from data that was originally collected over seven years for the purpose of quality assessment. After analyzing 639 office-based diagnostic or operative hysteroscopic procedures, the authors found that a multimodal approach to local anesthetic is appropriate both selectively and uniformly for diagnostic and operative hysteroscopy in an office setting. There were notably higher pain scores for operative hysteroscopy than diagnostic hysteroscopy and for patients who had both a cesarean and vaginal delivery than nulliparous patients [54].

3.6.2.3 Qualitative Study

The single qualitative study focusing on procedural methodologies was conducted by Stimmel et al. in 2022, and was a collection of U.S. based online forum posts surrounding self IUD removals by patients at home. Though this is not recommended by healthcare providers, some patients attempt to remove their IUDs at home for a variety of reasons, sometimes seeking the guidance or experience of others through online forums. The study identified over 1700 posts that were separated into categories such as “the experiences and techniques of those who successfully self-remove; experiences with unsuccessful self-removal attempts; and the questions and concerns of IUD users about self-removals”, which showed mostly positive themes around removal like “easy” and “painless”, and many questions about process and successful practices. The very few negative themes related to difficulty in grabbing strings and rarely discussed failed attempts that resulted in serious complications. The authors acknowledge the possibility of social desirability and other biases associated with self-reporting that could skew the results to being more positive

as well as the limitation to accurately gauge the date and geographical locations from which these posts originated [55].

3.6.3 Patient Attitudes or Perspectives

Of the 40 studies included in this review, 7 (17.5%) fell into the category of Patient Attitudes or Perspectives. This category represents potential patient perspective or attitudes surrounding pain management or anxiety about outpatient gynecological procedures. Of the 7 studies in this category, 2 were quantitative randomized trials, 3 were observational studies, 1 was mixed methods, and 1 was a qualitative analysis.

3.6.3.1 Randomized Trials

Two of the studies were secondary analyses of the previously mentioned Akers et al. study that examined 1% paracervical lidocaine for IUD insertion in young people aged 14-22. The first was also by Akers et al., and was performed in 2018 to specifically examine the satisfaction with the IUD insertion procedure in relation to predictors such as demographics, sexual and reproductive history, pain after IUD insertion, and treatment group. The results of this secondary analysis showed that older participants, those with previous history of gynecological examinations, and those with lower pain scores showed higher odds of satisfaction with the procedure than their counterparts. Overall, though, the results also show a generally high satisfaction with the procedure all around [56].

The other secondary analysis was performed by Hunter et al. in 2020, which used a linear regression to analyze demographic, sexual/gynecologic history, and mood covariates associated with anticipated pain. The only predictor of anticipated pain was found to be race, with adolescent

black people experiencing statistically significantly more anticipated pain. The authors conclude that since increased anticipated pain leads to increased actual pain, this population should be considered for additional counseling and guidance [57].

3.6.3.2 Observational Studies

One cross-sectional study that examined patient perspectives was by Brousseau et al. in 2022, which compared the perceptions of long-acting reversible contraceptives between people attending a local clinic and people during periods of incarceration. A survey was given to both groups that asked questions about demographics, current and previous contraceptive use, and perception of IUDs and implants. The questionnaires showed similar concerns about insertion procedure pain between the groups, and statistically higher concerns about removal and provider training in the incarcerated group than the clinic group. Authors comment that these differences likely related to previously studied barriers to care for incarcerated populations including: “lack of trust in medical providers, stigma of using contraception during incarceration, fear about the safety of devices provided in jail, and generally positive views of pregnancy” [58].

A prospective study by Hall and Kutler, published in 2016, looked at the subjective experiences of nulliparous college students who chose to use intrauterine contraceptives. All patients were given an oral NSAID and topical anesthetic before the procedure and experiences were recorded at the 1-, 6-, 12-, and 18-month benchmarks. The results around acute procedural pain showed that 85% of patients felt “very well informed” for their visit, and 77% showed either “moderate” or “severe” pain with insertion, 87% reported that they were “very likely” or “likely” to recommend it to a friend, and 83% stated that they were “very happy” or “happy” with the IUD. The authors comment that overall, the procedure is well tolerated, despite the high discomfort levels which are to be expected in this population [22].

Another prospective study, by Narayan et al. in 2018, aimed to determine if young people who initiate other contraceptive devices anticipate more pain than young people who initiate IUDs. This study enrolled 14- to 24-year-old young people who initiated contraception and used a verbal scripted survey that asked about demographics, anticipated pain, and whether they had heard pain anecdotes from others. The results showed that anticipated pain with IUD insertion was similar between groups, but that actual pain reported of IUD insertion was higher than expected. Overall, however, most still would recommend IUDs to others. Authors commented that insertional pain may not be a barrier to IUD initiation, but acknowledge that a more detailed survey and better understanding of pain tolerance between groups would be necessary for a more definitive assertion [59].

3.6.3.3 Mixed Methods Study

The only mixed method study in this scoping review was a 2018 study by Carr et al. that performed immediate post-partum IUD insertion (IPPI) following vaginal delivery using a ring forceps insertion technique. Patient pain scores and provider ease of insertion scores were measured quantitatively and then semi structured interviews were performed afterwards with a subset of patients in both groups. The quantitative results showed a lack of useful summary statistics for the pain scores and the qualitative results of the interviews showed themes that related to convenience of IPPI, high satisfaction, and conversely, an ineffective informed consent process. Additionally, the participants also noted less actual pain than anticipated pain [60].

3.6.3.4 Qualitative Study

The only qualitative study that fell under the patient perspective category was by Potter et al. in 2014, and it examined the attitudes surrounding IUDs in New York City adolescents. For

this study, qualitative semi structured interviews were performed with 21 young people aged 14 to 21 years to explore their attitudes, beliefs, and potential barriers to IUD use. The resulting themes included some benefits like superior contraceptive efficacy and long-term use, but predominantly showed fear surrounding pain, expulsion, foreign body, and potential for harm. Notably, the majority of respondents deemed the contraceptive as not the right choice for them, even recognizing the mentioned benefits. The authors conclude that targeted and relevant counseling is a necessary component for addressing IUD concerns in this population [61].

3.6.4 Provider Attitudes or Perspectives

Of the 40 studies included in this review, 2 (5.0%) fell into the category of Provider Attitudes or Perspectives. This category represents potential healthcare provider perspective or attitudes surrounding patient pain or anxiety during outpatient gynecological procedures. One of the studies in this category was a quantitative randomized trials and the other was a qualitative study.

The randomized trial by Maguire et al. in 2014, was a secondary analysis to see how providers perceived patient pain in IUD insertions compared to the actual pain perception of patients, knowing the healthcare providers often underestimate pain levels in other types of procedures. The study was consistent with other research, finding that healthcare providers largely underestimate patient pain levels with IUD insertion. Authors indicate that healthcare providers should be aware of this when providing counseling to be able to give more accurate expectations to patients [62].

The 2016 qualitative study by Wright et al. looked at advanced provider experiences in using IUDs for emergency contraception (EC) through semi structured interviews. Themes that

arose from these interviews included: personal views toward the copper IUD as EC, perceived patient views of the copper IUD as EC, process of presenting the copper IUD as method of EC to patients, process of inserting the IUD, and instances of failed insertions. Analysis found that EC experience and general IUD experience for providers was not very distinguishable, but that they were particularly concerned with patient understanding of side effects, patient's long-term use of the IUD, and perceived patient pain and fear of uterine perforation. The authors conclude that providers should continue to counsel patients thoroughly and that improvements should be made to provider training that ensure confidence in difficult IUD insertions [63].

3.6.5 Barriers

Of the 40 studies included in this review, 2 (5.0%) focused primarily on barriers to pain management during outpatient gynecological procedures. One was an observational study and the other was a qualitative study.

The 2019 quantitative study by O'Flynn et al. was a secondary analysis of a randomized trial, which explored duration of IUD insertion procedures in adolescents aged 14 to 22 years of age. The authors hypothesized that the younger patients would have longer procedure times due to a 2013 study showing that providers perceived a greater necessity for counseling for this population. This additional counseling could then, the authors state, add an additional barrier by adding to the time burden of both the clinics providing the IUDs and the patients receiving them. Study results, however, show no difference in procedure duration by age, though there were limitations with a lack of standardized preprocedural counseling [64].

The second study to focus on barriers was a 2024 analysis by Zelivianskaia et al. that looked at barriers to office hysteroscopy in fellowship education and practice. This cross-sectional

survey was given to all American Association of Gynecologic Laparoscopists, including fellows, program directors, and associate program directors. The results showed that the most common perceived barrier related to adequate pain management for patients, but also included concerns over equipment costs, sterilization costs, office staff training, and insufficient clinical time [65].

3.6.6 Risk Factors

Only one of the 40 studies included in this review (2.5%) fell into the primary category of risk factors. This category represents potential risk factors that could put patients at higher risk for more pain or anxiety during outpatient gynecological procedures. The 2014 observational prospective cohort study by Allen et al. analyzed IUD insertion among people with and without vaginal deliveries using a multivariable analysis controlling for age, breast-feeding, expected pain, baseline anxiety, and insertion timing and difficulty. Results showed that those who were nulliparous or had only cesarean deliveries prior to IUD insertion were likely to feel significantly more pain than those with vaginal deliveries. Additionally, other significant predictors or risk factors for pain included insertion difficulty and expected pain [66].

4.0 Discussion

The studies included in this review show that pain management in outpatient gynecological procedures is a nuanced and multifaceted topic. Within the scope of this review, six categories were identified including: direct pain interventions, procedural methodologies, patient attitudes and perspectives, provider attitudes and perspectives, barriers, and risk factors.

Among the acute pain management options, misoprostol, NSAIDs, cold compress, and topical anesthetics all showed little to no effect for the intracervical portions of procedures, and only moderate to no effect on the intravaginal portions of the procedures. The only intervention that showed significant differences in pain in intracervical procedures was injected lidocaine, though this was accompanied by the additional pain of injecting the medication. The additional pain caused during this administration step, however, was notably lower than the pain it was addressing. The NSAIDs did show an effect on pain post procedurally but not acutely, both standalone and in combination with other interventions [23, 26-28, 32-35]. A recurrent finding in studies that individually measured pain during tenaculum placement is that this tool itself is a significant source of pain and injected lidocaine was not effective here for reducing pain like it was for uterine sounding or IUD placement [23, 28]. Misoprostol, though it did not reduce pain for tenaculum placement, did lower the actual need for tenaculum placement in hysteroscopies [41]. This potentially indicates an alternate way to address pain, by removing the source rather than treating when possible.

The next category of procedural methodologies covered a range of experiments that evaluated possible interventions, such as procedural order, procedural timing in relation to previous deliveries, and use of different tools. Similarly, examining the traditionally used single-

tooth tenaculum, two studies investigated atraumatic and novel ways of stabilizing the cervix, with both showing trends towards reduced pain, but limited by sample size for marking statistically significant differences [45, 46]. In the remaining procedural methodologies, no interventions affected acute pain, but secondary analyses showed that those with vaginal deliveries consistently showed significantly less pain than those who had cesarean deliveries or were nulliparous [47, 54]. This highlights a potential risk factor for providers to consider when evaluating appropriate treatments.

One consistent theme that cropped up in the patient attitude category was anticipated pain or anxiety and how this was positively correlated to actual perceived pain. One study found that that adolescent African Americans experienced the highest levels of anticipated pain, which corresponds to what is known about medical distrust and mistreatment of pain in this community. (The authors noted that "The association between black race and anticipated pain is not likely to have a biological basis. Rather, this likely stems from complex social and structural realities within the lived experiences of black women in the United States." due to, for example, "a history of exploitation and racial discrimination in health care in the United States.") [29, 56, 57]. Healthcare providers should be aware of anxiety as an additional risk factor for pain experiences and should counsel and/or medicate patients appropriately.

Of the two studies that focused primarily on provider attitudes, the first identified managing pain as the one of highest perceived barriers to providing IUDs specifically for EC. Notably, the other study in this category found that providers consistently and largely underestimate patient pain in IUD insertions. These contrasting findings of providers showing concern about pain while also underestimating it speak to a potential disconnect between patient and provider understanding of IUD insertion experiences [62, 63].

As for barriers to better pain management options, studies showed concerns about the capacity of outpatient settings to provide different types of pharmacological or psychosocial support within the limited time constraints. The quick turnaround time between patients required of most clinics limits what types of options can reasonably be explored without imposing a significant time burden on both the patients and providers. Therefore, exploring fast acting or home accessible methods should be studied in more depth [65].

4.1 Literature Gaps and Areas of Future Research

This review allowed the author to identify some areas where more research is needed to inform best practices for pain management in outpatient gynecological procedures. Future research should be conducted to specifically identify means of reducing pain specifically in tenaculum placement, as this step showed high pain outcomes and low response to current treatments. These potential interventions could be through pharmacological methods or alternatives to the tenaculum itself, as seen in the early research found in this review. Additionally, there was not much research included in the United States over the past ten years that addressed pain management specifically for LEEPS. This could possibly be because the proportion of people receiving IUDs is much higher than that of those receiving LEEPs, so the literature reflects that as a priority, but identifying best practices for this procedure could benefit both patients' and providers' experiences.

On the psychosocial front, there was much indication of the relationship between anxiety and anticipated pain versus actual perceived pain. When considering ways to improve patient comfort overall, anxiety surrounding the treatment needs to be considered. Best practices around anxiety mitigation in relationship to pain management should be further studied, possibly

comparing standardized counseling to pharmacological interventions, as both warrant different clinical benefits and concerns. This research should keep in mind patient age and experience, as the younger and adolescent groups showed more anxiety than more experienced people.

4.2 Policy Recommendations

Within this scoping review, nearly every study called for more research. Considering the lack of historically consistent, universal, and easily identified methods of pain management, this is understandable. However, this causes current standards of care set by organizations like ACOG to be minimal, vague, or nonexistent while they wait for a remedy that is more universal in its response. Waiting, however, has the potential to negatively impact the short- and long-term health outcomes of people who are undergoing these procedures by furthering traumatic and painful clinic experiences. Temporary policies that reduce pain, though imperfect, should be considered to reduce these experiences while better solutions are being researched.

Though not every procedure showed data worth a policy recommendation, the most recent research on IUD insertions showed that a 20 mL buffered 1% lidocaine paracervical block does work to reduce overall pain in nulliparous people, who are the most likely to experience higher pain for this procedure. Patients should be informed that the injection itself will cause some pain, but that it will significantly reduce overall pain. It is the recommendation of this author, based on the findings from this review, that defining medical bodies like ACOG update their set procedural operating standards for IUD placements to include this intervention for acute pain management along with NSAIDs for reducing post procedural pain, as shown by previous literature.

4.3 Limitations

This scoping review has several notable limitations. One limitation is that this review was performed by one person, potentially adding bias in the interpretation of the results due to only one perspective. More limitations include the exclusion criteria, including limiting studies to those performed in the United States and published in English. Setting these criteria allowed for a manageable and relevant scope for the author, given time constraints, but this may have excluded relevant studies that were performed in other countries, published in different languages, or not published in journal articles, further risking bias. Furthermore, the small number of studies included in this review adds possible limitations to guiding future best practices.

5.0 Conclusion

Overall, the results from this review show that a multimodal, tailored response to pain management in outpatient gynecological procedures is likely necessary for significant reduction in pain experiences for patients. Although patient satisfaction with their procedures has remained generally high, pain should still be considered to improve patient experience and upkeep with their gynecological health. Patients' base anxiety levels and previous gynecological experiences, including examination history and vaginal deliveries, provider training levels plus available time per patient, and facility accessibilities, all play into patient experiences and need to be factored into acute pain interventions. Methods involving only topical treatments and NSAIDs that have been standard practice at many clinics for years, likely need to updated as these have increasingly been shown to be insufficient for acute pain. Additionally, anxiety and anticipated pain in particular were major predictors of actual pain, which could be addressed both pharmacologically and through counseling.

Despite the challenges that are faced with identifying clear cut solutions to pain management, advancements have been made in the past 10 years that should be recognized and recommended by the American College of Gynecology, specifically in relation to injectable lidocaine for acute pain and NSAIDs for postoperative pain for IUD insertions. Further research should involve more about tenaculum use and alternatives, LEEPS, and anxiety management.

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